THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

MWD MEETING AGENDA

E&O Committee
T. Smith, Chair
Vacant, Vice Chair
R. Apodaca
S. Blois
M. Camacho
D. De Jesus
L. Dick
S. Faessel
L. Fong-Sakai
R. Lefevre
J. Morris
G. Peterson
H. Repenning
H. Williams

Engineering and Operations Committee

Meeting with Board of Directors *

May 10, 2022

9:30 a.m.

Tuesday, May 10, 2022 Meeting Schedule
08:30 a.m. L&C
09:30 a.m. E&O
11:30 a.m. Break
12:00 p.m. BOD

Teleconference meetings will continue until further notice. Live streaming is available for all board and committee meetings on mwdh2o.com (Click Here)

A listen only phone line is also available at 1-800-603-9516; enter code: 2176868#. Members of the public may present their comments to the Board on matters within their jurisdiction as listed on the agenda via teleconference only. To participate call (404) 400-0335 and enter Code: 9601962.

MWD Headquarters Building • 700 N. Alameda Street • Los Angeles, CA 90012

* The Metropolitan Water District's meeting of this Committee is noticed as a joint committee meeting with the Board of Directors for the purpose of compliance with the Brown Act. Members of the Board who are not assigned to this Committee may participate as members of the Board, whether or not a quorum of the Board is present. In order to preserve the function of the committee as advisory to the Board, members of the Board who are not assigned to this Committee will not vote on matters before this Committee.

1. Opportunity for members of the public to address the committee on matters within the committee's jurisdiction (As required by Gov. Code Section 54954.3(a))

**** CONSENT CALENDAR ITEMS -- ACTION ****

2. CONSENT CALENDAR OTHER ITEMS - ACTION

A. Approval of the Minutes of the Engineering and Operations Committee held April 11, 2022 **21-1139**

Attachments: 05102022 EO 2A Minutes

3. CONSENT CALENDAR ITEMS - ACTION

Zoom Online

7-2 Certify the Final Program Environmental Impact Report for the Climate Action Plan and take related CEQA actions; adopt the Climate Action Plan; and authorize an increase of $1.2 million to an agreement with Rincon Consultants, Inc. for a new not-to-exceed total of $2.2 million for Climate Action Plan implementation support **21-1101**

Attachments: 05102022 EO 7-2 B-L
05102022 EO 7-2 Presentation

7-3 Adopt the CEQA determination that the proposed action was previously addressed in the certified Program Environmental Impact Report and related CEQA actions and (1) award an $18,930,000 contract to Woodcliff Corporation for improvements to the La Verne Shops; and (2) authorize an agreement with Richard Brady & Associates for a not-to-exceed amount of $650,000 **21-1104**

Attachments: 05102022 EO 7-3 B-L
05102022 EO 7-3 Presentation

7-4 Award a $3,143,592 contract to Blois Construction, Inc. for upgrades at three Sepulveda Feeder structures; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA **21-1105**

Attachments: 05102022 EO 7-4 B-L
05102022 EO 7-4 Presentation

7-5 Review and consider Addendum No. 1 to the certified 2015 Final Environmental Impact Report for the Weymouth Plant Improvements; award a $93,840,000 contract to J. F. Shea Construction, Inc. for rehabilitation of Basins Nos. 5-8 and Filter Building No. 2 at the F. E. Weymouth Water Treatment Plant; and authorize an agreement with Carollo Engineers, Inc., for an amount not to exceed $495,000 for engineering support during construction **21-1106**

Attachments: 05102022 EO 7-5 B-L
05102022 EO 7-5 Presentation

7-6 Award $2,654,000 contract to MMC Inc. for replacement of chillers at OC-88 Pump Station; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA **21-1107**

Attachments: 05102022 EO 7-6 B-L
05102022 EO 7-6 Presentation

7-7 Review and consider Addendum No. 5 to the certified 2017 Programmatic Environmental Impact Report for the Prestressed Concrete Cylinder Pipe Rehabilitation Program; and award an $11,884,700 contract to J. F. Shea Construction, Inc. to rehabilitate a portion of the Second Lower Feeder **21-1108**

Attachments: 05102022 EO 7-7 B-L
05102022 EO 7-7 Presentation

**** END OF CONSENT CALENDAR ITEMS ****

4. OTHER BOARD ITEMS - ACTION

NONE

5. BOARD INFORMATION ITEMS

NONE

6. COMMITTEE ITEMS

a. State Water Project Dependent Area Solutions: Drought Action Planning Update **21-1140**

Attachments: 05102022 EO 6a Presentation

b. Overview of Arc Flash Safety Planning **21-1147**

Attachments: 05102022 EO 6b Presentation

7. MANAGEMENT REPORTS

a. Water System Operations Manager's Report **21-1149**

Attachments: 05102022 EO 7a Presentation

b. Engineering Services Manager's Report **21-1150**

Attachments: 05102022 EO 7b Presentation

8. FOLLOW-UP ITEMS

NONE

9. FUTURE AGENDA ITEMS

10. ADJOURNMENT

Zoom Online

NOTE: This committee reviews items and makes a recommendation for final action to the full Board of Directors. Final action will be taken by the Board of Directors. Agendas for the meeting of the Board of Directors may be obtained from the Board Executive Secretary. This committee will not take any final action that is binding on the Board, even when a quorum of the Board is present.

Writings relating to open session agenda items distributed to Directors less than 72 hours prior to a regular meeting are available for public inspection at Metropolitan's Headquarters Building and on Metropolitan's Web site http://www.mwdh2o.com.

Requests for a disability related modification or accommodation, including auxiliary aids or services, in order to attend or participate in a meeting should be made to the Board Executive Secretary in advance of the meeting to ensure availability of the requested service or accommodation.

Zoom Online

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

MINUTES

ENGINEERING AND OPERATIONS COMMITTEE

April 11, 2022

Chair Smith called the teleconference meeting to order at 10:08 a.m.

Members present: Chair Smith, Directors Blois, Camacho, De Jesus, Dick, Faessel, Fong-Sakai, Lefevre, Morris, Peterson, and Williams

Members absent: Directors Apodaca and Repenning

Other Board members present: Directors Abdo, Ackerman, Atwater, Cordero, Dennstedt, Erdman, Fellow, Gray, McCoy, Miller, Record, and Tamaribuchi

Committee staff present: Bednarski, Chapman, Hagekhalil, Burrola, Rohen, Scully, Upadhyay, and Yamasaki

1. OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO ADDRESS THE COMMITTEE ON MATTERS WITHIN THE COMMITTEE'S JURISDICTION

None

CONSENT CALENDAR ITEMS -- ACTION

2. CONSENT CALENDAR OTHER ITEMS - ACTION

A. Approval of the Minutes of the Engineering and Operations Committee held March 7, 2022

3. CONSENT CALENDAR ITEMS – ACTION

Director Smith announced that Item 7-5 would be voted on separately.

7-4 Subject: Authorize an agreement with Stantec Consulting Services, Inc. for a not-to-exceed amount of $8.5 million to replace the control system at the Mills Water Treatment Plant and amend an existing agreement with CH2M Hill Engineers, Inc. for a not-to exceed amount of $4.435 million; the General Manager has determined that this proposed action is exempt or otherwise not subject to CEQA

Presented by: Mike Claisse, Team Manager, Engineering Services Group

Motion: a. Authorize an agreement with Stantec Consulting Services, Inc. for a not-to-exceed amount of $8.5 million for design and equipment procurement to upgrade the control system at the Mills plant.
b. Authorize an increase of $1.95 million to an agreement with CH2M Hill Engineers, Inc for a new not-to-exceed amount of $4.435 million to provide specialized technical support for the upgrade

The following Directors provided comments or asked questions:

1. Faessel
2. Camacho
3. Miller
4. Peterson

Staff responded to the Directors' comments or questions.

7-6 Subject: Adopt the CEQA determination that the proposed project was previously addressed in the approved 2014 Mitigated Negative Declaration and related CEQA action and (1) award a $17,226,250 contract to Spiniello Infrastructure West, Inc. to replace the lining in a portion of the Orange County Feeder; and (2) authorize the General Manager to enter into a new 24-month lease agreement, with an 18-month option to extend, at 2750 Bristol Street in Costa Mesa, CA (Assessor's Parcel No. 418 182-05) in an amount not to exceed $360,000 for use as a construction staging and storage site

Presented by: Sam Mouawad, Principal Engineer, Engineering Services Group

Motion: Adopt CEQA determination that the proposed project was previously addressed in the approved 2014 Mitigated Negative Declaration and related CEQA documentation, and that no further environmental analysis or documentation is required and a. Award a $17,226,250 contract to Spiniello Infrastructure West, Inc. to reline a portion of the Orange County Feeder. b. Authorize General Manager to enter into a new 24-month lease agreement with an 18-month option to extend at 2750 Bristol Street in Costa Mesa, CA (Assessor's Parcel No. 418 182-05) in an amount not to exceed $360,000

The following Directors provided comments or asked questions:

1. Faessel
2. Miller
3. Dick
4. Camacho
5. Morris

Staff responded to the Directors' comments or questions.

Director Camacho made a motion, seconded by Director Blois, to approve the consent calendar consisting of items 2A, 7-4, and 7-6.

The vote was:

Ayes:	Directors Blois, Camacho, De Jesus, Dick, Faessel, Fong-Sakai, Lefevre, Morris, Peterson, Smith, and Williams
Noes:	None
Abstentions:	None
Absent:	Apodaca and Repenning

The motion for Items 2A, 7-4, and 7-6 passed by a vote of 11 ayes, 0 noes, 0 abstentions, and 2 absent.

7-5 Subject: Appropriate $600 million for projects identified in the Capital Investment Plan for Fiscal Years 2022/23 and 2023/24 and authorize the General Manager to initiate or proceed with work on capital projects identified in the Capital Investment Plan for Fiscal Years 2022/23 and 2023/24 and Minor Capital Projects to be identified during the biennial period, subject to any limits on the General Manager's authority and CEQA requirements; the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA

Presented by: James Hong, Principal Engineer, Engineering Services Group

Motion: a. Appropriate $600 million for projects identified in the CIP appendix for FYs 2022/23 and 2023/24.
b. Authorize the General Manager to initiate or continue work on the capital projects described in the CIP Appendix for FYs 2022/23 and 2023/24 and Minor Capital Projects to be identified during the biennial period, subject to any limits on the General Manager's authority and CEQA requirements.

The following Directors provided comments or asked questions:

1. Faessel
2. Fong-Sakai
3. Blois
4. Peterson

Staff responded to the Directors' comments or questions.

Director Peterson made a motion, seconded by Director Morris, to approve the consent calendar consisting of item 7-5.

The vote was:

Ayes:	Directors Blois, De Jesus, Dick, Faessel, Lefevre, Morris, Peterson, and Williams
Noes:	None
Abstentions:	Fong-Sakai and Smith
Absent:	Apodaca and Repenning
Not Voting:	Camacho

The motion for Item 7-5 passed by a vote of 8 ayes, 0 noes, 2 abstentions, 2 absent, and 1 not voting.

**** END OF CONSENT CALENDAR ITEMS ****

4. OTHER BOARD ITEMS - ACTION

NONE

5. BOARD INFORMATION ITEMS

NONE

6. COMMITTEE ITEMS

a. Subject: Overview of Arc Flash Safety Planning

Deferred to May

7. MANAGEMENT REPORTS

a. Subject: Water System Operations Manager's report

Presented by: Brent Yamasaki, Water System Operations, Group Manager

Mr. Yamasaki reported on the following:

- Continuing operational actions to address the record drought
- Extending CRA 8-pump flow in 2022 for additional water reliability
- MWD PFAS monitoring update
- Innovative powerplant repair to preserve $1.5M of hydropower revenue

b. Subject: Engineering Services Manager's report

Presented by: John Bednarski, Engineering Services Group, Chief Engineer and Group Manager

Mr. Bednarski reported on the following:

- Price escalation Trends for Public Works Contracts
- Alternative Project Delivery legislation testimony
- Garvey Reservoir
  - Drainage & Erosion Control project
  - Hypochlorite System upgrade project
- SWP Dependent Area Solutions Update
  - Drought Action Planning and Development Workshop

8. FOLLOW-UP ITEMS

NONE

9. FUTURE AGENDA ITEMS

NONE

The next meeting will be held on May 9, 2022.

Meeting adjourned at 11:33 a.m.

Tim Smith
Chair

- **Board of Directors**
  Engineering and Operations Committee

5/10/2022 Board Meeting

7-2

Subject

Certify the Final Program Environmental Impact Report for the Climate Action Plan and take related CEQA actions; adopt the Climate Action Plan; and authorize an increase of $1.2 million to an agreement with Rincon Consultants, Inc. for a new not-to-exceed total of $2.2 million for Climate Action Plan implementation support

Executive Summary

The Metropolitan Water District of Southern California Climate Action Plan (CAP) is a comprehensive programmatic document that identifies energy and greenhouse gas (GHG) reduction actions from past, current, and future programs to reduce our carbon footprint in the face of climate change and to offset GHG emissions from future projects, such as the proposed Regional Recycled Water Program. The CAP would streamline California Environmental Quality Act (CEQA) GHG analysis and substantially reduce costs to Metropolitan resulting from project-by-project mitigation for GHG impacts. This action certifies the Final Program Environmental Impact Report (PEIR) for the CAP, adopts the CAP, and provides funding for implementation of the CAP program.

Details

Background

The Global Warming Solutions Act of 2006 (Assembly Bill 32) established a statewide target to reduce GHG emissions to 1990 levels by the year 2020. In 2016, Governor Jerry Brown signed Senate Bill (SB) 32, which furthered California's efforts to reduce climate change impacts by establishing a new, more stringent GHG reduction target of 40 percent below 1990 levels by the year 2030. In response to SB 32, the California Air Resources Board developed California's 2017 Climate Change Scoping Plan (Scoping Plan), which charts a path to the 2030 target. Since the release of the Scoping Plan in 2017, Governor Brown has signed Executive Order (EO) B-55-18, which set an even more aggressive goal of carbon neutrality by 2045.

A CAP is a comprehensive program that streamlines CEQA GHG impact analysis and reduces mitigation costs associated with impacts resulting from future projects. A CAP allows Metropolitan to obtain multiple benefits from existing water and energy conservation programs, capturing GHG savings from programs such as turf removal, solar power, hydroelectric plants, rideshare, and electric vehicle charging. The CAP also provides Metropolitan with an opportunity to demonstrate its longstanding and continuing commitment to environmental stewardship in California, and to participate in the global effort to curtail climate change. The CAP will also serve as a launching pad for Metropolitan's new Sustainability, Resiliency and Innovation Office, which will lead CAP implementation and identify the next steps for this effort.

Metropolitan's Board of Directors authorized the development of a CAP in October 2018. In November 2019, staff provided an oral report on Metropolitan's past and current emissions profile, as well as a forecast of future emissions. In March 2020, staff provided an oral report on a recommended emissions quantification and tracking protocol that will meet the needs of Metropolitan, meet local and statewide GHG reduction goals, and ensure compliance with CEQA. Finally, in June 2020, staff provided an oral report recommending adoption of a GHG reduction target consistent with the state's goal of carbon neutrality by 2045.

In the fall of 2021, prior to the public release of the document, staff released an advance copy of the draft CAP for peer review to the six county planning departments within Metropolitan's service area and two analogous water

agencies. Peer review comments were incorporated into the draft CAP before it was released for the required CEQA public review process. The public review process is complete, and staff has revised and finalized the CAP and CEQA document based on comments received during the public comment period.

Certification of Final Program Environmental Impact Report

On November 18, 2021, Metropolitan released the Draft PEIR for a 45-day public review period as required by CEQA and the State CEQA Guidelines. Staff filed the Notice of Completion with the State Clearinghouse, and the Notice of Availability of the Draft PEIR was mailed to contiguous property owners, federal, state, and local agencies, and individuals that may have an interest in the CAP and projects covered under the CAP. An electronic copy of the Draft PEIR was posted on Metropolitan's website, while hard copies were made available at Metropolitan's Headquarters Building and nine public libraries within the Plan Area. The 45-day public review period ended on January 7, 2022. Metropolitan received thirteen comment letters pertaining to the CAP and Draft PEIR: six from governmental agencies, five from non-governmental organizations, and two from individuals. Individual comments in each letter were identified, and a response to each comment was prepared. Overall, commenters were supportive of Metropolitan's decision to prepare a CAP. Several comments recommended the inclusion of State Water Project (SWP) emissions into Metropolitan's CAP planning process to provide a clearer picture of the embedded energy associated with all water delivered to Metropolitan's service area. In response to these comments, a detailed discussion of the SWP emissions was included in an appendix to the CAP. Other comments supported Metropolitan's water efficiency program but encouraged the expansion of stormwater capture and the incorporation of vegetated nature-based solutions into all projects moving forward. While most comments received were centered on the CAP, one comment raised concerns about the Alternatives Analysis in the Draft PEIR, and one comment recommended that Metropolitan pursue project-level EIRs for projects proposed in the CAP. Metropolitan explained its decision to proceed with a PEIR and the variety of alternatives considered in its analysis in the PEIR and the response to comments. All public comment letters received and responses to individual comments are included in Volume 1 of the Final PEIR.

CEQA requires that Metropolitan's Board certify that the Final PEIR was completed in compliance with CEQA and the State CEQA Guidelines; that the Board has reviewed and considered the information presented in the Final PEIR; and that the Final PEIR reflects the Board's independent judgment and analysis. CEQA also requires that public agencies adopt a Mitigation Monitoring and Reporting Program (MMRP) when they approve a project that contains mitigation measures to reduce or avoid significant environmental impacts. The Final PEIR identified potentially significant environmental impacts and proposed feasible mitigation measures, which are included in the MMRP. In addition, CEQA requires Metropolitan's Board adopt the Findings of Fact (FOF or Findings), which contain: (1) conclusions about each significant impact; (2) substantial evidence supporting Metropolitan's conclusions; and (3) an explanation of how the evidence supports the conclusions. Findings must be made at the time the Final PEIR is certified. The Final PEIR concluded that air quality, cultural resources, and noise impacts could not be mitigated to less-than-significant levels. Finally, the Board must adopt a Statement of Overriding Considerations (SOC) for these impacts. The SOC concludes that the benefits of the proposed program substantially outweigh the unavoidable significant adverse impacts that would result from project implementation.

CAP Adoption

Metropolitan's CAP is a comprehensive programmatic planning document designed to streamline the environmental analysis of GHG impacts from future capital projects by identifying GHG reduction actions and programs that offset future GHG emissions. To be used to offset future GHG emissions, the CAP must meet the requirements of Section 15183.5(b)(1) of the State CEQA Guidelines for a "Qualified GHG Reduction Plan" (Qualified CAP). Metropolitan's CAP is consistent with California GHG reduction legislation and includes a baseline GHG emissions inventory from Metropolitan's operations from 1990 through 2020; an emissions forecast modelled using published water supply scenarios through 2045; an established emissions reduction target of carbon neutrality by 2045; actions and policies that Metropolitan can implement to achieve the necessary GHG reductions to meet this target; a monitoring and reporting program to ensure the goals are met; and an implementation roadmap. Once adopted by the Board, Metropolitan's CAP will satisfy the CEQA requirements for a Qualified CAP.

Amendment to an Agreement for Environmental Support (Rincon Consultants, Inc.)

In October 2018, the Board authorized a new agreement with Rincon Consultants, Inc. (Rincon) for environmental support to develop the CAP and associated CEQA document. In September 2021, the Board authorized an increase to the agreement for public outreach and peer review support. Rincon completed the scope of work identified under the agreement, including the development of a CAP and supporting CEQA document.

This action authorizes an increase of $1.2 million to an existing agreement with Rincon for a new not-to-exceed total of $2.2 million for environmental services associated with CAP implementation. The scope of services will include developing and preparing annual progress reports; designing and implementing an online reporting tool to support Metropolitan's goal of transparency; developing an equitable community engagement strategy; preparing annual GHG inventories; and preparing Metropolitan's five-year update to the CAP and necessary CEQA documentation.

Summary

This action certifies the Final PEIR for the CAP, adopts the MMRP, FOF, and SOC, and adopts the CAP in accordance with CEQA, and authorizes an increase of $1.2 million to an existing agreement with Rincon for services related to implementation of the CAP. **See Attachment 1** for the Location Map; **Attachment 2** for the Draft PEIR; **Attachment 3** for the Final PEIR (including Responses to Comments, FOF, SOC, and MMRP); and **Attachment 4** for the Final CAP.

Policy

By Minute Item 44813, dated March 12, 2002, the Board adopted policy principles on global climate change and water resources planning, expressing Metropolitan's support for further research into the potential water resource and quality effects of global climate change, and support for reasonable, economically-viable, and technologically-feasible management strategies and efforts for reducing the potential impacts of global climate change to water resources.

By Minute Item 51350, dated October 9, 2018, the Board authorized the development of a CAP.

By Minute Item 52579, dated November 9, 2021, the Board adopted legislative policy principles on climate changes and the environment to help California reach its climate goals while adapting to a rapidly changing environmental landscape. The Board also expressed its support for policies and funding that encourage sustainable practices and environmental compliance, reduce greenhouse gas emissions, and improve energy sustainability.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

Certify that the Final PEIR was completed in compliance with CEQA and the State CEQA Guidelines; certify that the Board has reviewed and considered the information presented in the Final PEIR; certify that the Final PEIR reflects the Board's independent judgment and analysis; adopt the FOF, SOC, and the MMRP; and adopt the CAP for the purposes of CEQA.

CEQA determination for Option #2:

None required

Board Options

Option #1

Certify the Final Program Environmental Impact Report for the Climate Action Plan and take related CEQA actions; adopt the Climate Action Plan; and authorize an increase of $1.2 million to an agreement with Rincon Consultants, Inc for a new not-to-exceed amount of $2.2 million for Climate Action Plan implementation support.

Fiscal Impact: Expenditure of $1.2 million in O&M funds over the next five years. Approximately $250,000 will be incurred in the first fiscal year to develop tracking tools and provide implementation support.

Business Analysis: The option would leverage existing and planned water, energy, and other conservation measures to help offset GHG impacts from future projects and mitigate the effect of GHG-related climate change.

Option #2

Do not certify the Final Program Environmental Impact Report; do not adopt the Climate Action Plan; and do not authorize an increase to the agreement with Rincon Associates, Inc. at this time.

Fiscal Impact: Unknown

Business Analysis: Under this option, staff would continue to apply project-specific GHG reduction measures to individual projects. This option would forego a cost-saving opportunity to utilize existing programs to offset emissions from future capital projects.

Staff Recommendation

Option #1

4/22/2022

Elizabeth Crosson *Date*
Chief Sustainability, Resiliency and Innovation Officer

4/27/2022

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Location Map

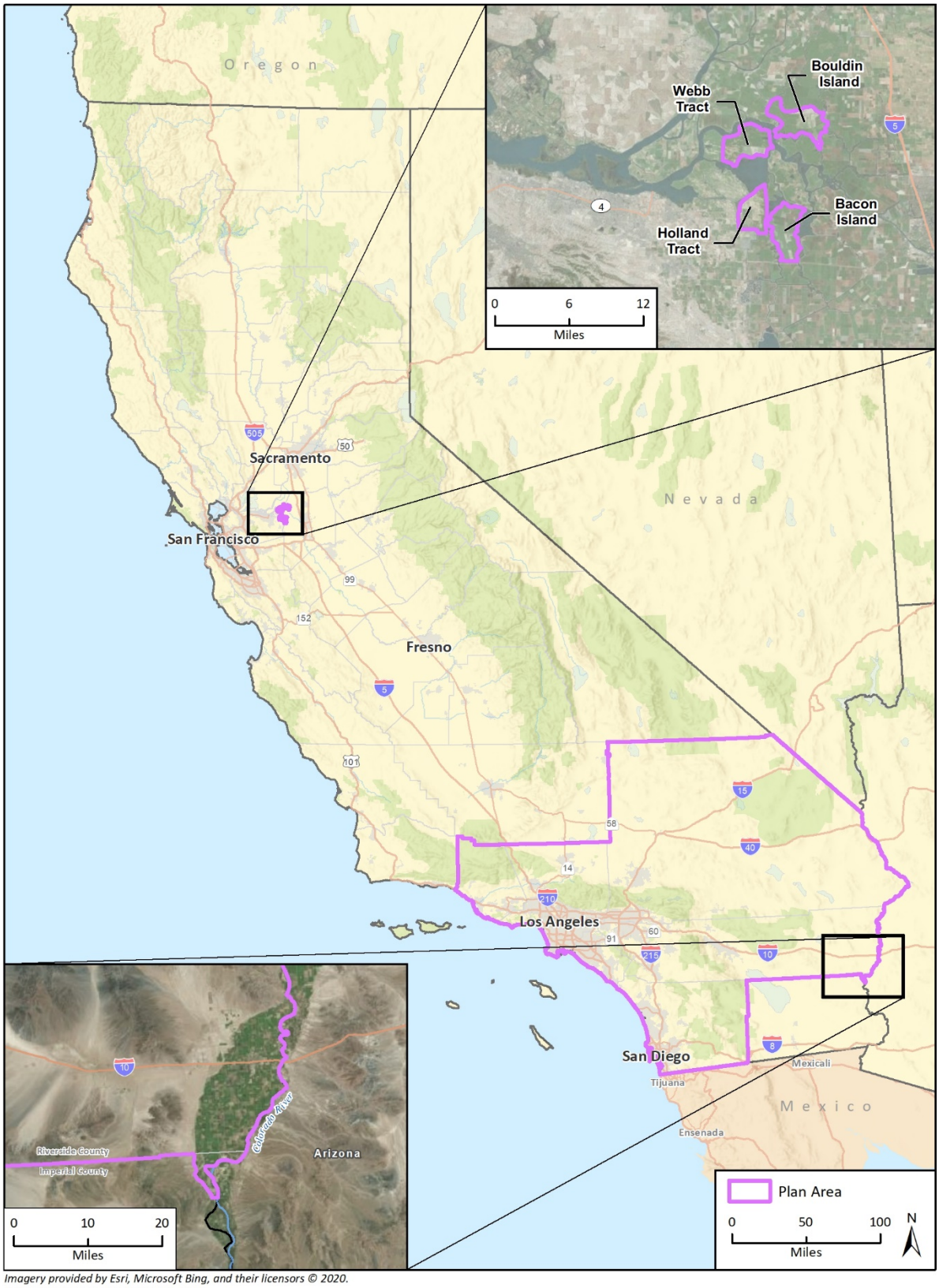
Attachment 2 – Draft Program EIR

Attachment 3 – Final Program EIR

Attachment 4 – Final CAP

Ref# cao12686424

Location Map

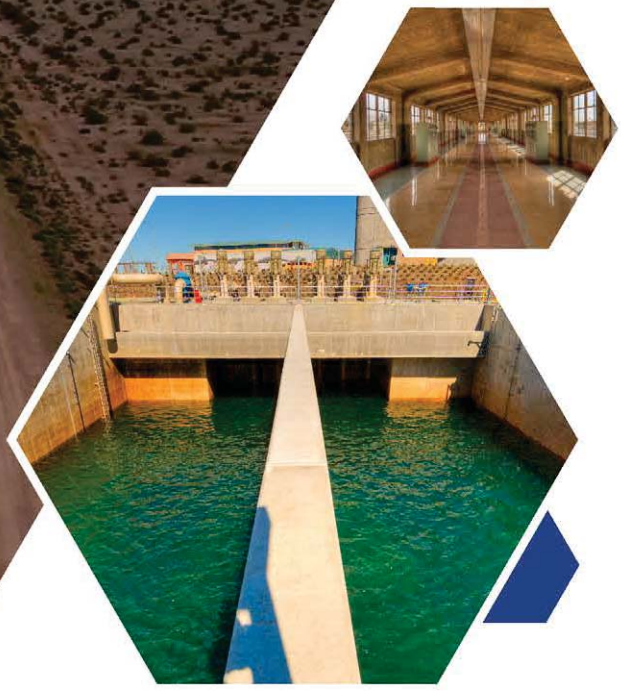


Imagery provided by Esri, Microsoft Bing, and their licensors © 2020.
Additional data provided by USGS, 2017.

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Metropolitan
Climate Action Plan

Draft Program Environmental Impact Report



November
2021

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Appendices

Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
AB	Assembly Bill
APCD	Air Pollution Control Districts
AQIA	Air Quality Impact Analysis
AQMP	Air Quality Management Plan
AVAQMD	Antelope Valley Air Quality Management District
AWTP	Advanced water treatment plant
BAAQMD	Bay Area Air Quality Management District
BESS	Battery energy storage systems
BMPs	Best Management Practices
°C	Degrees Celsius
CAAQS	California Ambient Air Quality Standards
CAISO	California Independent System Operator
CalEEMod	California Emissions Estimator Model
CAL FIRE	California Department of Forestry and Fire Protection
Cal OSHA	California Occupational Safety and Health Administration
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNEL	Community Noise Equivalent Level
CO_2e	Carbon Dioxide Equivalent
CO	Carbon Monoxide
CRA	Colorado River Aqueduct
CRHR	California Register of Historical Resources
cy	Cubic Yards
dB	Decibels

DNL	Day-Night Average Level
DOF	California Department of Finance
DPM	Diesel exhaust particulate matter
EIR	Environmental Impact Report
EMFAC2017	EMissions FACtor 2017
°F	Degree Fahrenheit
FHSZ	Fire Hazard Severity Zones
FHWA	Federal Highway Administration
FMP	Fisheries Management Plans
FTA	Federal Transit Administration
GHG	Greenhouse Gas
GWP	Global Warming Potentials
HABS	Historic American Building Survey
HCP	Habitat Conservation Plan
HMMP	Habitat Mitigation and Monitoring Plan
hp	Horsepower
Hz	Hertz
ICAPCD	Imperial County Air Pollution Control District
IPCC	Intergovernmental Panel on Climate Change
ITP	Incidental Take Permit
LED	Light Emitting Diode
LEED	Leadership in Energy Efficiency and Design
L_{eq}	Equivalent Noise Level
LRA	Local Responsibility Areas
LSAT	Land-Surface Air Temperature
LSTs	Localized Significance Thresholds
MBTA	Migratory Bird Treaty Act
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
Metropolitan	The Metropolitan Water District of Southern California
MT	Metric tons
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NCCP	Natural Community Conservation Plan
NMFS	National Marine Fisheries Service
NO_x	Nitrogen oxides

NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NPPA	Native Plant Protection Act
NRHP	National Register of Historic Places
OEHHA	California Office of Environmental Health Hazard Assessment
OSHA	Occupational Safety and Health Administration
PEIR	Program Environmental Impact Report
PM	Particulate Matter
ppm	Part Per Million
PPV	Peak Particle Velocity
PQS	Professional Qualifications Standards
PRC	Public Resources Code
RCNM	Roadway Construction Noise Model
RCRA	Resource Conservation and Recovery Act
RMS	Root Mean Squared
RRWP	Regional Recycled Water Program
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SCCAB	South Central Coast Air Basin
SCE	Southern California Edison
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SFBAAB	San Francisco Bay Area Air Basin
SGIP	Self-Generation Incentive Program
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SOI	Secretary of the Interior
SRA	Source Receptor Area
SRA	State Responsibility Area
SSAB	Salton Sea Air Basin
SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	Toxic Air Contaminants

USC	United States Code
U.S. DOT	United States Department of Transportation
VCAPCD	Ventura County Air Pollution Control District
VdB	Vibration Decibels
VMT	Vehicle Miles Travelled
VOCs	Volatile Organic Compounds
WTP	Water Treatment Plant
YLHEP	Yorba Linda Hydroelectric Power Plant
ZEV/EV	Zero-Emissions Vehicle/Electric Vehicle

Executive Summary

This document is a draft Program Environmental Impact Report (PEIR) analyzing the potential environmental effects of The Metropolitan Water District of Southern California's (Metropolitan) proposed Climate Action Plan (CAP or proposed program). This section summarizes the characteristics of the proposed program, the environmental impacts and mitigation measures associated with implementation of the proposed program, and alternatives to the proposed program considered in this draft PEIR.

ES.1 Lead Agency Contact Person

Ms. Malinda Stalvey, Senior Environmental Specialist
The Metropolitan Water District of Southern California
Environmental Planning Section
700 North Alameda Street
Los Angeles, California 90012

ES.2 Program Summary

Climate Action Planning

In response to mounting urgency surrounding global climate change and mandated emissions reductions, entities in California and around the world have developed CAPs. While the content of such plans varies depending on the specific emissions reduction objectives of the lead agency, CAPs generally include a baseline inventory of greenhouse gas (GHG) emissions, a forecast of future GHG emissions, a GHG reduction goal consistent with applicable reduction targets, and a series of policies, measures, or actions intended to achieve the reduction goal.

As Metropolitan's service population has grown, continued and increasing efforts to reduce the environmental and economic impact of Southern California's water supply have contributed to Metropolitan's resiliency and opportunities for neutralizing its carbon footprint. Metropolitan furthers this commitment to sustainability and efficiency by proposing to adopt a CAP to establish an emissions reduction target and describe in detail reduction activities and policies Metropolitan may implement to achieve its reduction targets over time.

Plan Area

The proposed CAP includes GHG emissions reduction measures for Metropolitan's construction, operation, and maintenance activities. It is anticipated that most reduction measures would be implemented throughout a six-county Southern California region comprising Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. These counties include all of Metropolitan's service area and most of its infrastructure facilities. The proposed CAP may also involve implementation of GHG emissions reduction measures or programs at Metropolitan land holdings in Imperial County, specifically within the Palo Verde Valley; as well as Bacon Island,

Bouldin Island, Holland Tract, and Webb Tract in the Sacramento-San Joaquin Delta region (San Joaquin County and Contra Costa counties).

While environmental emissions influence climate change at a global scale, the analysis in this PEIR focuses on potential impacts associated with implementation of the proposed CAP in California, and more specifically, the Plan Area, consistent with the requirements and applicability of CEQA.

Program Components

Emissions Inventory

The proposed CAP contains an inventory of Metropolitan's GHG emissions from 1990 to 2020 Due to the geographically disparate nature of Metropolitan's operations, emissions reported in the inventory are based on activities over which Metropolitan has direct operational control. The inventory delineates emissions by Scope, as defined in the Local Governments for Sustainability reporting frameworks and detailed below. The emissions inventory reports Metropolitan's GHG emissions in metric tons of carbon dioxide equivalent or CO_2e.

- **Scope 1 Emissions**. Scope 1 emissions are those associated with direct emissions from sources owned or controlled by Metropolitan. This includes emissions from direct fuel combustion, including natural gas, propane, welding gasses, and gasoline and diesel used to power Metropolitan's vehicle fleet.
- **Scope 2 Emissions**. Scope 2 emissions are those associated with indirect emissions associated with the consumption of Metropolitan's purchased electricity use. Specifically, emissions generated at power plants that supply electricity for Metropolitan operations. Metropolitan purchases electricity from power generated from within California and from outside of California in the southwestern United States, which includes electricity generated from hydropower at the Hoover Dam. Scope 2 emissions also include transmission and distribution losses that occur as electricity is delivered to Metropolitan facilities.
- **Scope 3 Emissions**. Scope 3 emissions are other indirect emissions that occur as a result of Metropolitan's operations, including emissions associated with waste generation, water consumption and wastewater generation from Metropolitan-owned buildings, employee commutes, and construction activities.

The proposed CAP also includes an emissions forecast through 2045 to account for potential changes in hydrology, climate, climate and air quality regulations, population growth, operations, and future construction projects that may affect Metropolitan's emissions in the future. Furthermore, the emissions forecast allows for comparison between forecasted GHG emissions and reduction targets to understand the reductions necessary to achieve Metropolitan's GHG reduction goals.

Reduction Target

The proposed CAP establishes a GHG reduction target aligned with applicable state GHG reduction policies. The CAP considers various reduction levels, target methodologies, and tracking mechanisms to quantify and measure progress toward GHG emissions reductions. Ultimately, a linear per capita target or "Linear Reduction to Carbon Neutral by 2045 – Per Capita Target" with a Carbon Budget tracking mechanism, described in greater detail in Chapter 2, *Project Description*, was utilized.

GHG Reduction Measures

In order to achieve the proposed CAP's emissions reduction target, GHG emissions reduction measures would need to be implemented. The CAP includes 39 proposed GHG emissions reduction measures that, if implemented, could help Metropolitan reduce its Scope 1, Scope 2, and Scope 3 emissions. Reduction measures for each Scope are grouped into nine strategies that could be employed at Metropolitan's various facility types during facility maintenance activities and future expansion and construction activities, as well as policies and projects to explore new technologies and practices to conserve resources. The reduction measures do not include actions taken by Metropolitan to date that have resulted in GHG emissions reductions, such as Metropolitan's early adoption of hybrid-electric vehicles for its operational fleet and Leadership in Energy Efficiency and Design (LEED) certification for several of its facilities. However, the measures may build or expand upon these past actions. Most measures within the nine categories are either administrative (e.g., studies, investigations) in nature or involve replacement of existing infrastructure with newer, more efficient infrastructure at the same location and, therefore, would not have physical impacts to the environment. Measures with the potential to result in physical impacts to the environment are described in detail in Chapter 2, *Project Description*.

ES.3 Alternatives

This draft PEIR examines alternatives to the proposed program in Chapter 7, *Alternatives*. Section 15126.6(a) of the *State CEQA Guidelines* states that an EIR shall describe "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project," as well as provide an evaluation of "the comparative merits of the alternatives." Under Section 15126.6(a), an EIR does not need to consider alternatives that are not feasible, nor need it address every conceivable alternative to the project. As discussed in greater detail in Chapter 7, *Alternatives*, several alternatives were considered but rejected, including alternative locations and alternative methods, as these alternatives would not be feasible, accomplish the basic objectives of the proposed program, or substantially lessen environmental effects.

This draft PEIR considers a No Program Alternative to determine whether environmental impacts would be similar to, less than, or greater than those of the proposed CAP. The No Program Alternative, as well as all alternatives considered but rejected, are described in greater detail in Chapter 7, *Alternatives*.

ES.4 Areas of Known Controversy

Section 15123(b)(2) of the *State CEQA Guidelines* requires that an EIR identify areas of controversy which are known to the lead agency, including issues raised by other agencies and the public. Areas of controversy associated with the proposed program are made known through comments received during the Notice of Preparation (NOP) process, as well as input solicited during public scoping meetings and an understanding of the community issues in the study area.

The comments on the NOP for the draft PEIR for the proposed CAP generally expressed concern over the following issues: alternatives analysis and impacts to biological species and jurisdictional habitats (California Department of Fish and Wildlife [CDFW]), air quality impacts from construction or operation of projects implemented under the proposed program (San Joaquin Valley Unified Air Pollution Control District [SJVAPCD], Mojave Desert Air Quality Management District [MDAQMD], South Coast Air Quality Management District [SCAQMD], and Ventura County Air

Pollution Control District [VCAPCD]), impacts to tribal cultural resources (Native American Heritage Commission [NAHC]), and watershed management (Ventura County Public Works). Appendix A contains a copy of the NOP and the comment letters received during the NOP scoping period.

ES.5 Issues to be Resolved

*State CEQA Guideline*s Section 15123(b)(3) requires that an EIR contain a discussion of issues to be resolved, including the choice among alternatives and whether or how to mitigate significant effects. Issues to be resolved for the proposed CAP include:

- How to address impacts from individual projects under the proposed CAP given that specific details for implementation of all GHG emissions reduction measures are not sufficient to prepare a project-level analysis at this time; and
- How best to implement programmatic mitigation measures identified in this draft PEIR at the project-level to reduce potential environmental impacts associated with implementation of the proposed CAP to the degree feasible.

ES.6 Summary of Impacts and Mitigation Measures

Table 1 includes a brief description of the identified environmental impacts associated with each threshold analyzed in detail in the draft PEIR, proposed mitigation measures, and the level of significance after mitigation.

This document is a PEIR. Section 15168(a) of the *State CEQA Guidelines* states that:

> A Program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either: (1) geographically; (2) as logical parts in a chain of contemplated actions; (3) in connection with issuance of rules, regulations, plans, or other general criteria, to govern the conduct of a continuing program; or (4) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.

As a programmatic document, this draft PEIR presents a regional assessment of the impacts of the proposed CAP prepared by Metropolitan. Analysis of site-specific impacts of individual projects is not the focus of a PEIR. Many specific projects are not currently defined at a level that would allow for such an analysis. The appropriate level of project-specific environmental analysis of individual projects would be undertaken, as necessary, by Metropolitan prior to each project being considered for approval. This draft PEIR serves as a first-tier CEQA document that will support second-tier CEQA documents for individual projects to be implemented under the proposed CAP.

This draft PEIR evaluates potential impacts against existing conditions, which are generally conditions existing at the time of the release of the NOP (June 23 to July 22, 2020). Mitigation identified in this draft PEIR, as listed in Table 1, shall be implemented by Metropolitan for individual CAP projects under its jurisdiction, as applicable and necessary. Project-specific environmental documents may adjust these mitigation measures as necessary to respond to site-specific conditions at the time of implementation.

As summarized in Table 1, this draft PEIR identifies significant and unavoidable impacts in the resource categories of air quality, cultural resources, and noise. Significant and unavoidable impacts identified in this draft PEIR are a result of the potential for construction activities associated with individual projects to exceed air quality emissions thresholds, impact historical or archaeological resources, or exceed noise or vibration thresholds. Because construction specifics such as project

footprint, construction schedules, and equipment usage are not known at this time, such impacts are presumed to be significant and unavoidable. However, such impacts may be reduced once individual project details are known and project-level analysis occurs. All other potentially significant impacts identified would be reduced to less than significant levels with the implementation of mitigation measures.

Table 1 Summary of Environmental Impacts, Mitigation Measures and Impacts After Mitigation

Impact	Mitigation Measure(s)	Significance After Mitigation
Air Quality		
Impact AQ-A. Implementation of the individual projects proposed under the CAP would potentially conflict with or obstruct implementation of the applicable air quality plan due to construction emissions. This impact would be potentially significant.	**MM AQ-1 Construction Air Quality Assessment** For individual projects to be implemented under the CAP that involve construction activities with an intensity (i.e., size, schedule, equipment, demolition, import/export of soil, architectural coating) greater than the sample program activity, an air quality assessment shall be prepared to evaluate construction emissions in light of the applicable air district thresholds. **MM AQ-2 Implement Emission Reduction Measures** If construction emissions would exceed any of the applicable thresholds, emission reduction measures shall be implemented to reduce emissions below the thresholds. Measures may include, but would not be limited to: • All construction equipment shall be equipped with Tier 4 certified engines or CARB-certified Level 3 diesel particulate filters. All diesel particulate filters shall be kept in working order and maintained in operable condition according to manufacturer's specifications, as applicable. • Construction equipment with lower horsepower ratings shall be utilized, as applicable and practicable. • Ultra-low-sulfur diesel fuel shall be used for stationary construction equipment, as applicable. • Low-emission on-site stationary equipment shall be used, as applicable. • Alternatively-fueled construction equipment (e.g., renewable diesel, natural gas, electric) shall be utilized instead of diesel-fueled construction equipment, as applicable. • The schedule for soil import and/or export shall be extended to reduce the number of daily haul truck trips, as applicable. • The schedule for the coating/painting phase shall be extended to reduce the square footage coated/painted each day, as applicable. • Architectural coatings with a VOC content of less than 250 grams per liter shall be utilized.	Significant and unavoidable.
Impact AQ-B. Construction impacts related to criteria air pollutant emissions resulting from implementation of individual projects proposed under the CAP would be potentially significant.	**MM AQ-1** and **MM AQ-2**.	Significant and unavoidable.
Impact AQ-C. Neither construction nor operation of individual projects proposed under the CAP would expose sensitive receptors to substantial pollutant concentrations. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.

Impact	Mitigation Measure(s)	Significance After Mitigation
Impact AQ-D. Neither construction nor operation of individual projects implemented under the proposed CAP would result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Biological Resources		
Impact BIO-A. Implementation of individual projects under the proposed CAP would potentially have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or other special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. This impact would be potentially significant.	**MM BIO-1 Special Status Plant Species Surveys** If completion of the project-specific biological resources assessment determines that special status plant species have potential to occur on site, surveys for special status plants shall be completed prior to any vegetation removal, grubbing, or other construction activity of each program activity (including staging and mobilization). The surveys shall be floristic in nature and shall be seasonally timed to coincide with the target species identified in the program activity-specific biological resources assessment. All plant surveys shall be conducted by a qualified biologist no more than one year prior to project implementation (annual grassland habitats may require yearly surveys). Surveys shall be conducted in accordance with current protocols established by the CDFW, USFWS and the local jurisdictions if said protocols exist. If special status plant species are identified, Mitigation Measure BIO-2 shall apply. **MM BIO-2 Special Status Plant Species Avoidance, Minimization, and Mitigation** If state- or federally-listed special status and/or CRPR 1 and 2 plant species are identified during the project-specific biological assessment, the activity shall be re-designed to avoid impacting these plant species to the maximum extent feasible. If CRPR 3 and 4 species are found, the biologist shall evaluate if they meet criteria to be considered special status, and if so, the same process as identified for CRPR 1 and 2 species shall apply. If special status plant species cannot be avoided and would be impacted by a program activity implemented under the proposed CAP, all impacts shall be mitigated at an appropriate ratio (minimum ratio of 1:1) to fully offset program activity impacts, as determined by a qualified biologist for each species. A restoration plan shall be prepared and implemented, as applicable. **MM BIO-3 Endangered/Threatened Animal Species Habitat Assessment and Protocol Surveys** If the results of the project-specific biological resources assessment determine suitable habitat may be present for any federally and/or state endangered or threatened animal species, habitat assessments and/or protocol surveys shall be completed in accordance with CDFW and/or USFWS/NMFS protocols prior to construction. Alternatively, in lieu of conducting protocol surveys, Metropolitan may choose to assume presence within the activity footprint and proceed with implementing appropriate avoidance measures, consultation, and permitting, as applicable.	Less than significant with mitigation incorporated.

Impact	Mitigation Measure(s)	Significance After Mitigation
	If the target species are detected during protocol surveys, or protocol surveys are not conducted and presence is assumed based on suitable habitat, Mitigation Measure BIO-4 shall apply. **MM BIO-4 Endangered/Threatened Animal Species Avoidance and Mitigation** If habitat is occupied or presumed occupied by federal and/or state-listed species and would be impacted by program activities, the program activity shall be redesigned in coordination with a qualified biologist to avoid impacting occupied/presumed occupied habitat to the maximum extent feasible. If occupied or presumed occupied habitat cannot be avoided, Metropolitan shall consult with USFWS, NMFS, and/or CDFW in order to determine the appropriate course of action, which may include a Biological Opinion (BO) or HCP/ITP issued by the USFWS/NMFS (relevant to federally listed species) and/or the ITP issued by the CDFW (relevant to state listed species). If occupied or presumed occupied habitat cannot be avoided, compensatory mitigation shall be provided (minimum ratio of 1:1) to fully offset impacts to habitat prior to the construction. Compensatory mitigation may be provided through purchase of mitigation bank credits, in-lieu fee, or permittee-responsible habitat restoration/establishment/enhancement/preservation. Compensatory mitigation may be combined/nested with special status plant species and sensitive natural community restoration, where applicable. Temporary impact areas shall be restored to similar pre-project conditions. If on and/or off-site habitat restoration/conservation is identified, a Habitat Mitigation and Monitoring Plan (HMMP) shall be prepared to ensure the success of compensatory mitigation sites. The HMMP shall identify long-term site management needs, routine monitoring techniques, and performance standards for determining that the conservation site has met the necessary criteria to function as a suitable mitigation site. **MM BIO-5 Endangered/Threatened Species Avoidance and Minimization During Construction** The following measures shall be applied to aquatic and terrestrial species, where appropriate. Metropolitan shall select from these measures as appropriate depending on site conditions, the species with potential for occurrence, and the results of the project-specific biological resources assessment (Mitigation Measure BIO-1). Pre-construction surveys for federal and/or state listed species with potential to occur shall be conducted where suitable habitat is present by a qualified biologist not more than 72 hours prior to the start of construction activities. The survey area shall include the proposed disturbance area and all proposed ingress/egress routes, plus a species-specific buffer. If any life stage of federal and/or state listed species is found within the survey area, the appropriate measures in the BO or HCP/ITP issued by the USFWS/NMFS (relevant to federally listed species) and/or the ITP issued by the CDFW (relevant to state listed species) shall be implemented; or if such guidance is not in place for the activity, the qualified biologist shall recommend an appropriate course of action, which may include consultation with USFWS, NMFS, and/or CDFW.	

Impact	Mitigation Measure(s)	Significance After Mitigation
	• The activity limits of disturbance shall be flagged. Areas of special biological concern within or adjacent to the limits of disturbance shall have Environmental Sensitive Area fencing installed between said area and the limits of disturbance. • All activities occurring within or adjacent to sensitive habitats that may support federally and/or state endangered/threatened species shall have a qualified biologist present during all initial ground disturbing/vegetation clearing activities. Once initial ground disturbing/vegetation clearing activities have been completed, the biologist shall conduct pre-activity clearance surveys, as needed to ensure protection of endangered/threatened species. • If pumps are used for dewatering activities, all intakes shall be completely screened with wire mesh not larger than five millimeters to prevent animals from entering the pump system. • If at any time during construction of the program activity an endangered/threatened species enters the construction site or otherwise may be impacted by the program activity, all program activities shall cease. At that point, a qualified biologist shall recommend an appropriate course of action, which may include consultation with USFWS, NMFS, and/or CDFW. Alternatively, the appropriate measures shall be implemented in accordance with the BO or HCP/ITP issued by the USFWS (relevant to federal listed species) and/or the ITP issued by the CDFW (relevant to state listed species) and work can then continue as guided by those documents and the agencies, as appropriate. • All trenches, pipes, culverts or similar structures shall be inspected for animals prior to burying, capping, moving, or filling. • Upon completion of the program activity, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the activity, including the pre-construction survey results. **MM BIO-6 Non-Listed Special Status Animal Species Avoidance and Minimization** Depending on the species identified in the project-specific biological resource assessment , the following applicable measures shall be implemented to reduce the potential for impacts to non-listed special status animal species: • Pre-construction clearance surveys shall be conducted by a qualified biologist within 14 days prior to the start of construction (including staging and mobilization). The surveys shall cover the entire disturbance footprint plus a minimum 100-foot buffer and shall identify all special status animal species that may occur on-site. The qualified biologist shall make recommendations for avoidance of non-listed special status species, such as through the use of exclusion fencing, buffer zones, etc. • A qualified biologist shall be present during all initial ground disturbing activities, including vegetation removal, to recover special status animal species encountered during construction activities.	

Impact	Mitigation Measure(s)	Significance After Mitigation
	• Upon completion of the program activity, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the program activity, including the pre-construction survey results. • If special status bat species may be present and impacted by the program activity, within 30 days of the start of construction a qualified biologist shall conduct presence/absence surveys for special status bats where suitable roosting habitat is present. Surveys shall be conducted using acoustic detectors and by searching tree cavities, crevices and other areas where bats may roost. If active bat roosts or colonies are present, the biologist shall evaluate the type of roost to determine the next step. o If a maternity colony is present, all construction activities shall be postponed within a 250-foot buffer around the maternity colony until it is determined by a qualified biologist that the young have dispersed. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately. o If a roost is determined by a qualified biologist to be used by a large number of bats (large hibernaculum), alternative roosts, such as bat boxes if appropriate for the species, shall be designed and installed near the program activity site. The number and size of alternative roosts installed will depend on the size of the hibernaculum and shall be determined by a qualified biologist. o If other active roosts are located, exclusion devices shall be installed such as valves, sheeting or flap-style one-way devices that allow bats to exit but not re-enter roosts to discourage bats from occupying the site.	
Impact BIO-B. Individual projects implemented under the proposed CAP could result in significant impacts to riparian habitats wetlands and/or sensitive natural communities. This impact would be potentially significant. **Impact BIO-C.** Individual projects implemented under the proposed CAP may result in significant impacts to state or federally protected wetlands. This impact would be potentially significant.	**MM BIO-7 Jurisdictional Delineation and Impact Avoidance** If the results of Mitigation Measure BIO-1 indicate program activities implemented under the proposed CAP would impact wetlands, drainages, riparian habitats, or other areas that may fall under the jurisdiction of the CDFW, USACE, and/or RWQCB, a qualified biologist shall complete a jurisdictional delineation. The jurisdictional delineation shall determine the extent of the jurisdiction for each of these agencies within the program activity site and shall be conducted in accordance with the requirement set forth by each agency. The results shall be provided in a jurisdictional delineation report submitted to Metropolitan, USACE, RWQCB, and CDFW, as appropriate, for review and approval. The program activity shall be designed to avoid or minimize impacts to jurisdictional areas to the maximum extent feasible. **MM BIO-8 Wetlands, Drainages and Riparian Habitat Restoration** If impacts to jurisdictional drainages, wetlands, riparian habitat, and sensitive vegetation communities cannot be avoided, impacts shall be mitigated at an appropriate ratio to fully offset project-specific impacts (minimum ratio of 1:1). Where feasible, temporarily impacted areas shall be restored to pre-project conditions. An HMMP shall be developed by a qualified biologist and submitted to the agency overseeing the program activity for approval. Alternatively, mitigation shall be accomplished through purchase of credits from an approved mitigation bank or in-lieu fee program.	Less than significant with mitigation incorporated.

Impact	Mitigation Measure(s)	Significance After Mitigation
	MM BIO-9 Sensitive Natural Community Avoidance and Mitigation If the results of Mitigation Measure BIO-1 indicate program activities implemented under the proposed CAP would impact sensitive natural communities, impacts shall be avoided through final program activity design modifications. If Metropolitan determines sensitive communities cannot be avoided, impacts shall be mitigated on-site or off-site at an appropriate ratio to fully offset program activity impacts (minimum ratio of 1:1). Temporarily impacted areas shall be restored to pre-project conditions. An HMMP shall be developed by a qualified biologist and submitted to the agency overseeing the program activity for approval.	
Impact BIO-D. Neither construction nor operation of individual projects implemented under the proposed CAP would interfere with movement of native resident or migratory fish or wildlife species or established wildlife corridors. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Impact BIO-E. Neither construction nor operation of individual projects implemented under the proposed CAP would impact protected trees and, as such, would not conflict with local policies or ordinances protecting biological resources. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Impact BIO-F. Individual projects implemented under the proposed CAP would not conflict with a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan area. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Cultural Resources		
Impact CUL-A. Individual projects implemented under the proposed CAP would have the potential to cause a substantial adverse change in the significant of a historical resource. This impact would be potentially significant.	**MM CUL-1(a) Built Environment Investigation** A historic resources evaluation shall be prepared for any future proposed project facilitated by the CAP involving a property which includes buildings, structures, objects, landscape/site plans, or other features that are 45 years of age or older. The evaluation shall be prepared by a qualified architectural historian or historian who meets the Secretary of the Interior's (SOI) Professional Qualifications Standards (PQS) in architectural history or history. The qualified architectural historian or historian shall conduct an evaluation in accordance with the guidelines and best practices promulgated by the State Office of Historic Preservation to identify any potential historical resources within the proposed	Significant and unavoidable

Impact	Mitigation Measure(s)	Significance After Mitigation
	project area. The evaluation of the potential resource within its historic context shall be documented. All evaluated properties shall be documented on Department of Parks and Recreation Series 523 Forms. If a property is identified as an eligible historical resource under CEQA, Mitigation Measure CUL-1(b) shall be implemented. **MM CUL-1(b) Built Environment Documentation Program** If eligible built environment historical resources are identified for a future proposed project implemented under the CAP, efforts shall be made to the extent feasible to ensure that impacts are avoided. If avoidance is not possible, a Built Environment Documentation Program shall be implemented. Measures may include but are not limited to, compliance with the Secretary of the Interior's Standards for Treatment of Historic Properties and documentation of the historical resource in the form of a Historic American Building Survey (HABS)- report or HABS-Like report. The HABS or HABS-Like report shall comply with the Secretary of the Interior's Standards for Architectural and Engineering Documentation and shall generally follow the HABS Level III requirements, including digital photographic recordation, detailed historic narrative report, and compilation of historic research. Application of mitigation shall generally be overseen by a qualified architectural historian or historic architect meeting the PQS, unless unnecessary in the circumstances (e.g., preservation in place). **MM CUL-3 Previously Unidentified Resources Encountered During Construction** In the event that any potentially significant cultural resources are unexpectedly encountered during construction, work will be immediately halted and the discovery shall be protected in place. A 50-foot buffer around the exposed resource shall be established until a qualified cultural resources specialist evaluates the discovery. If the qualified cultural resources specialist determines that the discovery represents a potentially significant cultural resource, including a potential historical resource, additional investigations may be required to mitigate adverse impacts from project implementation. This additional work may include avoidance, testing, and evaluation or data recovery excavation. Work shall be prohibited in the restricted area until Metropolitan provides written authorization.	
Impact CUL-B. Individual projects implemented under the proposed CAP may cause a substantial adverse change in the significance of an archaeological resource. This impact would be potentially significant.	**MM CUL-2(a) Phase 1 Archaeological Resource Investigation** If archaeological resources are identified during project-specific analysis that may be adversely affected by any future proposed project implemented under the CAP, Metropolitan shall retain a qualified archaeologist meeting the Secretary of the Interior standards in archaeology to complete a Phase 1 cultural resources assessment of the site. A Phase 1 cultural resources assessment will include an archaeological pedestrian survey of the site, if feasible, and sufficient background archival research to determine whether subsurface prehistoric or historic remains may be present. Archival research should include a current records search from the appropriate California Historical Resources Information System information center and a Sacred Lands File search conducted with the Native American Heritage Commission. A Phase 1 report or results documentation shall be submitted to Metropolitan prior to any ground disturbing activities. Recommendations contained therein shall be implemented throughout all ground disturbance activities.	Significant and unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
	MM CUL-2(b) Extended Phase 1 Investigation For any projects proposed within 100 feet of a known archaeological site and/or in areas identified as sensitive by the Phase 1 study, an Extended Phase 1 (XPI) study shall be conducted to determine the presence/absence and extent of archaeological resources on the project site. XPI testing should comprise a series of shovel test pits and/or hand augured units and/or mechanical trenching intended to establish the horizontal and vertical boundaries of archaeological site(s) on the project site. No archaeological resources would be collected during the XPI Investigation. If an archaeological site is identified, Mitigation Measure CUL-2(c) or CUL-2(d) shall be implemented. **MM CUL-2(c) Avoidance of Archaeological Resources** Identified prehistoric or historic archaeological resources shall be avoided and preserved in place, where feasible. Where avoidance and preservation in place is not feasible, additional measures shall be applied as identified in Mitigation Measure CUL-2(d) through CUL-2(g). **MM CUL-2(d) Phase 2 Archaeological Resources Investigation and Evaluation** Where preservation is not feasible, each resource shall be evaluated for significance and eligibility for listing in the CRHR through a Phase 2 archaeological resource evaluation. A Phase 2 evaluation shall include any necessary archival research to identify significant historical associations as well as mapping of surface artifacts, collection of functionally or temporally diagnostic tools and debris, and excavation of a sample of the cultural deposit to characterize the nature of the sites, define the artifact and feature contents, determine horizontal boundaries and depth below surface, and retrieve representative samples of artifacts and other remains. A final Phase 2 Testing and Evaluation report shall be submitted to Metropolitan prior to any ground disturbing activities. Recommendations contained therein shall be implemented throughout all ground disturbance activities. **MM CUL-2(e) Phase 3 Archaeological Data Recovery Program** If an archaeological resource meets the CRHR eligibility and cannot be avoided, Metropolitan shall implement a Phase 3 Archaeological Data Recovery Program, conducted to exhaust the data potential of significant archaeological sites. The Phase 3 Archaeological Data Recovery Program shall follow a research design prepared by a qualified archaeologist meeting the SOI PQS standards for archaeology and approved by Metropolitan in advance of Phase 3 fieldwork and excavations. The Phase 3 Data Recovery research design will use appropriate archaeological field and laboratory methods consistent with the California Office of Historic Preservation Planning Bulletin 5 (1991), Guidelines for Archaeological Research Design, or the latest edition thereof. The final Phase 3 Data Recovery report shall be submitted to Metropolitan prior to and any ground disturbing activities. Recommendations contained therein shall be incorporated into project design and implemented throughout all ground disturbance activities. **MM CUL-2(f) Processing and Curation of Archaeological Materials** Archaeological materials collected from the sites during the implementation of Mitigation Measures CUL-2(d) through CUL-2(e) shall be processed and analyzed in the laboratory according to standard archaeological procedures. The age of the materials shall be	

Impact	Mitigation Measure(s)	Significance After Mitigation
	determined using radiocarbon dating and/or other appropriate procedures; lithic artifacts, faunal remains, and other cultural materials shall be identified and analyzed according to current professional standards. The significance of the sites shall be evaluated according to the criteria of the CRHR. The results of the investigations shall be presented in a technical report following the standards of the California Office of Historic Preservation publication "Archaeological Resource Management Reports: Recommended Content and Format (1990 or latest edition)". Upon completion of the work, all artifacts, other cultural remains, records, photographs, and other documentation shall be curated an appropriate established curation facility based on the location of the fieldwork and/or repatriated to local Native Americans as appropriate. All fieldwork, analysis, report production, and curation shall be fully funded by Metropolitan. **MM CUL-2(g) Cultural Resources Monitoring** If recommended by Phase 1 (Mitigation Measure CUL-2(a)), XPI (Mitigation Measure CUL-2(b)), Phase 2 (Mitigation Measure CUL-2(d)), or Phase 3 (Mitigation Measure CUL-2(e)) studies, Metropolitan shall retain a qualified archaeologist to monitor project-related, ground-disturbing activities. **MM CUL-3**	
Impact CUL-C. Individual projects implemented under the proposed CAP would be required to comply with all applicable regulations pertaining to the discovery of human remains. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Noise		
Impact NOI-A. Individual projects implemented under the proposed CAP may result in generation of a substantial temporary or permanent increase in ambient noise levels. This impact would be potentially significant.	**MM NOI-1 Locate Excavation Sites Away from Noise-Sensitive Receivers, Where Feasible** Construction staging and activities shall be located in areas as far as practicable from sensitive receivers or in areas where receivers can be shielded from construction noise. **MM NOI-2(a) Conduct Project-Level Noise Studies for Construction Activities Where Noise-Sensitive Receivers are Present** Project-level construction noise studies shall be conducted for project activities that would exceed the screening criteria for a less-than-significant impact, as summarized in Table 30 and Table 32 of the draft PEIR. Such noise studies shall identify the existing ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during construction of individual projects, compare estimated noise levels to the local jurisdiction's noise limits or to the construction noise criteria in the FTA (2018) *Transit Noise and Vibration Impact Assessment Manual* for those that do not have quantitative construction noise level limits, outline any measures that may be used to reduce noise levels, and determine the amount of noise reduction that would occur with	Significant and unavoidable

Impact	Mitigation Measure(s)	Significance After Mitigation
	implementation of these measures. If the project-level noise study concludes that noise reduction measures are required, Mitigation Measure NOI-2(b) shall be implemented. **MM-NOI-2(b) Implement Noise Reduction Measures** If the results of the noise study determine noise reduction measures are required, noise reduction measures shall be implemented. Construction noise reduction measures may include, but would not be limited to, the use of mufflers, sound blankets/barriers, and/or enclosures and scheduling construction activities to minimize simultaneous operation of noise-producing equipment. Construction noise measures shall be implemented to reduce noise levels to FTA (2018) construction noise criteria, as feasible. If the individual project would be constructed concurrently with development projects located within a 0.5-mile radius of the individual project location, the noise study shall also consider the cumulative impact of construction noise on sensitive receivers. If applicable, construction noise reduction measures shall be implemented to reduce cumulative noise levels to local jurisdiction or FTA (2018) construction noise criteria, as feasible. **MM NOI-2(c) Conduct Project-Level Noise Studies for Post-Construction Activities Where Noise Sensitive Receivers are Present** Prior to the commencement of construction activities for individual projects that may be implemented under the CAP where sensitive receivers are located within 1,000 feet of the individual project sites, project-level post-construction noise studies shall be conducted. Such noise studies shall identify the ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during operation of individual projects during the post-construction period, compare estimated noise levels to the noise level standards of the applicable jurisdiction, outline any measures that may be used to reduce noise levels, and determine the amount of noise reduction that would occur with implementation of these measures. Noise reduction measures may include, but would not be limited to, alternative site design, alternative orientation of noise sources, and construction of berms and/or barriers. Noise reduction measures shall be implemented to reduce noise levels to the noise level standards of the applicable jurisdiction, as feasible.	

Impact	Mitigation Measure(s)	Significance After Mitigation
Impact NOI-B. Construction activities associated with implementation of individual projects under the proposed CAP may result in generation of excessive groundborne vibration or groundborne noise levels, depending on the nature and location of such projects. This impact would be potentially significant.	**NOI-3 (a) Locate Excavation Sites Away from Vibration-Sensitive Receivers, Where Feasible** Whenever practicable, vibration-generating equipment including bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers shall operate outside the minimum distances specified in Table 33 of the draft PEIR for historic sites, other structures, and vibration-sensitive receivers during program construction activities. Furthermore, whenever practicable, vibration-generating equipment including bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers shall not be operated concurrently with vibration-generating equipment associated with cumulative development projects located within 600 feet of program construction sites. **NOI-3(b) Conduct Project-Level Vibration Analysis for Construction Activities Where Vibration-Sensitive Receivers are Present** If operation of construction equipment outside the specified buffer distances is not practicable, a detailed study of vibration impacts shall be conducted prior to the commencement of construction for that project. Such vibration studies shall characterize the nearest historic sites, structures, and/or sensitive receivers; estimate the vibration levels receivers will experience during construction of individual projects; compare estimated vibration levels to applicable Caltrans (2020) standards for vibration impacts related to structural damage and human annoyance; outline any measures that may be used to reduce vibration levels; and determine the amount of vibration reduction that would occur with implementation of these measures. Vibration reduction measures may include, but would not be limited to, the use of non-vibratory equipment, vibration monitoring, and repair of structural damage. Construction vibration reduction measures shall be implemented to reduce vibration levels to Caltrans (2020) construction vibration thresholds as feasible. If the individual project would be constructed concurrently with cumulative development projects located within a 600-foot radius of the activity location, the vibration study shall also consider the cumulative impact of combined vibration levels at the nearest sensitive receivers by estimating the combined vibration levels receivers will experience during construction of individual projects and cumulative development; compare estimated vibration levels to applicable standards for vibration impacts related to structural damage and human annoyance described in the Caltrans (2020) *Transportation and Construction Vibration Guidance Manual* (CT-HWANP-RT-20-365.01.01); identify whether the individual project's contribution to any identified cumulative impact would be cumulatively considerable; outline any measures that may be used to reduce the project's contribution to combined vibration levels; and determine the amount of vibration reduction that would occur with implementation of these measures. Such measures may include, but are not limited to, the installation of wave barriers, maximization of the distance between vibratory equipment and receivers, restriction of vibration-generating activities to daytime hours, or temporary relocation of affected residents Construction vibration reduction measures shall be implemented to reduce cumulative vibration levels to Caltrans construction vibration thresholds as feasible.	Significant and unavoidable

Impact	Mitigation Measure(s)	Significance After Mitigation
Impact NOI-C. One individual project to be implemented under the proposed CAP is located within the vicinity of a private airstrip or within an airport land use plan. However, projects implemented under the proposed CAP would not expose people residing or working in the area to excessive noise levels. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Tribal Cultural Resources		
Impact TCR-A. Implementation of projects under the proposed CAP would not cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 5020.1(k), as Native American consultation completed pursuant to Assembly Bill (AB) 52 identified no resources that may be impacted by the proposed program. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Impact TCR-B. Implementation of projects under the proposed CAP would not cause a substantial adverse change in the significance of a tribal cultural resource determined to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. Native American consultation completed pursuant to AB 52 identified no resources that may be impacted by the proposed program. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.

1 Introduction

1.1 Overview of the Proposed Program

The Metropolitan Water District of Southern California (Metropolitan) is proposing a Climate Action Plan (CAP or proposed program) to identify strategies to reduce greenhouse gas (GHG) emissions and achieve the proposed GHG reduction targets. The CAP includes a baseline GHG emissions inventory of Metropolitan's operations from 1990 through 2017, emissions forecast through 2045, emissions reduction targets consistent with Senate Bill (SB) 32 and Executive Order B- 55-18, actions and policies that Metropolitan could implement to achieve GHG reductions, and an implementation roadmap. The CAP would apply to Metropolitan's operations throughout the state within a six-county Southern California region comprised of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties, and Metropolitan-owned facilities located in the Sacramento-San Joaquin Delta and Palos Verdes Valley, Imperial County, defined as the "Plan Area."

1.2 Purpose of the Program Environmental Impact Report

This Program Environmental Impact Report (PEIR) assesses the potential environmental effects of Metropolitan's proposed CAP. This PEIR has been prepared in accordance with the California Environmental Quality Act (CEQA) of 1970 (Public Resources Code [PRC] Section 21000 et seq.) and the Guidelines for Implementation of CEQA (*State CEQA Guidelines*) published by the Public Resources Agency of the State of California (California Code of Regulations [CCR], Title 14, Section 15000 et seq.). Metropolitan is the Lead Agency under CEQA (PRC Section 21067, as amended), is responsible for the preparation of the PEIR, and will use this document to objectively review and assess the proposed program prior to approval or disapproval.

An EIR is intended to: (1) inform decision-makers and the public about the potentially significant environmental effects of the proposed activities; (2) identify the ways that significant environmental effects can be avoided or reduced; (3) prevent significant, avoidable damage to the environment by requiring changes in the proposed program through the use of alternatives or mitigation measures, to the extent that Metropolitan determines the changes to be feasible (*State CEQA Guidelines* Section 15002; PRC Section 21002.1). Further, a PEIR can be prepared for a series of actions that can be characterized as one large project and are related either geographically, as logical parts in contemplated actions, or in the connection with issuance of rules, regulations, plans of other general criteria to govern the conduct of a continuing program (*State CEQA Guidelines* Section 15268; PRC Section 21002.1).

Subsequent activities covered under the proposed program must be examined in the light of the PEIR to determine whether an additional environmental document must be prepared. If a later activity would have effects that were not examined in the PEIR, a new Initial Study would need to be

prepared leading to either an EIR or a Negative Declaration (Section 15168 of the *State CEQA Guidelines)*. If the agency finds that pursuant to Section 15162 of the *State CEQA Guidelines*, no new effects could occur or no new mitigation measures would be required, the agency can approve the activity as being within the scope of the project covered by the PEIR, and no new environmental document would be required. An agency must incorporate those feasible mitigation measures and alternatives developed in the PEIR into subsequent actions in the program where such actions would result in similar significant impacts. Where the subsequent activities involve site-specific operations, the agency should use a written checklist or similar device to document the evaluation of the site and the activity to determine whether the environmental effects of the operation were covered in the PEIR. A PEIR will be most helpful in dealing with subsequent activities if it deals with the effects of the program as specifically and comprehensively as possible. With a good and detailed analysis of the proposed program, many subsequent activities could be found to be within the scope of the project described in the PEIR, and no further environmental documents would be required.

1.3 Scope of the Program Environmental Impact Report

This draft PEIR focuses on impacts identified to be potentially significant after impact analysis. The following environmental resource areas were found to include potentially significant impacts and have been studied in-depth in this PEIR:

- Air Quality
- Biological Resources
- Cultural Resources
- Noise

Resource areas identified as having no impacts or less than significant impacts after impact analysis include the following:

- Aesthetics
- Agriculture and Forestry Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Population and Housing
- Public Services
- Recreation
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfire

Additionally, this draft PEIR contains a Tribal Cultural Resources section describing Native American tribal outreach efforts conducted by Metropolitan pursuant to the requirements of Assembly Bill (AB) 52.

1.4 Format of the Program Environmental Impact Report

This draft PEIR is organized as follows:

- ***Executive Summary***. The summary includes a brief program description, a summary of environmental impacts and a list of proposed mitigation measures that would reduce or avoid impacts, discussion of alternatives considered, description of areas of controversy known to the lead agency, and any issues to be resolved (*State CEQA Guidelines* Section 15123).
- **Chapter 1, *Introduction***. This chapter introduces the program and describes the scope and purpose of the PEIR, provides a brief summary of the CEQA process, and establishes the document format.
- **Chapter 2, *Project Description***. This chapter provides background information on Metropolitan, a brief discussion on GHG emissions and climate change, the need for the CAP, the objectives of the CAP, the geographic area covered by the CAP, components of the CAP, and a description of the proposed emissions reduction measures.
- **Chapter 3, *Environmental Setting***. This chapter provides a general overview of the environmental setting for the Plan Area, including a regional setting, sub-regional setting, and a description of major Metropolitan facilities and land holdings. This chapter also outlines the PEIR baseline and approach to both program-level and cumulative impact analyses.
- **Chapter 4, *Environmental Impact Analysis***. This chapter constitutes the main body of the PEIR and includes the detailed impact analysis for each environmental resource area listed in Section 1.3, *Scope of the PEIR*. Sections 4.1 to 4.5 include a discussion of methods of analysis, existing conditions, the thresholds identified for the determination of significant impacts, and an evaluation of the impacts associated with the proposed program for each resource area. Where the impact analysis demonstrates the potential for the proposed program to have a significant impact on the environment, mitigation measures are provided that would minimize the significant effects. The PEIR indicates if the proposed mitigation measures would reduce impacts to less-than-significant levels. The cumulative impacts that would result from implementation of the proposed program in combination with other past, present, and reasonably foreseeable or probable future projects are discussed in each resource section. While enough project data exists to make reasonable assumptions about the potential level of significance for each project, additional project-level analysis will be completed when specific, project-level information becomes available for each project proposed in the CAP. The PEIR identifies the additional environmental analysis will be necessary at the project level.
- **Chapter 5, *Effects Found Not to be Significant.*** This chapter discusses the environmental resource areas indicated in Section 1.3, *Scope of the PEIR*, that would not be significantly impacted by the proposed program. Brief descriptions of why impacts would be less than significant in each of these resource areas are provided in this chapter.
- **Chapter 6, *Other Required CEQA Discussion*.** This chapter discusses additional topics required by CEQA, including unavoidable adverse impacts, growth inducement, and irreversible environmental changes.
- **Chapter 7, *Alternatives***. This chapter provides a description of alternatives to the proposed program and an evaluation of their potential to reduce or avoid the CAP's significant impacts.
- **Chapter 8, *References and Preparers***. This chapter contains references for all citations included in the draft PEIR, as well as a list of preparers and contributors.

1.5 Notice of Preparation

Development of the proposed program is subject to the requirements of CEQA, because it is an action subject to discretionary approval by a public agency (in this case, Metropolitan) that has the potential to result in a physical change in the environment. Pursuant to Section 15082 of the *State CEQA Guidelines*, a Notice of Preparation (NOP) of a Draft PEIR, dated June 23 to July 22, 2020, was prepared and circulated to interested agencies, organizations, and individuals to afford them an opportunity to respond with specific comments and/or questions regarding the scope and content of the PEIR. The NOP was also sent to the State Clearinghouse (SCH) at the California Governor's Office of Planning and Research. The SCH number assigned to this PEIR is SCH No. 2020060450. Pursuant to Section 15082 of the *State CEQA Guidelines*, recipients of the NOP for the proposed program were requested to provide responses within 30 days after their receipt of the NOP.

All comments received during the public review period were considered during the preparation of this PEIR. Metropolitan received letters from ten agencies in response to the NOP during the public review period. Written comments are addressed, as appropriate, in the analysis contained in the various subsections of Chapter 4, *Environmental Impact Analysis*, and Chapter 5, *Effects Found Not to be Significant*. The NOP is presented in Appendix A of this PEIR, along with the NOP responses received.

1.6 Availability of Draft Program Environmental Impact Report

This draft PEIR has been distributed to various federal, state, regional, county, and city agencies as well as interested parties for a 45-day public review period in accordance with Section 15087 of the *State CEQA Guidelines*. In addition, this draft PEIR, including supporting technical documentation, is available by appointment to the general public for review during normal operating hours at Metropolitan's offices at 700 North Alameda Street, Los Angeles, California, and can be viewed on Metropolitan's website at the following address: http://www.mwdh2o.com/CEQA.

Agencies and other interested parties may provide written comments on the draft PEIR before the end of the 45-day public review and comment period. Written comments on the draft PEIR must be received by 5 p.m. on the last day of the public review and comment period indicated in the Notice of Availability of a Draft PEIR and submitted to:

Ms. Malinda Stalvey
Senior Environmental Specialist
The Metropolitan Water District of Southern California
Environmental Planning Unit
P.O. Box 54153
Los Angeles, California 90054-0153

Comments may also be emailed to EP@mwdh2o.com (reference "Metropolitan CAP PEIR" in the subject line). Written comments should include the name, mailing address, telephone number, and email address, if available, of a contact person. Following the 45-day public review and comment period for the draft PEIR, Metropolitan will prepare a written response for each written comment received on the draft PEIR. The written comments and responses to those comments, as well as PEIR changes, if any, will be incorporated into a Final PEIR. Pursuant to Section 15092 of the *State CEQA Guidelines*, Metropolitan's Board of Directors will consider the following actions: certify the Final PEIR; adopt the findings of fact, statement of overriding considerations, and mitigation monitoring and reporting program; and approve the proposed program.

2 Project Description

The Metropolitan Water District of Southern California (Metropolitan), the lead agency under the California Environmental Quality Act (CEQA), is proposing a Climate Action Plan (CAP; proposed program) to identify strategies to reduce greenhouse gas (GHG) emissions and achieve the proposed GHG reduction targets. This chapter describes the CAP background and objectives, proposed project components, and the Plan Area. The chapter also provides a detailed summary of Metropolitan's emissions inventory and forecast, proposed emissions reduction targets, proposed emissions reduction measures, and a description of individual projects proposed under the CAP.

2.1 Background and Project Need

2.1.1 The Metropolitan Water District of Southern California

Metropolitan is a regional wholesaler that provides water for 26 member agencies to deliver either directly or through their sub-agencies to nearly 19 million people across a 5,200-square mile service area in six counties (Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura) in Southern California. On average, Metropolitan conveys approximately 1.7 billion gallons of water daily throughout its distribution system. Metropolitan imports water from the State Water Project (SWP) and from the Colorado River via the Colorado River Aqueduct (CRA). Approximately 45 percent of Southern California's water supply comes from these two sources. In addition to imported water, Metropolitan invests in local resource development along with its member agencies and utilizes groundwater banking and transfer programs. Metropolitan also manages water demands by promoting and investing in conservation and water use efficiency projects. Water supplies are conveyed through Metropolitan's extensive distribution system, which includes the CRA, 16 small hydroelectric facilities, nine reservoirs, 819 miles of large-scale pipes, and five water treatment plants.

Due to the large-scale water delivery services supplied by Metropolitan, large amounts of energy are required to bring the water from it source to its ultimate purchasing agency for delivery to the residents of Southern California. Metropolitan's activities include operation and maintenance of water infrastructure, offices, and other facilities throughout Southern California. Such activities require consumption of energy created from coal, hydrocarbon gas liquids, natural gas, petroleum, and renewable sources, many of which result in emissions of GHGs.

2.1.2 Greenhouse Gas Emissions and Global Climate Change

Greenhouse Gases

GHGs are gases that absorb and re-emit infrared radiation in the atmosphere, a process known as the greenhouse effect. As these gases accumulate in the atmosphere, the continued re-emission of radiation contributes to a warming of the planet, known as global warming or global climate change. While GHGs are emitted by both natural processes and human activities, emissions resulting from human activities have increased substantially since the Industrial Revolution during the 18th and 19th centuries, exacerbating the greenhouse effect and resulting in human-induced (or anthropogenic) climate change. GHGs that are widely seen as the principal contributors to human-induced climate change include carbon dioxide, methane, nitrous oxides, fluorinated gases such as hydrofluorocarbons and perfluorocarbons, and sulfur hexafluoride. While a potent GHG, water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere, and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

As described above, GHGs are emitted by both natural processes and human activities. Of these gases, carbon dioxide and methane are emitted in the greatest quantities from human activities. Emissions of carbon dioxide are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills.[1]

Human-made GHGs, many of which have greater heat-absorption potential than carbon dioxide, include fluorinated gases and sulfur hexafluoride (United States Environmental Protection Agency [U.S. EPA] 2018). Different types of GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally 100 years). Because GHGs absorb different amounts of heat, a common reference gas (carbon dioxide) is used to relate the amount of heat absorbed to the amount of the individual GHG emission, referred to as "carbon dioxide equivalent" (CO_2e), which is the amount of a GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a 100-year GWP of 25, meaning its global warming effect is 25 times greater than carbon dioxide on a molecule per molecule basis over a 100-year timescale (Intergovernmental Panel on Climate Change [IPCC] 2007).

Climate Change

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Long-term trends have found that each of the past three decades (from 1990 to 2020) has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest.

The observed global mean surface temperature for the 10-year period from 2006 to 2015 was approximately 0.87 degrees Celsius (°C) higher than the average global mean surface temperature over the period from 1850 to 1900. Furthermore, several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations demonstrate that LSAT as well as sea surface temperatures have increased. Due to past and current activities, anthropogenic GHG emissions are increasing global mean surface temperature at a rate of 0.2°C per decade. In addition to these findings, there are identifiable signs that global warming is

[1] Off-gassing refers to production and emissions of methane, produced when animal waste and municipal solid waste is broken down by bacteria.

currently taking place, including substantial ice loss in the Arctic from 1996 to 2019 (National Aeronautics and Space Administration 2020; IPCC 2014, 2018).

While global in nature, climate change has the potential to result in unique and concentrated regional and localized impacts in California. According to *California's Fourth Climate Change Assessment*, statewide temperatures from 1986 to 2016 were approximately 1 degree Fahrenheit (°F) to 2°F higher than those recorded from 1901 to 1960. Potential impacts of climate change in California may include loss in water supply from snowpack, sea level rise, more extreme heat days per year, more large forest fires, and more drought years (State of California 2019). While there is growing scientific consensus about the possible effects of climate change at a global and statewide level, current scientific modeling tools are unable to predict what local impacts may occur with a similar degree of accuracy. In addition to statewide projections, *California's Fourth Climate Change Assessment* includes regional reports that summarize climate impacts and adaptation solutions for nine regions of the state as well as regionally-specific climate change case studies (State of California 2019).

2.1.3 Greenhouse Gas Emissions Reduction Policies and Climate Action Planning

California Emissions Reduction Regulations

California continues to lead the global effort of mitigating and adapting to climate change through progressive legislative and executive direction. Such actions have established a series of increasingly stringent GHG emissions reduction goals and targets intended to help reduce and reverse the effects of global climate change. These goals and targets include the following:

- **Executive Order S-3-05.** In recognition of California's vulnerability to the effects of climate change, former Governor Schwarzenegger established Executive Order S-3-05 in 2005, which sets forth targets to reduce GHG emissions to 1990 levels by 2020 and to 80 percent below 1990 levels by 2050.
- **Assembly Bill (AB) 32.** Signed into law in 2006, the California Global Warming Solutions Act codifies a statewide goal of reducing GHG emissions to 1990 levels by 2020.
- **Senate Bill (SB) 32.** SB 32 serves as an update to the emissions reduction target codified under AB 32. Signed into law in 2016, SB 32 establishes a statewide emissions reduction target of 40 percent below 1990 levels by 2030.
- **Executive Order B-55-18.** On September 10, 2018, the governor issued Executive Order B-55-18, which established a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter.

Additionally, while it does not establish an emissions reduction target, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the state's Renewables Portfolio Standard Program, which requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

Climate Action Planning

In response to mounting urgency surrounding global climate change and mandated emissions reductions, entities in California and around the world have developed CAPs. While the content of such plans varies depending on the specific emissions reduction objectives of the entity, CAPs generally include an inventory of baseline emissions, a forecast of future emissions, a GHG reduction

goal consistent with applicable reduction targets, and a series of policies, measures, or actions intended to achieve the reduction goal.

Metropolitan's core mission of supplying its service area with adequate and reliable supplies of high-quality water is inextricably linked to the effects of global climate change, as changes in temperature and precipitation patterns create uncertainty around water supply availability and demand throughout Metropolitan's service area. Since its formation in 1928, Metropolitan's goal of securing water to meet the population demands in Southern California has evolved from meeting water needs, to providing this water delivery in an environmentally and economically responsible way. As Metropolitan's service population has grown, continued and increasing efforts to reduce the environmental and economic impact of Southern California's water supply have contributed to Metropolitan's resiliency and opportunities for neutralizing its carbon footprint.

Metropolitan furthers this commitment to sustainability and efficiency by proposing to adopt a CAP to establish an emissions reduction target and describe in detail reduction activities and policies Metropolitan may implement to achieve its reduction targets over time. Each of these core components of the CAP is described further in the following sections.

2.2 Proposed Program Objectives

This Program Environmental Impact Report (PEIR) analyzes potential environmental impacts associated with implementation of the proposed program, the CAP. Pursuant to Section 15124(b) of the *State CEQA Guidelines*, an EIR shall contain a statement of objectives sought by the proposed program. The objectives of the proposed program, the CAP, include the following:

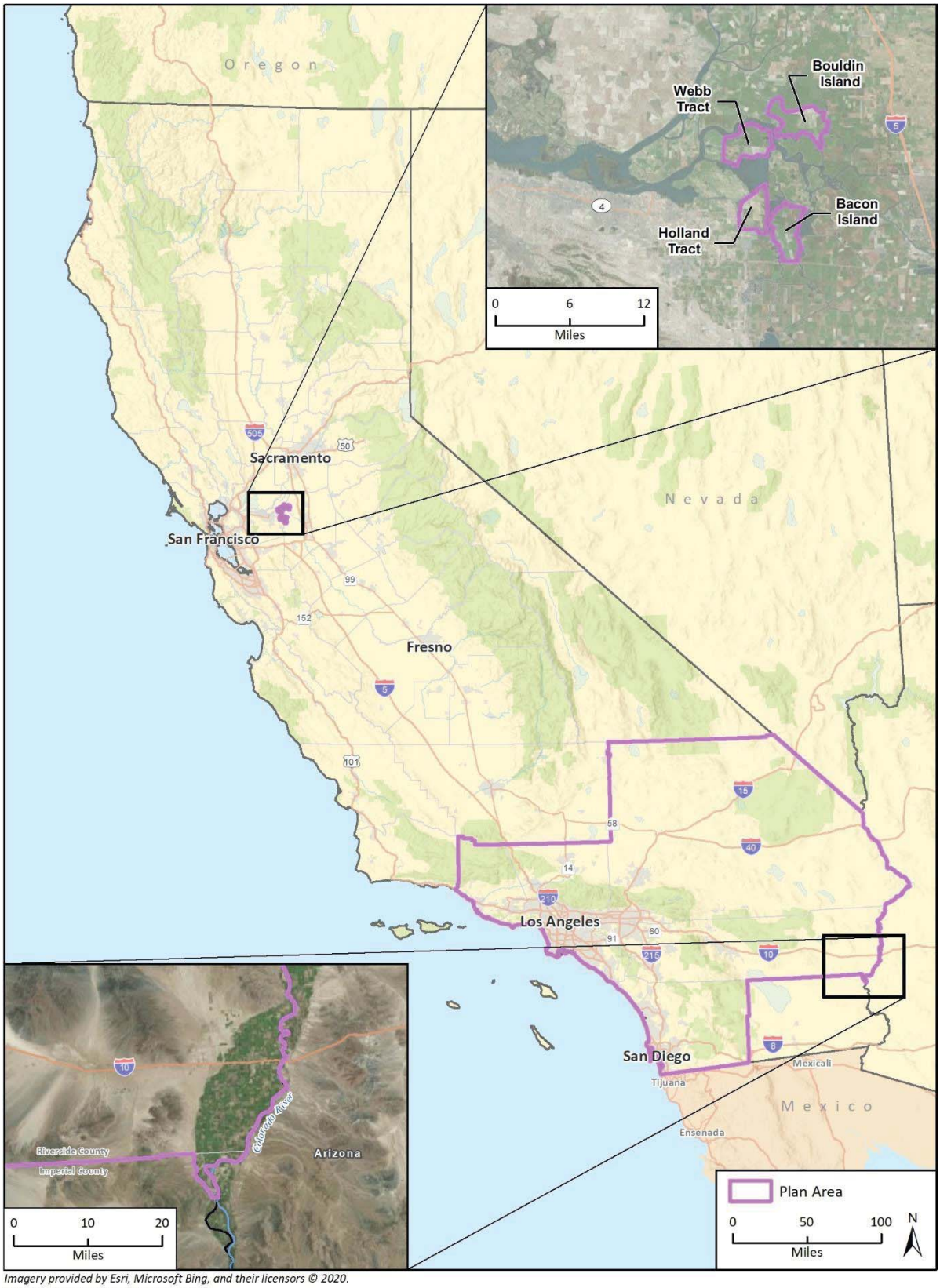
- Identify and quantify emissions associated with Metropolitan operations to prepare a baseline GHG emissions inventory in order to track emissions reduction progress over time
- Adopt an emissions reduction target that is both consistent with existing state emissions reduction targets while preparing Metropolitan to meet future state targets
- Identify and quantify specific reduction actions and policies that Metropolitan may implement to achieve the goal of reducing GHG emissions from its construction and operational activities
- Provide a roadmap for future activities to achieve consistency with the CAP and use CEQA streamlining tools for analysis of GHG emissions pursuant to the requirements of *State CEQA Guidelines* Section 15183.5

2.3 Climate Action Plan Area and Member Agencies

Plan Area

The CAP includes GHG emissions reduction measures for Metropolitan's construction, operation, and maintenance activities. It is anticipated that most reduction measures would be implemented throughout a six-county Southern California region comprising Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. These counties include all of Metropolitan's service area and most of its infrastructure facilities. The CAP may also involve implementation of GHG emissions reduction measures or programs at Metropolitan land holdings in Imperial County, specifically within the Palo Verde Valley; as well as Bacon Island, Bouldin Island, Holland Tract, and Webb Tract in the Sacramento-San Joaquin Delta region (San Joaquin County and Contra Costa County). Figure 1 shows the Plan Area for the CAP.

Figure 1 Plan Area



Imagery provided by Esri, Microsoft Bing, and their licensors © 2020.
Additional data provided by USGS, 2017.

While environmental emissions influence climate change at a global scale, the analysis in this PEIR focuses on potential impacts associated with implementation of the CAP in California—and specifically, the Plan Area—consistent with the requirements and applicability of CEQA.

Member Agencies

As described in Section 2.1, *Background and Project Need*, Metropolitan is comprised of 26 member agencies, including 14 cities and 12 water agencies, located throughout Southern California. These include:

- City of Anaheim
- City of Burbank
- City of Fullerton
- City of Long Beach
- City of Pasadena
- City of San Marino
- City of Santa Monica
- Calleguas Municipal Water District
- Eastern Municipal Water District
- Inland Empire Utilities Agency
- Municipal Water District of Orange County
- Three Valleys Municipal Water District
- West Basin Municipal Water District
- City of Beverly Hills
- City of Compton
- City of Glendale
- City of Los Angeles
- City of San Fernando
- City of Santa Ana
- City of Torrance
- Central Basin Municipal Water District
- Foothill Municipal Water District
- Las Virgenes Municipal Water District
- San Diego County Water Authority
- Upper San Gabriel Valley Municipal Water District
- Western Municipal Water District of Riverside County

All member agencies' jurisdictions and/or service areas are located within the Plan Area.

2.4 Project Components

2.4.1 Emissions Inventory

Metropolitan's operations inherently result in GHG emissions. Understanding the processes that generate these emissions is essential to identifying strategies to reduce GHG emissions.

Metropolitan's operational activities can be categorized into the following GHG emissions-generating sectors:

- **Water Conveyance and Treatment.** This sector comprises the majority of Metropolitan's emissions, which are a direct result of the purchase of energy consumed and delivered to pump, treat, and deliver water throughout Metropolitan's extensive service area.
- **Buildings/Infrastructure.** This sector includes emissions generated by energy consumed to power the command center/operational buildings, supporting infrastructure (including offices, facilities, control buildings, lighting, computers, and air conditioners), and other equipment required to support the treatment and delivery of water.
- **Transportation.** This sector includes the transportation of employees and equipment to and from offices and worksites. Emissions stem from both Metropolitan's fleet vehicles, which it

owns and operates, and vehicles owned by Metropolitan employees and used for commuting to work.

- **Waste Disposal.** The waste sector falls into three categories: mixed solids waste, mixed recycle, and organics. Metropolitan generates waste from various sources, ranging from employee lunches to office waste, which results in indirect GHG emissions as it decomposes in landfills.
- **Water Use.** Water sector GHG emissions by Metropolitan result from water use in facilities and irrigation. This sector includes indirect emissions associated with energy required to extract, convey, treat, and deliver water.
- **Construction.** As Metropolitan's infrastructure ages, there is a continued need for construction of new facilities and infrastructure or rehabilitation of existing facilities and infrastructure. Construction activities result in direct GHG emissions from fuel combustion associated with construction equipment usage, construction waste generation, and transportation of workers and materials.

The CAP inventories Metropolitan's emissions from 1990 to 2020. The inventory for 2017 is the most recent year for which complete Scope 3 data was available; inventories for 2018 through 2020 were included for carbon budget tracking purposes using estimated Scope 3 data. Due to the geographically disparate nature of Metropolitan's operations, emissions reported in the inventory are based on activities over which Metropolitan has direct operational control. The inventory delineates emissions by Scope, as defined in the Local Governments for Sustainability reporting frameworks and detailed below.[2] The emissions inventory reports Metropolitan's GHG emissions in metric tons (MT) of CO_2e.

Scope 1 Emissions

Scope 1 emissions are those associated with direct emissions from sources owned or controlled by Metropolitan. This includes emissions from direct fuel combustion, including natural gas, propane, welding gasses, and gasoline and diesel used to power Metropolitan's vehicle fleet. The CAP calculates Scope 1 emissions based on data reported by Metropolitan to The Climate Registry, such as therms[3] of natural gas or pounds of propane used at Metropolitan facilities.

Scope 2 Emissions

Scope 2 emissions are indirect emissions associated with the consumption of purchased electricity. Metropolitan purchases electricity from power generated from within California and from outside of California in the southwestern United States, which includes electricity generated from hydropower at the Hoover Dam. The CAP calculates Scope 2 emissions based on annually updated emissions factors, which are dependent on the specific mix of power purchased. For example, hydropower from the Hoover Dam has an emission factor of zero, while power purchased from other sources may have a higher emission factor based on the source. Scope 2 emissions also include transmission and distribution losses that occur as electricity is delivered to Metropolitan facilities.

Scope 3 Emissions

Scope 3 emissions are other indirect emissions resulting from Metropolitan's operations, including emissions associated with waste generation, water consumption, and wastewater generation from Metropolitan-owned buildings, employee commutes, and construction activities. The emissions inventory calculates emissions from water, wastewater, and solid waste based on utility invoices and appropriate energy intensity and emissions factors. Employee commute emissions are estimated based

[2] Emissions Scopes are delineated based on the emissions source in question, whether that source is under the control or ownership of the entity, and whether or not the emissions result directly or indirectly from the entity's operations and activities.
[3] A unit of heat equivalent to 100,000 Btu or 1.055 × 108 joules.

on Metropolitan's Employee Commute Survey and VanPool ridership data and emissions factor data from the California Air Resources Board's (CARB) EMissions FACtor 2017 (EMFAC2017) model (the latest emissions inventory model that calculates emissions inventories for motor vehicles operating on roads in California) and the Los Angeles County Metropolitan Transportation Authority. Construction emissions are estimated in the inventory based on GHG studies contained in CEQA documentation for Metropolitan projects and/or emissions factors from the U.S. EPA, the California Emissions Estimator Model (CalEEMod), and EMFAC2017.

Figure 2 depicts Scope 1, Scope 2, and Scope 3 emissions associated with Metropolitan's operations.

Table 2 summarizes the results of the emissions inventory for 1990 (the baseline year used by state legislation) and 2017, which is the most recent inventory year for which a complete Scope 3 analysis was completed. These dates are key to establishing an AB 32- and SB 32-compliant reduction target and measuring progress over time.

Table 2 1990 and 2017 Emissions by Scope and Sector

	1990		2017	
Scope	**GHG Emissions (MT of CO_2e)**	**Percent of Total Emissions**	**GHG Emissions (MT of CO_2e)**	**Percent of Total Emissions**
Scope 1	**8,482**	**1%**	**8,876**	**4%**
Stationary Combustion	1,082	<1%	1,918	1%
Fugitive Emissions	0	0%	71	<1%
Mobile Combustion	7,400	1%	6,886	3%
Scope 2	**739,845**	**96%**	**194,480**	**86%**
Electricity Consumption	726,994	94%	192,511	85%
T&D Losses	12,851	2%	1,969	1%
Scope 3	**23,187**	**3%**	**22,679**	**10%**
Water and Wastewater	99	<1%	184	<1%
Waste Generation	2,760	<1%	3,157	1%
Employee Commute	8,246	1%	7,257	3%
Construction Emissions	12,081	2%	12,081	5%
Total Emissions	**771,514**	**100%**	**226,036**	**100%**

MT = metric tons; CO_2e = carbon dioxide equivalent; T&D = transmission and distribution
Note: Totals may not sum exactly due to rounding.
Source: Metropolitan 2020

As described in Table 2, Scope 2 emissions constitute the majority of Metropolitan's overall emissions, comprising approximately 96 percent of Metropolitan's emissions in 1990 and 86 percent in 2017. Scope 1 emissions constitute 4 percent of Metropolitan's overall emissions in 2017, with the majority of Scope 1 emissions associated with mobile combustion. Scope 3 emissions constitute the remaining approximately 10 percent of Metropolitan's overall emissions in 2017.

The emissions inventory estimates that Metropolitan's GHG emissions have declined steadily from approximately 772,000 MT CO_2e in 1990 to approximately 226,000 MT CO_2e in 2017 (71 percent), despite Metropolitan's increasing service population. However, Metropolitan's annual emissions exhibit variability due to increases in CRA pumping during periods of drought, as water sourced via the CRA requires substantially higher electricity usage than water imported via the SWP.

Figure 2 Metropolitan Emissions by Scope

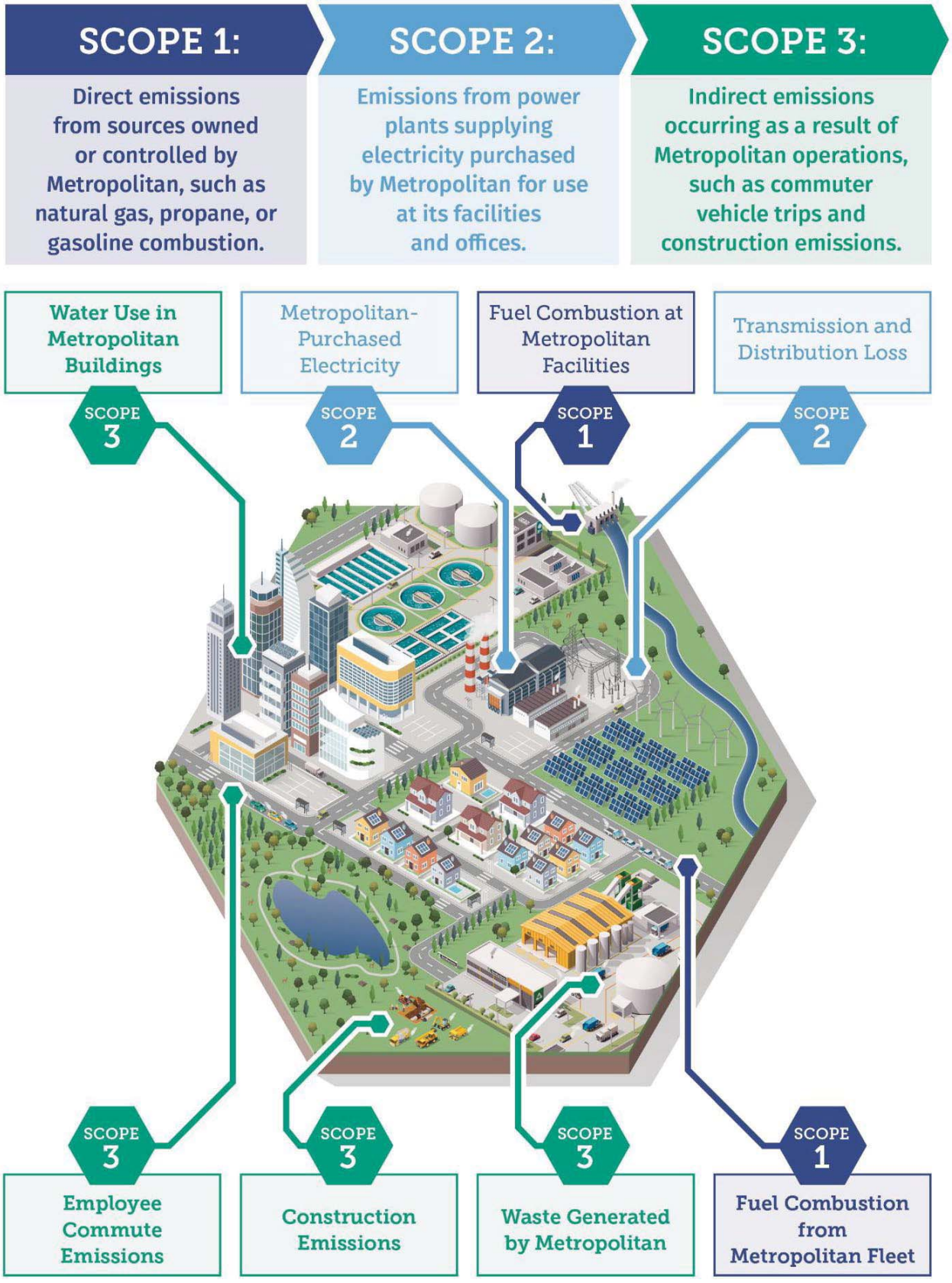
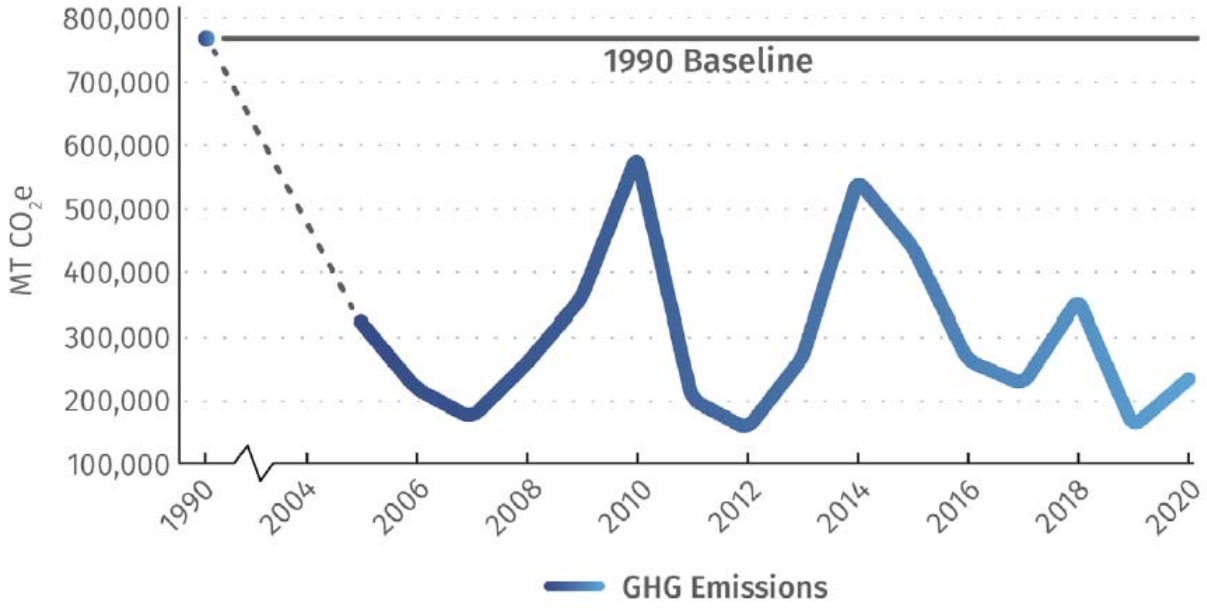


Figure 3 characterizes the nature and trend of Metropolitan's GHG emissions over time. The years of 2018, 2019 and 2020 were added to the inventories as data became available. However, 2017 remains the most recent year for which all Scope 3 data was available and therefore, was used for the GHG emissions forecast. A complete description of all inventory years, methodologies, and results can be found in the *Greenhouse Gas Inventory and Forecast Methodology* prepared for the CAP (Metropolitan 2021).

Figure 3 GHG Annual Emissions 1990 through 2020



2.4.2 Emissions Forecast

While the GHG emissions inventory described above provides reference points for emissions levels in past years, the CAP also includes an emissions forecast to account for how changes in hydrology, climate, climate and air quality regulations, population growth, operations, and future construction projects may affect Metropolitan's emissions into the future. Furthermore, the emissions forecast allows for comparison between forecasted GHG emissions and reduction targets to understand the reductions necessary to achieve Metropolitan's GHG reduction goals.

Forecast Scenarios

As described in Section 2.4.1, *Emissions Inventory*, Metropolitan's overall emissions vary substantially based on the amount of CRA pumping required in a given year because water sourced via the CRA requires substantially higher electricity usage than water imported via the SWP. The emissions forecast in the CAP accounts for this variability by forecasting emissions under the following scenarios:

- **High Emissions Scenario: Dry-year SWP with High CRA Pumping**. This scenario forecasts emissions based on the multiple dry-year water delivery demand defined in Metropolitan's 2020 Urban Water Management Plan (Metropolitan 2021) and the highest per acre-foot emissions[4]

[4] Quantified emissions per acre-foot of water conveyed by Metropolitan. One acre-foot is equivalent to approximately 325,850 gallons.

calculated in the emissions inventory from 2005[5] to 2017, which occurred in 2010. This scenario provides the highest potential GHG emissions forecast under the driest conditions.

- **Average Emissions Scenario: Average-year SWP with Average CRA Pumping.** This scenario forecasts emissions based on the single dry-year water delivery demand defined in Metropolitan's 2020 Urban Water Management Plan (Metropolitan 2021) and the average per acre-foot emissions calculated in the emissions inventory from 2005 to 2017. This scenario provides the emissions forecast under average conditions.
- **Low Emissions Scenario: Wet-year SWP with Low CRA Pumping.** This scenario forecasts emissions based on the average rainfall year water delivery demand defined in Metropolitan's 2020 Urban Water Management Plan (Metropolitan 2021) and the lowest per-acre emissions calculated in the emissions inventory from 2005 to 2017, which occurred in 2012. This scenario provides the emissions forecast under the rainiest conditions.

Proposed Regional Recycled Water Program

In addition to forecasting GHG emissions associated with ongoing operations and Capital Investment Plan construction projects, the emissions forecast in the CAP includes anticipated construction and operational emissions from the proposed Regional Recycled Water Program (RRWP). The RRWP is a partnership program with the Sanitation Districts of Los Angeles County intended to use an advanced purification process to produce high-quality water for reuse within Metropolitan's service area.

Emissions associated with RRWP construction include those required to construct the advanced water treatment plant (AWTP), and a conveyance and distribution system, which includes pipelines, pump stations, and groundwater injection wells. Construction emissions, which include a five-year construction schedule, include emissions from equipment use and fuel consumption, labor and material travel, and temporary electric power usage. Table 3 summarizes proposed RRWP construction emissions anticipated in the emissions forecast.

Table 3 Proposed Regional Recycled Water Program Construction Emissions

System	Construction Emissions (MT CO_2e)*
Advanced Water Treatment Plant	11,000
Pipelines	71,000
Pump Stations	630
Well Facilities	380
Total	**82,000**
5 Year Annual	**14,000**

MT = metric tons; CO_2e = carbon dioxide equivalent

*Values are rounded.

The emissions forecast in the CAP also quantifies anticipated operational GHG emissions from the proposed RRWP, including both process emissions and emissions associated with electricity consumption. Process emissions include nitrous oxide generation and emissions associated with consumption of carbon source additives used to facilitate denitrification and phosphorus removal during the water purification process. Electricity demand emissions would result from Metropolitan's purchase of electricity to power the AWTP and pump stations. The emissions forecast assumes

[5] 2005 is the first year in which Metropolitan's emissions were reported to The Climate Registry and the year in which detailed GHG emissions inventories were started.

electricity for the AWTP and pump stations would be supplied entirely from the retail market and, as such, emissions would decline over time as electricity providers incorporate more renewable energy supplies consistent with the requirements of the Renewables Portfolio Standard and SB 100. Table 4 summarizes overall RRWP emissions from 2025 through 2045.[6]

Table 4 Overall Estimated Proposed Regional Recycled Water Program Emissions

Year	Emissions (MT CO2e)*
2025 (construction)	14,000
2030 (construction)	14,000
2035 (operational)	88,000
2040 (operational)	58,000
2045 (operational)	28,000

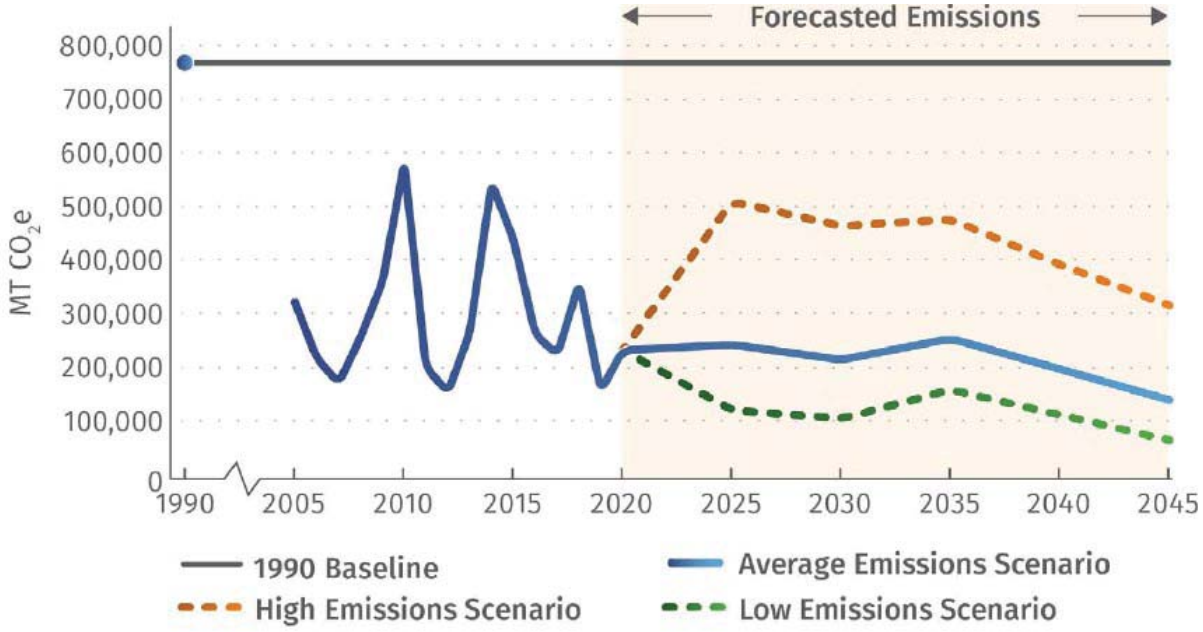
MT = metric tons; CO_2e = carbon dioxide equivalent
*Values are rounded.
Source: Metropolitan 2020

Forecast Results

The CAP emissions forecast includes the implementation of state regulations that would assist in reducing Metropolitan's emissions over time, such as increasing procurement of renewable retail energy pursuant to SB 100 and increasing water conservation pursuant to the Water Conservation Act of 2009 (SB X7-7). The CAP forecasts both mass emissions (Figure 4) and per capita emissions based on Metropolitan's service population (Figure 5). Based on the analysis in the CAP and depending on the emissions scenario assessed, Metropolitan's mass emissions would decrease between 40 to 86 percent below 1990 levels by 2030. By 2045, Metropolitan's mass emissions are expected to decrease between 59 to 91 percent below 1990 levels, depending on the emissions scenario evaluated. Figure 4 summarizes mass emissions forecasts through 2045 under the low, average, and high emissions scenarios. Though conservative, mass emissions analysis does not scale for population increases in Metropolitan's service area.

[6] SB 100 mandates that 100 percent of electricity supplied to the grid be procured from renewable sources by 2045. This is also the target year by which Metropolitan intends to achieve carbon neutrality, based on the emissions reduction target included in the CAP and described in detail in Section 2.4.3, *Reduction Target.*

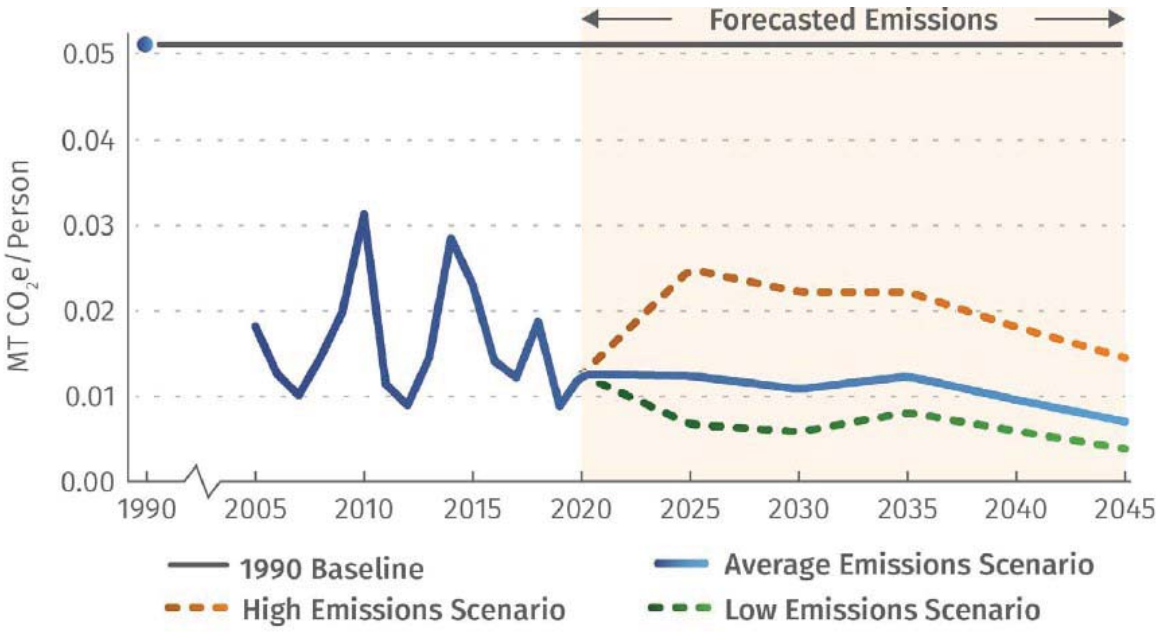
Figure 4 Historical and Forecasted Mass Emissions 1990-2045



The per capita emissions calculation uses Metropolitan's mass emissions and divides by the service area population. Metropolitan's service population is anticipated to reach just over 20.6 million people by 2030 and just over 22 million people by 2045.[7] Despite a growing service population, Metropolitan's emissions are anticipated to decrease steadily below 1990 levels under all emissions scenarios. Figure 5 shows Metropolitan's past and projected per capita emissions under all emissions scenarios. According to the CAP, Metropolitan's per capita emissions are expected to decrease between 56 and 90 percent below 1990 levels by 2030 and between 72 and 94 percent below 1990 levels by 2045, depending on the emissions scenario assessed.

[7] Service population is based on projections from the Southern California Association of Governments Regional Transportation Plan/Sustainable Communities Strategy and San Diego County Association of Governments Series 13 Forecasts. Service population forecasts are included in Appendix B of the CAP, *GHG Inventory and Forecast Methodology* prepared for the CAP (Metropolitan 2021).

Figure 5 Historical and Forecasted Per Capita Emissions 1990-2045



Using the per capita emissions forecast is a more accurate representation of Metropolitan's emission reductions over time because it recognizes how the substantial investments in water conservation have led to a reduction in water consumption in spite of a growing population in the service area.

2.4.3 Reduction Target

The CAP establishes a GHG reduction target aligned with applicable state GHG reduction policies. The CAP considers various reduction levels, target methodologies, and tracking mechanisms to quantify and measure progress toward GHG emissions reductions beyond those anticipated in the emissions forecast described above. Ultimately, the CAP utilizes a linear per capita target or "Linear Reduction to Carbon Neutral by 2045 – Per Capita Target" with a Carbon Budget tracking mechanism, described in greater detail later in this section.

Reduction Level

The CAP considers three reduction level options, all of which are consistent with current state GHG-reduction goals established by SB 32, California's most recent codified GHG reduction target.

However, the CAP utilizes a reduction level based on a linear reduction in emissions from baseline 1990 levels to carbon neutrality (zero emissions) in 2045. This strategy would reduce Metropolitan's emissions to approximately 73 percent below 1990 levels by 2030, a substantially more aggressive reduction than the 40 percent below 1990 levels by 2030 identified in SB 32. The CAP goals and policies are not only intended to demonstrate consistency with the statewide SB 32 target, but also achieve consistency with the carbon neutrality by 2045 goal established by Executive Order B-55-18.[8]

[8] As noted in Section 2.1, *Background and Project Need*, Metropolitan is not subject to the requirements of Executive Orders, and emissions reduction goals established by Executive Orders are not codified into state law. Nevertheless, the reduction level selected in the CAP demonstrates consistency with the emissions reduction goal established pursuant to Executive Order B-55-18 by achieving carbon neutrality (zero emissions) by 2045.

Target Methodology

There are three main approaches (target methodologies) the CAP examines to demonstrate progress towards meeting the established goal of carbon neutrality by 2045:

- **Mass Emissions Targets.** Mass emissions targets involve reducing total GHG emissions to a specified level (or lower) by a specific target year. An example of mass emissions reductions would be reducing to 200,000 MT CO_2e per year in 2030 (i.e., 26 percent of 1990 levels) and 0 MT CO_2e per year in 2045.
- **Per Capita Emissions Targets.** A per capita emissions target creates a per person emissions level based on Metropolitan's service population, such as reducing emissions to 0.02 MT CO_2e per capita by 2045.
- **Efficiency Targets.** Efficiency targets aim to reduce the emissions associated with each unit of production, such as reducing emissions to 0.1 MT CO_2e per acre-foot of water supplied by Metropolitan by 2045.

As mentioned above, Metropolitan's service population is projected to be over 22 million people by 2045. Therefore, to capture the substantial growth expected in the service area, the CAP establishes a per capita emissions reduction target approach, which accounts for population growth in the Metropolitan service area while capturing the reduction in emissions associated with water delivery and treatment from its past and ongoing water conservation efforts and other emissions reducing projects.

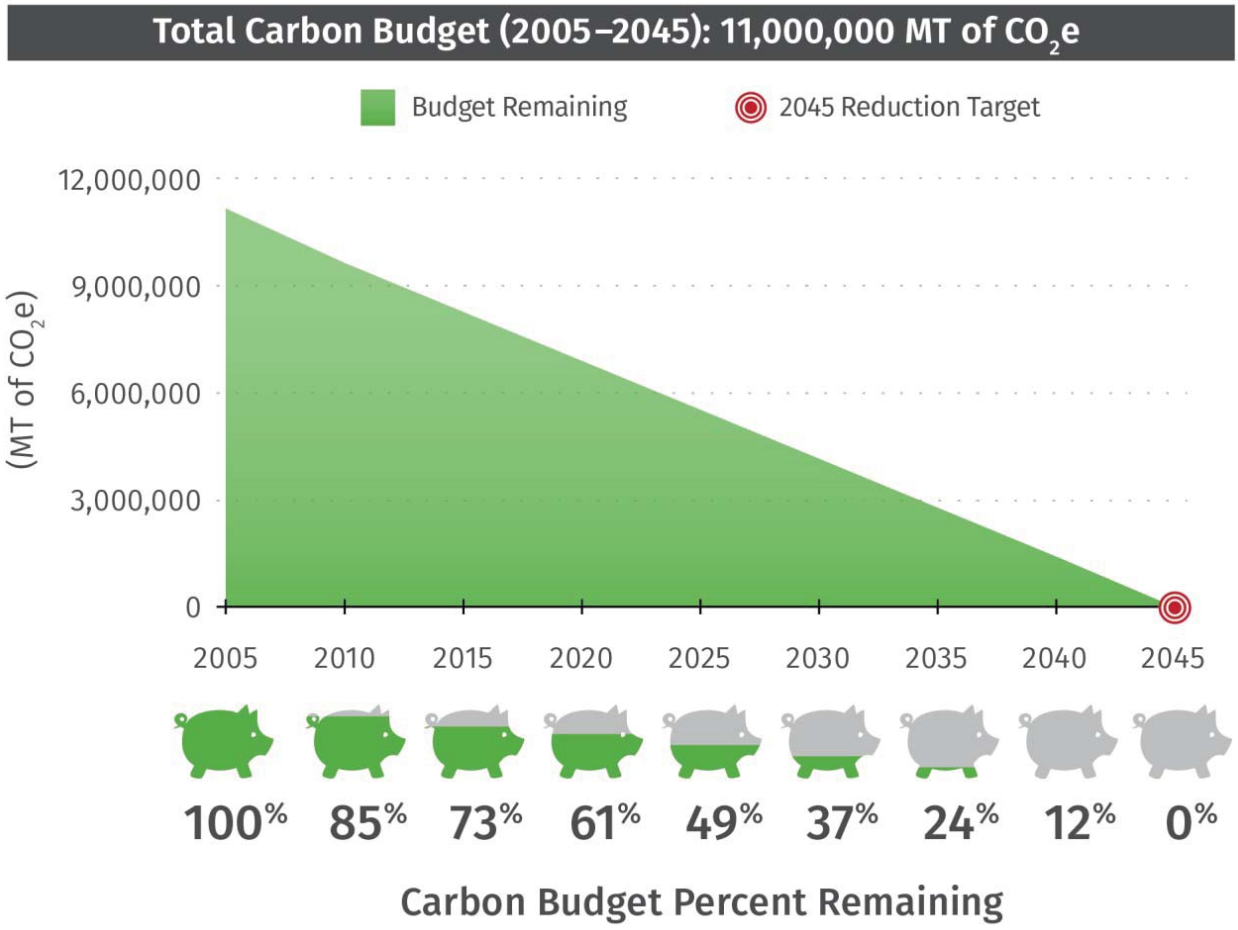
Tracking Mechanism

For most cities and other jurisdictions in California, emissions increase and decrease in a steady fashion along with population growth and in response to marginal GHG reduction actions.

Metropolitan's emissions, by contrast, can fluctuate widely year-to-year in response to CRA pumping levels, but generally track with wet years and drought years. This means emissions in any given year are not necessarily a good indicator of overall GHG reduction progress. As a result, the CAP proposes tracking GHG emissions reduction progress using a Carbon Budget methodology.

Simply put, the Carbon Budget acts as a debit account, wherein the cumulative amount of emissions allowed for Metropolitan over a given time period are calculated. Annually, Metropolitan's emissions will be debited from the total emissions "budget" and total emissions will be tracked over time to ensure Metropolitan is meeting its goal. Specifically, based on the Linear Reduction to Carbon Neutrality by 2045 reduction level described previously, Metropolitan could emit a total of 14,660,475 MT CO_2e between 2005 (the year in which detailed GHG emissions inventories were started) and 2045 under the Average Emissions forecast scenario. Figure 6 describes the Carbon Budget methodology conceptually, demonstrating a hypothetical Carbon Budget scenario and diminishing budget remaining as emissions cumulate over time.

Figure 6 Carbon Budget Conceptual Graph



The Carbon Budget is a more conservative and accurate approach to tracking GHG emissions reductions compared to simply calculating emissions in a single target year to determine if the target has been achieved because it tracks the total amount of CO_2e that enters the atmosphere that contributes to climate change rather than just total GHG emissions in the target year. This method ensures that Metropolitan is continually monitoring its emissions and provides an early warning system to ensure Metropolitan will meet its GHG reduction goals.

2.4.4 Emissions Reduction Measures

In order to achieve carbon neutrality by 2045, GHG emissions reductions measures would need to be implemented. As discussed under Section 2.4.1, *Emissions Inventory*, GHG emissions fall under three scopes. Scope 1 includes direct emissions sources owned or controlled by Metropolitan. Scope 2 includes indirect emissions from power plants that supply electricity to Metropolitan. Scope 3 includes other indirect emissions that occur as a result of Metropolitan's operations, such as from waste generation and employee commutes. The CAP includes 39 GHG emissions reduction measures that, if implemented, could help Metropolitan reduce its Scope 1, Scope 2, and Scope 3 emissions.

Reduction measures for each scope are grouped into strategies, which are described in more detail below.

The reduction measures do not include actions taken by Metropolitan to date that have resulted in GHG emissions reductions, such as Metropolitan's early adoption of hybrid-electric vehicles (EV) for

its operational fleet and Leadership in Energy Efficiency and Design (LEED) certification for several of its facilities. However, the measures may build or expand upon these past actions. Most reduction measures are either administrative in nature or involve replacement of existing infrastructure with newer, more efficient infrastructure and, therefore, would not have physical impacts to the environment. Table 5 details the GHG reduction measures under consideration in the CAP and identifies whether each has the potential to impact the environment. Those that may have the potential to impact the environment are analyzed further in this PEIR.

Scope 1: Direct Emissions

Scope 1 reduction measures can be categorized into three main strategies: Direct Combustion (DC), Vehicle and Equipment Fleet (FL), and Alternative Fuels (AF). The DC strategy includes measures to reduce GHG emissions from natural gas combustion at Metropolitan facilities by phasing out natural gas-powered equipment. The FL strategy includes reduction measures to reduce Metropolitan's reliance on gasoline- and diesel-powered fleet vehicles. The AF category includes measures to increase the use of cleaner fuel sources, such as biodiesel for equipment that cannot be electrified. Measures addressing Scope 1 emissions are described in Table 5.

Scope 2: Indirect Emissions from Electricity Use

Scope 2 reduction measures fall into two main strategies: Electricity (E) and Energy Efficiency (EE). The E category includes measures to reduce GHG emissions by transitioning to cleaner sources of electricity, such as low-carbon and carbon-free electricity and expanding deployment of renewable energy generation at Metropolitan facilities. Measures in the EE category seek to increase the efficiency of Metropolitan's operations, for example, through energy efficient lighting upgrades and retrofitting older pumps and motors. Measures addressing Scope 2 emissions are described in Table 5.

Scope 3: Other Indirect Emissions and Carbon Sequestration

Scope 3 includes a broad range of GHG emissions sources and includes reduction measures across four main strategies. The Employee Commute (EC) strategy includes measures to reduce GHG emissions by encouraging ridesharing, public transit use, and EV charging options for employees and vanpool fleets. The Waste (WA) strategy seeks to reduce GHG emissions by reducing the waste produced at Metropolitan's facilities and increasing waste diversion. The Water Conservation and Local Water Supply (WC) strategy includes measures to increase water conservation in Metropolitan's operations and by its customer base, as well as measures to increase the local water supply through water recycling and reduced water loss. Lastly, the Carbon Sequestration (CS) strategy is comprised of measures that aim to improve the capacity to sequester carbon at Metropolitan-owned lands. Measures addressing Scope 3 emissions are described in Table 5.

Implementation Phase

The intent of the CAP is to achieve the 2030 GHG reduction target and demonstrate substantial progress toward the long-term state reduction goal of carbon neutrality by 2045. New opportunities are anticipated to emerge that could yield additional reductions beyond those identified in the CAP. At this time, Metropolitan has developed two implementation phases for the GHG reduction measures considered in the CAP, Phase 1 and Phase 2.

Phase 1 measures are ready for implementation over the next ten years based on their cost, available technology, and certainty about future conditions. Phase 1 measures would be implemented between now and 2030. Phase 2 measures would require more research, new technologies, or different financial conditions before they could be implemented. These measures are expected to be

implemented between 2030 and 2045. The implementation phase for each measure is shown in Table 5.

Table 5 CAP GHG Reduction Measures with Potential Physical Impacts on the Environment

Measure Number	Measure Description	No Potential for Physical Impacts to the Environment	Potential to Result in Physical Impacts	Implementation Phase[1]
Scope 1: Direct Emissions				
Strategy 1 – Phase out Natural Gas Combustion at Facilities				
DC-1	Conduct a survey of all natural gas consuming devices in offices, control buildings, and residential structures and establish a schedule to replace natural gas equipment with electric by 2025.	X		1
DC-2	Reduce natural gas emissions by 50 percent by 2030 and 100 percent by 2045 through electrification.		X	1-2
DC-3	Update Metropolitan building standards to require all-electric construction for new buildings and retrofits.	X		1
Strategy 2 – Zero Emission Vehicle Fleet				
FL-1	Conduct a zero emission vehicle (ZEV)/electric vehicle (EV) Feasibility Study to determine which fleet vehicles can be converted, what chargers/fueling stations are required, and where they should be located by the end of 2022.	X		1
FL-2	Adopt an ZEV/EV first policy for fleet vehicles to obtain ZEVs when technological, operational, or cost effectiveness parameters are met.	X		1
FL-3	Replace fossil fuel passenger fleet vehicles as identified in the ZEV/EV Feasibility Study (Measure FL-1).	X		1
FL-4	Install EV charging and/or ZEV infrastructure at facilities pursuant to the findings of the ZEV/EV Feasibility Study (Measure FL-1).		X	1
Strategy 3 – Alternative Fuels to Bridge the Technology Gap to Zero Emission Vehicles and Equipment				
AF-1	Complete a pilot project on the use of renewable diesel rather than conventional diesel for all stationary equipment by 2025.	X		1
AF-2	Conduct a pilot project of renewable diesel use in on-road and off-road vehicles by providing at least one renewable diesel tank at Metropolitan-owned fueling depots in 2021.	X		1

Measure Number	Measure Description	No Potential for Physical Impacts to the Environment	Potential to Result in Physical Impacts	Implementation Phase[1]
AF-3	Based on the results of the study in AF-2, Metropolitan will begin using renewable diesel fuel in 100 percent of Metropolitan's diesel-consuming on-road and off-road vehicles by 2025.	X		1
Scope 2: Electricity				
Strategy 4: Utilize Carbon-Free Electricity				
E-1	Analyze marginal emissions rates and evaluate the feasibility of shifting energy use to lower emission periods.	X		1
E-2	Connect the Yorba Linda Hydroelectric Power Plant (YLHEP) behind Metropolitan's Southern California Edison (SCE) electricity meter to directly utilize carbon-free electricity at Metropolitan's Diemer facility by 2025.		X	1
E-3	In markets where available, Metropolitan will switch its retail accounts to green tariff options offered by power providers by 2025 to reduce the Scope 2 GHG emissions associated with retail electricity use.	X		1
E-4	Install 3.5 megawatt (MW) battery storage systems at the Jensen, Skinner, and Weymouth treatment plants. Investigate the use of a software system to track and optimize GHG emissions reduction due to time-of-use strategies by 2025.		X	1
E-5	Manage Metropolitan's energy purchases to ensure cost-effective energy supply while achieving the required GHG emissions objective.	X		1
Strategy 5 – Improve Energy Efficiency				
EE-1	Convert all interior and exterior lighting at 50 percent of Metropolitan facilities to light emitting diode (LED) technologies by 2030 and 100 percent by 2045.		X	1
EE-2	Continue programs to analyze CRA pump efficiency and replace or refurbish pumps when cost effective.	X		1
EE-3	Investigate feasibility of a large scale (100 MW) battery storage system for the CRA.	X		2
EE-4a	Replace pump impellers at the Iron Mountain pumping plant if directed by findings of the pump assessment (Measure EE-2).		X	2
EE-4b	Replace pump impellers at the Eagle Mountain or Hinds pumping plants if directed by findings of the pump assessment (Measure EE-2).		X	2
EE-4c	Refurbish motors at Iron Mountain if applicable based on the findings of the pump assessment (Measure EE- 2).		X	2

Measure Number	Measure Description	No Potential for Physical Impacts to the Environment	Potential to Result in Physical Impacts	Implementation Phase[1]
EE-4d	Refurbish motors at Eagle Mountain or Hinds pumping plants if directed by findings of the pump assessment (Measure EE-2).		X	2
EE-5	If the proposed RRWP is ultimately constructed, install an inter-stage pumping system on the reverse osmosis brine stream to reduce energy use.		X	2
Scope 3: Indirect Emissions and Sequestration				
Strategy 6 – Incentivize More Sustainable Commutes				
EC-1	Expand subsidized transit commute program to reduce employee commute miles.	X		1
EC-2	Expand employee use of carbon-free and low carbon transportation by providing education programs on the benefits of commute options including public transportation, EV/ ZEV options, and vanpools.	X		1
EC-3	Install ZEV and/or EV infrastructure as directed by the ZEV/EV Feasibility Study to support at least a 15 percent transition of employee-owned vehicles to ZEVs/EVs by 2025.		X	1
EC-4	Continue to offer benefits to employees who use alternative modes of transportation (e.g., public transportation, bikes).	X		1
EC-5	Allow 50 percent of employees located at Metropolitan's headquarters to telecommute or utilize flexible schedules through 2030 to reduce travel time, vehicle miles traveled (VMT), and GHG emissions.	X		1
EC-6	Replace all Metropolitan vanpool vehicles with ZEVs. Start with a pilot study (Measure FL-1) to evaluate the best approach.	X		2
Strategy 7 – Increase Waste Diversion to Achieve Zero Waste				
WA-1	Develop and implement net zero waste policies and programs at all facilities to reduce landfilled waste by 30 percent by 2030 and achieve zero landfilled waste by 2045.	X		1
WA-2	Implement a program to reduce organic waste at Metropolitan's Union Station building. Contract or team with local organizations and waste disposal companies to route organic waste to anaerobic digestion or composting facilities and edible food-to-food recovery centers.	X		1
WA-3	Develop and implement a sustainable procurement policy.	X		1

Measure Number	Measure Description	No Potential for Physical Impacts to the Environment	Potential to Result in Physical Impacts	Implementation Phase[1]
WA-4	Partner with municipal agencies, like the City of Los Angeles, to create programs that will allow Metropolitan to provide its fair share of diversion and help local jurisdictions meet the goals of SB 1383 for organics diversion, including food waste and composting.	X		2
Strategy 8 – Increase Water Conservation and Local Water Supply				
WC-1	Expand programs which educate customers on water conservation initiatives through workshops and speaking engagements.	X		1
WC-2	Continue to implement innovative water use efficiency programs.	X		1
WC-3	Continue Turf Removal Program to install an average of 1,500,000 square feet (sq. ft.) of water efficient landscapes per year through 2030 through the use of a rebate program.	X		1
WC-4	Provide funding for the development and monitoring of local stormwater recharge and use projects to evaluate the water supply benefit of stormwater.	X		1
WC-5	Continue to promote water efficiency technologies and innovative practices that can be adopted into future water conservation program updates.	X		1
WC-6	Implement advanced technology systems to increase Metropolitan- owned recycled and groundwater recovery systems to maintain local water supply (e.g., proposed RRWP).		X	2
Strategy 9 – Investigate and Implement Carbon Capture and Sequestration Opportunities				
CS-1	Study carbon capture protocols in the Sacramento-San Joaquin River Delta.	X		1
CS-2	Conduct a five-year research program to increase Metropolitan's knowledge of regenerative agriculture and carbon sequestration opportunities on Metropolitan properties in the Palo Verde Valley.		X	1
CS-3	Establish baseline soil carbon quantities through science based approaches then develop pilot projects to enhance carbon sequestration and implement larger scale carbon sequestration projects as deemed feasible.		X	2

[1] Phase 1 measures are planned for 2021-2030. Phase 2 measures are planned for 2031-2045

2.5 Description of Covered Projects with Potential for Physical Impacts

As mentioned above, most emission reduction measures are either administrative in nature or involve upgrades to existing infrastructure to improve function, which will reduce emissions (e.g., replacement or refurbishment of pump impellors). Activities with the potential for environmental impacts are analyzed at a program-level in the PEIR. Project-level CEQA analysis will be conducted and future environmental documentation prepared, as necessary, when additional site-specific project information becomes available for each of the proposed projects included in the proposed CAP. Updates to the proposed CAP are scheduled every five years. The CEQA documents for those updates will include the status of projects included in the proposed program, as well as analysis of any new projects that may be added to ensure progress towards meeting the proposed CAP GHG reduction goals. Future CEQA documents for the CAP updates will be prepared and made available for comment, as required. Project description information that is currently known for each of the projects that has potential to have physical impacts on the environmental is discussed below.

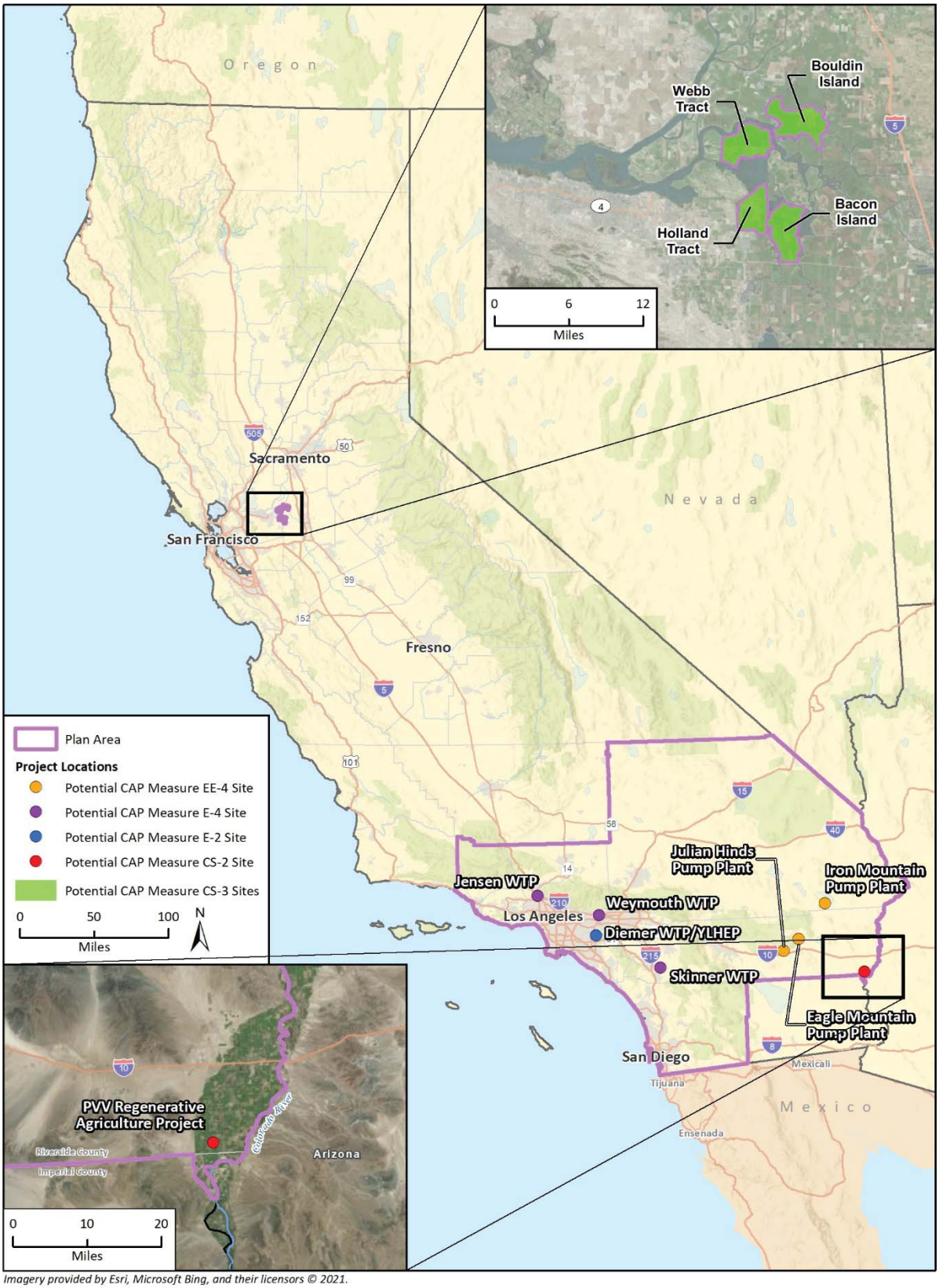
Project Locations

The precise locations of all proposed projects that may be implemented under the CAP are not known at this time. However, it is anticipated that construction of planned projects would occur at Metropolitan facilities or within Metropolitan rights-of-way. Specifically, the following Metropolitan-owned locations have been identified as potential project sites for projects that would be implemented under the CAP:

- **Robert B. Diemer (Diemer) Water Treatment Plant (WTP), Yorba Linda, California.** Proposed site for connection to the Yorba Linda Hydroelectric Power Plant (YLHEP) pursuant to CAP measure E-2.
- **Joseph Jensen (Jensen) WTP, Granada Hills, California.** Proposed site for battery energy storage system (BESS) facility pursuant to CAP measure E-4.
- **Robert A. Skinner (Skinner) WTP, Winchester, California.** Proposed site for BESS facility, pursuant to CAP measure E-4.
- **F.E. Weymouth (Weymouth) WTP, La Verne, California.** Proposed site for BESS facility, pursuant to CAP measure E-4.
- **Eagle Mountain Pump Plant, Unincorporated Riverside County, California.** Proposed site for pump rehabilitation projects pursuant to CAP measure EE-4b, EE-4d.
- **Iron Mountain Pump Plant Unincorporated San Bernardino County, California.** Proposed site for pump rehabilitation projects pursuant to CAP measure EE-4a, EE-4c.
- **Julian Hinds Pump Plant, Unincorporated Riverside County, California.** Proposed site for pump rehabilitation projects pursuant to CAP measure EE-4b, EE-4d.
- **Metropolitan-owned agricultural land at southwest corner of 35th Avenue and Keim Boulevard, unincorporated Riverside County, California.** Proposed site for regenerative agriculture pilot project pursuant to CAP measure CS-2.
- **Webb Tract, Holland Tract, Bouldin Island, and Bacon Island, San Joaquin/Contra Costa Counties, California.** Proposed sites for carbon sequestration and carbon capture projects pursuant to CAP measure CS-3.

Figure 7 shows the locations of these identified potential project sites within the Plan Area.

Figure 7 Potential Project Locations within Plan Area



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Additional data provided by USGS, 2017.

Project Descriptions

For currently planned projects, specific construction details associated with implementation of the emissions reduction measures, such as specific location, disturbance area, and schedule, are not known at this time. Every effort has been made to ensure a thorough impact analysis and, where necessary, impacts from similar projects have been used to conservatively estimate impacts that may change depending on circumstance (e.g., air quality or biological impacts). For example, exact construction equipment for a project may not yet be known, but a conservative estimate based on similar projects can be used. These covered activities form the basis for the environmental impact analysis in this PEIR. While enough project data exists to make reasonable assumptions about the potential level of significance for each project, additional project-level analysis will be completed when specific, project-level information becomes available for each project proposed in the CAP.

The following covered projects are analyzed in the PEIR:

- *DC-2 – Reduce natural gas emissions by 50 percent by 2030 and 100 percent by 2045 through electrification.*

  Metropolitan would replace natural gas and propane consuming equipment at its facilities with electrically powered equivalents at the end of their useful life or in an order that replaces the oldest and most antiquated pieces of equipment first. Some upgrades to existing electrical systems may be required to ensure proper function.

- *FL-4 – Install electric vehicle (EV) charging and/or zero emission vehicle (ZEV) infrastructure at facilities pursuant to the findings of a ZEV/EV Feasibility Study (CAP Measure FL-1).*

  Based on the results of a ZEV/EV study, which would analyze the existing fleet and develop a plan to replace fossil-fuel vehicles with ZEVs/EVs, this measure would install electric vehicle or other zero emissions infrastructure at Metropolitan facilities to ensure a smooth transition to clean fuel fleet vehicles. As the technology becomes available for large trucks and equipment, Metropolitan would transition to the newer technology to meet state requirements and ensure the success of the CAP.

  Installation of EV charging stations would include chargers, grid equipment, software, and communication networks. EV charging stations would be used by Metropolitan's fleet, both passenger vehicles and, as technology allows, larger fleet vehicles. Infrastructure would likely be required at Union Station Headquarters, the five treatment plants, pumping stations, and Metropolitan-owned housing, and other facilities. Minor trenching to install electrical lines or alternate fuel tanks may be required. All construction would be within existing Metropolitan-owned facilities. Though exact locations and timing of installation at each facility would be determined by the ZEV/EV study, construction is expected to begin at some locations before 2025.

- *E-2 – Connect the Yorba Linda Hydroelectric Power Plant (YLHEP) behind Metropolitan's Southern California Edison (SCE) electricity meter to directly utilize carbon-free electricity at Metropolitan's Diemer facility by 2025.*

  The YLHEP currently generates carbon-free electricity and sells the energy produced to the wholesale market through California Independent System Operator (CAISO). The Diemer WTP purchases energy from the retail utility SCE that has a GHG emission factor greater than zero. This measure would reconfigure the YLHEP to serve the Diemer WTP load behind the SCE meter, so that the electricity it generates would become directly available to the Diemer Plant enabling the Diemer Plant to fully meet its energy demands with carbon-free hydropower when the hydroelectric plant is running. Excess energy generated from YLHEP would continue to be sold to the wholesale market (CAISO). Work would occur entirely within the Diemer WTP

boundary (Figure 8). The construction duration is estimated to be 12 to 18 months. The project would include:

- Installation of new 4.16 kilovolt (kV) underground electrical feeder(s) to connect the YLHEP to Diemer switchgear. Excavation would only be required if existing spare underground conduits are not available. This would be determined during the design phase.
- Modification of switchgears (YLHEP and Diemer).
- Installation of new breakers at the existing switchgears, if required.
- Modification/installation of auxiliary equipment.
- Replacement of existing SCE and CAISO meters.

Figure 8 Location of YLHEP work at the Robert B. Diemer WTP in Yorba Linda, California

- *E-4 – Install 3.5 megawatt (MW) battery energy storage systems (BESS) at the Jensen, Skinner, and Weymouth treatment plants. Investigate the use of a software system to track and optimize GHG emissions reduction due to time-of-use strategies by 2025.*

  Energy storage systems store energy produced during peak renewable power generation periods in order to power systems during periods when renewable power is not produced. The BESS is proposed to store energy generated by the solar generation system (Jensen, Skinner, Weymouth WTPs). The battery system will remain behind-the-meter and in a non-exporting state. The BESS size at each location is as follows:

  - 1,000 kW/4,000 kWh BESS at Jensen WTP in Granada Hills, California,
  - 1,000 kW/4,000 kWh BESS at Skinner WTP in Winchester, California, and
  - 1,000 kW/4,000 kWh BESS at Weymouth WTP in La Verne, California.

In August 2020, Metropolitan received a conditional reservation letter for participation in the California Public Utilities Commission's Self-Generation Incentive Program (SGIP). SGIP's conditional reservation letter covers the BESS at Jensen WTP and Skinner WTP under the SGIP's Equity Resiliency budget. The BESS at the Weymouth WTP has been placed on the waitlist. As such, Metropolitan initiated design for the BESS at the Jensen WTP and Skinner WTP. Design for the Weymouth WTP BESS will begin at a later time.

Figure 9 illustrates an example BESS facility similar in size to those proposed. Each site will consist of cast-in-place concrete pads supported on 18 inches of ¾ sized crushed aggregate base rock. Grading and paving will be limited to minor incidental adjustments to the existing grade and pavement, as needed, to accommodate the new equipment slabs. The infrastructure of a BESS contains the following major and ancillary components:

- Battery system as storage medium;
- Power conversion system (inverter);
- Power transformers and switchgear;
- Various power electronics control and monitoring and the related thermal management systems;
- Fire detection and suppression systems;
- System control and monitoring system; and
- Connections with the grid, the solar generation and backup emergency power generator.

Figure 9 Example BESS Facility

Proposed locations were selected based on specific criteria, including proximity to existing infrastructure (e.g., manholes, ductbanks, solar generation equipment), accessibility for maintenance activities and avoidance of design and construction conflicts with existing infrastructure. Three locations were considered at the Jensen WTP (Figure 10). Site 3 has been

identified as the preferred location due to its proximity to existing electrical infrastructure. Two locations were considered at the Skinner WTP (Figure 11). Currently, Site 2 has been identified as the preferred alternative due to its proximity to the Substation Control Unit (SCU) Substation, existing solar facilities, and ease of access. Three locations were considered at the Weymouth WTP (Figure 12). Currently, no location has been identified as the preferred alternative.

Should the Jensen and Skinner projects be approved by the Board, construction could be expected to begin late 2021 with an expected construction duration for each site of approximately eight months. For the purposes of this PEIR, all construction is expected to occur concurrently.

Figure 10 Proposed BESS Locations at the Joseph Jensen WTP, Granada Hills, California

Figure 11 Proposed BESS Locations at the Robert A. Skinner WTP, Winchester, California

Figure 12 Proposed BESS Locations at the F.E. Weymouth WTP, La Verne, California

- *EE-1 – Convert all interior and exterior lighting at 50 percent of Metropolitan facilities to light emitting diode (LED) technologies by 2030 and 100 percent by 2045.*

  Metropolitan's facilities include extensive lighting systems. LED lights use only 20 to 25 percent of the energy of traditional incandescent lights and last 15 to 25 times longer. This measure would ensure that all incandescent lights are replaced at all Metropolitan facilities by 2045. This measure is limited to replacing lights and does not include the addition of new fixtures.

- *EE-4a-d – Implement findings of the CRA pump assessment (CAP Measure EE-2) to either refurbish or replace pumps at Eagle Mountain, Iron Mountain or Hinds pumping plants.*

  Based on the findings of the pump plant assessment, Metropolitan would replace impellers or refurbish pumps at the Iron Mountain, Eagle Mountain, or Hinds Pump Plants. All construction would occur inside the pump house buildings at the identified pump plants. As a Phase II measure, construction would not be expected until 2030 – 2045.

- *EE-5 – If the proposed RRWP is ultimately constructed, install an inter-stage pumping system on the reverse osmosis brine stream to reduce energy use.*

  This measure would ensure that if the proposed RRWP is constructed, an inter-stage pumping system would be installed on the reverse osmosis brine stream to reduce energy use. Construction of this measure would occur during construction of the RRWP, if construction of the facility is approved by the Board.

- *EC-3 – Install ZEV and/or EV infrastructure as directed by the ZEV/EV Feasibility Study (Measure FL-1) to support at least a 15 percent transition of employee-owned vehicles to ZEVs/EVs by 2025.*

  Currently Metropolitan has EV charging for employees at its Union Station Headquarters and the Weymouth and Diemer WTPs. Metropolitan would install or expand electric vehicle charging infrastructure for employee and visitor use at its facilities as recommended in the Feasibility Study from CAP Measure FL-1. The proposed measure would require upgrades to electrical systems, trenching for new duct banks, depending on the locations, and modifications to existing parking lot striping to accommodate EV vehicles parking only.

- *WC-6 – Implement advanced technology systems to increase Metropolitan-owned recycled and groundwater recovery systems to maintain local water supply (e.g., proposed RRWP).*

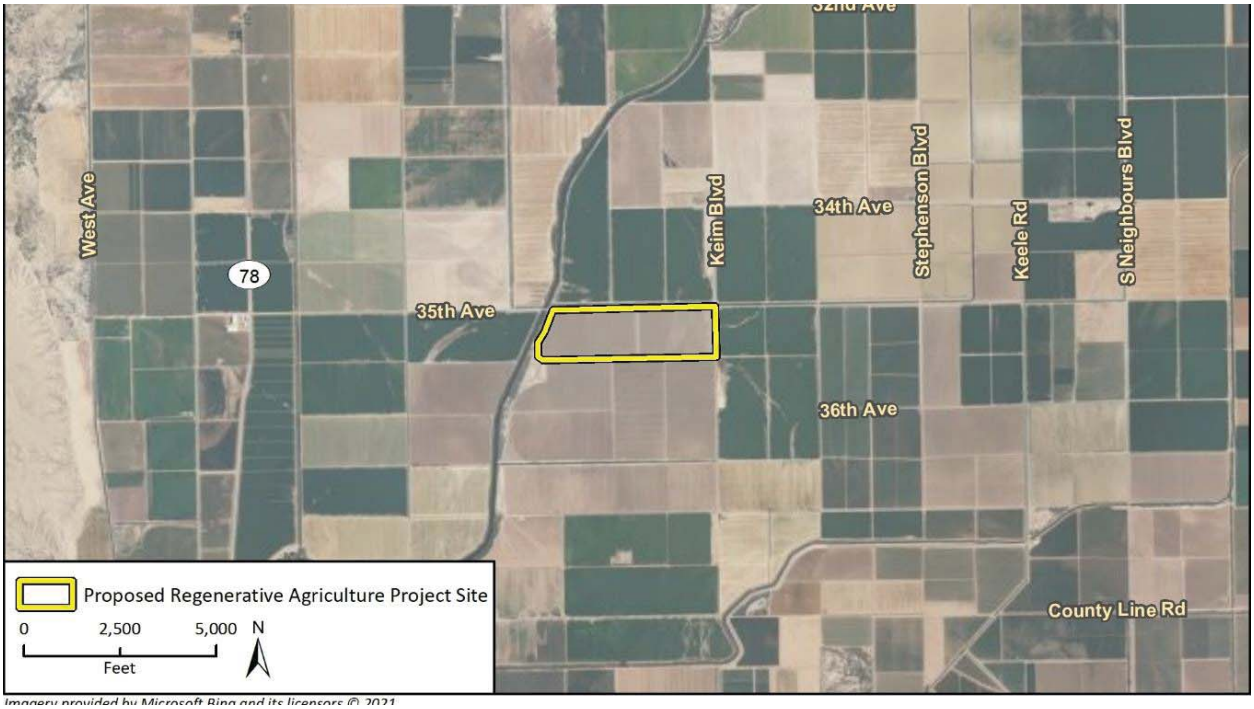
  This proposed measure would treat wastewater to potable water quality and send treated water to groundwater injection wells within the Los Angeles area. The development and operation of this facility would substantially increase the amount of local water available and potentially reduce the amount of imported water, reducing operational GHG emissions. The increased GHG emissions associated with the proposed RRWP have already been included in the GHG emissions forecast and the projected GHG savings are associated with estimates of reduced imported water pumping. Actual GHG emissions savings would depend on changes observed after RRWP implementation. The proposed RRWP is currently being considered by Metropolitan and is not a Board-approved project. The RRWP would undergo its own CEQA analysis. If the project is approved, implementation of the measure would not be expected until 2030-2045.

- *CS-2 – Conduct a five-year research program to increase Metropolitan's knowledge of regenerative agriculture and carbon sequestration opportunities on Metropolitan properties in the Palo Verde Valley.*

  Metropolitan would conduct a five-year research program with the California State University Chico Center for Regenerative Agriculture and Resilient Systems designed to increase Metropolitan's knowledge of regenerative agriculture and carbon sequestration opportunities.

The project would analyze impacts of traditional fallowing practices and investigate the effects of various cover crops and no-till practices. The proposed project would occur on plots of Metropolitan-owned land in the Palo Verde Valley designated for research purposes (Figure 13).

Figure 13 Proposed Regenerative Agriculture Project Site, Riverside County, California



- *CS-3 – Establish baseline soil carbon quantities through science based approaches then develop pilot projects to enhance carbon sequestration and implement larger scale carbon sequestration projects as deemed feasible.*

  This Phase II measure would study carbon sequestration and carbon capture opportunities on Metropolitan-owned properties within the Sacramento-San Joaquin River Delta. Implementation of carbon capture projects would be aligned with CARB's Approved Carbon Capture and Sequestration Protocol if projects are deemed feasible and would comply with existing laws and regulations.

Environmental Requirements for Construction

Metropolitan has established environmental protocols and requirements for contractors and Metropolitan staff engaging in construction, including specialized requirements for desert locations and guidelines for projects in the public right-of-way. Environmental requirements for construction activities are evaluated and implemented for every construction project and operations and maintenance activity. These requirements are intended to ensure best practices are in place during all construction phases and to reduce and/or avoid environmental impacts. In addition, Metropolitan's engineering project specification package also specifies design practices for contractors during construction to reduce or avoid impacts to the environment.

Some of these construction requirements are summarized below:

- Obtain and comply with the applicable local, state, and federal environmental permits.

- Flag and/or fence any environmentally sensitive areas (ESAs) and abide by any conditions and measures implemented to protect ESAs.
- Implement best management practices (BMPs) to protect water quality, such as the use of drip pans below stationary equipment, proper storage and covering of stockpiled debris and soils, and proper cleanup of spills in accordance with environmental regulations.
- Use low sulfur fuels for construction vehicles and equipment, prohibit idling of vehicles and equipment, and comply with the applicable air district's fugitive dust control measures, such as South Coast Air Quality Management District's (SCAQMD) Rules 401 (Visible Emissions), 402 (Nuisance), 403 (Fugitive Dust) and 403.1 (Supplemental Fugitive Dust Control Requirements for Coachella Valley Sources).
- Comply with the Migratory Bird Treaty Act, California Fish Game Code 3503, including conducting pre-construction nesting bird surveys and implementation of avoidance measures, where applicable.
- Comply with applicable local tree ordinances.
- Protect any sensitive cultural and paleontological resources by halting work within 50 feet of an unanticipated discovery for evaluation of the find by a qualified professional, require archaeological and/or paleontological monitoring for sites with high sensitivity, and comply with California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98 in the event that human remains are discovered.
- Properly store hazardous materials pursuant to state and federal regulations.
- Use spark arrestors and ensure availability of fire containment equipment to reduce fire risks.
- Use mufflers on construction vehicles and equipment to reduce noise impacts.
- Prepare and implement an approved Storm Water Pollution Prevention Plan (SWPPP) or Water Pollution Control Plan.
- All workers must attend a site-specific Worker's Environmental Awareness Training before being allowed on site.

Environmental Requirements for Desert Locations

In addition to the general environmental requirements discussed above, construction activities occurring in the desert locations must comply with special environmental requirements to protect sensitive desert habitat. These additional requirements include the following:

- All workers must attend a Desert Tortoise and Environmental Awareness Training before being allowed on site.
- Conduct preconstruction surveys for desert tortoise.
- Contract a qualified biologist to monitor for desert tortoise and other sensitive species, as needed.
- Limit vehicle speeds on all unpaved roadways.
- Check for desert tortoises beneath vehicles and equipment prior to operation.
- Use raven-proof containers for food and trash items to avoid attracting desert tortoise predators.

2.6 Permits and Approvals

Federal, state, and local agencies may rely on information in this PEIR to inform their decision-making regarding issuance of specific permits related to construction or operation of individual projects to be implemented under the proposed program. To the degree feasible, this PEIR identifies federal, state, and local permits and authorizations that may be required prior to construction for future projects envisioned as part of the proposed program, as well as the agencies that Metropolitan will likely need to coordinate with regarding these future program activities. These may include, but are not limited to, the following:

- CARB portable equipment registration and/or regional Air Pollution Control Districts (APCD) permit to operate for construction equipment.
- Encroachment permits, tree trimming/removal permits, and traffic control plans from local jurisdictions.
- California Department of Fish and Wildlife (CDFW) Lake and Streambed Alteration Agreement (Section 1602 Permit) and Regional Water Quality Control Board (RWQCB) Waste Discharge Requirements for impacts to Waters of the State.
- United States Army Corps of Engineers Clean Water Act Section 404 authorization for impacts to Waters of the United States.
- Federal Incidental Take Permit (ITP) from United States Fish and Wildlife Service for federally listed species or state ITP from CDFW for state listed species.
- Conformance with applicable State Water Resources Control Board National Pollutant Discharge Elimination System and/or Municipal Separate Storm Sewer System requirements.
- Review and approval by individual airport(s) and/or the Federal Aviation Administration.
- Regional Flood Control District permits.

3 Environmental Setting

This chapter provides a general overview of the environmental setting for the Plan Area, including a regional setting, sub-regional setting, and a description of major Metropolitan facilities and land holdings. This chapter also outlines the PEIR baseline and approach to both direct and cumulative impact analyses. More detailed descriptions of the environmental setting for each environmental resource area can be found in Chapter 4, *Environmental Impact Analysis*.

3.1 Regional Setting

As described in the Project Description, Section 2.3, *Climate Action Plan Area and Member Agencies*, the Plan Area consists of the following six counties in Southern California: Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura. Portions of northeastern Imperial County within the Palo Verde Valley, as well as four islands in the Sacramento-San Joaquin River Delta area[9], are also included in the Plan Area. The Plan Area includes all of Metropolitan's service area and its member agencies' jurisdictions, as well as all areas where Metropolitan owns land or facilities.

The Plan Area spans approximately 38,213 square miles across six ecoregions, including Southern California Mountains and Valley, Southern California Coast, Sonoran Desert, Mojave Desert, Colorado Desert, and California Central Valley (Great Valley) (United States Department of Agriculture 2007)[10]. The Plan Area contains a population[11] of approximately 22,176,450 across 202 incorporated cities and unincorporated county regions (California Department of Finance [DOF] 2020; United States Census Bureau 2020). The Plan Area includes over 220 miles of Pacific Ocean coastline, ranges in elevation from 234 feet below mean sea level to approximately 11,503 feet above mean sea level, and contains a national park, all or portions of four national forests, and three United States Census Bureau-designated Metropolitan Statistical Areas.

3.1.1 Sub-Regional Descriptions

Los Angeles County

Los Angeles County encompasses 4,058 square miles and is bounded by Ventura and Kern counties to the north, San Bernardino County to the east, Orange County to the south, and the Pacific Ocean to

[9] The Sacramento-San Joaquin River Delta area is made up of a series of branching waterways, which form islands and isolated tracts of land surrounded by rivers, streams, and channels. For simplicity, these features are referred to as islands in this document. The Webb Tract is surrounded by the San Joaquin River, Old River, and Fishermans Cut. Bouldin Island is surrounded by the South Mokelumne River and Little Potato Slough. The Holland Tract is surrounded by Roosevelt Cut, Holland Cut, Old River, Rock Slough, and Sand Mound Slough. Finally, Bacon Island is surrounded by Old River and Middle River.

[10] The portion of the Plan Area in the California Central Valley ecoregion is limited to four Metropolitan-owned islands in the Sacramento-San Joaquin River Delta region.

[11] Population includes 2020 population estimate for Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties, as well as population for the census-designated place of Palo Verde, Imperial County, California. Islands owned by Metropolitan in the Sacramento-San Joaquin River Delta region are largely uninhabited.

the west. Approximately 2,638 square miles of the county are unincorporated, with the remaining area consisting of the 88 incorporated cities within the county's boundaries (County of Los Angeles 2020a). An estimated 10,172,951 people live in Los Angeles County, accounting for approximately 45.9 percent of the population within the Plan Area (DOF 2020). The largest city within Los Angeles County is the city of Los Angeles, which encompasses 503 square miles and is home to 4,010,684 residents (DOF 2020). Other major population centers within the county include Long Beach, with 472,217 residents, Santa Clarita, with 221,932 residents, and Glendale, with 205,331 residents (DOF 2020).

The county contains a wide array of geological features. To the west, the county stretches along 75 miles of the Pacific Coast. In the northeastern portion of the county, large swathes of land are covered by the Angeles National Forest. In addition, the county contains portions of several mountain ranges, including the Santa Monica Mountains along the coast, the San Gabriel Mountains within the Angeles National Forest, the Peninsular Mountain Range in the south of the county, as well as desert areas within the Antelope Valley to the east (County of Los Angeles 2020b). The Los Angeles River is the largest river in the county and traverses 51 miles from Canoga Park to its terminus at the Pacific Ocean in Long Beach (Mountains Recreation and Conservation Authority 2020). Ecoregions present in the county include the Southern California Coast, Mojave Basin and Range, and Southern California Mountains (Griffith et al. 2016). The county is characterized by a Mediterranean climate, with hot, dry summers and mild, wet winters (County of Los Angeles 2015).

Metropolitan member agencies within the county include the Central Basin Municipal Water District, West Basin Municipal Water District, Upper San Gabriel Valley Municipal Water District, Las Virgenes Municipal Water District, Foothill Municipal Water District, Three Valleys Municipal Water District, the City of Beverly Hills, City of Burbank, City of Compton, City of Glendale, City of Long Beach, City of Los Angeles, City of Pasadena, City of Santa Monica, City of San Fernando, City of San Marino, and City of Torrance. Metropolitan facilities in Los Angeles County include the Weymouth WTP, Jensen WTP (Metropolitan's largest treatment plant), Live Oak Reservoir, Palos Verdes Reservoir, and Garvey Reservoir.

Orange County

Orange County covers 791 square miles and is bounded to the north by Los Angeles County, to the east by San Bernardino and Riverside counties, to the south by San Diego County, and to the west by the Pacific Ocean. There are 34 incorporated cities within the county, with 321 square miles of unincorporated territory (County of Orange 2005). The county has a population of 3,194,332, accounting for approximately 14.4 percent of the population within the Plan Area (DOF 2020).

Anaheim is the most populous city within the county, with 357,325 residents. Other major population centers include Santa Ana, with 335,052 residents, Irvine, with 281,707 residents, and Huntington Beach, with 201,281 residents (DOF 2020).

Orange County lies within an alluvial plain that is semi-enclosed by the Santiago Foothills and Santa Ana Mountains to the east, the Puente and Chino Hills to the north, and the San Joaquin Hills to the south. To the west, the county stretches along 40 miles of the Pacific coast. The Santa Ana River is the largest river within the county; it spans nearly 100 miles from the San Bernardino Mountains, enters Orange County between the Santa Ana Mountains and Chino Hills, and flows to the coast near Huntington Beach, where it empties into the Pacific Ocean (California Coastal Conservancy 2020). Climate in the county is influenced by its proximity to the ocean. The county lies within the Southern California Coast ecoregion (Griffith et al. 2016). Orange County has a Mediterranean climate with generally warm temperatures and light winds (County of Orange 2005).

The Municipal Water District of Orange County, City of Anaheim, City of Fullerton, and City of Santa Ana are the Metropolitan member agencies within the county. Metropolitan facilities in Orange County include the Diemer WTP, YLHEP, and Orange County Reservoir.

Riverside County

Riverside County encompasses 7,206 square miles within the eastern portion of Southern California. It is bordered by San Bernardino County to the north, the state of Arizona to the east, San Diego and Imperial counties to the south, and Orange County to the west. There are 28 incorporated cities within Riverside County, with approximately 6,416 square miles of unincorporated county land (County of Riverside 2019; DOF 2020). The county has a population of 2,442,304 which accounts for approximately 11.0 percent of the population within the Plan Area (DOF 2020). The city of Riverside is the most populous city within the county, with 328,155 residents. Other major population centers include Moreno Valley, with 208,838 residents, Corona, with 168,248 residents, and Murrieta, with 115,561 residents (DOF 2020).

The county contains mountainous areas, deserts, forests, rivers, and lakes. Major mountain ranges in the county include the Santa Ana, San Jacinto, and Santa Rosa mountain ranges in the western portion of the county and numerous desert ranges in the eastern portion of the county. The Cleveland National Forest and San Bernardino National Forest span mountainous regions of Riverside County. The southeastern part of the county lies within the Colorado Desert ecoregion, while a portion of north-central Riverside County is within the Mojave Desert ecoregion (County of Riverside 2015).

Portions of Joshua Tree National Park are also located in the eastern portion of the county. Major rivers that pass through the county include the Santa Ana, San Jacinto, and Whitewater rivers, the latter of which empties into the Salton Sea in the southeastern Coachella Valley, one of the largest inland seas in the world. In addition, the Colorado River runs along the eastern border of the county. There are also numerous lakes within the county, several of which are Metropolitan reservoirs that store water as part of the CRA system. Ecoregions present within Riverside County include the Southern California Coast, Mojave Basin and Range, Southern California Mountains, and Sonoran Basin and Range (Griffith et al. 2016). The county contains a variety of microclimates. Desert portions of the county are semi-arid to arid in climate with hot, dry summers and cool to cold winters depending on the elevation. In the western portion of the county, the climate is mild, with hot dry summers and wet winters (County of Riverside 2015).

Metropolitan member agencies within Riverside County include Eastern Municipal Water District and Western Municipal Water District. Metropolitan facilities in Riverside County include portions of the CRA, the Skinner WTP, Mills WTP, Diamond Valley Lake Reservoir, Lake Matthews Reservoir (CRA Western Terminus), Lake Skinner Reservoir, Eagle Mountain Pumping Plant, and Julian Hinds Pumping Plant.[12]

San Bernardino County

San Bernardino is the largest county in the Plan Area at 20,057 square miles (approximately 13 million acres). It is bordered by Inyo County to the north, the states of Nevada and Arizona to the east, Riverside and Orange counties to the south, and Los Angeles and Kern counties to the west. Approximately 78 percent of the land within San Bernardino County is under state or federal ownership; six million acres are controlled by the United States Bureau of Land Management, 1.9 million acres are owned by the United States Department of Defense, and 2.6 million acres are owned by the state. There are 24 incorporated cities within San Bernardino County, which account for 7

[12] The majority of Metropolitan's reservoirs are located within Riverside County.

percent of the land within the county (County of San Bernardino 2007). The county has a population of 2,180,537, accounting for approximately 9.8 percent of the Plan Area's population (DOF 2020).

The city of San Bernardino is the most populous city in the county, with 217,946 residents. Other major population centers include Fontana, with 213,000 residents, Ontario, with 182,871 residents, and Rancho Cucamonga, with 175,522 residents (DOF 2020).

The majority of San Bernardino County is comprised of desert areas, with mountain and valley regions in the southwest corner of the county (County of San Bernardino 2007). The San Bernardino Mountains and the eastern end of the San Gabriel Mountains run through the southwestern portion of the county and include the San Bernardino National Forest. Key riverine and lake resources within the county's mountains include Big Bear Lake, Baldwin Lake, the upper reaches of the Santa Ana River, Deep Creek, and Bear Creek. To the west of the mountains lies the valley region of the county, which is also the most urbanized part of the county. The Mojave Desert and Mojave Desert National Preserve are located in the northeastern portion of the county, while the Colorado Desert and portions of Joshua Tree National Park are located in the southeastern portion of the county. The Colorado River runs along the county's eastern boundary. Ecoregions present within San Bernardino County include Southern California Coast, Mojave Basin and Range, Southern California Mountains, and Sonoran Basin and Range (Griffith et al. 2016). The county contains a variety of microclimates.

Desert portions of the county are arid with hot, dry summers and mild to cold winters. The mountainous regions of the county are characterized by dry summers and wet, snowy winters. The valley regions exhibit a Mediterranean climate with hot, dry summers and cool winters (County of San Bernardino 2019).

The Inland Empire Utilities Agency is Metropolitan's only member agency within San Bernardino County. Metropolitan facilities in San Bernardino County include the Copper Basin Reservoir, Gene Wash Reservoir, Whitsett Intake (starting point of the CRA), Gene Pumping Plant, Iron Mountain Pumping Plant, portions of the CRA, and Etiwanda Reservoir.

San Diego County

San Diego County is the southernmost county in the Plan Area. It covers 4,207 square miles and is bordered by Riverside and Orange counties to the north, Imperial County to the east, the country of Mexico to the south; and the Pacific Ocean to the west. There are 18 incorporated cities within the county, all located within the western portion of San Diego County (County of San Diego 2011a). The county has a population of 3,343,355, accounting for approximately 15.1 percent of the Plan Area's total population (DOF 2020). The most populous city in the county is the city of San Diego, with 1,430,489 residents. Other major population centers include Chula Vista, with 272,202 residents, Oceanside, with 177,335 residents, and Escondido, with 153,008 residents (DOF 2020).

Urban land uses are concentrated in the westernmost portion of the county, while the eastern portions are largely undeveloped with mountains and desert landscapes. To the west, the landscape is characterized by low-lying coastal plains. To the east of the plains the mountains form the Peninsular Ranges. The easternmost portion of the county is characterized by desert, including the Anza-Borrego Desert State Park. Most of the land in the eastern, unincorporated portion of the county includes large areas of federal and state land, regional parks, and agricultural production (San Diego County 2011a). There are several federal and state protected lands within the county, including portions of the Cleveland National Forest, the San Diego National Wildlife Refuge, Tijuana Slough National Wildlife Reserve, Sweetwater Marsh Wildlife Refuge, Cuyamaca Rancho State Park, and Palomar Mountain State Park (County of San Diego 2011b). Major rivers within the county include the San Diego, San Dieguito, Sweetwater, and Otay rivers (Danskin 2010). Ecoregions present within the county include Southern California Coast, Southern California Mountains, and Sonoran Basin and Range (Griffith et al. 2016). The western portion of the county is characterized by a Mediterranean,

semi-arid climate, while the eastern portion of the county is arid and has a desert climate (County of San Diego 2011b).

The San Diego County Water Authority is Metropolitan's only member agency within San Diego County.

Ventura County

Ventura County is a coastal county encompassing 1,843 square miles in the northwestern portion of the Plan Area. The county is bounded by Santa Barbara County to the west, Kern County to the north, Los Angeles County to the east, and the Pacific Ocean to the southwest (County of Ventura 2020).

There are 10 incorporated cities within the county, which account for approximately 10 percent of Ventura County's land area. Approximately 47 percent of the county's land area is comprised of the Los Padres National Forest. Unincorporated county land comprises 43 percent of the county (County of Ventura 2020). The county's population is 842,886, accounting for about 3.8 percent of the Plan Area's total population (DOF 2020). The most populous city within the county is Oxnard, with 206,352 residents. Other major population centers include Thousand Oaks, with 126,484 residents, Simi Valley, with 125,115 residents, and San Buenaventura (Ventura), with 106,276 residents (DOF 2020).

The county includes approximately 42 miles of Pacific Coast to the west-southwest, with coastal marshes and habitat, and mountains and forested areas to the north. The Transverse Ranges, including the Topatopa Mountains, cross the county within the Los Padres National Forest (County of Ventura 2020). There are three major rivers in the county, which run from the mountains to the coast: the Ventura and Santa Clara rivers, and Calleguas Creek (County of Ventura 2020). Protected lands within the county include the Los Padres National Forest, the Santa Monica Mountains National Recreation Area, the Channel Islands National Park, Coldwater Canyon Ecological Reserve, Lake Casitas Recreation Area, and Hopper National Wildlife Refuge. Ecoregions present within the county include Southern California Coast and Southern California Mountains (Griffith et al. 2016). The county's climate is mild, with mean annual precipitation varying from 15 to 35 inches (County of Ventura 2020).

The Calleguas Municipal Water District is Metropolitan's only member agency within the County and there are no major Metropolitan infrastructure facilities in the County.

Imperial County (Palo Verde Valley)

An approximately 18-square mile portion of the Plan Area is located in northeastern Imperial County. This portion of the Plan Area is within the Palo Verde Valley and is bordered by Riverside County to the north, the Colorado River and Arizona to the east, and desert regions of Imperial County to the south and west. The region is characterized by extensive agriculture and sparse population. The unincorporated community of Palo Verde, a census-designated place, is located in northeastern Imperial County within the Plan Area and has a population of approximately 85 (United States Census Bureau 2020). The Palo Verde Mountains are situated immediately west of the Imperial County portion of the Plan Area. The Palo Verde Valley lies within the Sonoran Basin and Range ecoregion and is characterized by an arid, desert climate (Griffith et al. 2016). A network of irrigation canals conveying Colorado River water extends throughout the Palo Verde Valley. There are no Metropolitan member agencies in Imperial County. While there are no major Metropolitan infrastructure facilities in northeastern Imperial County, Metropolitan owns land in the Palo Verde Valley in both Riverside and Imperial counties. Specifically, Metropolitan owns 21,079 acres of irrigated or available-to-irrigate farmland, as well as an additional 1,474 acres of rights of way, roads, and non-irrigated lands, and an additional 6,741 acres in the Palo Verde Valley but outside of the Palo Verde Irrigation District boundary.

San Joaquin and Contra Costa Counties (Delta Islands)

The Plan Area includes four Metropolitan-owned islands in the Sacramento-San Joaquin Delta region. Bacon Island (approximately 5,600 acres) and Bouldin Island (approximately 6,020 acres) are located in San Joaquin County, while Holland Tract (approximately 4,250 acres) and Webb Tract (approximately 5,500 acres) are located in Contra Costa County. These sparsely populated islands and tracts are characterized by extensive agriculture and marshland. The Sacramento and San Joaquin Rivers flow through the Delta region, with tributaries such as the Mokelumne, Old, and Middle Rivers surrounding the islands and tracts described above. An extensive network of canals and levees spans the islands and tracts. Most islands and tracts are relatively flat, and elevations are generally around or just below mean sea level. The Delta Islands are within the Central California Valley ecoregion (Griffith et al. 2016). The region is part of California's Central Valley, with temperatures regularly exceeding 100 degrees Fahrenheit (°F) in the summer, dropping to around 30 °F in the winter, and annual rainfall averaging approximately 14 inches (City of Stockton 2016). There are no Metropolitan member agencies in this portion of the Plan Area. There are no major Metropolitan infrastructure facilities on the islands or tracts, but the region includes numerous pumping stations, reservoirs, and conveyance channels associated with the State Water Project and Central Valley Project.

3.1.2 Approach for Program-Level and Cumulative Analyses

Baseline Conditions

Section 15125 of the *State CEQA Guidelines* states that an EIR "must include a description of the physical environmental conditions in the vicinity of the project." Section 15125 states that this description, or environmental setting, "normally constitute[s] the baseline physical conditions by which a lead agency determines whether an impact is significant." Furthermore, Section 15125(a)(1) of the *State CEQA Guidelines* states that, "Generally, the lead agency should describe the physical environmental conditions as they exist at the time the notice of preparation [NOP] is published."

This PEIR evaluates impacts against existing conditions at the time of the release of the NOP (2020). It was determined that a comparison to current, existing baseline conditions would provide the most relevant information for the public and Metropolitan decision-makers. For certain issue areas (including air quality, greenhouse gas [GHG] emissions/climate change, energy, noise and transportation/circulation), the impact analysis may discuss how changes in baseline conditions resulting from background population growth, urbanization, or increase in traffic volume may occur over time, with or without implementation of the proposed program. However, all impact determinations are based on a comparison to existing baseline conditions. General existing baseline conditions for the Plan Area are described above in Section 3.1.1, *Sub-Regional Descriptions*. Existing baseline conditions specific to each environmental resource area are described at the beginning of each impact analysis section.

Approach for Program-Level Impact Analysis

The programmatic nature of the CAP necessitates a general approach to the evaluation of existing conditions and impacts associated with the proposed program. As a programmatic document, this PEIR presents a regionwide assessment of the impacts of the CAP. The analyzed impacts would potentially result from implementation of the GHG reduction measures proposed in the CAP. The analysis considers both construction-related and post-construction (operational) impacts. Because the CAP is a long-term document intended to guide actions necessary to meet Metropolitan's 2045

emissions reduction target, a high-level, program-level or qualitative evaluation is included, where available When project-specific information is available, project-level analysis would be completed and the appropriate level of project-specific CEQA review would be, as needed. For analytical purposes, the baseline year examined throughout this PEIR is 2020.

Approach for Cumulative Impact Analysis

CEQA defines cumulative impacts as "two or more individual effects which, when considered together, are considerable, or which compound or increase other environmental impacts." Section 15130 of the *State CEQA Guidelines* requires that an EIR evaluate environmental impacts that are individually limited but cumulatively considerable. These impacts can result from the proposed project alone, or together with other projects. The *State CEQA Guidelines* state: "The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present and reasonably foreseeable probable future projects" (*State CEQA Guidelines*, Section 15355). A cumulative impact of concern under CEQA occurs when the net result of combined individual impacts compounds or increases other overall environmental impacts (*State CEQA Guidelines*, Section 15355). In other words, cumulative impacts can result from individually minor but collectively significant projects or programs taking place over a period of time. CEQA does not require an analysis of incremental effects that are not cumulatively considerable nor is there a requirement to discuss impacts which do not result in part from the project or program evaluated in the PEIR.

When evaluating cumulative impacts, CEQA allows the use of either a list of past, present and probable future projects, including projects outside the control of the lead agency, or a summary of projections in an adopted planning document, or a combination of the two approaches. The cumulative analysis used in this PEIR uses a projections-based approach (see *State CEQA Guidelines* Section 15130(b)(1)(A) and Section 15130(b)(1)(B)). Land use and growth projections for the Plan Area are described in Table 6.

Table 6 Population, Household, and Employment Projections for the Plan Area (2020-2045)

County	Area (square miles)[1]	Population		Households		Jobs	
		2020[2]	2045[3]	2020[2]	2045[3]	2020[4]	2045[3]
Los Angeles	4,058	10,172,951	11,677,000	3,590,574	4,125,000	4,589,500	5,383,000
Orange	791	3,194,332	3,535,000	1,111,421	1,154,000	1,664,700	1,980,000
Riverside	7,206	2,442,304	3,252,000	856,124	1,086,000	779,700	1,103,000
San Bernardino	20,057	2,180,537	2,815,000	726,680	875,000	797,700	1,064,000
San Diego	4,207	3,343,355	4,275,000[5]	1,226,879	1,500,000[5]	1,512,700	1,800,000[5]
Ventura	1,843	842,886	947,000	291,210	306,000	334,500	389,000
Other[6]	51	85[7]	85	24[8]	24	–[9]	–
Plan Area Total	**38,213**	**22,176,450**	**26,501,085**	**7,802,912**	**9,046,024**	**9,678,800**	**11,719,000**

[1] California State Association of Counties 2014

[2] California Department of Finance 2020

[3] Southern California Association of Governments 2019

[4] United States Bureau of Labor Statistics 2020. Figures reported as of the end of December 2019.

[5] San Diego Association of Governments 2011

[6] Includes northeastern Imperial County and sparsely populated islands and tracts in the Sacramento-San Joaquin Delta region. These areas are not anticipated to account for a substantial amount of growth in population, households, or jobs in the Plan Area.

[7] Based on United States Census Bureau population estimate for the census-designated community of Palo Verde.

[8] Based on an average household size of 3.56 persons per household in Imperial County (California Department of Finance 2020).

[9] Due to their sparsely populated nature, these portions of the Plan Area are not anticipated to account for a substantial amount of current or future jobs in the Plan Area.

As shown in Table 6, the Plan Area is anticipated to experience an approximately 19.5 percent growth in population, 15.9 percent growth in households, and 21.1 percent growth in jobs by 2045, resulting in increased population, household, and employment density throughout the region. These projections are accounted for in planning documents adopted by regional planning agencies within the Plan Area. These growth projections, in conjunction with the potential impacts of the proposed program, form the basis of the cumulative impact analysis presented in this PEIR. Cumulative impacts are analyzed at the end of the impact analysis section for each environmental resource area.

4 Environmental Impact Analysis

Introduction

This chapter introduces the organization of the environmental resource sections, which contain the various impact analyses, as well as the methodology and terminology used throughout this PEIR. It explains the overall methodology used to analyze impacts, along with the methodology for the cumulative analysis.

Environmental Analysis Scope and Organization

Resource Sections

Sections 4.1 through 4.5 of this chapter contain discussions on the potentially significant impacts of the proposed program. Each of these sections corresponds with a specific environmental resource area. To assist the reader in comparing information about the various environmental issues, each section of this chapter is organized in the following manner.

- **Existing Conditions**. Describes the existing or baseline conditions in each resource study area for the proposed program.
- **Regulatory Framework**. Provides the federal, state, regional, and local regulations for each resource area that apply to the proposed program.
- **Thresholds and Methodology**. Identifies the thresholds for determining whether a significant impact would occur with implementation of the proposed program, based on California Environmental Quality Act (CEQA) guidance and, in some cases, resource-specific guidance. Describes the methods used for the analysis of impacts and any assumptions that were made in the analysis of impacts.
- **Impacts Analysis**. Presents the evaluation of impacts that would result from implementation of the proposed program, and any mitigation measures that would be necessary to reduce these impacts. Includes the analysis of cumulative impacts for each environmental resource area, evaluated by considering the impacts of the proposed program when combined with impacts of other projects and programs within the resource study area, and a discussion on the level of significance after mitigation.

The impact analysis compares the proposed program to the existing conditions, also known as the CEQA baseline.

The analysis contained in this PEIR addresses both construction and post-construction (i.e., operational) impacts associated with implementation of the proposed program. When considering the existing conditions and potential project-level impacts for each resource area, sufficient information about the location and intensity of program activities is not available. To facilitate impact analysis, impacts were estimated by referencing a “typical,” reasonable construction schedule and equipment mix that could be expected to be required for construction of individual projects described in

Chapter 2, *Project Description*. The sample program activity includes parameters based on reasonable, conservative assumptions that are anticipated to encompass most or all individual projects. The analysis is compared to local, regional, and statewide regulations to develop a conservative scenario against which supplemental environmental analysis would be compared to make a significance determination and to determine if feasible mitigation is available to reduce these impacts to less-than-significant levels. However, the lack of project- specific details, such as the location of construction sites and proposed construction methods, limits the ability of this PEIR to determine the severity of impacts of specific project-level activities covered by the proposed program. Supplemental environmental analysis for individual covered projects would be required when project-specific details are known and projects are further defined.

Methodology and Terminology Used in the Analysis

In evaluating the potential impacts of the proposed program, the level of significance is determined by applying the thresholds of significance presented for each resource area. The environmental analyses in Sections 4.1 through 4.5 include a detailed discussion and final impact determination for the proposed program.

To determine significance, the environmental conditions with implementation of the proposed program are compared to a baseline condition. The difference between the environmental conditions with implementation of the proposed program and the baseline is then compared to a threshold to determine if the difference is significant. Section 15125 of the *State CEQA Guidelines* requires that an EIR include a description of the physical environmental conditions in the vicinity of a proposed action that exist at the time the Notice of Preparation is published (the NOP was published for public review from June 23 to July 22, 2020). This environmental setting serves as the baseline by which the lead agency determines whether an impact is significant. The lead agency may also consider a baseline condition that better reflects fluctuations resulting from cyclical trends, such as drought and wet weather. The baseline to which the proposed program is compared is described in each resource section to determine the significance of impacts.

The following terms are used to describe the level of impact in each resource section.

- **No impact.** A designation of no impact is given when no adverse changes to the environment are expected.
- **Less-than-significant impact.** A less-than-significant impact is identified when the proposed program would cause no substantial adverse change to the environment (i.e., the impact would not reach the threshold of significance).
- **Significant impact.** A significant impact is identified when the proposed program would create a substantial adverse change in any of the physical conditions within the affected resource area. Such an impact would exceed the applicable significance threshold established by CEQA but would be reduced to a less-than-significant level with incorporation of one or more mitigation measures.
- **Mitigation.** Mitigation refers to measures that would be implemented to avoid or lessen potentially significant impacts. Mitigation includes:
    - Avoiding the impact altogether by not taking a certain action or parts of an action.
    - Minimizing the impact by limiting the degree or magnitude of the action and its implementation.
    - Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

Mitigation measures would be required as conditions of program approval and would be monitored to ensure compliance and implementation.

- **Significant and unavoidable impact.** A significant and unavoidable impact is identified when an impact that would cause a substantial adverse effect on the environment could not be reduced to a less-than-significant level through implementation of any feasible mitigation measure(s).

In some cases, a significant and unavoidable impact determination is made because project-specific detail is not available to ensure that the proposed mitigation could reduce the impact to a less-than-significant level. In such cases, program-level impacts are considered to be potentially significant and unavoidable. Additional analysis and CEQA documentation would identify whether project-specific mitigation would be required and whether the proposed mitigation would avoid or lessen any potentially significant impacts.

- **Level of Significance After Mitigation.** Level of Significance After Mitigation is the determination of the level of impact after the implementation of mitigation measures. The level of significance after mitigation would be expressed as no impact, less-than-significant impact, less-than-significant impact with mitigation incorporated, or significant and unavoidable impact, as defined above.

Cumulative Analysis Methodology

The *State CEQA Guidelines* define cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (*State CEQA Guidelines* Section 15355). According to *State CEQA Guidelines* Section 15130, an EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable. A cumulative impact analysis must include either: (1) a list of past, present, and reasonably anticipated future projects ("list approach"); or (2) a summary of projections contained in adopted plans designed to evaluate regional or area-wide conditions ("plan approach"). A cumulative impact analysis considers the collective impacts posed by individual plans and projects. Cumulative impacts can result from individually minor, but collectively substantial, impacts taking place within a study area and/or over a period of time.

At the program level, the list approach is not possible because the specific location and timing of individual projects to be implemented under the program is not known, so the potential for the impacts of the proposed program components to combine with other specific projects is also not known. Instead, this document uses a plan approach, looking at ongoing and planned growth patterns in the Plan Area to identify where there would be the potential for program component impacts to combine with the impacts from other projects or programs to result in cumulative impacts. For more detailed discussion of the plan approach to cumulative analysis and growth projections within the Plan Area, refer to Chapter 3, *Environmental Setting*.

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4.1 Air Quality

4.1.1 Introduction

This section describes the existing conditions of the Plan Area for air quality, the regulatory framework associated with air quality, the impacts on air quality that would result from implementation of the proposed program, and the mitigation measures that would reduce these impacts. Impacts related to greenhouse gas emissions are evaluated in Chapter 5, *Effects Found Not to Be Significant*.

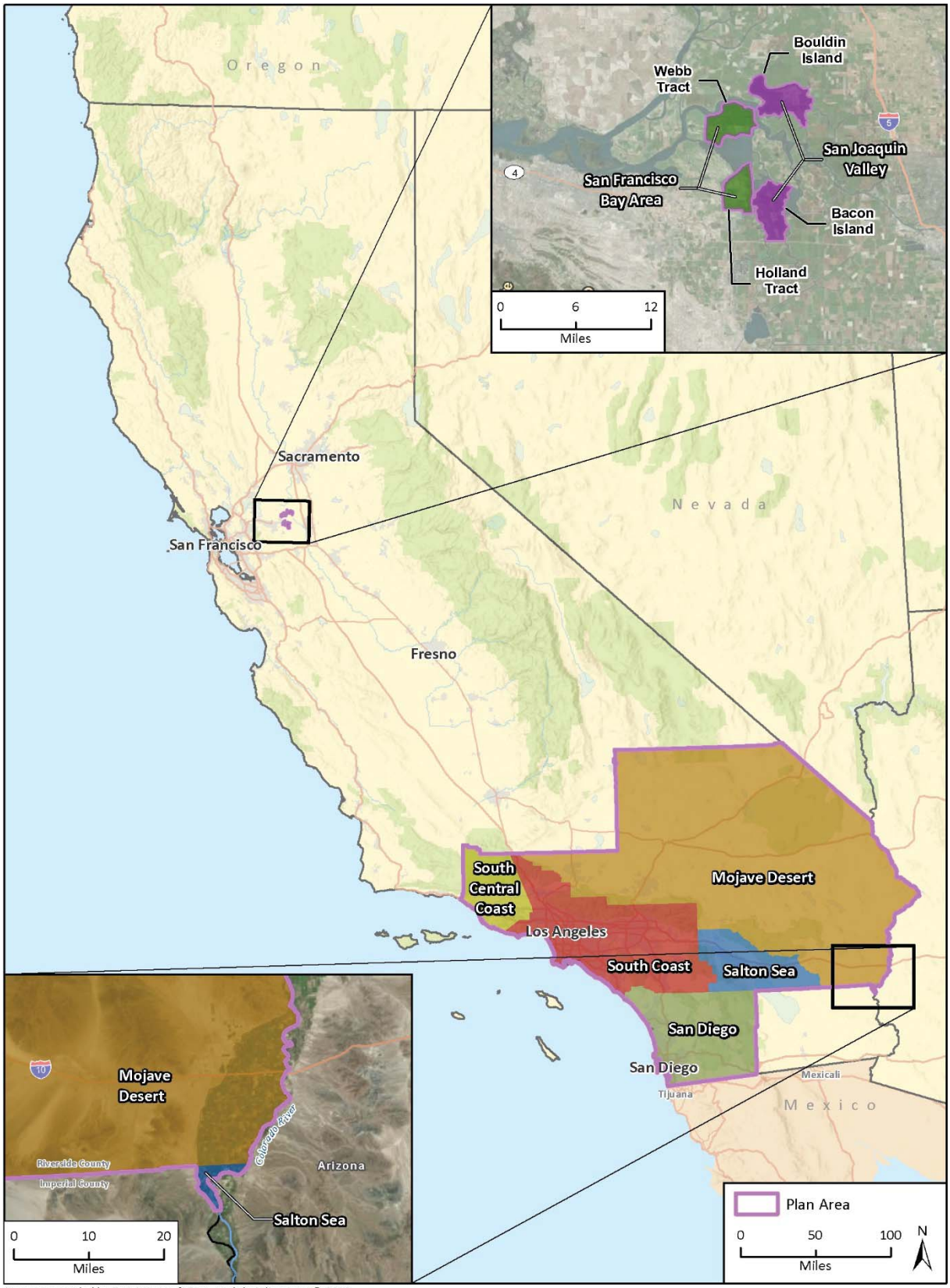
4.1.2 Existing Conditions

California is divided geographically into 15 air basins for managing the air resources of the state on a regional basis. Air basin boundaries were created by the CARB [13] largely by reviewing areas with similar geographical and meteorological characteristics; however, political boundaries are also accounted for in these boundaries. Some air basins are relatively small, while others are quite large (CARB 2014). Areas within each air basin are considered to share the same air masses and, therefore, are expected to have similar ambient air quality. The Plan Area includes five air basins in Southern California (South Coast, Mojave Desert, San Diego, Salton Sea, and South Central Coast) and two in Northern California (San Joaquin Valley and San Francisco Bay Area) that encompass all or portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura, Imperial, San Joaquin, Contra Costa, and Solano counties. Table 7 and Figure 14 detail the air basins and the associated counties within the Plan Area.

Local air quality management control and planning is provided through 35 regional air districts established by CARB for the 15 individual basins. CARB is responsible for control of mobile emission sources, while the local air districts are responsible for control of stationary sources and enforcing regulations. The seven air basins listed above fall within the jurisdictional areas of the eight air districts listed below in Table 7 and shown in Figure 15. They include SCAQMD, Mojave Desert Air Quality Management District (MDAQMD), Imperial County Air Pollution Control District (ICAPCD), Ventura County Air Pollution Control District (VCAPCD), San Joaquin Valley Unified Air Pollution Control District (SJVAPCD), Antelope Valley Air Quality Management District (AVAQMD), San Diego Air Pollution Control District (SDAPCD) and the Bay Area Air Quality Management District (BAAQMD). Combined, the eight air districts have jurisdiction over an area of approximately 38,275 square miles, which encompasses 26 counties. All the known locations of proposed CAP projects are within the jurisdictional boundaries of the eight regional air districts listed in Table 7.

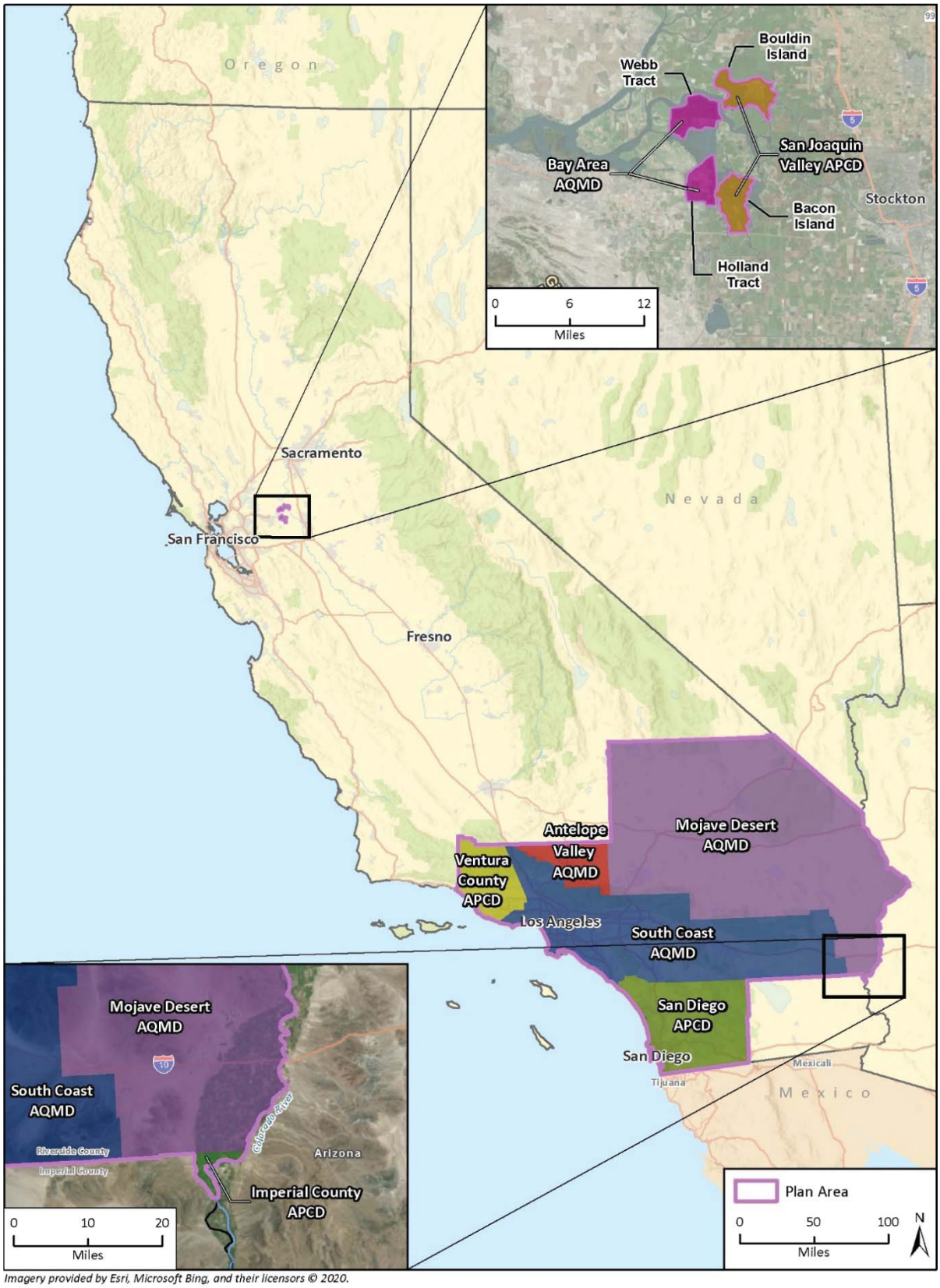
[13] CARB is the state agency designated to administer air quality regulations

Figure 14 Air Basins in the Plan Area



Imagery provided by Esri, Microsoft Bing, and their licensors © 2020.
Additional data provided by USGS, 2017 and CA Air Resources Board, 2019.

Figure 15 Air Districts in the Plan Area



Imagery provided by Esri, Microsoft Bing, and their licensors © 2020.
Additional data provided by USGS, 2017 and CA Air Resources Board, 2019.

Table 7 Air Basins and Associated Counties and Air Districts in the Plan Area

Air Basin	Counties	Air District(s)
South Coast Air Basin	Los Angeles Orange Riverside San Bernardino	South Coast Air Quality Management District
Mojave Desert Air Basin	Los Angeles San Bernardino Riverside	Mojave Desert Air Quality Management District Antelope Valley Air Quality Management District South Coast Air Quality Management District
San Diego Air Basin	San Diego	San Diego Air Pollution Control District
Salton Sea Air Basin	Imperial Riverside	Imperial County Air Pollution Control District South Coast Air Quality Management District
South Central Coast Air Basin	Ventura	Ventura County Air Pollution Control District
San Joaquin Valley Air Basin	San Joaquin	San Joaquin Valley Unified Air Pollution Control District
San Francisco Bay Area Air Basin	Contra Costa	Bay Area Air Quality Management District

4.1.2.1 Criteria Pollutants

The following discussion provides an introduction to air pollutants that are emitted into the ambient air by various stationary and mobile sources and are regulated by federal and state law. These regulated air pollutants are known as criteria air pollutants and are categorized either as primary pollutants or secondary pollutants. Primary air pollutants are those pollutants that are emitted directly from the various stationary and mobile sources, including carbon monoxide, volatile organic compounds (VOCs), nitrogen oxides, sulfur dioxide, and most fine particulate matter (particulate matter 10 microns or less in diameter [PM_{10}], particulate matter 2.5 microns or less in diameter [$PM_{2.5}$] such as lead and fugitive dust). Of these, carbon monoxide, sulfur dioxide, PM_{10}, and $PM_{2.5}$ are criteria pollutants. VOCs and nitrogen oxides are precursors that form secondary criteria pollutants, such as ozone and nitrogen dioxide, through chemical and photochemical reactions in the atmosphere. Presented below is a description of each of the primary and secondary criteria air pollutants and their known health effects.

Ozone

Ozone, a colorless toxic gas, is found in two regions of the Earth's atmosphere: at ground level and in the upper regions of the atmosphere. Ozone is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides and VOCs. Nitrogen oxides are formed during the combustion of fuels, while VOCs are formed during incomplete combustion of fuels as well as evaporation of organic solvents. Both types of ozone have the same chemical composition (O_3). Although upper atmospheric ozone protects the Earth from the sun's harmful rays, ground-level ozone is the main component of smog (U.S. EPA 2018). It enters the bloodstream and interferes with the transfer of oxygen, depriving sensitive tissues in the heart and brain of oxygen. It also damages vegetation by inhibiting growth. Although ozone is not directly emitted, it forms in the atmosphere through a photochemical reaction between VOCs and nitrogen oxides in the presence of sunlight (i.e., smog). The damaging effects of photochemical smog are generally related to the concentration of ozone, which is present in relatively high concentrations in the Plan Area's seven air basins. Meteorology and terrain play major roles in ozone formation. Ideal smog conditions typically occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies; however, smog conditions can also occur during the winter months in high-elevation areas in

the western United States when snow is on the ground and temperatures are near or below freezing if high levels of local VOC and nitrogen oxide emissions are present (U.S. EPA 2016).

Organic Gases – Precursors to Ozone

There are several subsets of organic gases, including reactive organic gases and VOCs. Hydrocarbons are organic gases that are formed solely of hydrogen and carbon. Reactive organic gases include all hydrocarbons except those exempted by CARB. Therefore, reactive organic gases are a set of organic gases based on state rules and regulations. VOCs are similar to reactive organic gases in that they include all organic gases except those exempted by federal law. Both VOCs and reactive organic gases are emitted from incomplete combustion of hydrocarbons or other carbon-based fuels. Combustion engine exhaust, oil refineries, and oil-fueled power plants are the primary sources of hydrocarbons. Another source of hydrocarbons is evaporation from petroleum fuels, solvents, dry-cleaning solutions, and paint. In general, reactive organic gases and VOCs are used interchangeably to refer to the hydrocarbons that are a precursor to ozone formation. However, to avoid confusion, the following analysis only uses the term VOCs to denote organic gases.

The primary health effects of hydrocarbons result from the formation of ozone and its related health effects. High levels of hydrocarbons in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of VOCs are considered to be toxic air contaminants (TACs) (described later in this section).

Carbon Monoxide

Carbon monoxide is a colorless, odorless gas that can interfere with the transfer of oxygen to the brain. It can cause dizziness and fatigue and impair central nervous system functions. Carbon monoxide is emitted almost exclusively from incomplete combustion of fossil fuels. In urban areas, carbon monoxide is emitted by motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. Automobile exhaust is the largest carbon monoxide contributor in urban areas. Carbon monoxide is a non-reactive air pollutant that dissipates relatively quickly; therefore, ambient carbon monoxide concentrations generally follow the spatial and temporal distributions of vehicular traffic. Carbon monoxide concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. Carbon monoxide from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February.

Nitrogen Dioxide

Nitrogen dioxide is a brownish gas that irritates the lungs. It can cause breathing difficulties at high concentrations. Similar to ozone, nitrogen dioxide is not directly emitted but is formed through a reaction between nitric oxide and atmospheric oxygen. Nitric oxide and nitrogen dioxide are collectively referred to as nitrogen oxides and are major contributors to ozone formation. Nitrogen dioxide also contributes to the formation of PM_{10} (see discussion of PM_{10} later in this section). At atmospheric concentrations, nitrogen dioxide is only potentially irritating. At high concentrations, the result is a brownish-red cast to the atmosphere and reduced visibility. There is some indication of a relationship between nitrogen dioxide and chronic pulmonary fibrosis. Some increase in bronchitis in children (2 to 3 years old) has also been observed at concentrations below 0.3 part per million (ppm) (SCAQMD 1993).

Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles floating in the air, including smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted

from industries and motor vehicles undergo chemical reactions in the atmosphere. PM_{10} and $PM_{2.5}$ represent fractions of particulate matter. PM_{10} refers to particulate matter 10 microns or less in diameter, about 1/7th the thickness of a human hair. $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter, roughly 1/28th the diameter of a human hair. Major sources of PM_{10} include motor vehicles; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. $PM_{2.5}$ results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, PM_{10} and $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur dioxide, nitrogen oxides, and VOCs.

Both PM_{10} and $PM_{2.5}$ pose a greater health risk than larger size particles because when inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM_{10} and $PM_{2.5}$ can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances, such as lead, sulfates, and nitrates, can cause lung damage directly. These substances can be absorbed into the bloodstream and cause damage elsewhere in the body; they can also transport adsorbed contaminants such as chlorides or ammonium into the lungs and cause injury. Particles measuring 2.5 to 10 microns in diameter tend to collect in the upper portion of the respiratory system, and $PM_{2.5}$ are so tiny that they can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle and contribute to haze and reduce regional visibility (SCAQMD 1993).

Sulfur Dioxide

Sulfur dioxide is a product of high-sulfur fuel combustion. The main source of sulfur dioxide is combustion of coal and oil used in power stations, industries, and domestic heating. Industrial chemical manufacturing is another source of sulfur dioxide. Sulfur dioxide is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. Sulfur dioxide can also cause plant leaves to turn yellow and erode iron and steel. In recent years, sulfur dioxide concentrations have been reduced by the increasingly stringent controls placed on stationary-source emissions of sulfur dioxide and limits on the sulfur content of fuels.

Lead

Lead is a metal found naturally in the environment, as well as in manufacturing products. Lead occurs in the atmosphere as particulate matter. Leaded gasoline has been regulated by the U.S. EPA since the early 1970s, which has resulted in dramatic reductions of lead found in the environment. As a result of those reductions, metal processing currently is the primary source of lead emissions. The highest level of lead in the air is generally found near lead smelters. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturers. Lead may cause a range of health effects, including anemia, kidney disease, and, in severe cases, neuromuscular and neurological dysfunction.

Toxic Air Contaminants

With respect to criteria pollutants, federal and/or state ambient air quality standards represent the exposure level (with an adequate margin of safety) deemed safe for humans. No ambient air quality standards exist for TACs because no exposure level has been deemed safe for humans. Pollutants are identified as TACs because of their potential to increase the risk of developing cancer or their acute or chronic health risks. For TACs that are known or suspected carcinogens, CARB has consistently found that there are no levels or thresholds below which exposure is risk-free. Individual TACs vary

greatly in the risk they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. For certain TACs, a unit risk factor can be developed to evaluate cancer risk. For acute and chronic health risks, a similar factor, called a Hazard Index, is used to evaluate risk. In the early 1980s, CARB established a statewide comprehensive air toxics program to reduce exposure to air toxics.

To date, CARB has identified 21 TACs and adopted the U.S. EPA's list of hazardous air pollutants as TACs. In August 1998, CARB identified diesel exhaust particulate matter (DPM) emissions as a TAC. According to CARB, diesel engine emissions are believed to be responsible for about 70 percent of California's estimated known cancer risk attributable to toxic air contaminants and comprise about eight percent of outdoor $PM_{2.5}$ (CARB 2020). DPM accounts for a greater fraction of overall cancer risk in some regions, such as in the SCAB where 80 percent of overall cancer risk from TACs is attributed to DPM (SCAQMD 2015). In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan is to reduce DPM emissions and the associated health risk by 75 percent by 2010 and by 85 percent by 2020 (CARB 2000). CARB estimates that DPM emissions in 2035 will be less than half of those in 2010 (CARB 2020).

4.1.2.2 Climate and Meteorological Conditions

The following subsections detail the location, climate, and metrological influences of each air basin in the Plan Area. Air quality in each basin is primarily influenced by its unique meteorology, its interactions with neighboring air basins, and a wide range of emissions sources, such as dense population centers, substantial vehicular traffic, and industry. All seven air basins are also influenced by the semi-permanent Pacific High subtropical pressure system off the coast. This pressure system consists of warm air from the low latitudes (i.e., the tropics) that is circulated to the North Pacific via atmospheric currents. As this air descends along the coast, the air warms and dries, which typically results in sunny and dry weather (National Oceanic and Atmospheric Administration 2020). The specific influences of the Pacific High subtropical pressure system in each air basin are discussed below. In addition, several air basins are influenced by regional "Santa Ana" conditions in which the prevailing westerly wind pattern is sometimes interrupted. Santa Ana conditions occur when a strong high pressure develops over the Nevada–Utah area and overcomes the prevailing westerly coastal winds, sending strong, steady, hot, dry northeasterly winds over the mountains and out to sea. The high pressure and strong Santa Ana winds tend to blow pollutants out over the ocean, thus producing clear days. However, at the onset or during breakdown of Santa Ana conditions, or if the Santa Ana is weak, dispersion of pollutants can be impeded. The specific influences of the Sana Ana conditions in some air basins are discussed below.

South Coast Air Basin

The South Coast Air Basin (SCAB) consists of all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties, in addition to the San Gorgonio Pass area in Riverside County. The SCAB is bordered by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east.

The regional climate in the SCAB is semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity (SCAQMD 1993 and 2016). Most of the annual rainfall in the SCAB occurs between November and April with annual precipitation ranging from 12 to 15 inches along the coast and decreasing to less than 10 inches inland (CARB 2011). Summer rainfall is minimal and is generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the SCAB and along the coastal side of the mountains. Average temperatures vary widely throughout the SCAB

from lows in the mid-50 degrees Fahrenheit (°F) and highs in the mid-70°F along the coast to average summertime highs in the mid- to high-90°F in the inland regions. The mountainous regions of the SCAB experience temperatures below freezing in the winter and precipitation in the form of snow (CARB 2011).

The SCAB experiences a persistent temperature inversion (warmer air on top of cooler air) as a result of the Pacific High subtropical pressure system. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed in mid- to late afternoons on hot summer days. Winter inversions frequently break by midmorning. The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino counties. In the winter, the greatest pollution problem is the accumulation of carbon monoxide and nitrogen oxides due to low inversions and air stagnation during the night and early morning hours. Longer daylight hours and brighter sunshine in the summer result in greater frequency of reactions between sunlight, hydrocarbons, and nitrogen oxides, which forms photochemical smog (SCAQMD 2017).

Mojave Desert Air Basin

The Mojave Desert Air Basin (MDAB) consists of the desert portions of Los Angeles, San Bernardino, Riverside, and Kern counties and is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. The MDAB is separated from the southern California coastal and central California valley regions by the Tehachapi Mountains to the west and by the San Gabriel Mountains to the south. The mountains in the lower region generally reach heights of 1,000 to 4,000 feet above the valley floor.

The MDAB averages three to seven inches of rain annually. Thus, it is classified as a dry-hot desert climate where temperatures can be in excess of 95°F for 60 to 70 days per year with almost no precipitation. Prevailing winds in the MDAB come from the west and southwest and are produced by a combination of the proximity of the MDAB to coastal and central regions and the location of the Sierra Nevada Mountains to the north, which prevent air from passing through. During summer, the MDAB is normally influenced by the Pacific High subtropical pressure cell off the coast that prevents cloud formation and encourages daytime solar heating. Cold air masses moving south from Canada and Alaska do not generally influence the MDAB because the frontal systems are weak and diffuse before they reach the desert. Therefore, desert moisture is created through warm, moist, unstable air masses from the south (Eastern Kern Air Pollution Control District 2017).

San Diego Air Basin

The San Diego Air Basin (SDAB) consists of San Diego County and is bordered by the Pacific Ocean to the west, Orange and Riverside Counties to the north, Imperial County to the east, and the United States/Mexico border to the south. Temperature and precipitation can vary widely within the SDAB, where average annual precipitation ranges from approximately 10 inches in the coastal and inland areas to over 30 inches in the mountains. In general, milder annual temperatures are experienced in the maritime and coastal areas, whereas the interior and desert areas experience warmer summers and cooler winters. Regional wind patterns are dominated by onshore sea breezes during the day, and winds generally slow or reverse direction toward the sea at night.

High air pollution levels in the coastal portion of the SDAB can often occur when polluted air from the SCAB, particularly from the Los Angeles region, travels southwest over the Pacific Ocean at night and travels onshore into the SDAB via the sea breeze during the day (SDAPCD 2015). Ozone and its precursor emissions (VOCs and nitrogen oxides) are also transported to the SDAB during relatively mild Santa Ana weather conditions. During strong Santa Ana weather conditions, air pollutants are pushed away from the SDAB farther west to the Pacific Ocean.

Salton Sea Air Basin

The Salton Sea Air Basin (SSAB) consists of Imperial County and most of the low desert areas of central Riverside County and is bordered by the San Jacinto Mountains to the west, the Little San Bernardino Mountains and the Mojave Desert to the north and east, the Arizona border to the east, and the United States/Mexico border to the south. The SSAB is located in the Colorado Desert; although there are some mountainous regions, most of the SSAB lies below 1,000 feet above mean sea level.

Annual precipitation in the SSAB ranges from three to seven inches. Daytime temperatures in the winter average 70°F, and high temperatures in the summer frequently exceed 100°F (CARB 2011). The dominant meteorological feature affecting the SSAB is the Pacific High subtropical pressure system, which produces prevailing westerly to northwesterly winds. These winds tend to blow pollutants away from coastal regions of the SCAB, including Los Angeles, Orange, San Bernardino, and Riverside counties, and through the San Gorgonio Pass to the SSAB. As a result, air quality in the SSAB is affected by both local air emissions and air emissions from the coastal regions. Similar to the SDAB, the prevailing westerly wind pattern is sometimes interrupted by regional Santa Ana wind conditions.

The SSAB is susceptible to air inversions which trap a layer of stagnant air near the ground where it can be further loaded with pollutants. Due to local climactic conditions, inversions generally occur 6,000 to 8,000 feet above the desert ground surface. These occasional inversions create conditions of haziness caused by moisture, suspended dust, and a variety of chemical aerosols emitted by trucks and automobiles, furnaces and other sources. Increasing air emissions from nearby air basins, particularly the SCAB, have also led to poorer air quality in the SSAB.

South Central Coast Air Basin

The South Central Coast Air Basin (SCCAB) consists of San Luis Obispo, Santa Barbara, and Ventura counties and is bordered by the San Gabriel Mountains to the south, the Pacific Ocean to the west, Monterey County to the north, and the San Joaquin Valley to the east.

The climate of the SCCAB is strongly influenced by its proximity to the Pacific Ocean and the location of the Pacific High subtropical pressure system. The Mediterranean climate of the SCCAB produces moderate average temperatures along the coast with average minimums in the 40s °F and 50s °F and average maximums in the 60s °F and 70s °F. Average precipitation along the coast is between 15 and 25 inches per year. The inland regions of the SCCAB experience similar average minimum temperatures; however, average maximum temperatures are often in the high 70s and can exceed 100°F on some days. Precipitation in the inland regions is typically less than 15 inches per year (CARB 2011). The SCCAB is also subject to seasonal Santa Ana winds, which are particularly strong in the mountain passes and at the mouths of canyons.

Two types of temperature inversions are created in the SCCAB: subsidence and radiational. The subsidence inversion is a regional effect created by the Pacific High subtropical pressure system in which air is heated when it flows from high-pressure areas to the low-pressure areas inland and is compressed. This type of inversion generally forms at about 1,000 to 2,000 feet above mean sea level and can occur throughout the year, but it is most evident during the summer months. Radiational, or

surface, inversions are formed by the more rapid cooling of air near the ground at night, especially during winter. This type of inversion is typically lower and is generally accompanied by stable air. Both types of inversions limit the dispersal of air pollutants within the regional airshed because more stable air conditions (i.e., low wind speeds and uniform temperatures) result in lower rates of pollutant dispersion.

San Joaquin Valley Air Basin

The San Joaquin Valley Air Basin (SJVAB) consists of all of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare counties as well as a portion of Kern County. The SJVAB is bordered by the Sierra Nevada Mountain Range to the east, the Coastal Ranges to the west, the Transverse Mountains to the south, and the Sacramento Valley to the north.

The SJVAB is generally considered to have a Mediterranean climate, characterized by cool, wet winters, sparse rainfall, and hot, dry summers. Average temperatures increase from north to south with summertime maximum temperatures often exceeding 100°F through the valley while average annual precipitation decreases from an average of 14 inches in Stockton to six inches in Bakersfield (CARB 2011). With an average of over 260 sunny days per year, the SJVAB provides favorable conditions for ozone formation. While precipitation and fog during the winter block sunlight and reduce ozone concentrations, wintertime fog provides favorable conditions for the formation of particulate matter (SJVAPCD 2015).

The surrounding topographic features restrict air movement through and out of the SJVAB and, as a result, the SJVAB is highly susceptible to pollutant accumulation over time. Inversion layers are formed in the SJVAB throughout the summer and winter. During the summer, the San Joaquin Valley experiences daytime temperature inversions at elevations from 2,000 to 2,500 feet above the valley floor. During the winter months, inversions occur from 500 to 1,000 feet above mean sea level (SJVAPCD 2015). According to the U.S. EPA, the San Joaquin Valley has some of the nation’s worst air quality. Poor air quality in the SJVAB is the result of several major air pollution sources including heavy truck traffic on Interstate 5 and State Route 99; diesel-burning locomotives, tractors and irrigation pumps; and wood-burning stoves and fireplaces, as well as the surrounding mountain ranges, which trap air pollution in the valley (U.S. EPA 2019).

San Francisco Bay Area Air Basin

The San Francisco Bay Area Air Basin (SFBAAB) is comprised of all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern portion of Sonoma County, and the southwestern portion of Solano County. The SFBAAB is characterized by coastal mountain ranges, inland valleys, and bays, and the topography distorts normal wind flow patterns. The coastal mountain range splits, resulting in a western coast gap (the Golden Gate) and an eastern coast gap (Carquinez Strait). These gaps allow air to flow in and out of the SFBAAB and the Central Valley. The greatest distortion occurs when low-level inversions are present and the air beneath the inversion flows independently of air above the inversion, a condition that is common in the summertime.

The SFBAAB is characterized by moderately wet winters and dry summers. Winter rains account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the SFBAAB to another even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys.

The climate of the SFBAAB is dominated by the strength and location of the North Pacific High, a subtropical pressure system. During the summer, the North Pacific High is centered over the northeastern Pacific Ocean resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below to the surface because of the northwesterly

flow produces a band of cold water off the coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold water band resulting in condensation and the presence of fog and stratus clouds. In the winter, the Pacific High cell weakens and shifts southward resulting in offshore wind flow, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential. The normal northwest wind pattern carries air onshore. Bay breezes push cool air onshore during the daytime and draw air from the land offshore at night. Winds are predominantly out of the northwest during the summer months (BAAQMD 2017a).

Regional and Localized Air Quality

Existing ambient air quality conditions in the Plan Area are a function of the number and type of pollutant sources located in each air basin, such as motor vehicles, industrial sources, and agricultural activities. Table 8 presents ambient air quality data for each of the seven air basins.

Sensitive Receptors

Certain population groups are considered more sensitive to air pollution than others, particularly children, the elderly, and acutely ill and chronically ill persons, especially those with cardio-respiratory diseases. Sensitive receptors include residences, schools and schoolyards, parks and playgrounds, day care centers, nursing homes, and hospitals (CARB 2005). Sensitive receptors are located throughout the Plan Area, however proposed projects would occur either within Metropolitan facilities, on Metropolitan-owned islands in the Sacramento-San Joaquin Delta or on agricultural lands in the Palo Verde Valley and The following list provides a summary of the nearest sensitive receptors to the known potential locations of proposed projects under the CAP that are described in Chapter 2, *Project Description*:

- YLHEP/Diemer WTP: residences located approximately 500 feet west and 1,000 feet southeast of the facility.
- Jensen WTP: residences located immediately to the west and south and the Van Gogh Charter School located approximately 1,000 feet southwest of the facility.
- Mills WTP: residences located immediately north and west and approximately 200 feet to the south of the facility.
- Skinner WTP: residences located approximately 600 feet west of the facility.
- Weymouth WTP: residences located immediately to the south, west, north, and east; Grace Miller Elementary School located immediately to the east; Calvary Baptist Schools located immediately to the west; and Joan Macy School located 800 feet south of the facility.
- Julian Hinds Pump Plant: Metropolitan residences located immediately west of the facility.
- Eagle Mountain Pump Plant: Metropolitan residences located immediately northeast of the facility.
- Iron Mountain Pump Plant: Metropolitan residences located immediately southwest of the facility.
- Gene Pump Plant: Metropolitan residences located immediately to the northwest and south of the facility.

Table 8 Ambient Air Quality for the Air Basins in the Plan Area in 2019[1]

Pollutant	SCAB	MDAB	SDAB	SSAB	SCCAB	SJVAB	SFBAAB
Ozone (ppm), Worst Hour[2]	0.137	0.119	0.110	0.106	0.091	0.110	0.106
Number of days of state exceedances (>0.09 ppm)	82	21	2	10	0	0	6
Ozone (ppm), 8-Hour Average	0.117	0.090	0.084	0.089	0.078	0.093	0.085
Number of days of state and federal exceedances (>0.07 ppm)	109	72	16	59	10	96	9
NO_2 (ppm), Worst Hour	0.0977	0.0598	0.0860	0.0962	0.0450	0.0887	0.0651
Number of days of state exceedances (>0.18 ppm)	0	0	0	0	0	0	0
Number of days of federal exceedances (>0.10 ppm)	0	0	0	0	0	0	0
PM_{10} (µg/m^3), Worst 24 Hours	283.5	248.7	199.0	324.4	187.8	652.2	75.4
Number of days of state exceedances (>50 µg/m^3)	110	15	8	108	55	118	4
Number of days of federal exceedances (>150 µg/m^3)	2	2	1	2	2	1	0
$PM_{2.5}$ (µg/m^3), Worst 24 Hours[2]	81.3	34.1	23.8	53.1	26.3	83.7	35.9
Number of days of federal exceedances (>35 µg/m^3)	12	0	0	1	0	29	1
Hydrogen Sulfide (ppm), Worst Hour[2]	N/A	0.078	N/A	N/A	0.017	N/A	0.034
Number of days of state exceedances (>0.03 ppm)	N/A	58	N/A	N/A	0	N/A	1

SCAB = South Coast Air Basin; MDAB = Mojave Desert Air Basin; SDAB = San Diego Air Basin; SSAB = Salton Sea Air Basin; SCCAB = South Central Coast Air Basin; SJVAB = San Joaquin Valley Air Basin; SFBAAB = San Francisco Bay Area Air Basin; ppm = parts per million; mg/m^3 = micrograms per cubic meter

[1] 2019 is the most recent year for which summary data is available from CARB.

[2] Worst-hour ozone and hydrogen sulfide do not have federal standards, while worst 24-hour $PM_{2.5}$ does not have a state standard; only applicable exceedances are provided for these pollutants.

Source: California Air Resources Board 2019

4.1.3 Regulatory Framework

This section describes the plans, policies, and regulations related to air quality that are applicable to the proposed program.

4.1.3.1 Federal

Federal Clean Air Act

The federal Clean Air Act regulates the emission of airborne pollutants from various mobile and stationary sources. The U.S. EPA is the federal agency designated to administer air quality regulation and has established national ambient air quality standards (NAAQS) for major pollutants at thresholds intended to protect public health. Federal standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, PM_{10}, and $PM_{2.5}$. Table 9 summarizes the NAAQS for each of these pollutants, and Table 10 shows each air basin's attainment status for the NAAQS.

Table 9 Current Federal and State Ambient Air Quality Standards

Pollutant	Federal Standard	California Standard
Ozone	0.070 ppm (8-hr avg)	0.09 ppm (1-hr avg) 0.070 ppm (8-hr avg)
Carbon Monoxide	35.0 ppm (1-hr avg) 9.0 ppm (8-hr avg)	20.0 ppm (1-hr avg) 9.0 ppm (8-hr avg)
Nitrogen Dioxide	0.100 ppm (1-hr avg) 0.053 ppm (annual avg)	0.18 ppm (1-hr avg) 0.030 ppm (annual avg)
Sulfur Dioxide	0.075 ppm (1-hr avg) 0.5 ppm (3-hr avg) 0.14 ppm (24-hr avg) 0.030 ppm (annual avg)	0.25 ppm (1-hr avg) 0.04 ppm (24-hr avg)
Lead	0.15 μg/m^3 (rolling 3-month avg) 1.5 μg/m^3 (calendar quarter)	1.5 μg/m^3 (30-day avg)
Particulate Matter (PM10)	150 μg/m^3 (24-hr avg)	50 μg/m^3 (24-hr avg) 20 μg/m^3 (annual avg)
Particulate Matter (PM2.5)	35 μg/m^3 (24-hr avg) 12 μg/m^3 (annual avg)	12 μg/m^3 (annual avg)
Visibility-Reducing Particles	No Federal Standards	Extinction coefficient of 0.23 per kilometer – visibility of ten miles or more (0.07 - 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape (8-hr avg)
Sulfates	No Federal Standards	25 μg/m^3 (24-hr avg)
Hydrogen Sulfide	No Federal Standards	0.03 ppm (1-hr avg)
Vinyl Chloride	No Federal Standards	0.01 ppm (24-hr avg)

ppm= parts per million; hr = hour; avg = average; mg/m^3 = micrograms per cubic meter

Source: California Air Resources Board 2016

Table 10 Federal and State Attainment Status for the Air Basins in the Plan Area

Pollutant	SCAB	MDAB	SDAB	SSAB	SCCAB – Ventura County	SJVAB	SFBAAB
Ozone							
Federal/State 8-hr	N-E	N-S	N-Mo	N-Ma/N-S[1]	N-S	N-E	N-Ma
State 1-hr	N	N	N	N	N	N	N
Carbon Monoxide							
Federal	A	U	A	U	A	A/U	A
State	A	A/U	A	A	A	A/U	A
Nitrogen Dioxide							
Federal	A	U	U	U	U	U	U
State	N[2]	A	A	A	A	A	A
Sulfur Dioxide							
Federal	U	U	U	U	U	U	U
State	A	A	A	A	A	A	A
Lead							
Federal	N[3]	U	U	U	U	U	U
State	A	A	A	A	A	A	A
Particulate Matter (PM_{10})							
Federal	N[4]	N[4]	U	N[5]	A	A	U
State	N	N	N	N	N	N	N
Particulate Matter ($PM_{2.5}$)							
Federal Annual Arithmetic Mean	N-Mo	U	U	N-Mo	A	N-Mo	U
Federal 24-hour	N-S	U	U	N-Mo	U	N-S	N-Mo
State	N	A/U	N	N[6]	A	N	N
Visibility-Reducing Particles							
State	U	U	U	U	U	U	U

Pollutant	SCAB	MDAB	SDAB	SSAB	SCCAB – Ventura County	SJVAB	SFBAAB
Sulfates							
State	A	A	A	A	A	A	A
Hydrogen Sulfide							
State	U	N[7]	U	U	U	U	U
Vinyl Chloride							
State	U	U	U	U	A	A	U

[1] The Imperial County portion of the SSAB is designated nonattainment-marginal, and the Coachella Valley portion of the SSAB is designated nonattainment-severe.

[2] Only the portion of the SCAB along State Route 60 between U.S. Highway 605 and the western limit of Riverside County is designated nonattainment.

[3] Only the Los Angeles county portion of the SCAB is designated nonattainment.

[4] Only the San Bernardino county portion of the SCAB and MDAB is designated nonattainment.

[5] Only the Imperial Valley and Coachella Valley portions of the SSAB are designated nonattainment.

[6] Only the city of Calexico is designated nonattainment.

[7] Only the Searles Valley portion of the MDAB is designated nonattainment. Remainder is unclassified.

SCAB = South Coast Air Basin; MDAB = Mojave Desert Air Basin; SDAB = San Diego Air Basin; SSAB = Salton Sea Air Basin' SCCAB = South Central Coast Air Basin; SJVAB = San Joaquin Valley Air Basin; SFBAAB = San Francisco Bay Area Air Basin; N-E = Nonattainment-Extreme; N-S = Nonattainment-Severe; N-Mo = Nonattainment-Moderate; N-Ma = Nonattainment-Marginal; N = Nonattainment; N-T = Nonattainment-Transitional; A/U = Attainment/Unclassified; A = Attainment; U = Unclassified

Sources: California Air Resources Board 2019a through 2019j and United States EPA 2020a through 2020h

4.1.3.2 State

California Clean Air Act

The California Clean Air Act, signed into law in 1988, requires all areas of the state to achieve and maintain the California ambient air quality standards (CAAQS) by the earliest practical date. The CAAQS incorporate additional standards for most of the criteria pollutants and set standards for other pollutants recognized by the state. In general, the California standards are more health protective than the corresponding NAAQS. California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. As stated in Section 4.1.2, *Existing Conditions*, eight air districts have jurisdiction over various portions of the seven air basins within the Plan Area. Table 9 details the current CAAQS and Table 10 provides the attainment status of all seven air basins with respect to the CAAQS.

State Tailpipe Emission Standards

To reduce emissions from off-road diesel equipment, on-road diesel trucks, and harbor craft, CARB established a series of increasingly strict emission standards for new engines, such as the recently approved Advanced Clean Trucks regulation. New construction equipment used for the program, including medium- and heavy-duty trucks and off-road construction equipment, would be required to comply with the standards.

Toxic Air Contaminants

California regulates TACs primarily through the Toxic Air Contaminant Identification and Control Act (Tanner Act) and the Air Toxics "Hot Spots" Information and Assessment Act of 1987 ("Hot Spots" Act). In the early 1980s, CARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act created California's program to reduce exposure to air toxics. The "Hot Spots" Act supplements the Tanner Act by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks. In addition, in response to AB 617 (C. Garcia, Chapter 136, Statues of 2017), CARB established the Community Air Protection Program, which selects communities disproportionately impacted by high cumulative exposure burdens for criteria air pollutants and TACs and develops community air monitoring plans and community emissions reduction programs for these communities.

CARB identified DPM as a TAC in 1998. Shortly thereafter, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan is to reduce DPM (respirable particulate matter) emissions and the associated health risk by 75 percent in 2010 and by 85 percent by 2020. The plan identifies several measures for CARB to implement, which have been enacted since publication of the plan (CARB 2000). CARB estimates that DPM emissions in 2035 will be less than half of those in 2010 (CARB 2020). The proposed program would be required to comply with applicable diesel control measures.

4.1.3.3 Regional

Air Pollution Control District Plans, Rules, and Regulations

As summarized in Table 7 in Section 4.1.2, *Existing Conditions*, the SCAQMD, MDAQMD, AVAQMD, SDAPCD, ICAPCD, VCAPCD, SJVAPCD, and BAAQMD all have jurisdiction over portions of the Plan Area. In accordance with the federal and state Clean Air Acts, each of these eight APCDs have prepared air quality management plans (AQMPs) that demonstrate each air district's

clean air strategy to achieve attainment of various federal and state air quality standards, including those for ozone, PM_{10}, and $PM_{2.5}$, depending on each district's attainment status. These plans outline a variety of stationary source, land use, and transportation control measures that each district proposes to implement as part of its clean air strategy. These measures include specific actions to implement new emissions control regulations and Reasonably Available Control Technology requirements; enforce New Source Review; reduce vehicle trips and vehicle miles traveled; facilitate use of public transit and alternative transportation modes; and retrofit, modernize, and electrify the vehicle fleet and equipment used for construction, freight, farming, and lawn and garden activities.

The following are the most recent versions of air quality management plans adopted in the Plan Area. These plans typically have a three- to six-year planning horizon and are updated on a periodic basis depending on the specific federal and state requirements for each nonattainment area and the discretion of each air district:

- SCAQMD (2017) Final 2016 Air Quality Management Plan
- MDAQMD (2017) Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Nonattainment Area)
- AVAQMD (2017) Federal 75 ppb Ozone Attainment Plan (Western Mojave Desert Nonattainment Area)
- SDAPCD (2016a) 2008 Eight-Hour Ozone Attainment Plan for San Diego County
- SDAPCD (2016b) 2016 Revision to the Regional Air Quality Strategy for San Diego County
- ICAPCD (2018) Imperial County 2018 Redesignation Request and Maintenance Plan for Particulate Matter Less than 10 Microns in Diameter
- ICAPCD (2017a) Imperial County 2017 State Implementation Plan for the 2008 8-Hour Ozone Standard
- ICAPCD (2014) Imperial County 2013 State Implementation plan for the 2006 24-Hour $PM_{2.5}$ Moderate Nonattainment Area
- VCAPCD (2016) Final 2016 Ventura County Air Quality Management Plan
- SJVAPCD (2016) 2016 Ozone Plan for 2008 8-Hour Ozone Standard
- SJVAPCD (2018) 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards
- BAAQMD (2017b) Spare the Air – Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area

Each air district has also adopted a set of rules and regulations pertaining to various air emissions sources. Rules and regulations applicable to the proposed program would include those related to construction equipment, stationary emergency generators, nuisance odors, fugitive dust, metal coatings, cutback and emulsified asphalt, architectural coatings, consumer paint thinners and multi-purpose solvents, solvent degreasers, composting and related operations, storage tanks for VOCs, organic liquids, publicly owned treatment works operations (i.e., wastewater treatment plants), asbestos emissions from demolition/renovation activities, and particulate emissions from soils with TACs. A comprehensive list of rules and regulations adopted by each air district is available online at CARB's District Rules Database at https://ww3.arb.ca.gov/drdb/drdb.htm.

4.1.3.4 Local

Although local actions have important implications for air quality, regulation of air quality occurs primarily at the federal, state, and regional levels. Local general plans typically include several policies related to air quality that are directed at participating in regional collaboration with the applicable air district, achieving attainment of NAAQS and CAAQS, implementing the use of the applicable air district's thresholds of significance for CEQA analysis, and ensuring project-level compliance with applicable air district rules.

4.1.4 Thresholds and Methodology

4.1.4.1 Thresholds of Significance

Table 11 lists the thresholds from Appendix G of the *State CEQA Guidelines* that pertain to air quality. These thresholds are addressed in the draft PEIR.

Table 11 CEQA Thresholds for Air Quality

Threshold Would the proposed program:
a. Conflict with or obstruct implementation of the applicable air quality plan?
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?
c. Expose sensitive receptors to substantial pollutant concentrations?
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Appendix G of the *State CEQA Guidelines* further states that the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the determinations in Table 11. As such, seven of the eight air districts with jurisdiction in the Plan Area (excluding the SDAPCD) have published guidance documents for use in evaluating the air quality impacts of projects under CEQA, including the following:

- SCAQMD (1993) CEQA Air Quality Handbook (currently being updated) and supplemental guidance
- SCAQMD (2008) Final Localized Significance Threshold Methodology
- SCAQMD (2019) South Coast AQMD Air Quality Significance Thresholds
- MDAQMD (2016) California Environmental Quality Act (CEQA) and Federal Conformity Guidelines
- AVAQMD (2016) California Environmental Quality Act (CEQA) and Federal Conformity Guidelines
- ICAPCD (2017b) CEQA Air Quality Handbook
- VCAPCD (2003) Ventura County Air Quality Assessment Guidelines
- SJVAPCD (2015) Guidance for Assessing and Mitigating Air Quality Impacts
- BAAQMD (2017a) California Environmental Quality Act Air Quality Guidelines

The following subsections discuss the significance thresholds adopted by each air district.

Consistency with Air Quality Plans

Based on a review of the CEQA guidance documents published by seven of the eight air districts with jurisdiction in the Plan Area (excluding the SDAPCD, which has not published guidance), the proposed program would be consistent with the applicable air quality plans listed in Section 4.1.3.3, *Regional*, if it meets all of the following conditions:

1. The program would not generate direct and/or indirect population growth that would exceed the population growth forecasts underlying the applicable air quality plans. Emissions forecasts are usually based on population growth forecasts; therefore, if the program would generate population growth in excess of population growth anticipated by the air quality plans, then it may result in higher emissions than those anticipated and mitigated by the plans.
2. The program would not generate emissions in excess of the thresholds of significance established by the applicable air district, which are often connected to the air quality plans.
3. The program would incorporate all applicable control measures from the applicable air quality plans.
4. The program would provide buffer zones around sources of odors and TACs.

Criteria Pollutant Emissions

Regional Thresholds of Significance

Seven of the eight air districts with jurisdiction in the Plan Area (excluding the SDAPCD) have adopted regional significance thresholds to evaluate air pollutant emissions. Thresholds of significance adopted by each air district for construction and operational emissions are summarized in Table 12 and Table 13, respectively.

Table 12 Thresholds of Significance for Construction Emissions

Air District	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	Lead	H_2S
SCAQMD	75 lbs/day	100 lbs/day	550 lbs/day	150 lbs/day	150 lbs/day	55 lbs/day	3 lbs/day	N/A
MDAQMD	137 lbs/day	137 lbs/day	548 lbs/day	137 lbs/day	82 lbs/day	65 lbs/day	3 lbs/day	54 lbs/day
	25 tons/ year	25 tons/ year	100 tons/ year	25 tons/ year	15 tons/ year	12 tons/ year	0.6 ton/year	10 tons/ year
AVAQMD	137 lbs/day 25 tons/ year	137 lbs/day 25 tons/ year	548 lbs/day 100 tons/ year	137 lbs/day 25 tons/ year	82 lbs/day 15 tons/ year	65 lbs/day 12 tons/ year	3 lbs/day 0.6 ton/year	54 lbs/day 10 tons/ year
SDAPCD[1]	N/A	250 lbs/day	550 lbs/day	250 lbs/day	100 lbs/day	67 lbs/day	N/A	N/A
ICAPCD	75 lbs/day	100 lbs/day	550 lbs/day	N/A	150 lbs/day	N/A	N/A	N/A
VCAPCD	25 lbs/day	25 lbs/day	N/A	N/A	N/A	N/A	N/A	N/A
SJVAPCD	10 tons/ year	10 tons/ year	100 tons/ year	27 tons/ year	15 tons/ year	15 tons/ year	N/A	N/A
BAAQMD	54 lbs/day	54 lbs/day	N/A	N/A	82 lbs/day (exhaust) BMPs (fugitive dust)	54 lbs/day (exhaust) BMPs (fugitive dust)	N/A	N/A

[1] The SDAPCD has not adopted thresholds for determining the significance of air quality impacts under CEQA. However, the SDAPCD has adopted Air Quality Impact Analysis (AQIA) trigger levels for new, modified, or relocated stationary sources (SDAPCD Rules 20.1, 20.2, and 20.3). These AQIA trigger levels do not generally apply to construction, mobile sources, or general land development projects; however, it is general practice for local lead agencies in the jurisdiction of the SDAPCD to use these trigger levels as thresholds of significance for evaluating air quality impacts. The SDAPCD does not consider AQIA trigger levels to represent significance thresholds because exceedances do not necessarily result in air quality impacts; rather, AQIA trigger levels were developed to identify sources with emissions that are too small to cause or substantially contribute to violations of NAAQS or CAAQS and therefore do not warrant further air quality analysis or permitting. In lieu of adopted thresholds, these trigger levels are used as thresholds of significance for the purpose of this analysis.

VOC = volatile organic compounds; NO_X = nitrogen oxides; CO = carbon monoxide; SO_X = sulfur oxides; PM_{10} = particulate matter with a diameter of 10 microns or less; $PM_{2.5}$ = particulate matter with a diameter of 2.5 microns or less; H_2S = hydrogen sulfide; lbs/day = pounds per day; N/A = not adopted (The air district has not adopted a threshold of significance for this pollutant.); CAAQS = California Ambient Air Quality Standards; BMPs = Best Management Practices; SCAQMD = South Coast Air Quality Management District; MDAQMD = Mojave Desert Air Quality Management District; AVAQMD = Antelope Valley Air Quality Management District; SDAPCD = San Diego Air Pollution Control District; ICAPCD = Imperial County Air Pollution Control District; VCAPCD = Ventura County Air Pollution Control District; SJVAPCD = San Joaquin Valley Air Pollution Control District; BAAQMD = Bay Area Air Quality Management District

Sources: SCAQMD 2019; MDAQMD 2016; AVAQMD 2016; SDAPCD 2019; ICAPCD 2017b; VCAPCD 2003; SJVAPCD 2015; BAAQMD 2017a

Table 13 Thresholds of Significance for Operational Emissions

Air District	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	Lead	H_2S
SCAQMD	55 lbs/day	55 lbs/day	550 lbs/day	150 lbs/day	150 lbs/day	55 lbs/day	3 lbs/day	N/A
MDAQMD	137 lbs/day	137 lbs/day	548 lbs/day	137 lbs/day	82 lbs/day	65 lbs/day	3 lbs/day	54 lbs/day
	25 tons/year	25 tons/year	100 tons/year	25 tons/year	15 tons/year	12 tons/year	0.6 ton/year	10 tons/year
AVAQMD	137 lbs/day	137 lbs/day	548 lbs/day	137 lbs/day	82 lbs/day	65 lbs/day	3 lbs/day	54 lbs/day
	25 tons/year	25 tons/year	100 tons/year	25 tons/year	15 tons/year	12 tons/year	0.6 ton/year	10 tons/year
SDAPCD[1]	N/A	250 lbs/day	550 lbs/day	250 lbs/day	100 lbs/day	67 lbs/day	N/A	N/A
ICAPCD	137 lbs/day	137 lbs/day	550 lbs/day	150 lbs/day	150 lbs/day	550 lbs/day	N/A	N/A
VCAPCD	25 lbs/day	25 lbs/day	N/A	N/A	N/A[2]	N/A	N/A	N/A
SJVAPCD	10 tons/year	10 tons/year	100 tons/year	27 tons/year	15 tons/year	15 tons/year	N/A	N/A
BAAQMD	54 lbs/day	54 lbs/day	Violation of the CAAQS	N/A	82 lbs/day	54 lbs/day	N/A	N/A
	10 tons/year	10 tons/year			15 tons/year	10 tons/year		

[1] The SDAPCD has not adopted thresholds for determining the significance of air quality impacts under CEQA. However, the SDAPCD has adopted Air Quality Impact Analysis (AQIA) trigger levels for new, modified, or relocated stationary sources (SDAPCD Rules 20.1, 20.2, and 20.3). These AQIA trigger levels do not generally apply to construction, mobile sources, or general land development projects; however, it is general practice for local lead agencies in the jurisdiction of the SDAPCD to use these trigger levels as thresholds of significance for evaluating air quality impacts. The SDAPCD does not consider AQIA trigger levels to represent significance thresholds because exceedances do not necessarily result in air quality impacts; rather, AQIA trigger levels were developed to identify sources with emissions that are too small to cause or substantially contribute to violations of NAAQS or CAAQS and therefore do not warrant further air quality analysis or permitting. In lieu of adopted thresholds, these trigger levels are used as thresholds of significance for the purpose of this analysis.

[2] The VCAPCD recommends that the fugitive dust mitigation measures described in Section 7.4.1 of the *Air Quality Assessment Guidelines* be implemented as part of all project-related dust-generating operations and activities (VCAPCD 2003).

VOC = volatile organic compounds; NO_X = nitrogen oxides; CO = carbon monoxide; SO_X = sulfur oxides; PM_{10} = particulate matter with a diameter of 10 microns or less; $PM_{2.5}$ = particulate matter with a diameter of 2.5 microns or less; H_2S = hydrogen sulfide; lbs/day = pounds per day; N/A = Not adopted (The air district has not adopted a threshold of significance for this pollutant.); CAAQS = California Ambient Air Quality Standards; BMPs = Best Management Practices; SCAQMD = South Coast Air Quality Management District; MDAQMD = Mojave Desert Air Quality Management District; AVAQMD = Antelope Valley Air Quality Management District; SDAPCD = San Diego Air Pollution Control District; ICAPCD = Imperial County Air Pollution Control District; VCAPCD = Ventura County Air Pollution Control District; SJVAPCD = San Joaquin Valley Air Pollution Control District; BAAQMD = Bay Area Air Quality Management District

Sources: SCAQMD 2019; MDAQMD 2016; AVAQMD 2016; SDAPCD 2019; ICAPCD 2017b; VCAPCD 2003; SJVAPCD 2015; BAAQMD 2017a

Localized Thresholds of Significance

In addition to the regional thresholds of significance identified above, the SCAQMD has developed Localized Significance Thresholds (LSTs) in response to the Governing Board's Environmental Justice Enhancement Initiative (1-4), which was prepared to supplement the *CEQA Air Quality Handbook* (SCAQMD 1993). LSTs were devised in response to concern regarding exposure of individuals to criteria pollutants in local communities and have been developed for nitrogen oxides, carbon monoxide, PM_{10}, and $PM_{2.5}$. LSTs represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest sensitive receptor, taking into consideration ambient concentrations in each source receptor area (SRA), distance to the sensitive receptor, and project size. LSTs have been developed for emissions generated at construction sites up to five acres in size. However, LSTs only apply to emissions in a fixed stationary location and are not applicable to mobile sources, such as cars on a roadway (SCAQMD 2008). As such, typically LSTs are referred to for on-site construction emissions, because most operational emissions and off-site construction emissions are associated with vehicle trips. The SCAQMD provides LSTs for one-, two-, and five-acre project

sites for receptors at a distance of 82 feet to 1,640 feet (25 to 500 meters) from a project site's boundary[14].

Due to the programmatic nature of the proposed CAP, there is currently not sufficient detail to allow for the quantification of emissions from individual projects proposed under the program; therefore, the applicability of LSTs to specific proposed projects is also largely unknown. To provide a conservative estimate of project impacts in consideration of the LSTs, this analysis uses the most stringent LSTs recommended by the SCAQMD for use within its jurisdictional area, which are for one-acre sites within the SRA 12 (South Central Los Angeles County) within 82 feet (25 meters) of the nearest sensitive receptor (SCAQMD 2009). These LSTs are summarized in Table 14.[15]

Table 14 SCAQMD LSTs for Construction (SRA 12)

Pollutant	LSTs for a 1-acre Site in SRA 12 for a Receptor 82 Feet Away (lbs/day)
Gradual conversion of NO_X to NO_2	46
CO	231
PM_{10}	4
$PM_{2.5}$	3

SCAQMD = South Coast Air Quality Management District; LSTs = Localized Significance Thresholds; SRA = South Receptor Area; lbs/day = pounds per day; NO_X = nitrogen oxides; NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = particulate matter with a diameter of 10 microns or less; $PM_{2.5}$ = particulate matter with a diameter of 2.5 microns or less

Source: SCAQMD 2009

Toxic Air Contaminants

Five of the eight air districts with jurisdiction in the Plan Area have adopted thresholds of significance for evaluating impacts related to TAC emissions to be evaluated at the most exposed receptor within 1,000 feet of individual projects that may be implemented under the proposed CAP. The thresholds of significance for TAC emissions are shown in Table 15.

[14] It should be noted that use of LSTs is voluntary.
[15] SRA 12 is bound by Interstate 110 to the west, State Route 91 to the south, Interstate 710 to the east, and Slauson Avenue to the north.

Table 15 Thresholds of Significance for Toxic Air Contaminants

Air District	Excess Cancer Risk	Excess Chronic and Acute Hazard Index	Excess Cancer Burden	Annual Average $PM_{2.5}$ Concentration
SCAQMD (2019)	≥ 10 in 1 million	≥ 1.0	> 0.5 cancer cases in areas with cancer risk greater than or equal to one case in 1 million	N/A
BAAQMD – Individual Source	≥ 10 in 1 million	≥ 1.0	N/A	≥ 0.3 μg/m^3
BAAQMD – Cumulative Sources	≥ 100 in 1 million from all local sources	≥ 10.0 from all local sources[1]	N/A	> 0.8 μg/m^3 from all local sources
VCAPCD	≥ 10 in 1 million	≥ 1.0	N/A	N/A
SJVAPCD	≥ 20 in 1 million	≥ 1.0	N/A	N/A
SDAPCD[2]	≥ 10 in 1 million	≥ 1.0	≥ 1.0	N/A

SCAQMD = South Coast Air Quality Management District; BAAQMD = Bay Area Air Quality Management District; VCAPCD = Ventura County Air Pollution Control District; SJVAPCD = San Joaquin Valley Air Pollution Control District; SDAPCD = San Diego Air Pollution Control District; N/A = not applicable; μg/m^3 = micrograms per cubic meter

[1] Chronic Hazard Index only.

[2] Based on Public Health Risk Notification Requirements defined by SDAPCD Rule 1210.

Sources: SCAQMD 2019; BAAQMD 2017a; VCAPCD 2003; SJVAPCD 2015; SDAPCD 2019

Valley Fever

San Joaquin Valley Fever (Valley Fever; formally known as Coccidioidomycosis) is an infectious disease caused by the fungus *Coccidioides immitis*. Valley Fever is a disease of concern in arid and semiarid areas of the western United States, including in the dry, inland regions of southern California. Infection is caused by inhalation of *Coccidioides immitis* spores that become airborne when dry, dusty soil or dirt is disturbed by natural processes such as wind or earthquakes, or by human induced ground-disturbing activities such as construction, farming, or other activities (VCAPCD 2003).

The VCAPCD recommends consideration of the following factors that may indicate a program's potential to result in impacts related to Valley Fever:

- Disturbance of the topsoil of undeveloped land (to a depth of about 12 inches)
- Presence of dry, alkaline, sandy soils
- Ground-disturbing activities in virgin, undisturbed, non-urban areas
- Activities occurring in windy areas
- Presence of archaeological resources probable or known to exist in the area (e.g., Native American midden sites)[16]
- Special events (e.g., fairs, concerts) and motorized activities (e.g., motocross track, All Terrain Vehicle activities) on unvegetated soil (non-grass)
- Exposure of non-native population (e.g., out-of-area construction workers)

[16] The presence of archaeological resources can indicate that soils have been historically undisturbed and therefore have higher potential to contain *Coccidioides immitis* spores.

Odors

The threshold of significance for evaluating odor-related impacts is whether the proposed project would result in the discharge of quantities of air contaminants (including odors from non-agricultural sources) that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety or any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business of property.[17]

Cumulative Impacts

Project-level thresholds for criteria air pollutant emissions are typically set at levels that are not cumulatively considerable because these thresholds are developed to address the cumulative air quality impacts already occurring in the air basin. However, several air districts with jurisdiction in the Plan Area have published the following additional guidance on assessing cumulative air quality impacts:

- **SCAQMD**: The SCAQMD's approach to determining cumulative air quality impacts for criteria air pollutants is to first determine whether a proposed project would result in a significant project-level impact to regional air quality based on the SCAQMD significance thresholds. If the project would not generate emissions exceeding the SCAQMD thresholds, then the lead agency needs to consider the additive effects of related projects only if the proposed project is part of an ongoing regulatory program, such as a market program for reducing air pollution, or is contemplated in a PEIR, and the related projects are located within approximately one mile of the project site. If there are related projects within the vicinity (one-mile radius) of the project site that are part of an ongoing regulatory program or are contemplated in a PEIR, then the additive effect of the related projects should be considered (SCAQMD 1993).
- **ICAPCD**: For criteria pollutant emissions, lead agencies should utilize the project-level thresholds to identify whether a project's contribution to a significant cumulative air quality impact is significant (see Table 12 and Table 13). In addition, cumulative traffic volumes should be accounted for in the carbon monoxide hotspot analysis (ICAPCD 2017).
- **VCAPCD**: A project with estimated emissions two pounds per day or greater of VOCs, or two pounds per day or greater of nitrogen oxides that is inconsistent with the AQMP would have a significant cumulative adverse air quality impact (VCAPCD 2003).
- **SJVAPCD**: Any proposed program that would individually have a significant air quality impact would also be considered to have a significant cumulative air quality impact. In addition, cumulative traffic volumes should be accounted for in the carbon monoxide hotspot analysis. Because impacts from TACs are localized and the thresholds of significance for TACs have been established at such a conservative level, risks over the individual thresholds of significance are also considered cumulatively significant (SJVAPCD 2015).
- **BAAQMD**: In developing thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a program's individual emissions would be cumulatively considerable. If a program exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary (BAAQMD 2017a).

[17] This threshold of significance is based on AVAQMD Rule 402, BAAQMD Rule 1-0, ICAPCD Rule 407, MDAQMD Rule 402, SDAPCD Rule 51, SJVAPCD Rule 4102, SCAQMD Rule 402, and VCAPCD Rule 51.

4.1.4.2 Methodology

Due to the programmatic nature of the proposed CAP, there is currently not sufficient detail to allow for the quantification of emissions from individual projects proposed under the program. Therefore, construction emissions were estimated by referencing a "typical," reasonable construction schedule and equipment mix that could be expected to be required for construction of individual projects described in Chapter 2, *Project Description*, such as installation of electric vehicle infrastructure (CAP measure FL-4; CAP measure EC-3), electric-powered equipment (to replace natural gas-powered equipment)(CAP measure DC-2), or BESS facilities (CAP measure E-4) and construction of a direct meter connection between the YLHEP and Diemer WTP (CAP measure E-2). Construction emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2.[18] CalEEMod was developed by the SCAQMD as a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operations from a variety of land use projects (California Air Pollution Control Officers Association 2017). The sample program activity included the following parameters based on reasonable, conservative assumptions that are anticipated to encompass most or all individual projects:

- Construction site size of five acres
- Construction schedule of 12 months, which includes phases for demolition, site preparation, grading, construction/installation, paving, and architectural coating
- Use of the following diesel-powered construction equipment equipped with Tier 3 certified engines for eight hours a day, five days a week during each phase:[19]
    - Demolition: one 81-horsepower (hp) concrete/industrial saw, one 158-hp excavator, and one 247-hp dozer
    - Site Preparation: one 247-hp dozer, two 97-hp tractors/loaders/backhoes, and one water truck
    - Grading: one 158-hp excavator, one 187-hp grader, one 247-hp dozer, and one water truck
    - Construction/Installation: one 231-hp crane, three 89-hp forklifts, one 84-hp generator, three 97-hp tractors/loaders/backhoes, and one 46-hp welder
    - Paving: two 130-hp pavers, two 132-hp paving equipment, and two 80-hp rollers
    - Architectural Coating: one 78-hp air compressor
- Demolition of 20,000 square feet of structures
- Import of 1,000 cubic yards of soil material and export of 1,000 cubic yards of soil material over a 16-day period
- Architectural coating of 10,000 square feet of interior surfaces and 10,000 square feet of exterior surfaces
- Use of architectural coatings with a maximum VOC content of 250 grams per liter[20]
- Implementation of the following standard fugitive dust control measures:

[18] Additional information on the CalEEMod model, including the User Guide, default data tables, technical source documentation is incorporated by reference and is available online at: http://www.caleemod.com/ (click on "User's Guide").
[19] Horsepower values are based on CalEEMod defaults.
[20] All contractors would be required to comply with the applicable air district rule(s) regarding the VOC content limits of architectural coatings, which may be lower than 250 grams per liter depending on the air district and type of coating.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and unpaved access roads.
- Limit vehicle speeds on unpaved roads to 15 miles per hour.

4.1.5 Impacts Analysis

4.1.5.1 Program Analysis

Threshold AQ-A: *Would the project conflict with or obstruct implementation of the applicable air quality plan?*

Construction

The following subsections discuss the consistency of proposed program construction activities with the 12 air quality plans adopted by the eight air districts with jurisdiction in the Plan Area (see Section 4.1.3.3, *Regional*) using the four criteria identified in Section 4.1.4.1, *Thresholds of Significance*. As discussed below, proposed program construction activities would be potentially inconsistent with the applicable air quality plans, therefore impacts would be **significant**.

Population Growth

Due to the nature of individual projects to be implemented under the proposed CAP (e.g., replacement of lighting, installation of BESS facilities, installation of electric vehicle infrastructure, installation of electric-powered equipment, construction of a direct meter connection between the YLHEP and Diemer WTP) and their geographic distribution throughout the Plan Area, it is anticipated workers required for construction activities would be from the existing local or regional workforce. As a result, construction of the proposed program would not result in substantial indirect population growth.

Criteria Pollutant Emissions

As discussed under Threshold AQ-B, the individual projects that may be implemented under the proposed CAP do not have sufficient detail to allow specific project-level analysis of criteria pollutant emissions during construction at this time. However, construction emissions were estimated for a sample program activity (see parameters in Section 4.1.4.2, *Methodology*) and compared to the most stringent daily and annual emissions thresholds in Table 12 and to the SCAQMD LSTs in Table 14 to provide a screening level below which individual projects proposed under the CAP would have a less-than-significant impact related to criteria air pollutant emissions. Individual projects that involve construction activities with an intensity (i.e., size, schedule, equipment, demolition, import/export of soil, architectural coating) equal to or less than the sample program activity would have a less-than-significant construction impact associated with criteria air pollutant emissions regardless of location. Therefore, construction emissions associated with proposed CAP measures would not conflict with the applicable air quality plans. However, for individual proposed projects that involve construction activities with an intensity (i.e., size, schedule, equipment, demolition, import/export of soil, architectural coating) greater than the sample program activity, the severity and location of the impacts cannot be determined until the construction details of individual projects are known. As a result, for these projects, construction impacts related to consistency with the applicable air quality plan would be potentially significant because criteria pollutant emissions have the potential to exceed the applicable air district thresholds of significance. Mitigation may be available to reduce emissions of criteria air pollutants during construction (see Mitigation Measures [MM] AQ-1 and AQ-2);

however, it is not possible to determine whether impacts would be reduced to less-than-significant levels because the magnitude of construction emissions is not known at this time. Therefore, criteria pollutant emissions would be **significant.**

Control Measures

The proposed program includes a suite of GHG emission reduction measures, some of which would have the co-benefits of reducing air pollutant emissions generated during construction activities associated with the program. For example, CAP measure AF-2 includes conducting a pilot study of renewable diesel use in on-road and off-road vehicles by providing at least one renewable diesel tank at Metropolitan-owned fueling depots. Based on the results of this study, CAP measure AF-3 includes use of renewable diesel fuel in Metropolitan's diesel-consuming on-road and off-road vehicles. These measures would be consistent with the control measures identified in the 12 air quality plans related to the Plan Area. Furthermore, existing programs implemented by Metropolitan such as the agency's Small Business and Regional Business Programs encourage use of local contractors for construction projects, resulting in fewer vehicle miles traveled and associated mobile source emissions during construction.

Buffer Zones for Odors and TACs

As discussed under Thresholds AQ-C and AQ-D, construction activities associated with the proposed program would not result in substantial sources of TAC or odor emissions because CAP measures would generally result in small-scale and temporary construction activities.

Post-Construction

The following subsections discuss the consistency of post-construction activities with the 12 air quality plans adopted by the eight air districts with jurisdiction in the Plan Area (see Section 4.1.3.3, *Regional*) using the four criteria identified in Section 4.1.4.1, *Thresholds of Significance*. As discussed below, post-construction activities would be consistent with the applicable air quality plans, and **no impact** would occur.

Population Growth

The proposed program includes a suite of GHG emissions reduction measures that would not directly generate population growth because they do not involve construction of housing. As discussed in Chapter 2, *Project Description*, GHG emissions reduction measures proposed under the CAP may include replacement of lighting, installation of BESS facilities, installation of electric vehicle infrastructure, installation of electric-powered equipment to replace natural gas-powered equipment, and construction of a direct meter connection between the YLHEP and Diemer WTP. Implementation of these proposed measures would not be expected to create substantial employment opportunities because measures would either serve existing Metropolitan facilities or require minimal numbers of new employees for operations and maintenance. Given the nature of these employment opportunities, it is anticipated that new employees would be hired from the existing local or regional workforce. As a result, implementation of the proposed program would not result in substantial indirect population growth. Impacts would be **less than significant**.

Criteria Pollutant Emissions

As discussed under Threshold AQ-B, the proposed CAP measures would have the co-benefits of reducing air pollutant emissions and/or would generate *de minimis* post-construction air pollutant emissions beyond those generated by existing Metropolitan operations. Therefore, post-construction

activities under the proposed program would be consistent with the applicable air quality plans and impacts would be **less than significant**.

Control Measures

Upon implementation, many of the proposed CAP measures would have the co-benefits of reducing air pollutant emissions by reducing natural gas, gasoline, and diesel fuel consumption. Measures that would have co-benefits related to air quality include, but are not limited to, reducing natural gas consumption (CAP measure DC-2), increasing use of renewable energy (CAP Strategy 4), improving energy efficiency (CAP Strategy 5), and electrifying fleet vehicles (CAP Strategy 2). These measures would be consistent with the control measures identified in the 12 air quality plans related to the Plan Area.

Buffer Zones for Odors and TACs

As discussed under Thresholds AQ-C and AQ-D, the proposed program would not include post-construction sources of substantial TAC or odor emissions that would potentially impact sensitive receptors and **no impact** would occur.

Threshold AQ-B: *Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?*

Construction and implementation of individual projects that may be implemented under the proposed CAP would generate criteria pollutant emissions and fugitive dust emissions, which are discussed further in the following subsections.

Construction

Criteria Pollutant Emissions

Construction of individual projects that may be implemented under the proposed CAP would cause temporary emissions of various air pollutants from fuel combustion by on-site construction equipment, demolition, grading, construction worker travel to and from construction sites, use of architectural coatings, and transport of construction supplies and soil material to and from construction sites. These proposed construction activities would temporarily create emissions of dust, fumes, equipment exhaust, and other air pollutants, particularly during individual projects that require demolition, site preparation, and/or grading. The extent of daily emissions, particularly emissions of VOCs and nitrogen oxides, generated by construction equipment would depend on the equipment used and the hours of operation for each individual project that may be implemented under the CAP. The extent of PM_{10} and $PM_{2.5}$ emissions would primarily depend upon the following factors: 1) the amount of disturbed soils; 2) the length of disturbance time; 3) whether excavation is involved; and 4) whether transporting excavated materials off site is necessary.

At this time, there is not sufficient detail about the proposed individual projects that may be implemented under the CAP to allow for the quantification of construction emissions for each project. Therefore, it is not possible to compare construction-related emissions for each individual project to the thresholds of significance adopted by the appropriate air district, as summarized in Table 12 and it would be too speculative to analyze project-level impacts of individual projects that may be implemented under the CAP.

However, construction emissions were estimated for a sample program activity (see parameters in Section 4.1.4.2, *Methodology*) and compared to the most stringent daily and annual emissions thresholds in Table 12 and to the SCAQMD LSTs in Table 14 to provide a screening level below

which individual projects that may be implemented under the proposed CAP would have a less-than-significant impact related to criteria air pollutant emissions. Table 16 summarizes estimated maximum daily construction emissions from the sample program activity, and Table 17 presents estimated annual construction emissions from the sample program activity. To provide a conservative evaluation of impacts, emissions are compared to the most stringent thresholds adopted by air districts with jurisdiction in the Plan Area. As shown in Table 16 and Table 17, construction of the sample program activity would generate temporary VOC, nitrogen oxides, carbon monoxide, sulfur dioxide, PM_{10}, and $PM_{2.5}$ emissions. However, maximum daily and annual construction emissions from the sample program activity would not exceed the most stringent daily and annual regional significance thresholds of those adopted by the eight air districts with jurisdiction in the Plan Area. In addition, as shown in Table 18, maximum daily on-site construction emissions from the sample program activity would not exceed the most stringent SCAQMD LSTs. Therefore, individual projects that may be implemented under the proposed CAP that involve construction activities with an intensity (i.e., size, schedule, equipment, demolition, import/export of soil, architectural coating) equal to or less than the sample program activity would have a less-than-significant construction impact associated with criteria air pollutant emissions regardless of location.

Table 16 Estimated Maximum Daily Construction Emissions – Sample Program Activity

	Maximum Daily Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Maximum Emissions from Sample Program Activity	21.4	19.1	22.5	< 0.1	3.7	2.0
Most Stringent Thresholds[1]	25	25	548	137	82	55
Threshold Exceeded?	No	No	No	No	No	No

[1] The most stringent daily construction emissions thresholds listed in Table 12 are the VOC and NO_X thresholds adopted by the VCAPCD; the CO, SO_X, and PM_{10} thresholds adopted by MDAQMD/AVAQMD; and the $PM_{2.5}$ threshold adopted by the SCAQMD.

lbs/day = pounds per day; VOC = volatile organic compounds, NO_X = nitrogen oxides, CO = carbon monoxide, SO_2 = sulfur dioxide, PM_{10} = particulate matter 10 microns in diameter or less, $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; VCAPCD = Ventura County Air Pollution Control District; MDAQMD = Mojave Desert Air Quality Management District; AVAQMD = Antelope Valley Air Quality Management District; SCAQMD = South Coast Air Quality Management District; CalEEMod = California Emissions Estimator Model

Notes: All emissions modeling was completed using CalEEMod. See Appendix B for modeling results. Some numbers may not add up due to rounding.

Table 17 Estimated Maximum Annual Construction Emissions – Sample Program Activity

	Maximum Annual Emissions (tons per year)					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Maximum Emissions from Sample Program Activity	0.5	2.5	2.2	< 0.1	0.2	0.1
Most Stringent Thresholds[1]	10	10	100	25	15	12
Threshold Exceeded?	No	No	No	No	No	No

[1] The most stringent annual construction emissions thresholds listed in Table 12 are the VOC, NO_X, and CO thresholds adopted by the SJVAPCD and the SO_X, PM_{10}, and $PM_{2.5}$ thresholds adopted by the MDAQMD/AVAQMD.

VOC = volatile organic compounds, NO_X = nitrogen oxides, CO = carbon monoxide, SO_2 = sulfur dioxide, PM_{10} = particulate matter 10 microns in diameter or less, $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; SJVAPCD = San Joaquin Valley Air Pollution Control District; MDAQMD = Mojave Desert Air Quality Management District; AVAQMD = Antelope Valley Air Quality Management District; CalEEMod = California Emissions Estimator Model

Notes: All emissions modeling was completed using CalEEMod. See Appendix B for modeling results. Some numbers may not add up due to rounding.

Table 18 Estimated Maximum Daily On-site Construction Emissions – Sample Program Activity

	Maximum On-Site Emissions (lbs/day)					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Maximum Emissions from Sample Program Activity	21.4	15.2	19.1	< 0.1	3.3	1.9
Most Stringent LSTs[1]	N/A	46	231	N/A	4	3
Threshold Exceeded?	No	No	No	No	No	No

[1] The most stringent LSTs are for construction sites in SRA 12 that are one acre (or less) in size within 82 feet (25 meters) of the nearest sensitive receptor. See Table 14.

VOC = volatile organic compounds, NO_X = nitrogen oxides, CO = carbon monoxide, SO_2 = sulfur dioxide, PM_{10} = particulate matter 10 microns in diameter or less, $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; lbs/day = pounds per day; N/A = not adopted (The SCAQMD has not adopted LSTs for these pollutants.); LSTs = Localized Significance Thresholds; SCAMQD = South Coast Air Quality Management District; SRA = Source Receptor Area; CalEEMod = California Emissions Estimator Model

Notes: All emissions modeling was completed using CalEEMod. See Appendix B for modeling results. Some numbers may not add up due to rounding.

For individual projects that may be implemented under the proposed CAP that involve construction activities with an intensity (i.e., size, schedule, equipment, demolition, import/export of soil, architectural coating) greater than the sample program activity, the severity and location of the impacts cannot be determined until the construction details and locations of such projects are known. The severity of the impacts would vary depending upon the size of the individual project and the intensity of construction activities. Therefore, for these individual projects, the magnitude of construction impacts related to criteria pollutant emissions cannot be determined at this time. As a result, it is possible that construction emissions associated with individual projects that may be implemented under the proposed CAP would exceed the applicable air district thresholds. Therefore, construction impacts related to criteria air pollutant emissions associated with implementation of the CAP would be **significant**. Mitigation would reduce emissions of criteria pollutants during construction of specific individual projects (see MM AQ-1 and AQ-2); however, it is not possible to

determine whether impacts would be reduced to less-than-significant levels because the magnitude of construction emissions is not known.

Even if individual projects that may be implemented under the proposed CAP require construction activities with an intensity (i.e., size, schedule, equipment, demolition, import/export of soil, architectural coating) equal to or less than the sample program activity, it is possible that more than one individual project would be constructed simultaneously. Simultaneous construction of two or more individual projects under the CAP within the jurisdiction of the same air district would combine to generate higher total air pollutant emissions than those modeled for the individual sample program activity. The severity of the impacts would vary depending upon the size of each individual project implemented under the CAP, the intensity of its construction activities, and the number of individual projects constructed simultaneously within the jurisdiction of the same air district. Therefore, for individual projects that would be constructed simultaneously within the jurisdiction of the same air district, it cannot be determined at this time if combined construction impacts related to criteria air pollutant emissions would exceed the relevant thresholds or by how much. As a result, construction impacts related to criteria air pollutant emissions resulting from implementation of the proposed CAP would be **significant**. Implementation of MM AQ-1 and AQ-2 would reduce combined emissions of criteria pollutants during construction of specific individual projects that may be implemented under the proposed CAP; however, it is not possible to determine whether impacts would be reduced to less-than-significant levels at the program-level because the magnitude of combined construction emissions is not known.

Fugitive Dust Emissions

Site preparation and grading may cause wind-blown dust that could contribute particulate matter into the local atmosphere. As discussed in Chapter 2, *Project Description*, in addition to Metropolitan's standard Environmental Requirements for Construction, Metropolitan implements environmental requirements for construction detailed in Metropolitan's engineering project specification package, which includes compliance with the applicable air district's fugitive dust control measures, such as SCAQMD Rule 403 (Fugitive Dust) and MDAQMD Rule 403 (Fugitive Dust). The BAAQMD requires implementation of additional BMPs for all projects to reduce fugitive dust impacts to less-than-significant levels, and the VCAPCD and the ICAPCD recommend implementation of additional fugitive dust control measures for all projects undergoing CEQA review (BAAQMD 2017a; VCAPCD 2003; ICAPCD 2017). Implementation of Metropolitan's engineering project specification package, which includes fugitive dust control BMPs and compliance with the applicable air district's fugitive dust control measures would ensure that individual project-specific construction impacts related to fugitive dust emissions would be reduced to **less-than-significant** levels.

Post-Construction

Upon implementation, many of the proposed CAP measures would have the co-benefits of reducing air pollutant emissions by reducing natural gas, gasoline, and diesel fuel consumption. Measures that would have co-benefits related to air quality include, but are not limited to, electrifying natural gas-consuming equipment and devices (CAP measure DC-2), reducing electricity demand (CAP Strategy 5), increasing use of renewable energy (CAP Strategy 4), electrifying fleet vehicles (CAP Strategy 2), reducing vehicle miles traveled (CAP Strategy 6), expanding the subsidized transit commute program (CAP measure EC-1), and facilitating alternative transportation (CAP measure EC-4) and alternative work schedules (CAP measure EC-5). Alternatively, some post-construction activities for individual projects would have the potential to result in sources of criteria pollutant and fugitive dust emissions, such as regular maintenance trips and activities for the proposed BESS facilities that may result in additional mobile source emissions of air pollutants.

Because proposed CAP measures are intended to reduce GHG emissions from Metropolitan operations, several of the air pollutant emissions sources identified above would not generate net new emissions as compared to existing conditions. Furthermore, any net new post-construction sources of emissions for individual projects, such as additional maintenance trips and activities, would be minimal and would therefore generate *de minimis* emissions of criteria air pollutants and fugitive dust. Therefore, post-construction impacts related to criteria air pollutant and fugitive dust emissions would be **less than significant**.

Threshold AQ-C: *Would the project expose sensitive receptors to substantial pollutant concentrations?*

Individual projects that may be implemented under the proposed CAP would potentially generate localized emissions of carbon monoxide, TACs, and *Coccidioides immitis* spores during the construction and post-construction periods. As discussed in Section 4.1.2, *Existing Conditions*, sensitive receptors in the Plan Area include residences, schools and schoolyards, parks and playgrounds, day care centers, nursing homes, and hospitals. Sensitive receptors nearest to the known potential locations of proposed individual projects (i.e., the YLHEP/Diemer WTP, the Colorado River Aqueduct Pump Plant facilities, Jensen, Mills, Skinner, Weymouth WTPs) include existing and planned (under construction) residences, the Van Gogh Charter School in the city of Granada Hills, and the Grace Miller Elementary, Calvary Baptist, and Joan Macy schools in the city of La Verne.

Carbon Monoxide Hotspots

A carbon monoxide hotspot is a localized concentration of carbon monoxide that is above a carbon monoxide ambient air quality standard. Specifically, hotspots can be created at intersections and along roadways where traffic levels are sufficiently high such that the local carbon monoxide concentration exceeds the federal one-hour standard of 35.0 ppm or the federal and state eight-hour standard of 9.0 ppm (CARB 2016). Localized carbon monoxide concentrations are primarily the result of the volume of cars along a road and the level of emissions generated by vehicles. Restricted vehicular traffic flows can contribute to higher volumes of vehicles on a given roadway in a period of time but are not the cause of high carbon monoxide concentrations. As shown in Table 10, all seven air basins in the Plan Area are in attainment or are unclassified for the NAAQS and CAAQS for carbon monoxide. Stringent vehicle emission standards in California have reduced the level of carbon monoxide emissions generated by vehicles over time such that carbon monoxide hotspots are rarely a concern, except for roadways with very high traffic volumes. The BAAQMD has established a volume of 44,000 vehicles per hour as the level above which traffic volumes may contribute to a localized violation of carbon monoxide standards (BAAQMD 2017a). The maximum hourly traffic volume on a highway in California in 2017 was 35,500 vehicles on Interstate 405 at its junction with State Route 10 in Los Angeles (California Department of Transportation 2018). Therefore, the minimum number of trips that would need to be added to a roadway in the Plan Area to result in a carbon monoxide hotspot would be approximately 8,500 vehicles per hour (i.e., 44,000 – 35,500).

Construction

Construction activities associated with the proposed program would require vehicle trips to deliver heavy-duty construction equipment and materials, import/export soil, haul demolition debris, and transport construction workers. For example, during construction of the one sample program activity discussed under Threshold AQ-B, up to approximately 127 daily one-way trips would occur in the region of the given sample program activity (see Appendix B for CalEEMod modeling results on which this trip estimate is based). Due to the relatively small scale of individual projects that may be implemented under the CAP and their geographic distribution throughout the Plan Area, construction-

related trips would not have the potential to add 8,500 vehicles per hour on any given roadway in the Plan Area (see previous paragraph above) and therefore would not cause hourly traffic volumes on any roadways in the Plan Area to exceed 44,000 vehicles (per BAAQMD guidelines, described above). Therefore, **no impact** related to carbon monoxide hotspots would occur during construction.

Post-Construction

Individual projects that may be implemented under the proposed CAP would require a minimal number of vehicle trips related to operations and maintenance activities, the majority of which would travel on local and regional roadways that experience hourly traffic volumes far less than 44,000 vehicles per hour. Nevertheless, even if operations and maintenance trips utilize high-volume highways and freeways, these trips would not have the potential to add 8,500 vehicles per hour on any given roadway in the Plan Area due to the relatively small scale of individual projects that may be implemented under the proposed CAP and their geographic distribution throughout the Plan Area. Therefore, post-construction activities would not cause hourly traffic volumes on any roadways in the Plan Area to exceed 44,000 vehicles. Furthermore, the CAP includes measures intended to reduce vehicle trips and vehicle miles traveled, which would result in decreased traffic volumes on some roadways in the Plan Area. As a result, **no impact** related to carbon monoxide hotspots would occur during post-construction activities.

Toxic Air Contaminants

Construction

The greatest potential for TAC emissions during construction would be from DPM emissions associated with heavy equipment operations. According to CARB methodology, health effects from carcinogenic air toxics are usually described in terms of individual cancer risk, which is expressed as an estimate of the increased changes of developing cancer due to emissions over a 70-year lifetime (CARB 2005). The 2015 California Office of Environmental Health Hazard Assessment (OEHHA) Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments does not include recommendations for assessing the health risk of TACs associated with temporary construction projects because there is "considerable uncertainty" in evaluating cancer risk over short-term durations (OEHHA 2015).

Construction activities in any one location would be temporary and short-term given the relatively small scale of individual projects that may be implemented under the proposed CAP, after which time all construction-related TAC emissions would cease in that area. Furthermore, DPM emissions would be distributed geographically throughout the Plan Area, and it is unlikely that DPM emissions from construction of one project implemented under the CAP would affect the same sensitive receptor as DPM emissions from construction of another project implemented under the CAP. Therefore, construction impacts related to TAC emissions would be **less than significant**.

Post-Construction

The primary sources of TAC emissions in urbanized and suburban areas are industrial uses and vehicle trips on area roadways. The proposed program would not include new stationary sources of TAC emissions such as diesel generators, dry cleaners, distribution centers, or warehouses. In addition, as discussed under *Carbon Monoxide Hotspots*, the proposed program would not generate a substantial increase in operational vehicle trips. Therefore, the proposed program would not result in

a significant increase in DPM emissions from mobile sources on roadways in the Plan Area. As a result, post-construction impacts related to TAC emissions would be **less than significant**.

Valley Fever

Construction

Construction activities, including site preparation and grading, would have the potential to release *Coccidioides immitis* spores. The populations of arid and semiarid areas in the Plan Area have been and will continue to be exposed to Valley Fever from agricultural and construction activities occurring throughout these regions. Substantial increases in the number of reported cases of Valley Fever tend to occur only after major ground-disturbing events, such as the 1994 Northridge earthquake (VCAPCD 2003). Construction activities under the proposed program would not result in a comparable major ground disturbance, and because of compliance with applicable air district rules related to fugitive dust control, construction activities under the proposed program would not release a large number of spores. As discussed in Section 4.1.4.1, *Thresholds of Significance*, the VCAPCD recommends consideration of the following factors that may indicate the program's potential to result in significant impacts related to Valley Fever:

- Disturbance of the topsoil of undeveloped land (to a depth of about 12 inches)
- Dry, alkaline, sandy soils
- Virgin, undisturbed, non-urban areas
- Windy areas
- Archaeological resources probable or known to exist in the area (Native American midden sites)[21]
- Special events (fairs, concerts) and motorized activities (motocross track, All Terrain Vehicle activities) on unvegetated soil (non-grass)
- Non-native population (i.e., out-of-area construction workers)

The proposed program involves activities that would occur primarily in urbanized areas at or near existing Metropolitan facilities on relatively small project sites (five acres or less). While possible that individual projects may occur on virgin, undisturbed land, due to the relatively small scale of individual projects and their geographic distribution throughout the Plan Area, it is anticipated that construction workers would be from the local or regional area and would therefore have previous exposure to and immunity from Valley Fever. As discussed in Chapter 2, *Project Description*, in addition to Metropolitan's standard Environmental Requirements for Construction, Metropolitan implements environmental requirements for construction that are detailed in Metropolitan's engineering project specification package, which includes compliance with the applicable air district's fugitive dust control measures, such as SCAQMD Rule 403 (Fugitive Dust) and MDAQMD Rule 403 (Fugitive Dust). Therefore, construction activities associated with the proposed program would not result in a substantial increase in entrained fungal spores that cause Valley Fever above existing background levels, and construction impacts related to Valley Fever would be **less than significant**.

[21] The presence of archaeological resources can indicate that soils have been historically undisturbed and therefore have higher potential to contain *Coccidioides immitis* spores.

Post-Construction

Upon completion, individual projects that may be implemented under the CAP would not require substantial ground disturbance on undisturbed land in close proximity to sensitive receptors that could mobilize *Coccidioides immitis* spores. Therefore, **no impacts** related to Valley Fever would occur during post-construction activities.

Threshold AQ-D: *Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?*

Construction

Construction activities under the proposed program are small in nature and generally occur within the boundaries of Metropolitan -owned facilities and would not require a substantial amount of paving or use of heavy equipment that would generate oil and diesel fuel odors. Any odors would be limited to the construction period and would be temporary. Because the projects under the proposed program are small in nature and would not be expected to generate emissions that would adversely affect a substantial number of people, construction impacts related to odors would be **less than significant**.

Post-Construction

Based on a review of the CEQA guidance documents published by seven of the eight air districts with jurisdiction in the Plan Area (excluding the SDAPCD, which has not published guidance), odor-generating land uses include wastewater treatment facilities, sanitary landfills, solid waste transfer stations, composting facilities, petroleum extraction/transfer/processing/refining operations and facilities, asphalt batch plants, chemical manufacturing, fiberglass manufacturing, painting/coating operations (e.g., auto body shops), food processing facilities, coffee roasters, commercial charbroiling, green waste and recycling operations, wastewater pumping facilities, mushroom farms, metal smelting plants, rendering plants, feed lot/dairies, and agriculture. None of the proposed CAP measures involve these types of facilities or land uses, except planned regenerative agricultural studies on existing agricultural lands in the Palos Verde Valley (CAP measure CS-2). The proposed studies would analyze impacts of traditional fallowing practices and investigate the effects of various cover crops and no-till practices on existing agricultural lands. None of the proposed study activities would result in new or additional odor-generating land uses; therefore, **no impact** related to odors would occur during post-construction activities.

Cumulative Analysis

The geographic scope for the cumulative air quality impact analysis is the area covered by the seven air basins that encompass the Plan Area. In general, there are cumulative air quality impacts in air basins that are designated nonattainment for one or more criteria pollutants, as shown in Table 10. As discussed in the BAAQMD (2017a) *California Environmental Quality Act Air Quality Guidelines*, "By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts."

As summarized in Section 4.1.4.1, *Thresholds of Significance*, the proposed program would have a cumulatively considerable contribution to a significant cumulative air quality impact if any of the following criteria are met:

1. The project would be inconsistent with the applicable air quality plan, which is intended to address cumulative air quality impacts;

2. Emissions associated with the proposed program would exceed the project-level thresholds of significance, which are set at levels at which air districts have determined that individual projects would not have a cumulatively considerable contribution to cumulative air quality impacts; and/or
3. Cumulative traffic volumes in addition to program-related traffic volumes would result in a carbon monoxide hotspot.

As discussed under Thresholds AQ-A and AQ-B, the individual projects that may be implemented under the proposed CAP do not have sufficient detail to allow project-level analysis of criteria pollutant emissions during the construction phase at this time; however, post-construction activities under the CAP would not generate substantial air quality emissions. As discussed under Threshold AQ-C, the proposed program would not have the potential to generate a substantial number of vehicle trips on any one roadway; therefore, it is unlikely that cumulative traffic volumes in addition to program-related traffic volumes would result in a carbon monoxide hotspot along roadways in the Plan Area. As discussed under Threshold AQ-D, the proposed program activities are small in nature and would not generate emissions (such as those leading to odors) that would adversely affect a substantial number of people.

Nevertheless, for individual projects that may be implemented under the proposed CAP that involve construction activities with an intensity (i.e., size, schedule, equipment, demolition, import/export of soil, architectural coating) greater than the sample program activity as shown in Table 16 through Table 18, it cannot be determined at this time if cumulatively considerable construction and post-construction impacts related to the applicable air quality plans and criteria air pollutants or their severity. Mitigation would reduce emissions of criteria air pollutants during the construction phases for these individual projects to the extent feasible; however, it is not possible to determine whether impacts would be reduced to less-than-significant levels because the magnitude of emissions is not known. Therefore, even with implementation of MM AQ-1 and AQ-2, at the program-level, cumulative impacts are considered potentially **significant** and the CAP's contribution **cumulatively considerable**. Further environmental analysis and documentation is necessary at the project -level prior to construction for each individual project to determine if a potentially significant impact would occur and if mitigation would reduce the project-level impact to less than cumulatively considerable.

4.1.5.2 Mitigation Measures

MM AQ-1 **Construction Air Quality Assessment.** For individual projects to be implemented under the CAP that involve construction activities with an intensity (i.e., size, schedule, equipment, demolition, import/export of soil, architectural coating) greater than the sample program activity, an air quality assessment shall be prepared to evaluate construction emissions in light of the applicable air district thresholds.

MM AQ-2 **Implement Emission Reduction Measures.** If construction emissions would exceed any of the applicable thresholds, emission reduction measures shall be implemented to reduce emissions below the thresholds. Measures may include, but would not be limited to:

- All construction equipment shall be equipped with Tier 4 certified engines or CARB-certified Level 3 diesel particulate filters. All diesel particulate filters shall be kept in working order and maintained in operable condition according to manufacturer's specifications, as applicable.
- Construction equipment with lower horsepower ratings shall be utilized, as applicable and practicable.

- Ultra-low-sulfur diesel fuel shall be used for stationary construction equipment, as applicable.
- Low-emission on-site stationary equipment shall be used, as applicable.
- Alternatively-fueled construction equipment (e.g., renewable diesel, natural gas, electric) shall be utilized instead of diesel-fueled construction equipment, as applicable.
- The schedule for soil import and/or export shall be extended to reduce the number of daily haul truck trips, as applicable.
- The schedule for the coating/painting phase shall be extended to reduce the square footage coated/painted each day, as applicable.
- Architectural coatings with a VOC content of less than 250 grams per liter shall be utilized.

4.1.5.3 Level of Significance After Mitigation

Implementation of MM AQ-1 and AQ-2 would reduce conflicts with applicable air quality plans and criteria air pollutants; however, these impacts are assumed to be **significant and unavoidable**, as the severity of impacts from individual projects carried out under the proposed program cannot be determined at this time. Once project-specific information is available regarding each individual project under the proposed CAP, further environmental analysis and documentation is necessary at a project-level prior to construction to determine if a significant impact would occur and if mitigation would reduce the impact to a less-than-significant level.

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4.2 Biological Resources

4.2.1 Introduction

This chapter describes the existing conditions for biological resources, the regulatory framework associated with biological resources, the potential impacts to biological resources that would result from the proposed program, and the mitigation measures that would reduce these impacts.

4.2.2 Existing Conditions

The existing conditions related to biological resources, including habitat classifications, drainages and wetlands, sensitive natural communities, special-status plants and animals, and wildlife movement corridors are provided in Appendix C.

4.2.3 Regulatory Framework

Federal, state, and local authorities, under a variety of statutes and guidelines, share regulatory authority over biological resources. The primary authority for general biological resources lies within the land use control and planning authority of local jurisdictions, which in this instance are the counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura, in addition to the portions of Imperial, San Joaquin, and Contra Costa counties, as well as other local jurisdictions including cities within these counties. The CDFW is a trustee agency for biological resources throughout the state as defined in CEQA and also has direct jurisdiction under the California Fish and Game Code (CFGC), which includes, but is not limited to, resources protected by the State of California under the California Endangered Species Act (CESA) and Section 1600 *et. seq*. In addition, the RWQCB is the responsible agency for "waters of the state".

4.2.3.1 Federal

Endangered Species Act

The United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) share responsibility and regulatory authority for implementing the federal Endangered Species Act (FESA) (16 United States Code [USC] Section 1531 *et seq*.). Under the FESA, authorization is required to "take" a listed species. Take is defined under FESA Section 3 as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Under federal regulation (50 Code of Federal Regulations [CFR] Sections 17.3), "harm" is further defined as "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." Critical habitat is a specific geographic area(s) containing physical or biological features essential for the conservation of a threatened or endangered species and that may require special management considerations or protection. Critical habitat may include an area that is not currently occupied by the species but will be needed for its recovery.

FESA Section 7 outlines procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat. Section 7(a)(2) of the FESA and its implementing regulations require federal agencies to consult with USFWS or NMFS to ensure that they are not authorizing, funding, or carrying out actions likely to jeopardize the continued existence of listed species, or result in the destruction or adverse modification of critical habitat.

For program activities where federal action is not involved and take of a listed species may occur, the proponent may seek to obtain an incidental take permit (ITP) under FESA Section 10(a)(1)(B). This section, in conjunction with Section 10(a)(2)(A), allows USFWS to permit the incidental take of listed species if such take is accompanied by a Habitat Conservation Plan (HCP)[22] that includes components to minimize and mitigate impacts associated with the take.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) protects native birds and bird parts (16 USC Section 703-712). Under the provisions of the MBTA, it is unlawful to take (pursue, hunt, take, capture, or kill) migratory birds, except under permits issued by the USFWS for special situations, such as imminent threat to human safety or scientific research. The law currently applies to more than 1,000 species (50 CFR Section 10.13), including most native birds, and covers the destruction or removal of active nests of those species. These protections apply regardless of whether other entitlements are in place, such as approvals under CEQA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act is the primary law protecting eagles, including individuals and their nests and eggs (16 USC Section 668-668d, 54, Stat. 250 and Amendments). It states “no person shall take, possess, sell, purchase, barter, offer for sale, transport, export, or import any bald or golden eagle alive or dead, or any part, nests or eggs, thereof without a valid permit to do so.”

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) is the primary law governing marine fisheries management in United States federal waters. The act was first passed in 1976 and revised in 1996 and 2007. The purpose of the act is to provide long-term biological and economic sustainability of United States marine fisheries.

The NMFS has regulatory authority for implementing the Magnuson-Stevens Act. The NMFS requires regional fishery management councils to develop Fisheries Management Plans (FMP) specific to their regions, fisheries and fish stocks. For waters off the United States West Coast, the Pacific Fishery Management Council has developed four FMPs, which are implemented through fisheries regulations for coastal pelagic species, groundfish species, highly migratory species and salmon species. These FMPs also identify Essential Fish Habitat which is broadly defined as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. Federal agencies which fund, permit, or undertake activities that may adversely affect Essential Fish Habitat are required to consult with National Oceanic and Atmospheric Administration (NOAA) Fisheries regarding the potential effects of their actions on Essential Fish Habitat and to respond to NOAA’s conservation recommendations.

[22] HCPs are planning documents required as part of an application for an ITP. They describe the anticipated effects of the proposed taking; how those impacts will be minimized or mitigated; and how the HCP is to be funded. HCPs can apply to both listed and nonlisted species, including those that are candidates or have been proposed for listing.

Section 10 of the River and Harbors Act

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through the USACE, for any structure or work in, under, or over any navigable water of the United States. Regulated activities include dredging or disposal of dredged materials, excavation, filling, re-channelization and construction of any structure or any other modification of a navigable water of the United States.

Clean Water Act

The Clean Water Act was enacted to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Under Section 404 of the Clean Water Act, the USACE, with U.S. EPA oversight, regulates activities that result in discharge of dredged or fill material into wetlands or other "waters of the United States." Any discharge of dredged or fill material into jurisdictional waters requires a Section 404 permit from the USACE prior to the start of work. In administering its regulatory program to achieve the goals of the Clean Water Act, the USACE implements a mitigation sequencing requirement whereby impacts must be avoided, then minimized, and finally compensated for if avoidance and minimization are not sufficient to reduce adverse effects on the aquatic ecosystem. When compensatory mitigation is required, it should comply with the following hierarchy established by the USACE/U.S. EPA 2008 Mitigation Rule (in descending order): (1) mitigation banks; (2) in-lieu fee programs; (3) permittee-responsible mitigation under a watershed approach; (4) permittee-responsible mitigation through on-site and in-kind mitigation; and, (5) permittee-responsible mitigation through off-site and/or out-of-kind mitigation.

The scope of waters of the United States has been the subject of recent agency rulemaking. On April 21, 2020, the USACE and U.S. EPA published the "Navigable Waters Protection Rule," to finalize a revised definition of waters of the United States under the Clean Water Act. Under the revised definition, ephemeral drainages are non-jurisdictional, as are wetlands that do not exhibit, at least seasonally, a continuous surface connection to jurisdictional waters.

Also, in accordance with Section 401 of the Clean Water Act, applicants for a Section 404 permit must obtain water quality certification from the appropriate RWQCB. The certification requirement functions as a mechanism for states to review proposed Section 404 permits and to ensure that proposed discharges do not violate state water quality standards. For program activities that would occur in multiple regions, the water quality certification is issued by the State Water Resources Control Board.

4.2.3.2 State

Endangered Species Act

The CESA (CFGC Section 2050 et. seq.) prohibits take of state-listed threatened and endangered species without a CDFW ITP. Take under California law means "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill," and does not include indirect harm by way of habitat modification. In issuing an ITP, CDFW must make several findings, including that the proposed take would not jeopardize the continued existence of the species and that the impacts of the take would be minimized and fully mitigated.

Fully Protected Species

Protection of fully protected species is described in CFGC Sections 3511, 4700, 5050 and 5515. These statutes prohibit take or possession of fully protected species. Incidental take of fully protected

species may be authorized under an approved Natural Community Conservation Plan (NCCP; see CFGC sections 2800 *et seq*.).

California Fish and Game Code sections 3503, 3503.5 and 3513

CFGC sections 3503, 3503.5 and 3513 protect all birds, as well as their nests and eggs, for species that are not already listed as fully protected and that occur naturally within the state. Sections 3503 and 3503.5 of the CFGC stipulate the following regarding eggs and nests: Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by CFGC or any regulation made pursuant thereto; and Section 3503.5 states that is it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by CFGC or any regulation adopted pursuant thereto. Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA. In November 2018, the CDFW and California Attorney General issued an advisory to affirm that relevant statutes in the CFGC continue to provide protections for birds, including their active nests. Specifically, the advisory notes that for purposes of these statutes, California courts have held that the CFGC's protections include prohibitions on incidental take and that such take is not limited to hunting, fishing, and other activities that are lawfully permitted to take/kill wildlife.

Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 (CFGC Sections 1900 *et seq.*) authorizes the CDFW to designate rare and endangered native plants and provides specific protection measures for these listed species. Under Section 1913(c) of the NPPA, the owner of land where a rare or endangered native plant is growing is required to notify the department at least 10 days in advance of changing the land use to allow for salvage of the plant(s).

Section 1600 *et seq*. of the California Fish and Game Code

Sections 1600 through 1617 of the CFGC describe CDFW's Lake and Streambed Alteration program. Section 1602 of the CFGC provides that an entity shall not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, without prior notification to CDFW. Upon receiving such notification, CDFW assesses whether the proposed activity would adversely affect fish and wildlife resources. If an adverse effect is identified, CDFW issues a Lake/Streambed Alteration Agreement authorizing the activity to proceed subject to required measures CDFW believes are necessary to protect fish and wildlife resources. Although CDFW has not promulgated regulatory definitions of "Lake" or "Stream" for use in this regulatory program, all lakes, ponds, perennial, intermittent and ephemeral streams, and associated riparian vegetation are typically subject to the program.

Natural Community Conservation Planning Act

The NCCP Act (CFGC Sections 2800 *et seq.*) is administered by the CDFW as a means to protect habitat in California. The NCCP Act takes a regional approach to preserving habitat. The designation of a NCCP area identifies and provides for the regional protection of plants, animals and their habitats, while allowing compatible and appropriate economic activity. Once an NCCP has been approved, CDFW may provide take authorization for all covered species, including fully protected

species, under Section 2835 of the CFGC. Working with landowners, environmental organizations, and other interested parties, a local agency oversees the numerous activities that compose the development of an NCCP. Refer to Section 4.2.3.3, *Local Policies and Adopted/Approved Plans*, below for a summary of NCCPs within the Plan Area.

Porter-Cologne Water Quality Control Act

The State Water Resources Control Board (SWRCB) and each of nine local RWQCBs have jurisdiction over waters of the State pursuant to the Porter-Cologne Water Quality Control Act. Waters of the State are defined as any surface water or groundwater, including saline waters, within the boundaries of the state. The Porter-Cologne Act regulates discharges of waste into waters of the State and includes discharges from both point and non-point sources. Discharges of dredge or fill material are considered discharges of waste and are regulated by the RWQCBs under this statute. Because the limits of Porter-Cologne Act jurisdiction are unaffected by the recent reductions in federal Clean Water Act jurisdiction, the RWQCBs are increasingly relying on their authority under the Porter-Cologne Act to regulate discharges into non-federal waters. The SWRCB has issued general Waste Discharge Requirements regarding discharges to "isolated" waters of the state (Water Quality Order No. 2004-0004-DWQ, Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the USACE to be Outside of Federal Jurisdiction). Additionally, a new set of procedures for regulating discharges of dredge and fill material was approved by the SWRCB in April 2019 and became effective on May 28, 2020.

4.2.3.3 Local Policies and Adopted/Approved Plans

General Plans typically contain elements which address protection of biological resources. Typically, these elements consist of goals, policies and actions that protect natural resources, such as environmentally sensitive habitats, special status species, native trees, creeks, wetland and riparian habitats. Local jurisdictions generally approve development as long as it is consistent with those elements of the General Plan.

Some resources are afforded protection via local ordinances that protect trees, riparian corridors and environmentally sensitive habitats. Each county and many cities in the Plan Area have municipal codes which protect natural resources and address compliance with environmental regulations. For example, local ordinances and policies may be in place that protect native and nonnative trees in urban landscapes, as well as in unincorporated county lands. These ordinances and policies vary in their definitions of protected trees (e.g., certain species, minimum diameter at breast height [dbh], trees that form riparian corridors or a combination thereof) and in the requirements for ordinance or policy compliance. In addition, counties and cities may have local ordinances or policies that are intended to protect other biological resources such as wetlands and drainages, riparian habitat and other sensitive habitat areas. Due to the programmatic nature of the proposed CAP, a precise, project-level analysis of the specific impacts associated with individual program activities is not possible, thus, evaluation of compliance with local ordinances would be completed on a case-by-case basis as covered activities progress through the project planning phase and subsequent CEQA analysis and documentation, as required, as project-level details become available regarding individual proposed projects.

According to the CDFW NCCP website, the following are those NCCPs and HCPs that occur within the Plan Area (CDFW 2019b):

- **Los Angeles County**
  - **City of Rancho Palos Verdes NCCP/HCP**. The City of Rancho Palos Verdes NCCP/HCP covers approximately 3,146 acres within Rancho Palos Verdes. It covers 10 species of plants and wildlife as well as several natural vegetation communities.
- **Orange County**
  - **County of Orange Central/Coastal Subregion NCCP/HCP.** The County of Orange Central/Coastal Subregion NCCP/HCP covers approximately 208,000 acres within the central and coastal portions of Orange County. It covers 45 species of plants and wildlife as well as several natural vegetation communities.
- **Riverside County**
  - **Western Riverside Multiple Species Habitat Conservation Plan (MSHCP).** The Western Riverside Multiple Species HCP covers approximately 1.26 million acres within western Riverside County. It covers 118 species of plants and wildlife as well as many natural vegetation communities.
  - **Coachella Valley MSHCP**. The Coachella Valley Multiple Species HCP covers approximately 1.2 million acres within eastern Riverside County. It covers 27 species of plants and wildlife as well as 27 natural vegetation communities.
- **San Bernardino County**
  - **Town of Apple Valley Multi-Species Conservation Plan.** The Town of Apple Valley Multi-Species Conservation Plan covers approximately 221,180 acres within the town of Apple Valley as well as in unincorporated San Bernardino County to the north and east. It covers 21 species of plants and wildlife as well as 17 natural vegetation communities.
- **San Diego County**
  - **San Diego County Multiple Habitat Conservation Program (East County).** The San Diego County Multiple HCP covers approximately 1.6 million acres within eastern San Diego County. It covers 253 species of plants and wildlife as well as many natural vegetation communities.
  - **San Diego North County Multiple Species Conservation Plan.** The San Diego North County Multiple Species HCP covers approximately 345,000 acres within northern San Diego County. It covers 62 species of plants and wildlife as well as several natural vegetation communities.
  - **San Diego County Multiple Species Conservation Program (South County).** The San Diego County Multiple Species HCP for South San Diego County covers approximately 576,000 acres within southern San Diego County. It covers 80 species of plants and wildlife and several natural vegetation communities.

4.2.4 Thresholds and Methodology

4.2.4.1 Thresholds of Significance

Table 19 lists thresholds from Appendix G of the *State CEQA Guidelines* that pertain to impacts associated with biological resources. These thresholds are addressed in the draft PEIR.

Table 19 CEQA Thresholds for Biological Resources

Threshold Would the proposed program:
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and/or
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.2.4.2 Methodology

Section 4.2.5, *Impacts Analysis*, below presents a programmatic-level discussion of impacts to special status biological resources from implementation of the proposed CAP. As discussed in Section 1.2, *Purpose of the Program Environmental Impact Report*, a project-level analysis of the specific impacts associated with all individual projects and program activities would occur when project details are available. Potential impacts to plants and animal species would be identified during subsequent environmental analysis conducted when additional project-level details are available prior to construction. If species are identified, the mitigation measures described in this section would apply.

The following section summarizes the impacts associated with implementation of emission reduction measures proposed in the CAP. It is anticipated that construction of planned projects would occur at Metropolitan facilities or within Metropolitan rights-of-way. Specifically, the following Metropolitan locations have been identified as potential project sites for projects that would be implemented under the proposed CAP: Diemer WTP (Orange County), Jensen WTP (Los Angeles County), Mills WTP (Riverside County), Skinner WTP (Riverside County), Weymouth WTP (Los Angeles County), headquarters building (Los Angeles County), CRA pump plants (Riverside and San Bernardino counties), Metropolitan-owned facilities throughout the Plan Area, Metropolitan-owned agricultural land at the southwest corner of 35th Avenue and Keim Boulevard in the Palo Verde Valley (Imperial County), and Webb Tract, Holland Tract, Bouldin Island, and Bacon Island in the Bay Delta (San Joaquin/Contra Costa counties). In general, implementation of proposed program activities envisioned by the CAP could result in the biological resources impacts as described in the following section. Data used for this analysis include aerial photographs, topographic maps, and data on special status species and sensitive habitat information obtained from the CDFW BIOS (CDFW 2020c), the CNDDB (CDFW 2020a), the CNPS Online Inventory of Rare and Endangered Plants (CNPS 2020), the USFWS IPaC (USFWS 2020b), and accepted scientific texts to identify species. The USFWS Critical Habitat Mapper (USFWS 2020c) and USFWS National Wetlands Inventory (USFWS 2020a) were also queried. Due to the large Plan Area, field surveys were not conducted. Analysis is based solely on desktop analysis and literature review.

4.2.5 Impacts Analysis

4.2.5.1 Program Analysis

Threshold BIO-A: *Would the proposed program have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

For the purposes of this analysis, special status plant and animal species include those designations described in Appendix C. Most of the program activities proposed under the CAP would occur in urbanized areas at or near existing Metropolitan facilities. While the proposed covered projects located within existing Metropolitan facilities would be unlikely to directly impact special status species, several Metropolitan facilities are located in close proximity to suitable habitat for special status species and proposed covered projects in these locations may potentially result in indirect effects (e.g., disturbance from noise, dust, equipment staging) to adjacent sensitive habitat, if present. Specifically, special status species with potential to occur at the proposed project sites could include:

- Diemer WTP: Adjacent to coastal scrub that may support coastal California gnatcatcher (*Polioptila californica californica*)
- Jensen WTP: Adjacent to riparian habitat surrounding Bull Creek that may support coastal California gnatcatcher, least Bell's vireo (*Vireo bellii pusillus*), and southwestern pond turtle (*Actinemys pallida*)
- Mills WTP: Adjacent to habitat that may support coastal California gnatcatcher, least Bell's vireo, and Stephens' kangaroo rat (*Dipodomys stephensi*)
- Skinner WTP: Adjacent to habitat that may support burrowing owl (*Athene cunicularia*), coastal California gnatcatcher, and Stephens' kangaroo rat
- Weymouth WTP: Existing facilities may support special status bat species
- CRA Pump Plants: Existing facilities and adjacent habitat may support desert tortoise (*Gopherus agassizii*)
- Palo Verde: Agricultural land and adjacent irrigation ditches within and adjacent to the proposed project site may support burrowing owl and rail species
- Bay Delta: Aquatic habitat surrounding the islands may support special status aquatic species including Delta smelt (*Hypomesus transpacificus*), green sturgeon (*Acipenser medirostris*), salmon species, and steelhead (*Oncorhynchus mykiss irideus*)

It is unlikely that construction activities would occur on natural, undisturbed areas, with the exception of sites in the Bay Delta region. Nonetheless, because the specific project-level details regarding program activities are unknown at this time, these activities could have the potential to impact areas occupied by special status plant and animal species. There are 883 special status species known to occur or with potential to occur within the Plan Area (see Appendix C). One hundred fifty-one of these species are given high levels of protection by the federal government through listing under FESA or by the state government through listing under CESA or designation of Fully Protected status (animals only). A full list of species is presented in Appendix C. Most special status species have very limited ranges within the subject counties and have specific habitat requirements. Many special status species also tend to be associated with sensitive habitats, such as riparian habitats and drainages.

Various proposed program activities could affect special status species or their habitats. Vegetation clearing and excavation could remove habitat or individuals. Excavation, ground clearing, equipment and materials storage, access routes, and other activities could result in impacts on runoff and/or water quality, potentially affecting habitat. Excavation, ground clearing, and access routes could result in air quality impacts (dust, exhaust) that could affect adjacent individuals. Equipment or construction-related traffic could introduce hazardous materials into habitats. Equipment and construction-related traffic could result in noise impacts affecting noise-sensitive species. Equipment and construction personnel could also introduce harmful, noxious, and/or invasive species that could damage habitats (such as by tracking in invasive weed seeds). Most projects under the proposed CAP are relatively small in scope and located in previously disturbed areas so the likelihood of a significant impact to special status species or their habitat is low. In addition, projects would be designed/located to avoid or minimize impacts to the extent possible, where feasible. However, impact to special status species would be examined at a project-level during subsequent environmental review when more detailed project description information is available for each individual project proposed under the CAP. If it is determined that construction or operation of any covered activity would result in significant impacts on special status species, implementation of MM BIO-1 through BIO-6 would reduce these impacts to **less than significant**.

Even in fully developed areas, proposed program activities have the potential to result in impacts on protected species. Migratory birds, including most birds that nest in the Plan Area, are protected by the federal MBTA, which prohibits take (including killing, capturing, selling, trading and transport) of protected migratory bird species, including to their active nests. In addition, CFGC Section 3503 makes it unlawful to destroy nests or eggs of any bird. Where vegetation, and especially trees, are removed as part of construction, there is the potential for impacts to nests or eggs under the MBTA and Section 3503 of the CFGC, but the level of impact would need to be determined at the project level when specific details are known about each of the proposed projects covered under the CAP. Compliance with the CFGC and the MBTA would ensure that impacts to migratory birds would be **less than significant**.

Threshold BIO-B: *Would the proposed program have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

Threshold BIO-C: *Would the proposed program have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

Program activities that may be implemented under the proposed CAP have the potential to impact sensitive habitats, including riparian areas and wetlands. Most of the program activities proposed under the CAP would occur in urbanized areas at or near existing Metropolitan facilities except for projects occurring in the Palo Verde and Bay Delta regions. While work within existing Metropolitan facilities would be unlikely to directly impact wetlands, riparian habitat or other sensitive communities, several Metropolitan facilities are located near these resources, specifically:

- Diemer WTP: Adjacent to coastal sage scrub and California black walnut woodland (considered sensitive communities by CDFW) as well as potentially jurisdictional drainages
- Jensen WTP: Adjacent to riparian habitat within and adjacent to Bull Creek
- Skinner WTP: Adjacent to riparian habitat within and adjacent to Tucalota Creek.
- Bay Delta: Mapped as a wetland by the USFWS National Wetlands Inventory

Due to the programmatic nature of the proposed CAP, the specific details of individual project activities are unknown at this time, so specific project-level analysis cannot be conducted and impacts identified at this time; however, some examples of potential impacts to riparian/wetland habitats include, but are not limited to, the following: vegetation clearing and excavation could remove habitat or result in runoff and/or water quality impacts; excavation, ground clearing, and use of unpaved access routes could result in air quality impacts (dust, exhaust) that could affect adjacent habitat; equipment or construction-related traffic could introduce hazardous materials into habitats; and equipment and construction personnel could also introduce harmful, noxious, and/or invasive species that could damage habitats (such as by tracking in weed seeds). Riparian areas provide wildlife habitat and movement corridors, enabling both terrestrial and aquatic organisms to move along river systems between areas of suitable habitat. The impacts, if any, to riparian or wetland habitat would need to be determined at the project level when specific details are known about each project proposed under the CAP. Construction activities under the proposed program are relatively small in scope and generally located within previously disturbed areas such as Metropolitan pump or treatment plant boundaries or on existing agricultural lands. Projects would be designed and located to avoid or minimize impacts to the extent feasible. Additionally, the projects under the proposed program are small in nature and would not be expected to have a substantial adverse effect on riparian or wetland habitats. However, if, during project-level analysis, it is determined that construction or operation of any covered activity would result in significant impacts to riparian habitats, sensitive natural communities, or state or federally protected wetlands, implementation of MM BIO-7 through MM-BIO-9 would reduce these impacts to **less than significant**.

Threshold BIO-D: *Would the proposed program interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

Most of the program activities proposed under the CAP would occur primarily in urbanized areas at or near existing Metropolitan facilities with the exception of proposed projects occurring in the Palo Verde and Bay Delta regions. Proposed projects occurring within existing Metropolitan facilities, including Diemer WTP, Jensen WTP, Skinner WTP, Weymouth WTP, and the CRA pump plants would not interfere with wildlife movement as those facilities are currently fenced and developed. Although the exact locations of program activities in the Bay Delta regions have not been identified at this time, individual project activities in both the Palo Verde and the Bay Delta regions would be small in nature and would be located to not impede or interfere with movement of native resident or migratory fish or wildlife species, established native resident or migratory wildlife corridors, or the use of native wildlife nursery sites. Construction activity and noise could temporarily alter the behavior of wildlife in the area and therefore temporarily disrupt wildlife movement patterns. However, the portions of the Plan Area within the undeveloped areas of the Palo Verde and Bay Delta regions comprise a very small portion of the surrounding habitat areas available for wildlife movement. Therefore, it is unlikely that proposed program activities implemented in these areas would substantially interfere with wildlife movement as there is sufficient adjacent habitat in these areas to facilitate wildlife movement and development in these areas would not isolate wildlife from adjacent movement corridors. Impacts would be **less than significant,** and no mitigation would be required.

Threshold BIO-E: *Would the proposed program conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

Protected trees and other biological resources that are protected by city and/or county ordinances and/or policies may be encountered at the locations where program activities are proposed under the CAP and therefore there is potential for conflict with local ordinances and/or policies. Most of the program activities proposed under the CAP, however, would occur primarily in urbanized areas at existing Metropolitan facilities. Because ground disturbances would be limited, the removal of native trees and disturbances to other biological resources protected by local policies or ordinances would likely be minimal for most program activities. Metropolitan would comply with any local policies or ordinances protecting biological resources, therefore impacts would **be less than significant** and no mitigation would be required.

Threshold BIO-F: *Would the proposed program conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

Portions of the Plan Area are within established habitat conservation plans including the Town of Apple Valley Multi-Species Conservation Plan, City of Rancho Palos Verdes NCCP/HCP, County of Orange Central/Coastal Subregion NCCP/HCP, Western Riverside MSHCP, Coachella Valley MSHCP, San Diego County Multiple HCP (East County), San Diego North County Multiple Species Conservation Plan, and San Diego County Multiple Species Conservation Program (South County). However, the only planned projects under the proposed CAP that would occur within the boundaries of an established HCP/NCCP or other approved local, regional, or state HCP would occur at the Skinner WTP and Mills WTP, both of which are in the Western Riverside MSHCP. Proposed activities would not conflict with the provisions of the Western Riverside MSHCP as those facilities are currently developed and the proposed projects are small in nature with minimal impacts. Therefore, program activities that may occur within areas covered by an HCP/NCCP or other approved local, regional, or state habitat conservation plan would be **less than significant** and no mitigation would be required.

4.2.5.2 Mitigation Measures

Depending on the results of the project-specific biological resource assessment completed during subsequent environmental review for each proposed project under the CAP, the following mitigation measures would be applied, as applicable:

MM BIO-1 Special Status Plant Species Surveys

If completion of the project-specific biological resources assessment determines that special status plant species have potential to occur on site, surveys for special status plants shall be completed prior to any vegetation removal, grubbing, or other construction activity of each program activity (including staging and mobilization). The surveys shall be floristic in nature and shall be seasonally timed to coincide with the target species identified in the program activity-specific biological resources assessment. All plant surveys shall be conducted by a qualified biologist no more than one year prior to project implementation (annual grassland habitats may require yearly surveys). Surveys shall be conducted in accordance with current protocols established by the CDFW, USFWS and the local jurisdictions if said protocols exist. If special status plant species are identified, Mitigation Measure BIO-2 shall apply.

MM BIO-2 Special Status Plant Species Avoidance, Minimization, and Mitigation

If state- or federally-listed special status and/or CRPR 1 and 2 plant species are identified during the project-specific biological assessment, the activity shall be re-designed to avoid impacting these plant species to the maximum extent feasible. If CRPR 3 and 4 species are found, the biologist shall evaluate if they meet criteria to be considered special status, and if so, the same process as identified for CRPR 1 and 2 species shall apply.

If special status plant species cannot be avoided and would be impacted by a program activity implemented under the proposed CAP, all impacts shall be mitigated at an appropriate ratio (minimum ratio of 1:1) to fully offset program activity impacts, as determined by a qualified biologist for each species. A restoration plan shall be prepared and implemented, as applicable.

MM BIO-3 Endangered/Threatened Animal Species Habitat Assessment and Protocol Surveys

If the results of the project-specific biological resources assessment determine suitable habitat may be present for any federally and/or state endangered or threatened animal species, habitat assessments and/or protocol surveys shall be completed in accordance with CDFW and/or USFWS/NMFS protocols prior to construction.

Alternatively, in lieu of conducting protocol surveys, Metropolitan may choose to assume presence within the activity footprint and proceed with implementing appropriate avoidance measures, consultation, and permitting, as applicable.

If the target species are detected during protocol surveys, or protocol surveys are not conducted and presence is assumed based on suitable habitat, Mitigation Measure BIO-4 shall apply.

MM BIO-4 Endangered/Threatened Animal Species Avoidance and Mitigation

If habitat is occupied or presumed occupied by federal and/or state-listed species and would be impacted by program activities, the program activity shall be redesigned in coordination with a qualified biologist to avoid impacting occupied/presumed occupied habitat to the maximum extent feasible. If occupied or presumed occupied habitat cannot be avoided, Metropolitan shall consult with USFWS, NMFS, and/or CDFW in order to determine the appropriate course of action, which may include a Biological Opinion (BO) or HCP/ITP issued by the USFWS/NMFS (relevant to federally listed species) and/or the ITP issued by the CDFW (relevant to state listed species).

If occupied or presumed occupied habitat cannot be avoided, compensatory mitigation shall be provided (minimum ratio of 1:1) to fully offset impacts to habitat prior to the construction. Compensatory mitigation may be provided through purchase of mitigation bank credits, in-lieu fee, or permittee-responsible habitat restoration/establishment/enhancement/preservation. Compensatory mitigation may be combined/nested with special status plant species and sensitive natural community restoration, where applicable. Temporary impact areas shall be restored to similar pre-project conditions.

If on and/or off-site habitat restoration/conservation is identified, a Habitat Mitigation and Monitoring Plan (HMMP) shall be prepared to ensure the success of compensatory mitigation sites. The HMMP shall identify long-term site management

needs, routine monitoring techniques, and performance standards for determining that the conservation site has met the necessary criteria to function as a suitable mitigation site.

MM BIO-5 Endangered/Threatened Species Avoidance and Minimization During Construction

The following measures shall be applied to aquatic and terrestrial species, where appropriate. Metropolitan shall select from these measures as appropriate depending on site conditions, the species with potential for occurrence, and the results of the project-specific biological resources assessment (Mitigation Measure BIO-1).

Pre-construction surveys for federal and/or state listed species with potential to occur shall be conducted where suitable habitat is present by a qualified biologist not more than 72 hours prior to the start of construction activities. The survey area shall include the proposed disturbance area and all proposed ingress/egress routes, plus a species-specific buffer. If any life stage of federal and/or state listed species is found within the survey area, the appropriate measures in the BO or HCP/ITP issued by the USFWS/NMFS (relevant to federally listed species) and/or the ITP issued by the CDFW (relevant to state listed species) shall be implemented; or if such guidance is not in place for the activity, the qualified biologist shall recommend an appropriate course of action, which may include consultation with USFWS, NMFS, and/or CDFW.

- The activity limits of disturbance shall be flagged. Areas of special biological concern within or adjacent to the limits of disturbance shall have Environmental Sensitive Area fencing installed between said area and the limits of disturbance.
- All activities occurring within or adjacent to sensitive habitats that may support federally and/or state endangered/threatened species shall have a qualified biologist present during all initial ground disturbing/vegetation clearing activities. Once initial ground disturbing/vegetation clearing activities have been completed, the biologist shall conduct pre-activity clearance surveys, as needed to ensure protection of endangered/threatened species.
- If pumps are used for dewatering activities, all intakes shall be completely screened with wire mesh not larger than five millimeters to prevent animals from entering the pump system.
- If at any time during construction of the program activity an endangered/threatened species enters the construction site or otherwise may be impacted by the program activity, all program activities shall cease. At that point, a qualified biologist shall recommend an appropriate course of action, which may include consultation with USFWS, NMFS, and/or CDFW. Alternatively, the appropriate measures shall be implemented in accordance with the BO or HCP/ITP issued by the USFWS (relevant to federal listed species) and/or the ITP issued by the CDFW (relevant to state listed species) and work can then continue as guided by those documents and the agencies, as appropriate.
- All trenches, pipes, culverts or similar structures shall be inspected for animals prior to burying, capping, moving, or filling.
- Upon completion of the program activity, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the activity, including the pre-construction survey results.

MM BIO-6 Non-Listed Special Status Animal Species Avoidance and Minimization

Depending on the species identified in the project-specific biological resource assessment, the following applicable measures shall be implemented to reduce the potential for impacts to non-listed special status animal species:

- Pre-construction clearance surveys shall be conducted by a qualified biologist within 14 days prior to the start of construction (including staging and mobilization). The surveys shall cover the entire disturbance footprint plus a minimum 100-foot buffer and shall identify all special status animal species that may occur on-site. The qualified biologist shall make recommendations for avoidance of non-listed special status species, such as through the use of exclusion fencing, buffer zones, etc.
- A qualified biologist shall be present during all initial ground disturbing activities, including vegetation removal, to recover special status animal species encountered during construction activities.
- Upon completion of the program activity, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the program activity, including the pre-construction survey results.
- If special status bat species may be present and impacted by the program activity, within 30 days of the start of construction, a qualified biologist shall conduct presence/absence surveys for special status bats where suitable roosting habitat is present. Surveys shall be conducted using acoustic detectors and by searching tree cavities, crevices, and other areas where bats may roost. If active bat roosts or colonies are present, the biologist shall evaluate the type of roost to determine the next step.
- If a maternity colony is present, all construction activities shall be postponed within a 250-foot buffer around the maternity colony until it is determined by a qualified biologist that the young have dispersed. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately.
- If a roost is determined by a qualified biologist to be used by a large number of bats (large hibernaculum), alternative roosts, such as bat boxes if appropriate for the species, shall be designed and installed near the program activity site. The number and size of alternative roosts installed will depend on the size of the hibernaculum and shall be determined by a qualified biologist.
- If other active roosts are located, exclusion devices shall be installed such as valves, sheeting or flap-style one-way devices that allow bats to exit but not re-enter roosts to discourage bats from occupying the site.

MM BIO-7 Jurisdictional Delineation and Impact Avoidance

If the results of Mitigation Measure BIO-1 indicate program activities implemented under the proposed CAP would impact wetlands, drainages, riparian habitats, or other areas that may fall under the jurisdiction of the CDFW, USACE, and/or RWQCB, a qualified biologist shall complete a jurisdictional delineation. The jurisdictional delineation shall determine the extent of the jurisdiction for each of these agencies within the program activity site and shall be conducted in accordance with the requirement set forth by each agency. The results shall be provided in a jurisdictional delineation report submitted to Metropolitan, USACE, RWQCB, and CDFW, as

appropriate, for review and approval. The program activity shall be designed to avoid or minimize impacts to jurisdictional areas to the maximum extent feasible.

MM BIO-8 Wetlands, Drainages and Riparian Habitat Restoration

If impacts to jurisdictional drainages, wetlands, riparian habitat, and sensitive vegetation communities cannot be avoided, impacts shall be mitigated at an appropriate ratio to fully offset project-specific impacts (minimum ratio of 1:1). Where feasible, temporarily impacted areas shall be restored to pre-project conditions. An HMMP shall be developed by a qualified biologist and submitted to the agency overseeing the program activity for approval. Alternatively, mitigation shall be accomplished through purchase of credits from an approved mitigation bank or in-lieu fee program.

MM BIO-9 Sensitive Natural Community Avoidance and Mitigation

If the results of Mitigation Measure BIO-1 indicate program activities implemented under the proposed CAP would impact sensitive natural communities, impacts shall be avoided through final program activity design modifications.

If Metropolitan determines sensitive communities cannot be avoided, impacts shall be mitigated on-site or off-site at an appropriate ratio to fully offset program activity impacts (minimum ratio of 1:1). Temporarily impacted areas shall be restored to pre-project conditions. An HMMP shall be developed by a qualified biologist and submitted to the agency overseeing the program activity for approval.

4.2.5.3 Level of Significance After Mitigation

Implementation of MM BIO-1 through BIO-9 would reduce potential impacts evaluated under Thresholds BIO-A through BIO-C discussed in Section 4.2.5.1, *Program Analysis*, to **less than significant**.

4.2.5.4 Cumulative Analysis

The geographic scope for the cumulative biological resources impact analysis is the area covered by the seven counties that encompass the Plan Area, particularly areas surrounding identified proposed project activities, as described in Chapter 2, *Project Description*. The following factors are considered with respect to analyzing cumulative impacts to biological resources:

- The cumulative contribution of other approved and proposed projects to fragmentation of open space in the program activity vicinity;
- The loss of sensitive habitats and species;
- Contribution of the program activity to urban expansion into natural areas; and
- Isolation of open space within the vicinity by proposed/future projects.

Cumulative impacts depend on the proximity of cumulative projects to proposed program activities within the Plan Area, as well as impacts from past projects in the vicinity. Native vegetation communities and open areas were once more widespread in the vicinity of the Plan Area. Over the last half-century or more, naturally vegetated open areas diminished as the landscape surrounding the Plan Area has been built out with residential and commercial uses.

This program, in conjunction with other nearby planned, pending, and potential future projects on undeveloped land, would have the potential to adversely impact sensitive habitats and biological resources. Cumulative development in the region would continue to disturb areas with the potential to contain sensitive habitats and biological resources. It is anticipated that for other projects that would have significant impacts on these resources, similar mitigation measures as those described herein would be imposed on those other projects, along with requirements to comply with all applicable laws and regulations governing said resources.

Depending on the specific locations of covered activities, it is possible that cumulative development is currently resulting in a significant cumulative impact to biological resources. Therefore, cumulative impacts may be potentially significant. As discussed above, because the specific details regarding covered activities are unknown at this time, the level of impact to biological resources would need to be determined at the project level when specific individual program activity information is known; however, projects proposed under the scope are relatively small and MM BIO-1 through BIO-8 would reduce project-specific impacts to biological resources. Therefore, cumulative impacts are considered **less than significant with mitigation incorporated** and the proposed program's contribution would **not be cumulatively considerable**.

4.3 Cultural Resources

4.3.1 Introduction

This chapter describes the existing conditions, regulatory framework, and potential impacts to cultural resources which would result from the proposed program, as well as mitigation measures to reduce these impacts. Cultural resources under CEQA include archaeological sites (both prehistoric and historic) and built environment resources (including buildings, structures, water conveyance systems, etc.).

4.3.2 Existing Conditions

The Plan Area includes all of Metropolitan's service area and spans approximately 38,280 square miles, including all of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties, as well as a portion of northeastern Imperial County and four islands in the Sacramento-San Joaquin River Delta region. As discussed in Chapter 3, *Environmental Setting*, the Plan Area includes six ecoregions: Southern California Mountains and Valley, Southern California Coast, Sonoran Desert, Mojave Desert, Colorado Desert, and California Central Valley (Great Valley). The Plan Area includes over 220 miles of Pacific Ocean coastline, ranges in elevation from 234 feet below mean sea level to approximately 11,503 feet above mean sea level, and contains a national park, all or portions of four national forests, and three U.S. Census Bureau-designated Metropolitan Statistical Areas.

Within the Plan Area, population centers are concentrated near coastal areas in the western portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties. An extensive freeway network links the major cities of Los Angeles and San Diego to one another and their respective metropolitan areas. Riverside, San Bernardino, and San Diego counties and northeastern Imperial County have experienced some urban development but are sparsely developed overall. Large portions of these areas are agricultural in character. Portions of the Plan Area located in the Sacramento-San Joaquin River Delta region are predominantly rural and characterized by the surrounding estuary system. Land use in the area is predominantly agricultural.

Historic built-environment resources are most likely to be identified in urban areas because they are more densely developed with buildings and infrastructure. Such areas have been densely developed with residential, commercial, institutional, and industrial districts, as well as infrastructure related to transportation, utilities, and other uses. These same areas are most likely to contain historic archaeological resources, particularly in residential areas constructed prior to the mid twentieth century. More rural and agricultural areas may also contain built-environment resources, which could include landscape elements. Areas located near fresh water sources and other natural resources are likeliest to contain prehistoric archaeological resources.

4.3.2.1 Cultural Background

The cultural background discussion is provided in Appendix D. The cultural background is divided into pre- and post-European contact histories. The pre-contact history includes a discussion of the four archaeological regions present in the Plan Area. The post-contact history includes a discussion of the area broken down by county.

4.3.3 Regulatory Framework

This section includes a discussion of the applicable laws, ordinances, regulations, and standards governing cultural resources.

4.3.3.1 Federal

National Register of Historic Places

The National Register of Historic Places (NRHP) was established by the National Historic Preservation Act of 1966 as "an authoritative guide to be used by Federal, state, and local governments, private groups and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment" (36 Code of Federal Regulations 60.2). The NRHP recognizes properties that are significant at the national, state, and local levels. To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must also possess integrity of location, design, setting, materials, workmanship, feeling, and association. A property is eligible for the NRHP if it meets any one of the following criteria:

Criterion A: Are associated with events that have made a significant contribution to the broad patterns of our history

Criterion B: Are associated with the lives of persons significant in our past

Criterion C: **E**mbody the distinctive characteristics of a type, period, or method of installation, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction

Criterion D: Have yielded, or may be likely to yield, information important in prehistory or history

In addition to meeting at least one of the above designation criteria, resources must also retain integrity. The National Park Service recognizes seven aspects or qualities that, considered together, define historic integrity. To retain integrity, a property must possess several, if not all, of these seven qualities, defined in the following manner:

Location: The place where the historic property was constructed or the place where the historic event occurred

Design: The combination of elements that create the form, plan, space, structure, and style of a property

Setting: The physical environment of a historic property

Materials: Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property

Workmanship: The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory

Feeling: A property's expression of the aesthetic or historic sense of a particular period of time

Association: The direct link between an important historic event or person and a historic property

4.3.3.2 State

California Environmental Quality Act

The CEQA requires that a lead agency determine whether a project could have a significant effect on historical resources and tribal cultural resources (Public Resources Code [PRC] Section 21074 [a][1][A]-[B]). A historical resource is a resource listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR) (Section 21084.1), a resource included in a local register of historical resources (Section 15064.5[a][2]), or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant (Section 15064.5[a][3]).

PRC Section 5024.1 requires an evaluation of historical resources to determine their eligibility for listing in the CRHR. The purpose of the register is to maintain listings of the state's historical resources and to indicate which properties are to be protected from substantial adverse change. The criteria for listing resources in the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the NRHP, as enumerated according to CEQA and quoted below.

Section 15064.5(a)(3). […]Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (PRC, § 5024.1, Title 14 California Code of Regulations, Section 4852) including the following:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage

(2) Is associated with the lives of persons important in our past

(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values

(4) Has yielded, or may be likely to yield, information important in prehistory or history

Section 15064.5(a)(4). The fact that a resource is not listed in or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the PRC), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the PRC) does not preclude a lead agency from determining that the resource may be an historical resource as defined in PRC sections 5020.1(j) or 5024.1.

Section 15064.5(b). A project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.

In addition, if a project can be demonstrated to cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC, Section 21083.2[a], [b], and [c]).

PRC Section 21083.2(g) defines a unique archaeological resource as an artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it does one or more of the following:

a. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information

b. Has a special and particular quality such as being the oldest of its type or the best available example of its type

c. Is directly associated with a scientifically recognized important prehistoric or historic event or person

Impacts to significant cultural resources that affect the characteristics of any resource that qualify it for the NRHP or adversely alter the significance of a resource listed in or eligible for listing in the CRHR are considered a significant effect on the environment. These impacts could result from physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired (*State CEQA Guidelines* Section 15064.5 [b][1]). Material impairment is defined as demolition or alteration in an adverse manner [of] those characteristics of an historical resource that convey its historical significance and that justify its inclusion or eligibility for inclusion in the CRHR (*State CEQA Guidelines* Section 15064.5[b][2][A]).

4.3.4 Thresholds and Methodology

4.3.4.1 Thresholds of Significance

Table 20 lists thresholds from Appendix G of the *State CEQA Guideline* that pertain to impacts associated with cultural resources. These thresholds are addressed in the draft PEIR.

Table 20 CEQA Thresholds for Cultural Resources

Threshold Would the proposed program:
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?
b. Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?
c. Disturb any human remains, including those interred outside of formal cemeteries?

4.3.4.2 Methodology

Section 4.3.5, *Impacts Analysis,* presents a programmatic-level discussion of potential impacts to cultural resources which may occur from implementation of the proposed CAP. These potential impacts and associated mitigation measures would apply throughout the Plan Area and are directly tied to individual projects with physical impacts to the environment. The CAP is programmatic in nature and due to the extensive size of the Plan Area, field surveys and a records search of the California Historical California Historical Resources Information System were not completed. Rather methods were limited to desktop analysis and definition of the existing conditions which characterize the prehistory and history of the Plan Area. As applicable, Metropolitan-adopted cultural resources guidance is also addressed.

4.3.5 Impacts Analysis

4.3.5.1 Program Analysis

Threshold CUL-A: *Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?*

Individual projects implemented under the proposed CAP would have a significant impact on historical resources if such activities would cause a substantial adverse change in the significance of a historical resource. Historical resources are those eligible for listing on the NRHP or CRHR. In addition, as explained in Section 15064.5 of the *State CEQA Guidelines*, "substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired."

The California Office of Historic Preservation recognizes any evidence of human activities over 45 years of age, including buildings, structures, sites, objectives, and districts, may be eligible for listing in the CRHR. An extensive survey and inventory of the historical resources located within the Plan Area was not completed. However, background research confirms the presence of many known historical resources within the Plan Area. National Park Service data confirms there are over 1,000 resources in the Plan Area listed in the NRHP and the CRHR. Some of these resources include facilities owned and operated by Metropolitan, including the CRHR-eligible Weymouth Water Treatment Plant Historic District at the Weymouth WTP and the Colorado River Aqueduct and associated facilities. Due to insufficient detail to allow specific project-level analysis at this time and the extensive Plan Area, an extensive survey and inventory of the historical resources located within the Plan Area was not completed.

In addition to known historical resources, the Plan Area includes many other potential resources, which are over 45 years of age (or will cross this threshold over the course of proposed CAP implementation) and have yet to be evaluated for historical resources eligibility. This includes not only historic-age buildings, but also structures such as canals, reservoirs, pipelines, pump plants, and other sites. A review of historic aerial imagery indicates that many of the Metropolitan facilities where construction activities would occur under the proposed CAP are over 45 years of age (or will cross this threshold over the course of CAP implementation).

Implementation of projects under the proposed CAP that include physical impacts to the environment may occur at any of the Metropolitan facilities, as described in Chapter 2, *Project Description,* including the Yorba Linda HEP at the Diemer WTP (CAP measure E-2); Diemer WTP, Jensen WTP, Skinner WTP, and Weymouth WTP (CAP measure E-4); pump refurbishment/replacement at the desert pumping plants (CAP measure EE-4a through EE-4d); installation at of EV charging infrastructure at WTPs, pump plants, and other Metropolitan-owned facilities (CAP measure EC-3), agricultural studies on Metropolitan-owned land in the Palo Verde Valley (CAP measure CS-2), and carbon sequestration pilot projects in the Sacramento-San Joaquin River Delta (CAP measure CS-3). Additional measures included in the proposed CAP may be implemented at other existing or planned Metropolitan facilities within the Plan Area but have not been fully developed, and the location of these activities is not known at this time.

Projects proposed under the CAP which could impact historical resources include the alteration of buildings and facilities and the removal or addition of infrastructure that may be necessary components of construction associated with GHG reduction measures (CAP measures DC-2, FL-4). Activities proposed within the boundaries of the Weymouth Water Treatment Plant Historic District would be avoided or mitigated to the greatest extent feasible through adherence to the *Cultural*

Resource Treatment Plan for the Weymouth Water Treatment Plant Historic District, City of La Verne, Los Angeles County, California (Chasteen et al. 2016).The alteration of a historical resource through activities such as renovation or the installation of new infrastructure may result in a significant impact should that activity materially impair, or alter the physical characteristics of a historical resource which conveys its significance and justifies its listing in the CRHR. Projects would be designed and located to avoid or minimize impacts to the extent feasible. If, during project-level analysis, it is determined that construction or operation of any covered activity would result in significant impacts to historic resources MM CUL-1 and CUL-3 would be implemented to avoid or minimize impacts to historical resources to the greatest extent feasible. However, this impact would remain **significant and unavoidable**.

Threshold CUL-B: *Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?*

Due to the extensive Plan Area included in the proposed CAP and insufficient detail to allow specific project-level analysis at this time, a study to identify archaeological resources within the Plan Area is infeasible. Effects on archaeological resources can only be determined once a specific project footprint has been identified because the effects are highly dependent on both the individual project site conditions and the characteristics of the proposed ground-disturbing activity. Projects described in the proposed CAP with the potential to result in physical impacts to the environment are listed in Table 5 (CAP GHG Reduction Measures with Potential Physical Impacts on the Environment). Future ground-disturbing activities associated with these projects may have the potential to impact historic or prehistoric archaeological resources that may be present on or below the ground surface, especially in areas that have not previously been studied through a cultural resources investigation, or where proposed excavation depths exceed those previously attained. Consequently, damage to or destruction of archaeological resources could occur as a result of covered activities, thus impacts to archaeological resources are potentially significant. Projects would be designed and located to avoid or minimize impacts to the extent feasible. If, during project-level analysis, it is determined that construction or operation of any covered activity would result in significant impacts to archaeological resources MM CUL-2 and CUL-3 has been included to reduce impacts to archaeological resources to the extent feasible. However, this impact would remain **significant and unavoidable**.

Threshold CUL-C: *Disturb any human remains, including those interred outside of formal cemeteries?*

The discovery of human remains is always a possibility during ground disturbing activities. If human remains are found, existing regulations outlined in the state of California Health and Safety Code Section 7050.5 state no further disturbance may occur until the County Coroner has made a determination of origin and disposition pursuant to PRC Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner where the remains are found must be notified immediately. If the human remains are determined to be prehistoric, the County Coroner will notify the Native American Heritage Commission, which will determine and notify a most likely descendant (MLD). The MLD must complete the inspection of the site within 48 hours of being granted access and provide recommendations as to the treatment of the remains to the landowner. With adherence to existing regulations, impacts to human remains would be **less than significant**.

4.3.5.2 Cumulative Analysis

Cumulative development across the Plan Area could disturb areas that may potentially contain historical and archaeological resources. The potential for impacts from projects in the proposed program is generally site-specific and depends on the location and nature of each individual project.

Individual projects implemented under the proposed program would continue to be subject to applicable federal, state, and local requirements. As discussed above, individual projects implemented under the proposed program have the potential to result in impacts to historical and archaeological resources. While mitigation would reduce impacts to the greatest extent feasible, there is still potential for impacts to historical and archaeological resources to be **significant and unavoidable**. Therefore, the potential for cumulative impacts to historical and archaeological resources is significant, and the proposed program's contribution to such impacts would be **cumulatively considerable**.

4.3.5.3 Mitigation Measures

MM CUL-1(a) **Built Environment Investigation.** A historic resources evaluation shall be prepared for any future proposed project facilitated by the CAP involving a property which includes buildings, structures, objects, landscape/site plans, or other features that are 45 years of age or older. The evaluation shall be prepared by a qualified architectural historian or historian who meets the Secretary of the Interior's (SOI) Professional Qualifications Standards (PQS) in architectural history or history. The qualified architectural historian or historian shall conduct an evaluation in accordance with the guidelines and best practices promulgated by the State Office of Historic Preservation to identify any potential historical resources within the proposed project area. The evaluation of the potential resource within its historic context shall be documented. All evaluated properties shall be documented on Department of Parks and Recreation Series 523 Forms. If a property is identified as an eligible historical resource under CEQA, Mitigation Measure CUL-1(b) shall be implemented.

MM CUL-1(b) **Built Environment Documentation Program.** If eligible built environment historical resources are identified for a future proposed project implemented under the CAP, efforts shall be made to the extent feasible to ensure that impacts are avoided. If avoidance is not possible, a Built Environment Documentation Program shall be implemented. Measures may include but are not limited to, compliance with the Secretary of the Interior's Standards for Treatment of Historic Properties and documentation of the historical resource in the form of a Historic American Building Survey (HABS)- report or HABS-Like report. The HABS or HABS-Like report shall comply with the Secretary of the Interior's Standards for Architectural and Engineering Documentation and shall generally follow the HABS Level III requirements, including digital photographic recordation, detailed historic narrative report, and compilation of historic research. Application of mitigation shall generally be overseen by a qualified architectural historian or historic architect meeting the PQS, unless unnecessary in the circumstances (e.g., preservation in place).

MM CUL-2(a) **Phase 1 Archaeological Resource Investigation.** If archaeological resources are identified during project-specific analysis that may be adversely affected by any future proposed project implemented under the CAP, Metropolitan shall retain a qualified archaeologist meeting the Secretary of the Interior standards in archaeology to complete a Phase 1 cultural resources assessment of the site. A Phase 1 cultural resources assessment will include an archaeological pedestrian survey of the site, if feasible, and sufficient background archival research to determine whether subsurface prehistoric or historic remains may be present. Archival research should include a current records search from the appropriate

California Historical Resources Information System information center and a Sacred Lands File search conducted with the Native American Heritage Commission. A Phase 1 report or results documentation shall be submitted to Metropolitan prior to any ground disturbing activities. Recommendations contained therein shall be implemented throughout all ground disturbance activities.

MM CUL-2(b) **Extended Phase 1 Investigation.** For any projects proposed within 100 feet of a known archaeological site and/or in areas identified as sensitive by the Phase 1 study, an Extended Phase 1 (XPI) study shall be conducted to determine the presence/absence and extent of archaeological resources on the project site. XPI testing should comprise a series of shovel test pits and/or hand augured units and/or mechanical trenching intended to establish the horizontal and vertical boundaries of archaeological site(s) on the project site. No archaeological resources would be collected during the XPI Investigation. If an archaeological site is identified, MM CUL-2(c) or CUL-2(d) shall be implemented.

MM CUL-2(c) **Avoidance of Archaeological Resources.** Identified prehistoric or historic archaeological resources shall be avoided and preserved in place, where feasible. Where avoidance and preservation in place is not feasible, additional measures shall be applied as identified in MM CUL-2(d) through CUL-2(g).

MM CUL-2(d) **Phase 2 Archaeological Resources Investigation and Evaluation.** Where preservation is not feasible, each resource shall be evaluated for significance and eligibility for listing in the CRHR through a Phase 2 archaeological resource evaluation. A Phase 2 evaluation shall include any necessary archival research to identify significant historical associations as well as mapping of surface artifacts, collection of functionally or temporally diagnostic tools and debris, and excavation of a sample of the cultural deposit to characterize the nature of the sites, define the artifact and feature contents, determine horizontal boundaries and depth below surface, and retrieve representative samples of artifacts and other remains. A final Phase 2 Testing and Evaluation report shall be submitted to Metropolitan prior to any ground disturbing activities. Recommendations contained therein shall be implemented throughout all ground disturbance activities.

MM CUL-2(e) **Phase 3 Archaeological Data Recovery Program.** If an archaeological resource meets the CRHR eligibility and cannot be avoided, Metropolitan shall implement a Phase 3 Archaeological Data Recovery Program, conducted to exhaust the data potential of significant archaeological sites. The Phase 3 Archaeological Data Recovery Program shall follow a research design prepared by a qualified archaeologist meeting the SOI PQS standards for archaeology and approved by Metropolitan in advance of Phase 3 fieldwork and excavations. The Phase 3 Data Recovery research design will use appropriate archaeological field and laboratory methods consistent with the California Office of Historic Preservation Planning Bulletin 5 (1991), Guidelines for Archaeological Research Design, or the latest edition thereof. The final Phase 3 Data Recovery report shall be submitted to Metropolitan prior to and any ground disturbing activities. Recommendations contained therein shall be incorporated into project design and implemented throughout all ground disturbance activities.

MM CUL-2(f) **Processing and Curation of Archaeological Materials.** Archaeological materials collected from the sites during the implementation of MM CUL-2(d) through CUL-2(e) shall be processed and analyzed in the laboratory according to standard archaeological procedures. The age of the materials shall be determined using radiocarbon dating and/or other appropriate procedures; lithic artifacts, faunal remains, and other cultural materials shall be identified and analyzed according to current professional standards. The significance of the sites shall be evaluated according to the criteria of the CRHR. The results of the investigations shall be presented in a technical report following the standards of the California Office of Historic Preservation publication "Archaeological Resource Management Reports: Recommended Content and Format (1990 or latest edition)". Upon completion of the work, all artifacts, other cultural remains, records, photographs, and other documentation shall be curated an appropriate established curation facility based on the location of the fieldwork and/or repatriated to local Native Americans as appropriate. All fieldwork, analysis, report production, and curation shall be fully funded by Metropolitan.

MM CUL-2(g) **Cultural Resources Monitoring.** If recommended by Phase 1 (MM CUL-2(a)), XPI (MM CUL-2(b)), Phase 2 (MM CUL-2(d)), or Phase 3 (MM CUL-2(e)) studies, Metropolitan shall retain a qualified archaeologist to monitor project-related, ground-disturbing activities.

MM CUL-3 **Previously Unidentified Resources Encountered During Construction.** In the event that any potentially significant cultural resources are unexpectedly encountered during construction, work will be immediately halted and the discovery shall be protected in place. A 50-foot buffer around the exposed resource shall be established until a qualified cultural resources specialist evaluates the discovery. If the qualified cultural resources specialist determines that the discovery represents a potentially significant cultural resource, including a potential historical resource, additional investigations may be required to mitigate adverse impacts from project implementation. This additional work may include avoidance, testing, and evaluation or data recovery excavation. Work shall be prohibited in the restricted area until Metropolitan provides written authorization.

Level of Significance After Mitigation

At this time, there is insufficient specific project-level analysis to assess impacts to historical resources associated with individual covered activities under the proposed program. As such, impacts may be significant. Further environmental analysis and documentation is necessary prior to construction to determine if a significant impact would occur at the project-level and if mitigation would reduce the impact to a less-than-significant level. Implementation of MM CUL-1 and CUL-3 would reduce impacts to historical built environment resources to the maximum extent feasible; however, mitigation measures which reduce impacts to a less-than-significant level cannot be assured in all cases and demolition, removal, or substantial alteration of a historically significant built-environment resource typically cannot be mitigated to below a level of significance under CEQA. Therefore, impacts to historical built environment resources associated with implementation of the proposed CAP are assumed to be **significant and unavoidable**. Further environmental analysis and documentation is necessary prior to construction to determine if a significant impact would occur at the project-level and if mitigation would reduce the impact to a less-than-significant level.

Impacts to archaeological resources, including those that may be considered historical or unique archaeological resources, associated with the construction or operation of individual projects to be implemented under the proposed program may be significant, but the impacts to archaeological

resources or the location of the impacts cannot be determined at this time. Implementation of MM CUL-2 and CUL-3 may reduce these impacts; however, whether this measure would reduce all impacts to archaeological resources to less-than-significant levels is not known. Therefore, at this stage of planning, impacts to archaeological resources associated with implementation of the proposed CAP are assumed to be **significant and unavoidable**. Further environmental analysis and documentation is necessary prior to construction to determine if a significant impact would occur at the project-level and if mitigation would reduce the impact to a less-than-significant level.

Cumulative impacts to historical and archaeological resources may be significant, and the proposed program's contribution to such impacts may be cumulatively considerable. The mitigation measures described in this section would reduce these impacts by requiring project-specific historical resources evaluation for individual projects involving properties with historic-age buildings, structures, or other features and archaeological resources investigations for covered activities involving ground disturbance. However, because the specific locations of individual projects and potential cultural resources that may be affected are not presently known, the program's contribution to potentially significant cumulative impacts is assumed to remain cumulatively considerable.

4.4 Noise

4.4.1 Introduction

This section describes the existing conditions related to noise, the regulatory framework associated with noise, the impacts caused by noise that would result from the proposed program implementation, and the mitigation measures that would reduce these impacts.

4.4.2 Existing Conditions

4.4.2.1 Environmental Noise

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs (e.g., the human ear). Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (California Department of Transportation [Caltrans] 2013).

Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response, which is most sensitive to frequencies between 250 Hertz (Hz) and 10,000 Hz (Federal Transit Administration [FTA] 2018). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as a doubling of traffic volume, would increase the noise level by 3 dB; similarly, dividing the energy in half would result in a decrease of 3 dB (Crocker 2007).

Human perception of noise has no simple correlation with sound energy: the perception of sound is not linear in terms of dBA or in terms of sound energy. Two sources of equivalent noise level do not "sound twice as loud" as one source. It is widely accepted that the average healthy ear can barely perceive an increase (or decrease) of up to 3 dBA in noise levels (i.e., twice [or half] the sound energy); that a change of 5 dBA is readily perceptible (8 times the sound energy); and that an increase (or decrease) of 10 dBA sounds twice (or half) as loud (10.5 times the sound energy) (Crocker 2007).

Sound changes in both level and frequency spectrum as it travels from the source to the receiver. The most obvious change is the decrease in sound level as the distance from the source increases. The manner by which noise reduces with distance depends on factors such as the type of sources (e.g., point or line), the path the sound will travel, site conditions, and obstructions. Noise levels from a point source (e.g., construction, industrial machinery, ventilation units) typically attenuate, or drop off, at a rate of 6 dBA per doubling of distance. Noise from a line source (e.g., roadway, pipeline, railroad) typically attenuates at about 3 dBA per doubling of distance (Caltrans 2013). The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site, such as a parking lot or smooth body of water, provides no additional ground attenuation and the changes in noise levels with distance (drop-off rate) result simply from the geometric spreading of sound waves from the source. An additional ground attenuation value of 1.5 dBA per doubling of

distance applies to a soft site (e.g., soft dirt, grass, or scattered bushes and trees) (Caltrans 2013). Noise levels may also be reduced by intervening structures; the amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels. Natural terrain features, such as hills and dense woods, and man-made features, such as buildings and walls, can significantly alter noise levels. Generally, any large structure blocking the line of sight will provide at least a 5-dBA reduction in source noise levels at the receiver (Federal Highway Administration [FHWA] 2011). Structures can substantially reduce occupants' exposure to noise as well. The FHWA's guidelines indicate that modern building construction generally provides an exterior-to-interior noise level reduction of 20 to 35 dBA with closed windows.

The impact of noise is not a function of sound level alone. The time of day when noise occurs and the duration of the noise are also important. Most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. One of the most frequently-used noise metrics is the equivalent noise level (L_{eq}); it considers both duration and sound power level. L_{eq} is defined as the single steady A-weighted level equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time. Typically, L_{eq} is summed over a one-hour period. L_{max} is the highest root mean squared (RMS) sound pressure level within the sampling period, and L_{min} is the lowest RMS sound pressure level within the measuring period (Crocker 2007). Normal conversational levels are in the 60 to 65 dBA L_{eq} range; ambient noise levels greater than 65 dBA L_{eq} can interrupt conversations (FTA 2018).

Noise that occurs at night tends to be more disturbing than that occurring during the day. Community noise is usually measured using Day-Night Average Level (DNL), which is the 24-hour average noise level with a +10 dBA penalty for noise occurring during nighttime hours (10:00 p.m. to 7:00 a.m.). Community noise can also be measured using Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a +5 dBA penalty for noise occurring from 7:00 p.m. to 10:00 p.m. and a +10 dBA penalty for noise occurring from 10:00 p.m. to 7:00 a.m. (Caltrans 2013).

4.4.2.2 Groundborne Vibration

Groundborne vibration consists of oscillatory waves that move from a source through the ground to adjacent structures. The number of cycles per second of oscillation makes up the vibration frequency, described in terms of Hz. The frequency of a vibrating object describes how rapidly it oscillates. The normal frequency range of most groundborne vibration that can be felt by the human body is from a low of less than 1 Hz up to a high of about 200 Hz (Crocker 2007). Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration.

While people have varying sensitivities to vibrations at different frequencies, in general they are most sensitive to low-frequency vibration. Vibration in buildings, such as from nearby construction activities, may cause windows, items on shelves, and pictures on walls to rattle. Building vibration components can also take the form of an audible low-frequency rumbling noise, referred to as groundborne noise. Groundborne noise is usually only a problem when the originating vibration spectrum is dominated by frequencies in the upper end of the range (60 to 200 Hz), or when foundations or utilities, such as sewer and water pipes, physically connect the structure and the vibration source (FTA 2018). Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never perceived as annoying to people who are outdoors (FTA 2018). The primary concern from vibration is that it can be intrusive and annoying to building occupants and vibration-sensitive land uses.

Vibration energy spreads out as it travels through the ground, causing the vibration level to diminish with distance away from the source. High-frequency vibrations diminish much more rapidly than low frequencies, so low frequencies tend to dominate the spectrum at large distances from the source.

Discontinuities in the soil strata can also cause diffractions or channeling effects that affect the propagation of vibration over long distances (Caltrans 2020). When a building is impacted by vibration, a ground-to-foundation coupling loss will usually reduce the overall vibration level. However, under rare circumstances, the ground-to-foundation coupling may actually amplify the vibration level due to structural resonances of the floors and walls.

Vibration amplitudes are usually expressed in peak particle velocity (PPV) or RMS vibration velocity. The PPV and RMS velocity are normally described in inches per second. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in monitoring of blasting vibration because it is related to the stresses that are experienced by buildings (Caltrans 2020).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a one-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA 2018).

Vibration significance ranges from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, the general threshold where minor damage can occur in fragile buildings[23] (FTA 2018). The general human response to different levels of groundborne vibration velocity levels is described in Table 21.

Table 21 Human Response to Different Levels of Groundborne Vibration

Vibration Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception for many people
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible – many people find that transportation-related vibration at this level is unacceptable
85 VdB	Vibration acceptable only if there are an infrequent number of events per day

VdB = vibration decibels

Source: FTA 2018

4.4.2.3 Sensitive Receivers

Noise-sensitive land uses are generally considered to be residential homes, transient lodging (i.e., hotels and motels), hospitals, nursing homes, public assembly and entertainment venues (e.g., auditoriums, theaters, music halls, meeting halls); places of worship, schools, daycare centers, libraries, museums, parks, playgrounds, recreation and open space areas, and cemeteries. Each local jurisdiction typically includes its definition of noise-sensitive land uses in the Noise Element of its General Plans and/or in its Noise Ordinance.

Vibration-sensitive receivers, which are similar to noise-sensitive receivers, include residences and institutional uses, such as schools, places of worship, and hospitals. Vibration-sensitive receivers also include other places where people sleep, such as hotels and motels, fragile buildings, and buildings where vibrations may interfere with vibration-sensitive equipment that is affected by vibration levels that may be well below those associated with human annoyance (e.g., recording studios or laboratory facilities with sensitive equipment).

[23] Fragile buildings may generally include buildings in disrepair, old or historic buildings, or buildings of poor structural integrity due to inadequate engineering or materials.

Noise- and vibration-sensitive receivers are located throughout the Plan Area. Because the specific locations of individual projects that may be implemented under the proposed CAP are not all known at this time, the specific locations and proximities of sensitive receivers nearest to the sites of all individual projects that may be implemented under the proposed CAP are also not known. However, the following list provides a summary of the nearest sensitive receivers to the known potential project locations, as described in Chapter 2, *Project Description*:

- **YLHEP/Diemer WTP:** residences located approximately 500 feet west and 1,000 feet southeast and the Black Gold Golf Club golf course located approximately 660 feet south of the facility.
- **Jensen WTP:** residences located immediately to the west and south, sports fields located immediately to the east, and the Van Gogh Charter School located approximately 1,000 feet southwest of the facility.
- **Mills WTP:** residences located immediately north and west and approximately 200 feet south of the facility.
- **Skinner WTP:** residences located approximately 600 feet west of the facility.
- **Weymouth WTP:** residences located immediately to the south, west, north, and east; Grace Miller Elementary School located immediately to the east; Calvary Baptist Church and School located immediately to the west; Kuns Park located approximately 460 feet southeast; Joan Macy School located 800 feet south; and Wheeler Avenue Park located approximately 1,200 feet south of the facility.
- **Hinds Pump Plant:** Metropolitan-owned residences located immediately west of the facility within Hinds Pump Plant boundary.
- **Eagle Mountain Pump Plant:** Metropolitan-owned residences located immediately northeast of the facility within the Eagle Mountain Pump Plant boundary.
- **Iron Mountain Pump Plant:** Metropolitan-owned residences located immediately southwest of the facility within the Iron Mountain Pump Plant boundary.

4.4.2.4 Existing Noise Environment

Existing noise levels vary widely throughout the Plan Area depending on the nature, type, and intensity of existing development. Rural and suburban residential areas generally experience lower ambient noise levels while areas in highly urbanized regions, along high-volume roadways, and near industrial development generally experience higher ambient noise levels. Generally, quiet suburban areas typically have noise levels in the range of 40 to 50 dBA, while those along arterial streets are in the 50 to 60+ dBA range. Highly urbanized areas, such as downtown Los Angeles, typically have noise levels in the range of 65 to 80+ dBA.

4.4.3 Regulatory Framework

This section describes the plans, policies, and regulations related to noise that are applicable to the proposed program.

4.4.3.1 Federal

There are no federal regulations related to noise applicable to the proposed program.

4.4.3.2 State

California Noise Control Act (California Health and Safety Code Section 46010 et seq.)

The California Noise Control Act of 1973 gave cities and communities the power to set noise ordinances and enforce them as necessary. The goal of the state and local governments is to prohibit unnecessary, annoying, intrusive, or dangerous noise.

California Office of Planning and Research General Plan Noise Element Guidelines

The California Office of Planning and Research recommends use of the noise/land use compatibility criteria shown in Table 22 in local General Plan Noise Elements (Office of Planning and Research 2017).

Table 22 Noise/Land Use Compatibility Criteria

Land Use	Community Noise Exposure (L_{dn} or CNEL)					
	55	60	65	70	75	80
Residential – Low Density Single Family, Duplex, Mobile Homes						
Residential – Multiple-Family						
Transient Lodging - Motels, Hotels[1]						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arena, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						
Office Buildings, Business Commercial and Professional						
Industrial, Manufacturing, Utilities, Agriculture						

Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable: New construction or development should generally not be undertaken.

L_{dn} = Day-Night Noise Level; CNEL = Community Noise Exposure Level

[1]Transient lodging generally consists of hotels, motels, inns, hostels, or other short-term living accommodations.

Source: California Office of Planning and Research 2017

4.4.3.3 Local

Each city and county in California is required to include a Noise Element in its General Plan. Most jurisdictions have also adopted Noise Ordinances, and several have adopted noise guidelines for CEQA analysis as well. It should be noted that California Government Code Section 53091 exempts Metropolitan, as a regional public water purveyor and utility, from local zoning and building ordinances but not from codified stand-alone noise ordinances. Despite this exemption from local planning ordinances, for purposes of full disclosure of potential impacts on the environment, this assessment of potential noise impacts broadly considers the potential for noise generated by individual projects that may be implemented under the proposed CAP to exceed locally-applicable noise-related standards contained in the general plans and noise ordinances of the cities and counties in the Plan Area.

The Plan Area encompasses a variety of local jurisdictions throughout the state, including the cities of Los Angeles (Jensen WTP) and La Verne (Weymouth WTP); Contra Costa and San Joaquin Counties (Delta properties); Imperial County (Palo Verde Valley properties); unincorporated Orange County (YLHEP/Diemer WTP); unincorporated Riverside County (Skinner WTP, Hinds and Eagle pump plants); and unincorporated San Bernardino County (Iron Mountain and Gene pump plants). Because the specific locations of individual projects that may be implemented under the proposed CAP are not all known at this time, specific local noise standards and regulations are not detailed in this PEIR. However, local noise standards and regulations generally include some or all of the following components:

- Statement that it is the policy of the city/county to prohibit unnecessary, excessive, and annoying noise within its jurisdiction in order to protect the public health, welfare, and safety of its citizens
- Definition of noise-sensitive receivers
- Procedures for sound level measurements
- Noise/Land use compatibility standards
- Limits on the allowed hours of construction and/or construction noise level limits
- Exemptions for construction noise generated during the allowed hours of construction and for work performed by private or public utilities in the maintenance or modification of their facilities
- Exterior daytime and nighttime noise level limits for stationary noise sources
- Exterior and interior noise level standards for noise-sensitive land uses
- Noise level standards for specific noise sources, such as radios, television sets, powered landscaping equipment, powered hand tools, and heating, ventilation, and air conditioning equipment

4.4.4 Thresholds and Methodology

4.4.4.1 Thresholds of Significance

Table 23 lists the thresholds from Appendix G of the *State CEQA Guidelines* that pertain to impacts associated with noise. These thresholds are addressed in the draft PEIR.

Table 23 CEQA Thresholds for Noise

Threshold Would the proposed program:
a. Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
b. Generate excessive groundborne vibration or groundborne noise levels?
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels?

Temporary or Permanent Increase in Ambient Noise Levels

Construction Noise

Metropolitan has not adopted thresholds for evaluating the significance of construction noise impacts. Although local jurisdictions often restrict hours of construction to reduce construction noise impacts, they do not always adopt quantitative construction noise level limits. Jurisdictions with quantitative noise construction level limits set varying thresholds, which may depend on the urban or rural environment, daytime or nighttime hours, and mobile or stationary equipment. For the purposes of this analysis, the FTA (2018) *Transit Noise and Vibration Impact Assessment Manual* criteria for construction noise are used for local jurisdictions that do not have quantitative construction noise level limits. The FTA provides reasonable criteria for assessing construction noise impacts based on the potential for adverse community reaction. The daytime noise thresholds are 80 dBA L_{eq} for residential uses, 85 dBA L_{eq} for commercial uses, and 90 dBA L_{eq} for industrial uses for an 8-hour period (FTA 2018).

On-site Operational Noise

Metropolitan has not adopted thresholds for evaluating the significance of on-site operational noise impacts. Most local jurisdictions throughout the Plan Area have their own noise level standards, which are often contained in each jurisdiction's General Plan Noise Element, Noise Ordinance, and/or CEQA noise guidelines. As discussed in Section 4.4.3.3, *Local*, despite Metropolitan's exemption from local zoning and building ordinances, this analysis broadly considers the potential for operational noise generated by individual projects that may be implemented under the proposed CAP to exceed the locally-applicable operational noise standards outlined in the general plans and noise ordinances of the cities and counties in the Plan Area for purposes of full disclosure of potential impacts on the environment.

Off-site Roadway Noise

Metropolitan has not adopted thresholds for evaluating the significance of off-site roadway noise impacts. Therefore, for traffic-related noise, impacts would be significant if project-generated traffic would result in exposure of sensitive receivers to an unacceptable increase in noise levels. For purposes of this analysis, a significant impact would occur if project-related traffic increases the ambient noise environment of noise-sensitive locations by 3 dBA or more (a barely perceptible increase) if the locations are subject to noise levels in excess of 60 CNEL for exterior areas or 45

CNEL for interior noise levels, or by 5 dBA or more (a readily perceptible increase) if the locations are not subject to noise levels in excess of the aforementioned standards.[24]

Vibration

Metropolitan has not adopted thresholds for evaluating the significance of vibration impacts. Therefore, vibration limits used in this analysis to determine a potential impact to local land uses are based on information contained in Caltrans' (2020) *Transportation and Construction Vibration Guidance Manual* and the FTA (2018) *Transit Noise and Vibration Impact Assessment Manual*. Maximum recommended vibration limits by the American Association of State Highway and Transportation Officials (AASHTO) are identified in Table 24.

Table 24 AASHTO Maximum Vibration Levels for Preventing Structural Damage

Type of Situation	Limiting PPV (in/sec)
Historic sites	0.1
Residential buildings, plastered walls	0.2 - 0.3
Residential buildings in good repair with gypsum board walls	0.4 - 0.5
Engineered structures, without plaster	1.0 - 1.5

AASHTO = American Association of State Highway and Transportation Officials; PPV = peak particle velocity; in/sec = inches per second
Source: Caltrans 2020

Based on AASHTO recommendations, limiting vibration levels to below 0.1 PPV inches per second would prevent structural damage regardless of the situation. These limits are applicable regardless of the frequency of the source. However, as shown in Table 25 and Table 26, potential human annoyance associated with vibration is usually different if it is generated by a steady state or a transient vibration source.

Table 25 Human Response to Steady State Vibration

PPV (in/sec)	Human Response
3.6 (at 2 Hz) to 0.4 (at 20 Hz)	Very disturbing
0.7 (at 2 Hz) to 0.17 (at 20 Hz)	Disturbing
0.10	Strongly perceptible
0.035	Distinctly perceptible
0.012	Slightly perceptible

PPV = peak particle velocity; Hz = hertz; in/sec = inches per second
Source: Caltrans 2020

[24] An exterior noise level of 60 CNEL is considered a "normally acceptable" noise level for single-family residential areas by the California Office of Planning and Research (see Table 4.4-1). In addition, California Code of Regulations, Title 24, Part 2 (2019 California Building Code), Chapter 12, Section 1206.4 requires that interior noise levels attributable to exterior sources not exceed 45 CNEL in any habitable room within a residential structure.

Table 26 Human Response to Transient Vibration

PPV (in/sec)	Human Response
2.0	Severe
0.9	Strongly perceptible
0.24	Distinctly perceptible
0.035	Barely perceptible

PPV = peak particle velocity; in/sec = inches per second
Source: Caltrans 2020

As shown in Table 25, the vibration level threshold at which steady vibration sources are considered to be distinctly perceptible is 0.035 inches per second PPV, which is roughly equivalent to the FTA criterion of 78 VdB for identifying impacts to residential land uses from infrequent events, such as passing trains. However, as shown in Table 26, the vibration level at which transient vibration sources (such as construction equipment) are considered to be distinctly perceptible is 0.24 inches per second PPV, which is roughly equivalent to 94 VdB. As a point of reference for the purposes of this analysis, the distinctly perceptible vibration level of 94 VdB is utilized as a significance threshold for assessing vibration impacts. This threshold is appropriate because proposed program activities would result in transient vibration sources, such as construction activities, (distinctly perceptible at 0.24 PPV) and would not result in steady state vibration (distinctly perceptible at 0.035 PPV).

4.4.4.2 Methodology

Temporary or Permanent Increase in Ambient Noise Levels

Construction Noise

Construction noise was estimated using the FHWA (2006) Roadway Construction Noise Model (RCNM). RCNM predicts construction noise levels for a variety of construction operations based on empirical data and the application of acoustical propagation formulas. RCNM provides reference noise levels for standard construction equipment, with an attenuation rate of 6 dBA per doubling of distance. Table 27 summarizes typical noise levels generated by a variety of equipment used in construction activities.

Table 27 Construction Equipment Noise Levels

Equipment	Noise Level at 50 feet (dBA L_{max})	Equipment	Noise Level at 50 feet (dBA L_{max})
Auger Drill Rig	85	Generator (25 kVA or less)	70
Backhoe	80	Generator (more than 25 kVA)	82
Chain Saw	85	Grader	85
Clam Shovel	93	Impact Pile Driver (diesel or drop)	95
Compactor (Ground)	80	Jackhammer	85
Compressor (Air)	80	Paver	85
Concrete Batch Plant	83	Pickup Truck	55
Concrete Mixer Truck	85	Pneumatic Tools	85
Concrete Pump	82	Pumps	77
Concrete Saw	90	Rock Drill	85
Crane (mobile or stationary)	85	Scraper	85
Dozer	85	Tractor	84
Dump Truck	84	Vacuum Street Sweeper	80
Excavator	85	Vibratory Concrete Mixer	80
Flat Bed Truck	84	Vibratory Pile Driver	95
Front End Loader	80	Welder	73

dBA = A-weighted decibel; kVA = kilovolt-amperes; Lmax = highest root mean squared sound pressure level within the sampling period

Source: Adapted from Federal Highway Administration (2006) Construction Noise Handbook

Because there is currently not sufficient detail to allow for the quantification of construction noise generated by each individual project to be implemented under the proposed CAP, construction noise levels were estimated using RCNM for sample program construction phases with different combinations of construction equipment based on reasonable assumptions at distances of 25, 50, and 100 feet to evaluate the intensity of construction activities that would result in less-than-significant impacts related to construction noise. The various combinations of construction equipment are representative of those expected to be used for construction of proposed individual projects, such as installation of electric vehicle infrastructure (CAP measure FL-4) and electric-powered equipment (to replace natural gas-powered equipment)(CAP measure DC-2) and construction of BESS facilities (CAP measure E-4) and a direct meter connection between the YLHEP and Diemer WTP (CAP measure E-2). Table 28 details the type and number of equipment modeled for each sample construction scenario. Because different construction phases have different objectives, each construction scenario has a specific equipment mix, depending on the work to be accomplished during that phase. Each construction scenario also has its own noise characteristics; some will have higher continuous noise levels than others, and some may have higher instantaneous noise levels. The maximum hourly L_{eq} of each phase is determined by combining the L_{eq} contributions from each piece of equipment used in that scenario (FTA 2018).

Table 28 Construction Equipment for Sample Program Construction Scenarios

Sample Construction Scenario	Construction Equipment
1	Excavator, Dozer, Jackhammer
2	Dozer, Front End Loader
3	Excavator, Grader, Dozer
4	Crane, Generator, Front End Loader
5	Pavers (2), Roller

Construction equipment operate in either a stationary or mobile mode during a construction noise assessment. As a rule, stationary equipment operates in a single location for one or more days at a time, with either fixed-power operation (e.g., pumps, generators, and compressors) or variable-power operation (e.g., pile drivers, rock drills, and pavement breakers). Mobile equipment, such as bulldozers, graders, and loaders, move around the construction site with power applied in cyclic fashion (FTA 2018). Noise impacts from stationary equipment are assessed from the center of the equipment, while noise impacts from mobile construction equipment are assessed from the center of the equipment activity area (e.g., construction site). In order to provide a conservative analysis for noise impacts, it is assumed that diesel engines would power all construction equipment.

Variation in power adds additional complexity in characterizing the noise source level from construction equipment. Power variation is accounted for by describing the noise at a reference distance from the equipment operating at full power and adjusting it based on the duty cycle, or percent of operational time, of the activity to determine the L_{eq} of the operation (FTA 2018). RCNM calculations are included in Appendix E.

Operational Noise

Individual projects that may be implemented under the proposed CAP would be located in a variety of jurisdictions with varying noise level standards and restrictions. As a result, the analysis does not use specific quantitative thresholds to evaluate program impacts but rather generally discusses the relationship between the types of noise levels likely to be produced during individual projects under the proposed program and local jurisdictions' noise level standards.

Vibration

The individual projects that may be implemented under the proposed CAP do not include any substantial vibration sources associated with operation, such as the installation of stationary vibration-generating equipment or railroad tracks. Metropolitan complies with all applicable engineering standards and implements up-to-date design measures to ensure infrastructure functions efficiently and excessive vibration is minimized. Accordingly, construction activities have the greatest potential to generate groundborne vibration affecting nearby receivers, especially during site preparation and grading of construction sites. Construction vibration estimates are based on vibration levels and equations developed by Caltrans and the FTA (Caltrans 2020; FTA 2018). Table 29 shows vibration levels used in the assessment of construction vibration (FTA 2018) for various pieces of typical construction equipment expected to be used during construction of projects proposed under the CAP.

Table 29 Vibration Levels Measured during Construction Activities

Equipment	PPV at 25 feet (in/sec)	Approximate VdB at 25 feet
Large bulldozer	0.089	87
Small bulldozer	0.003	58
Loaded trucks	0.076	86
Jackhammer	0.035	79

PPV = peak particle velocity; in/sec = inches per second; VdB = vibration decibels

[1] Caisson drilling was used as a proxy for bore/drill rigs.

Source: FTA 2018

Exposure to Existing Aircraft Noise

The potential for construction workers and Metropolitan employees to be exposed to excessive noise levels in areas near public use airports and private airstrips is addressed in this analysis.

4.4.5 Impacts Analysis

4.4.5.1 Program Analysis

Threshold NOI-A: *Would the proposed program result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Construction

During construction, individual projects that may be implemented under the proposed CAP would temporarily increase ambient noise levels in the vicinity of the construction sites due to the operation of construction equipment. The magnitude of the temporary noise level increase would depend on the type and number of equipment pieces used. At this time, there is currently not sufficient detail regarding the proposed individual projects under the CAP to allow for the quantification of construction noise that would be generated by these projects. As a result, it would be speculative to analyze project-level impacts of individual projects that may be implemented under the proposed CAP.

It is, however, possible to evaluate the intensity of construction activities that would result in a less than significant construction noise impact. Some individual projects may only require the use of one

piece of construction equipment at a time. Table 30 summarizes the minimum distances at which noise generated by individual pieces of construction equipment would attenuate to less-than-significant levels at various receiving land uses based on the FTA (2018) construction noise thresholds, described in Section 4.4.4.1, *Thresholds of Significance*. Because noise thresholds are lowest for residential uses and highest for industrial uses, the minimum distance for a less than significant impact is furthest for residential uses and closest for industrial uses. Program construction activities utilizing only one piece of equipment at a time at the minimum distances from receiving land uses as shown in Table 30 would have a less than significant construction noise impact.

Table 30 Construction Noise Screening Criteria for Single Equipment Use

Equipment	Minimum Distance to Receiving Land Use for a Less-than-Significant Impact[1]		
	Industrial[2] (feet)	Commercial[3] (feet)	Residential[4] (feet)
Auger Drill Rig	30	50	90
Backhoe	20	30	50
Chain Saw	30	50	90
Clam Shovel	75	130	225
Compactor (Ground)	20	30	50
Compressor (Air)	20	30	50
Concrete Batch Plant	25	40	75
Concrete Mixer Truck	30	50	90
Concrete Pump	20	35	65
Concrete Saw	50	90	160
Crane (mobile or stationary)	30	50	90
Dozer	30	50	90
Dump Truck	25	45	80
Excavator	30	50	90
Flat Bed Truck	25	45	80
Front End Loader	20	30	50
Generator (25 kVA or less)	5	10	20
Generator (more than 25 kVA)	20	35	65
Grader	30	50	90
Impact Pile Driver (diesel or drop)	90	160	285
Jackhammer	30	50	90
Paver	30	50	90
Pickup Truck	5	5	5
Pneumatic Tools	30	50	90
Pumps	15	20	35
Rock Drill	30	50	90
Scraper	30	50	90
Tractor	25	45	80
Vacuum Street Sweeper	20	30	50
Vibratory Concrete Mixer	20	30	50
Vibratory Pile Driver	90	160	285
Welder	10	15	20

dBA = A-weighted decibel; L_{max} = maximum instantaneous noise level; L_{eq} = equivalent noise level; kVA = kilo volt-amperes

Notes: Noise levels are based on an attenuation rate of 6 dBA per doubling of distance. Distances are rounded up to the nearest 5 feet. This analysis is based on the L_{max} noise level contour of each piece of equipment rather than the L_{eq} noise level contour, which is conservative because average noise levels (L_{eq}) generated by each piece of equipment over an 8-hour period (the typical time period for construction noise limits in noise ordinances) would be less than its estimated instantaneous maximum noise level (L_{max}).

[1] As measured from the center of construction activities.

[2] Distance to the 90 dBA L_{max} contour.

[3] Distance to the 85 dBA L_{max} contour.

[4] Distance to the 80 dBA L_{max} contour.

While some proposed individual projects under the CAP may utilize only one piece of construction equipment at a time, others would require simultaneous use of multiple pieces of equipment during construction. Table 31 summarizes construction noise levels for sample construction scenarios at various distances. For example, the simultaneous use of an excavator, dozer, and jackhammer during sample construction scenario 1 would generate a noise level of approximately 90 dBA L_{eq} at 25 feet from the center of construction activities, 84 dBA L_{eq} at 50 feet from the center of construction activities, and 78 dBA L_{eq} at 100 feet from the center of construction activities.

Table 31 Construction Noise Levels for Sample Construction Scenarios

Sample Construction Scenario	Equipment	Noise Levels (dBA L_{eq})		
		25 Feet from Center of Construction Activities	50 Feet from Center of Construction Activities	100 Feet from Center of Construction Activities
1	Excavator, Dozer, Jackhammer	90	84	78
2	Dozer, Front End Loader	86	80	74
3	Excavator, Grader, Dozer	90	84	78
4	Crane, Generator, Front End Loader	86	80	74
5	Pavers (2), Roller	85	79	73

dBA = A-weighted decibel; L_{eq} = equivalent noise level

Based on the results presented in Table 31, the combined noise levels of various combinations of construction equipment are greater than the individual noise levels for each piece of equipment. Using the data provided in Table 31, Table 32 identifies the minimum distances at which noise generated by combined operation of construction equipment for each of the sample construction scenarios would attenuate to less-than-significant levels at various receiving land uses.

Program construction activities utilizing equipment equivalent to or less intensive than those specified in Table 28 at the minimum distances from receiving land uses as shown in Table 32 would have less than significant construction noise impacts. For example, a proposed program construction activity that requires use of an excavator, dozer, and jackhammer (equivalent to sample construction scenario 1) at a distance of 25 feet from the nearest industrial receiver, 60 feet from the nearest commercial receiver, and 100 feet from the nearest residential receiver would have a less-than-significant impact because the construction activity would occur at a distance equal to or further than the specified minimum distances for receiving land uses. Similarly, a project construction activity that only requires the use of an excavator (i.e., less intensive than sample construction scenario 1) at the same distances from the land uses previously specified would have a less-than-significant impact because construction activities would be less intensive than those evaluated for sample construction scenario 1.

As project-specific information becomes available for proposed projects under the CAP, subsequent CEQA analysis will be conducted. For these proposed projects, construction activities that utilize equipment with louder noise levels and/or are located within the minimum distances of receiving land uses shown in Table 32 would result in a potentially significant construction noise impact and would be required to implement MM NOI-1 and NOI-2. For example, a program construction activity that requires the use of a dozer and front end loader (equivalent to sample construction scenario 2) at a distance of 30 feet from the nearest residential receiver (i.e., closer than the specified distance of 50 feet) would result in a potentially significant construction noise impact, and mitigation would be required. Similarly, a program construction activity that requires the use of a concrete saw, dozer and front-end loader at a distance of 50 feet from the nearest residential receiver would generate higher noise levels than those evaluated for sample construction scenario 4 because of the additional

concrete saw. Therefore, construction noise impacts would be potentially significant, and mitigation would be required.

Table 32 Construction Noise Screening Criteria for Combined Equipment Use

Sample Construction Scenario	Equipment	Minimum Distance to Receiving Land Use for a Less-than-Significant Impact[1]		
		Industrial[2] (feet)	Commercial[3] (feet)	Residential[4] (feet)
1	Excavator, Dozer, Jackhammer	25	45	80
2	Dozer, Front End Loader	20	30	50
3	Excavator, Grader, Dozer	25	45	80
4	Crane, Generator, Front End Loader	20	30	50
5	Pavers (2), Roller	15	25	45

dBA = A-weighted decibel; L_{eq} = equivalent noise level

Notes: Noise levels are based on an attenuation rate of 6 dBA per doubling of distance. Distances are rounded to the nearest 5 feet.

[1] As measured from the center of construction activities.

[2] Distance to the 90 dBA L_{eq} contour.

[3] Distance to the 85 dBA L_{eq} contour.

[4] Distance to the 80 dBA L_{eq} contour.

If construction equipment is used within the minimum distances provided in Table 30 and/or Table 32, then proposed individual projects would result in a potentially significant construction noise impact. The severity of the noise impacts from construction activities would vary depending upon the number and type of equipment utilized for each phase and the proximity to residential, commercial, and industrial receiving land uses. Therefore, construction noise impacts at the program level are considered potentially significant and would be analyzed at the project-level once specific construction parameters are known. With the implementation of MM NOI-1 and NOI-2, noise generated during construction activities would be reduced; however, it is not possible to determine whether impacts would be reduced to less-than-significant levels because the magnitude of the construction noise impacts would need to be determined on a project-by-project basis. Therefore, at a program level of analysis, construction noise impacts would remain **significant and unavoidable**.

Post-Construction

On-site Operational Noise

Upon implementation, none of the proposed CAP measures would generate new on-site operational noise except the BESS facilities proposed under CAP measure E-4, which may include cooling fans and transformers with the potential to generate continuous noise during operation. Projects would be designed and located to avoid or minimize impacts to the extent feasible. Project-level analysis would evaluate noise impacts, including evaluating noise impacts at the nearest sensitive receivers and comparing estimated noise levels to the noise level standards adopted by the applicable local jurisdiction. The severity of the impacts would vary depending upon the type and intensity of the individual project, its proximity to sensitive receivers, and the relevant local noise standards. As a result, it would be speculative to analyze project-level impacts of individual projects that may be implemented under the proposed CAP, and it cannot be determined at this time if post-construction activities would result in a substantial permanent increase in noise levels or the severity of this impact. Therefore, post-construction operational conditions would result in a potentially significant permanent increase in noise levels. The BESS proposed at the Skinner WTP would be more than

1,000 feet from the nearest sensitive receivers, at which distance noise impacts would not be significant. Feasible mitigation for the remainder of the individual projects proposed for implementation under the proposed CAP may reduce noise generated during the post-construction period (see MM NOI-2(c)); however, due to the programmatic nature of the proposed program, it is not possible to determine whether impacts could be reduced to less-than-significant levels. Therefore, these impacts at a program level of analysis are assumed to be **significant and unavoidable**.

Off-site Roadway Noise

As discussed in Section 4.4.2, *Existing Conditions*, a doubling of traffic volumes would increase roadway noise by 3 dBA. Local roadways have the greatest potential to experience roadway noise impacts because low existing traffic volumes result in lower ambient noise levels, which increases the potential for noise generated by program-related traffic volumes to be more perceptible. However, operations and maintenance trips related to individual proposed CAP projects would be distributed throughout the Plan Area. Measures considered in the proposed CAP generally involve efficiency improvements to existing Metropolitan infrastructure and processes and generally do not involve construction of substantial trip-generating land use projects. Due to the scale and nature of the individual projects that would implement CAP measures, each project would likely add an estimated two to ten daily trips to local roadways. The limited number of trips would not have the potential to double traffic volumes even on low-volume local roadways. Thus, it is unlikely the proposed program would increase noise levels by 3 dBA. Operational roadway noise impacts would be **less than significant,** and no mitigation would be required.

Threshold NOI-B: *Would the proposed program result in the generation of excessive groundborne vibration or groundborne noise levels?*

Construction

Construction activities associated with the proposed program would potentially require the use of equipment that may generate substantial levels of vibration, such as bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers. As shown in Table 29 in Section 4.4.4.2, *Methodology*, the use of this construction equipment would generate vibration levels ranging from 0.003 to 0.089 inches per second PPV, or 58 to 87 VdB, at a distance of 25 feet. At this time, the individual projects that may be implemented under the proposed CAP identified above do not have sufficient detail to allow project-level analysis of vibration impacts during construction.

Nevertheless, it is possible to evaluate the intensity of construction activities that would result in a less-than-significant construction vibration impact on historic sites, other structures, and sensitive land uses as defined in Section 4.4.2.3, *Sensitive Receivers*. Table 33 summarizes the minimum distances at which vibration generated by construction equipment would attenuate to less-than-significant levels at various receivers. Program construction activities utilizing equipment at the minimum distances shown in Table 33 would have a less-than-significant construction vibration impact.

Table 33 Vibration Level Contours during Construction Activities

Equipment		Minimum Distance to Receiving Land Use for a Less-than-Significant Impact (feet)		
		Historic Sites[1]	All Other Structures[2]	Vibration-Sensitive Land Uses[3]
Large bulldozer		25	15	15
Small bulldozer		5	5	5
Loaded trucks		20	10	10
Impact Pile Driver	Upper Range	300	160	165
	Typical	140	75	75
Caisson Drilling[4]		25	15	15
Vibratory Roller		50	30	25
Jackhammer		10	5	5

PPV = peak particle velocity in inches per second; VdB = vibration decibels

Note: Distances are rounded to the nearest 5 feet.

[1] Distance to the 0.1 PPV contour.

[2] Distance to the 0.2 PPV contour.

[3] Distance to the 94 VdB contour.

[4] Caisson drilling was used as a proxy for bore/drill rigs.

If historic sites, structures, or sensitive receivers are located within the minimum distances to construction equipment shown in Table 33, then individual proposed projects would result in a potentially significant construction vibration impact and implementation of MM NOI-3 would be required. The severity of the impacts would vary depending upon the type of equipment used for each construction activity, the nature of the nearest structures and sensitive receivers (see Section 4.4.2.3, *Sensitive Receivers*), and the proximities of the nearest structures and sensitive receivers. Because detailed information is not currently available to conduct a project-level analysis of proposed projects under the CAP, it cannot be determined at this time if significant construction impacts related to vibration would occur or what the severity of the impact would be. As a result, construction impacts related to vibration at a program level of analysis would be potentially significant. Mitigation may be available to reduce vibration levels during construction activities (see MM NOI-3); however, it is not possible to determine whether impacts would be reduced to less-than-significant levels because the nature and intensity of the vibration impact is not fully known at this time. Thus, at a program-level of analysis, construction vibration impacts associated with implementation of the individual projects that may be implemented under the proposed CAP are assumed to be **significant and unavoidable**.

Post-Construction

Post-construction activities and/or conditions associated with individual projects proposed under the CAP would not include sources of vibration, such as heavy machinery. Program components such as BESS facilities (CAP measure E-4), LED lighting (CAP measure EE-1), electric vehicle charging stations (CAP measure FL-4 and CAP measure EC-3), and electric-powered equipment (to replace natural gas-powered equipment)(CAP measure DC-2), do not generate substantial vibration. Therefore, **no impact** would occur.

Threshold NOI-C: *For a program located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the proposed program expose people residing or working in the area to excessive noise levels?*

Public use airports and private air strips are located throughout the Plan Area (see Figure 16 for a map of public use airports within the Plan Area). Airport land use plans establish allowable land uses within areas that are subject to high noise levels related to aircraft operations. Of the individual proposed projects under the CAP identified in Chapter 2, *Project Description*, the only known potential location within two miles of a public or private airport is the Weymouth WTP, located approximately 0.9 mile north of the public use airport Brackett Field Airport.

Construction

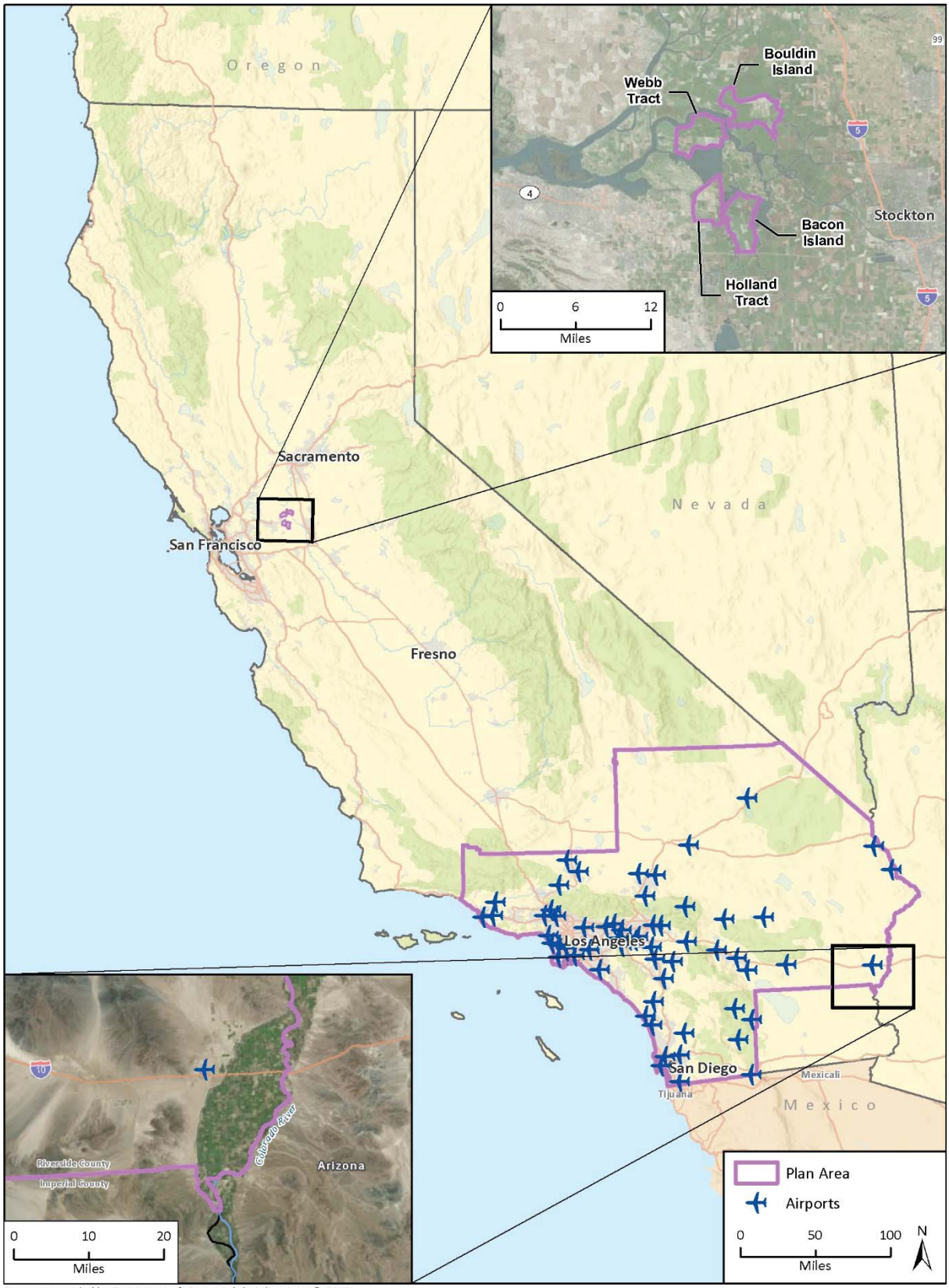
For individual projects proposed under the CAP that are located within two miles of a public use airport or private airstrip, construction workers would be intermittently exposed to elevated noise levels during aircraft take-off and landing events, especially within the 75 and 85 dBA noise level contours of the nearest airport or airstrip. Although aircraft take-off and landing events would contribute to the noise environment, construction noise would be the dominant source of noise exposure for construction workers. Construction contractors would be required to comply with California Occupational Safety and Health Administration (Cal OSHA) regulations related to worker exposure to noise. Section 5096 of these regulations sets duration-based noise exposure limits for construction workers that require provision of personal protective equipment should exposure exceed the specified limits. The requisite adherence to these regulations would reduce construction worker exposure to high noise levels such that proposed program construction activities would not expose employees to excessive noise levels. Therefore, construction workers would not be exposed to excessive noise levels from aircraft noise. Construction impacts related to aircraft noise would be **less than significant** and no mitigation would be required.

Post-Construction

Some individual projects implemented under the proposed CAP may be located within two miles of a public use airport or private airstrip, such as those at the Weymouth WTP. None of the proposed CAP measures involve operation of noise-sensitive receptors, such as residences or schools, that would be exposed to excessive airport noise in the Plan Area.

Most proposed program activities, including the proposed BESS facility at the Weymouth WTP (CAP measure E-4), would either be unmanned or would not require new on-site employees. However, some individual projects may require new exterior operations and maintenance activities beyond those currently occurring that could expose staff to elevated noise levels during aircraft take-off and landing events, especially within the 75 and 85 dBA noise level contours of the nearest airport or airstrip. Given the nature of individual projects, maintenance activities would occur infrequently and likely would not require extended exposure to aircraft noise. As stated previously, Metropolitan would be required to comply with Cal OSHA regulations related to worker exposure to noise. These regulations would reduce employee exposure to high noise levels such that post-construction activities would not expose employees to excessive noise levels. Therefore, post-construction impacts related to aircraft noise would be **less than significant**.

Figure 16 Public Airports in the Plan Area



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Additional data provided by USGS, 2017 and the Federal Aviation Administration, 2019.

Cumulative Analysis

The geographic scope for cumulative noise impacts is generally within 0.5 mile of the locations of individual projects that may be implemented under the proposed CAP. This geographic scope is appropriate for noise because the proposed program's noise impacts are localized and site-specific. Beyond this distance, typical construction and operational noise would be indistinguishable from the background noise level due to distance attenuation and interference from environmental conditions (e.g., topography and air disturbance).

If concurrent construction activities occur in close proximity to proposed program activities, combined construction noise would have the potential to impact the same sensitive receivers and result in cumulative construction noise and vibration levels that exceed the applicable thresholds of significance. The severity of the impacts would vary depending upon the intensity of construction activities for cumulative projects and the proximities of residential, commercial, and industrial land uses to each construction site. Therefore, it cannot be determined at this time if significant cumulative construction noise and vibration impacts would occur or whether the proposed program's contribution to those significant cumulative impacts would be considerable. As a result, cumulative construction noise and vibration impacts would be potentially significant, and proposed program activities would have a **cumulatively considerable contribution**. Mitigation may be available to reduce cumulative noise and vibration generated during construction of individual projects that may be implemented under the proposed CAP (see MM NOI-1 through NOI-3); however, it is not possible to determine whether impacts would be reduced to less than significant levels because the magnitudes of the noise and vibration impacts are not known.

Depending on the specific locations of individual projects that may be implemented under the proposed CAP, it is possible that cumulative development is currently resulting in a significant cumulative operational noise impact if operational noise exceeds the applicable jurisdiction's noise level standards at sensitive receivers. Therefore, cumulative operational noise impacts may be potentially significant. Nevertheless, per MM NOI-2(c), individual projects with the potential to generate on-site operational noise would be required to complete project-level post-construction noise studies and incorporate noise reduction measures to reduce noise levels to the noise level standards of the applicable jurisdiction, as feasible. As a result, regardless of whether a significant cumulative operational noise impact is occurring, the proposed program's noise contribution would **not be cumulatively considerable** with incorporation of MM NOI-2(c).

Cumulative growth in the Plan Area would result in increased traffic volumes on local and regional roadways. However, as discussed under Threshold NOI-A, due to the relatively low number of anticipated operations and maintenance trips associated with individual CAP projects, impacts related to off-site roadway noise would be incremental and likely inaudible; therefore, the proposed program would **not have a cumulatively considerable contribution to this potential cumulative impact**, significant or otherwise.

As discussed under Threshold NOI-C, public use airports and private airstrips are located throughout the Plan Area. The specific locations of individual projects that may be implemented under the proposed CAP are not all known at this time; therefore, it is also unknown whether individual projects or cumulative projects would be located within the vicinity of airports, other than the proposed BESS facility to be located at Weymouth WTP, which would be within 0.9 mile of Brackett Field Airport. Nevertheless, individual projects and cumulative projects would be required to comply with the applicable airport land use plan, federal and state OSHA regulations, and applicable California Building Code standards related to the protection of residents and workers from exposure to excessive aircraft noise. As a result, regardless of whether a significant cumulative noise impact related to airport operations exists, the proposed program would **not have a cumulatively considerable contribution to this potential cumulative impact**, significant or otherwise.

4.4.5.2 Mitigation Measures

MM NOI-1 **Locate Excavation Sites Away from Noise-Sensitive Receivers, Where Feasible.** Construction staging and activities shall be located in areas as far as practicable from sensitive receivers or in areas where receivers can be shielded from construction noise.

MM NOI-2(a) **Conduct Project-Level Noise Studies for Construction Activities Where Noise-Sensitive Receivers are Present.** Project-level construction noise studies shall be conducted for project activities that would exceed the screening criteria for a less-than-significant impact, as summarized in Table 30 and Table 32 of the draft PEIR. Such noise studies shall identify the existing ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during construction of individual projects, compare estimated noise levels to the local jurisdiction's noise limits or to the construction noise criteria in the FTA (2018) *Transit Noise and Vibration Impact Assessment Manual* for those that do not have quantitative construction noise level limits, outline any measures that may be used to reduce noise levels, and determine the amount of noise reduction that would occur with implementation of these measures. If the project-level noise study concludes that noise reduction measures are required, MM-NOI-2(b) shall be implemented.

MM-NOI-2(b) **Implement Noise Reduction Measures.** If the results of the noise study determine noise reduction measures are required, noise reduction measures shall be implemented. Construction noise reduction measures may include, but would not be limited to, the use of mufflers, sound blankets/barriers, and/or enclosures and scheduling construction activities to minimize simultaneous operation of noise-producing equipment. Construction noise measures shall be implemented to reduce noise levels to FTA (2018) construction noise criteria, as feasible.

If the individual project would be constructed concurrently with development projects located within a 0.5-mile radius of the individual project location, the noise study shall also consider the cumulative impact of construction noise on sensitive receivers. If applicable, construction noise reduction measures shall be implemented to reduce cumulative noise levels to local jurisdiction or FTA (2018) construction noise criteria, as feasible.

MM NOI-2(c) **Conduct Project-Level Noise Studies for Post-Construction Activities Where Noise Sensitive Receivers are Present**. Prior to the commencement of construction activities for individual projects that may be implemented under the CAP where sensitive receivers are located within 1,000 feet of the individual project sites, project-level post-construction noise studies shall be conducted. Such noise studies shall identify the ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during operation of individual projects during the post-construction period, compare estimated noise levels to the noise level standards of the applicable jurisdiction, outline any measures that may be used to reduce noise levels, and determine the amount of noise reduction that would occur with implementation of these measures. Noise reduction measures may include, but would not be limited to, alternative site design, alternative orientation of noise sources, and construction of berms and/or barriers. Noise reduction measures shall be implemented to reduce noise levels to the noise level standards of the applicable jurisdiction, as feasible.

MM NOI-3(a) **Locate Excavation Sites Away from Vibration-Sensitive Receivers, Where Feasible.** Whenever practicable, vibration-generating equipment including bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers shall operate outside the minimum distances specified in Table 33 of the draft PEIR for historic sites, other structures, and vibration-sensitive receivers during program construction activities. Furthermore, whenever practicable, vibration-generating equipment including bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers shall not be operated concurrently with vibration-generating equipment associated with cumulative development projects located within 600 feet of program construction sites.

MM NOI-3(b) Conduct Project-Level Vibration Analysis for Construction Activities Where Vibration-Sensitive Receivers are Present. If operation of construction equipment outside the specified buffer distances is not practicable, a detailed study of vibration impacts shall be conducted prior to the commencement of construction for that project. Such vibration studies shall characterize the nearest historic sites, structures, and/or sensitive receivers; estimate the vibration levels receivers will experience during construction of individual projects; compare estimated vibration levels to applicable Caltrans (2020) standards for vibration impacts related to structural damage and human annoyance; outline any measures that may be used to reduce vibration levels; and determine the amount of vibration reduction that would occur with implementation of these measures. Vibration reduction measures may include, but would not be limited to, the use of non-vibratory equipment, vibration monitoring, and repair of structural damage. Construction vibration reduction measures shall be implemented to reduce vibration levels to Caltrans (2020) construction vibration thresholds as feasible.

If the individual project would be constructed concurrently with cumulative development projects located within a 600-foot radius of the activity location, the vibration study shall also consider the cumulative impact of combined vibration levels at the nearest sensitive receivers by estimating the combined vibration levels receivers will experience during construction of individual projects and cumulative development; compare estimated vibration levels to applicable standards for vibration impacts related to structural damage and human annoyance described in the Caltrans (2020) *Transportation and Construction Vibration Guidance Manual* (CT-HWANP-RT-20-365.01.01); identify whether the individual project's contribution to any identified cumulative impact would be cumulatively considerable; outline any measures that may be used to reduce the project's contribution to combined vibration levels; and determine the amount of vibration reduction that would occur with implementation of these measures. Such measures may include, but are not limited to, the installation of wave barriers, maximization of the distance between vibratory equipment and receivers, restriction of vibration-generating activities to daytime hours, or temporary relocation of affected residents Construction vibration reduction measures shall be implemented to reduce cumulative vibration levels to Caltrans construction vibration thresholds as feasible.

4.4.5.3 Level of Significance After Mitigation

Implementation of MM NOI-1 and NOI-2 are intended to reduce potential impacts from construction and post-construction noise; however, whether these measures would reduce all construction and post-construction noise impacts to less-than-significant levels is not known. Therefore, as discussed under Threshold NOI-A, these impacts associated with projects covered under the implementation of the proposed CAP are assumed to be **significant and unavoidable**. Further environmental analysis and documentation is necessary prior to construction of each individual project to determine if a significant project-level impact would occur and if proposed mitigation would reduce the impact to a less-than-significant level.

Implementation of MM NOI-3 is intended to reduce construction vibration impacts; however, whether this measure would reduce all vibration impacts to less-than-significant levels is not known. Therefore, as discussed under Threshold NOI-B, the vibration impact associated with implementation of the proposed CAP is assumed to be **significant and unavoidable**. Further environmental analysis and documentation is necessary prior to construction of each individual project to determine if a significant impact project-level would occur and if mitigation would reduce the impact to a less than significant level.

Adherence to existing regulations regarding worker safety and noise exposure would ensure project-level impacts and the project's contribution to potential cumulative impacts associated with aircraft noise are **less than significant** and **not cumulatively considerable**. No mitigation is required.

Implementation of MM NOI-1, NOI-2, and NOI-3 are intended to reduce cumulative construction noise and vibration impacts; however, whether these measures would reduce the proposed program's contributions to potentially significant cumulative impacts to less-than-significant levels is not known. Therefore, the proposed program's contributions to significant cumulative construction noise and vibration impacts are assumed to be **cumulatively considerable**. As discussed under *Cumulative Analysis*, the project would **not have a cumulatively considerable contribution to cumulative impacts** related to operational noise with implementation of MM NOI-2(b).

4.5 Tribal Cultural Resources

4.5.1 Introduction

This section describes the existing conditions, regulatory framework, and potential impacts to tribal cultural resources which could result from the proposed program, as well as mitigation measures to reduce these impacts. Tribal cultural resources are those resources identified by California Native American tribes in consultation with lead agencies during tribal consultation (also referred to as Assembly Bill (AB) 52 consultation). See Section 4.5.3, *Regulatory Framework*, for a description of AB 52 and its requirements.

4.5.2 Existing Conditions

4.5.2.1 Setting

The Plan Area encompasses the traditional territory of numerous Native American ethnographic groups. Metropolitan has received formal notification for consultation from the following ten California Native American tribes that are traditionally and culturally affiliated with the geographic area of the Plan Area:

- Barbareño-Ventureño Band of Mission Indians
- Barona Band of Mission Indians
- Cabazon Band of Mission Indians
- Fernandeño Tataviam Band of Mission Indians
- Gabrieleño Band of Mission Indians-Kizh Nation
- San Gabriel Band of Mission Indians
- Pechanga Band of Luiseño Indians
- San Manuel Band of Mission Indians
- Soboba Band of Luiseño Indians
- Twenty-Nine Palms Band of Mission Indians

As previously described, most emission reduction measures that would be implemented under the plan are either administrative in nature or involve upgrades to existing infrastructure to improve function, which will reduce emissions (e.g., replacement or refurbishment of pump impellors). While enough project data exists to make reasonable assumptions about the potential level of significance for each project, additional project-level analysis will be completed when project-specific information becomes available for each project proposed in the CAP. Subsequent CEQA documentation will be prepared, as necessary. Future CEQA documents for the CAP updates may require additional consultation with tribes and will be made available for comment, as required.

4.5.2.2 Tribal Cultural Resource Consultation

As part of the process of identifying tribal cultural resources in or near the Plan Area, Metropolitan sent letters inviting all ten tribes whom had previously requested formal notice to consult on the proposed program on June 25, 2020. Metropolitan requested a response within 30 days of receipt of the notification, as specified by Section 21080.3.1 of the CEQA Statute. Metropolitan received one response requesting consultation from the San Manuel Band of Mission Indians on August 2, 2020. A consultation telephone conference meeting took place on August 19, 2020 between Metropolitan staff and Ms. Jessica Mauck, Director of Cultural Resources Management, and Ryan Nordness, Cultural Resource Analyst, for the San Manuel Band of Mission Indians.

During the consultation meeting, Metropolitan staff provided a brief history of Metropolitan, an overview of Metropolitan's cultural resource management and identification efforts and tribal cultural resource identification efforts, description of Metropolitan facilities in the vicinity of the San Manuel Reservation and Serrano ancestral tribal territory, and an overview of the proposed program and milestones. Metropolitan staff also reiterated that the proposed program does not include any specific projects slated for construction, and that any future project incorporating the Plan as a mitigation measure would subject to a project-specific environmental document with required tribal cultural resource outreach and consultation. The Tribe acknowledged understanding that the CAP is a high-level planning document with no direct construction activities and was also supportive of potential projects described in the Plan such as expansion of BESS facilities, electric vehicle charging infrastructure, and other "green" energy projects.

4.5.3 Regulatory Framework

4.5.3.1 Federal

Tribal cultural resources are a resource category identified by state law; there are no federal regulations pertaining to tribal cultural resources.

4.5.3.2 State

Assembly Bill 52 of 2014

AB 52 expanded CEQA by defining a new resource category, "tribal cultural resources." AB 52 establishes that "a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (Public Resources Code [PRC] Section 21084.2). AB 52 further states when feasible, the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource (PRC Section 21084.3). PRC Section 21074(a)(1) defines tribal cultural resources as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe," that satisfy either of the following criteria:

(A) Included or determined to be eligible for inclusion in the California Register of Historic Resources.

(B) Included in a local register of historical resources as defined in PRC Section 5020.1(k).

And PRC Section 21074(a)(2) defines tribal cultural resources as "A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c)

of PRC Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe."

In recognition of California Native American tribal sovereignty and the unique relationship of California local governments and public agencies with California Native American tribal governments and with respect to the interests and roles of project proponents, it is the intent AB 52 to accomplish all of the following:

1. Recognize that California Native American prehistoric, historic, archaeological, cultural, and sacred places are essential elements in tribal cultural traditions, heritages, and identities.
2. Establish a new category of resources in CEQA called "tribal cultural resources" that considers the tribal cultural values in addition to the scientific and archaeological values when determining impacts and mitigation.
3. Establish examples of mitigation measures for tribal cultural resources that uphold the existing mitigation preference for historical and archaeological resources of preservation in place, if feasible.
4. Recognize that California Native American tribes may have expertise with regard to their tribal history and practices which concern the tribal cultural resources with which they are traditionally and culturally affiliated (because CEQA calls for a sufficient degree of analysis, tribal knowledge about the land and tribal cultural resources at issue should be included in environmental assessments for projects that may have a significant impact on those resources).
5. In recognition of their governmental status, establish a meaningful consultation process between California Native American tribal governments and lead agencies, respecting the interests and roles of all California Native American tribes and project proponents and the level of required confidentiality concerning tribal cultural resources early in the CEQA environmental review process, so that tribal cultural resources can be identified and culturally appropriate mitigation and mitigation monitoring programs can be considered by the decision-making body of the lead agency.
6. Recognize the unique history of California Native American tribes and uphold existing rights of all California Native American tribes to participate in, and contribute their knowledge to, the environmental review process pursuant to CEQA.
7. Ensure that local and tribal governments, public agencies, and project proponents have information available, early in CEQA environmental review process, for purposes of identifying and addressing potential adverse impacts to tribal cultural resources and to reduce the potential for delay and conflicts in the environmental review process.
8. Enable California Native American tribes to manage and accept conveyances of, and act as caretakers of, tribal cultural resources.
9. Establish that a substantial adverse change to a tribal cultural resource has a significant effect on the environment.
10. AB 52 also establishes a formal consultation process for California tribes regarding those resources. The consultation process must be completed before a CEQA document can be certified or adopted. AB 52 requires that lead agencies "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." Native American tribes to be included in the process are those that have requested notice of projects proposed in the jurisdiction of the lead agency.

4.5.4 Thresholds and Methodology

4.5.4.1 Thresholds of Significance

Table 34 lists the thresholds from Appendix G of the *State CEQA Guidelines* that pertain to impacts associated with tribal cultural resources. These thresholds are addressed in the draft PEIR.

Table 34 CEQA Thresholds for Tribal Cultural Resources

Threshold Would the proposed program:
a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is: 1. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or 2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

4.5.4.2 Methodology

The following section presents a programmatic-level discussion of impacts to tribal cultural resources which could occur from implementation of the proposed CAP. These potential impacts would apply throughout the Plan Area and are directly tied to emissions reduction measures with physical construction activities. Due to the programmatic nature of the CAP, a precise, project-level analysis of the specific impacts associated with individual projects is not possible and would be speculative at this time. However, all program activities proposed under the CAP that are subject to CEQA must comply with AB 52.

Refer to Section 4.5.2.2, *Tribal Cultural Resource Consultation*, for a summary of Metropolitan's consultation outreach efforts.

4.5.5 Impacts Analysis

4.5.5.1 Program Analysis

Threshold TCR-A: *Would the program cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?*

As part of its tribal cultural resource identification process, Metropolitan sent letters via certified mail to ten Native American tribes that had previously requested to be informed through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated

with the tribes. One tribe, the San Manuel Band of Mission Indians, requested consultation. A consultation telephone conference meeting took place on August 19, 2020. During consultation, the San Manuel Band of Mission Indians did not identify any specific tribal cultural resources that would be impacted by the proposed program.

No tribal cultural resources were identified during consultation and no resources eligible for the California Register of Historical Resources or local register have been identified as being impacted by the proposed program. The proposed CAP would have **less than significant** to tribal cultural resources and no mitigation would be required.

Threshold TCR-B: *Would the program cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1.?*

As described under Threshold TCR-A, Metropolitan sent letters via certified mail to ten Native American tribes that had previously requested to be informed through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated with the tribes. The San Manuel Band of Mission Indians requested consultation. Metropolitan, as lead agency, has not determined any significant impacts to resources pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. Additionally, the San Manuel Tribe did not identify any specific tribal cultural resources potentially impacted by the proposed program. For these reasons, the CAP would have a **less than significant** impact to tribal cultural resources and no mitigation would be required.

4.5.5.2 Cumulative Analysis

Tribal cultural resources are regionally specific and determined by the consulting tribes. As described above, based on Metropolitan's outreach to Native American tribes in the Plan Area and the fact that no tribal cultural resources have been identified that may be impacted by the CAP, a **less than significant** cumulative impact associated with implementation of the proposed program would occur and no mitigation would be required.

4.5.5.3 Mitigation Measures

No mitigation is required.

4.5.5.4 Level of Significance After Mitigation

Impacts are **less than significant,** and no mitigation would be required.

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5 Effects Found Not to be Significant

According to Section 15128 of the *State CEQA Guidelines*, an EIR shall contain a statement that briefly indicates the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the PEIR. Such a statement may be contained in an attached copy of an Initial Study.

This chapter includes a brief description and analysis of the impact categories described in Appendix G of the *State CEQA Guidelines* that were found not to be significant. The analysis includes a review of resources, a detailed impact assessment conducted during the PEIR preparation process, and incorporation of comments received during the NOP process. Impacts that are found not to have a significant effect on the environment include Aesthetics, Agriculture and Forestry, Energy, Geology and Soils, Greenhouse Gases, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Mineral Resources, Population and Housing, Public Services, Recreation, Transportation, Utilities and Service Systems, and Wildfire. The Appendix G of the *State CEQA Guidelines* thresholds and a discussion of the impacts associated with implementation of the proposed program on these resources are discussed below.

5.1 Aesthetics

Pursuant to Appendix G of the *State CEQA Guidelines*, potentially significant aesthetic impacts would occur if implementation of the proposed program would:

- Have a substantial adverse effect on a scenic vista; or
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; or
- Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points. If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality); or
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Individual projects under the proposed CAP identified in Chapter 2, *Project Description*, include electrification, infrastructure, and renewable energy storage improvements at existing Metropolitan facilities (e.g., BESS facilities under CAP measure E-4), as well as carbon capture and sequestration pilot studies on agricultural land in the Palo Verde Valley and Sacramento-San Joaquin River Delta Islands (e.g., CAP measures CS-1 through CS-3). None of the individual projects under the CAP are located near a scenic vista such that they would have a substantial adverse effect on a scenic vista. None of the projects are located near a state scenic highway and would, therefore, not result in damage to scenic resources located within a state scenic highway.

Though some projects could be seen from a publicly accessible vantage point, individual projects would be small in nature and occur entirely within existing Metropolitan facilities that already include buildings, fuel pumps, water conveyance and treatment infrastructure, parking structures, maintenance facilities, etc. The addition of new structures at these facilities would not represent a major change in visual character of the sites. In urban areas, local jurisdictions may adopt zoning or other regulations governing scenic quality. Generally, projects implemented under the CAP would not conflict with such local regulations because California Government Code Section 53091 exempts Metropolitan, as a regional public water purveyor and utility, from local zoning and building ordinances. Furthermore, the CAP includes measures, such as carbon capture and sequestration initiatives, that may improve views of project sites from publicly accessible viewpoints by enhancing vegetation cover and improving the quality of those views. Therefore, none of the individual CAP projects would substantially degrade the existing visual character of a public view or conflict with applicable zoning or other regulations governing scenic quality. Impacts related to scenic resources, scenic highways, and visual character associated with aesthetics resources would be less than significant and no mitigation would be required.

Metropolitan plans to convert all interior and exterior lighting to light emitting diode (LED) technology (CAP measure EE-1), which is more energy efficient and emits light in a specific direction, unlike incandescent and compact fluorescent lamp technology, which emits light in all directions. Lighting would be directed downward or would be shielded and would not adversely affect day or nighttime views in the area. Though projects such as the proposed BESS facilities (CAP measure E-4) would include new lighting to illuminate the buildings/structures, new lighting would be shielded, directed downwards, and would use low wattage bulbs to reduce impacts to nighttime views in the area. Project lighting would be designed to reduce intrusion onto adjacent properties. In addition, the project designs do not propose new highly reflective materials that could potentially cause significant glare during the day, such as stainless-steel panels or expansive glass. Lighting may be required during construction activities for individual projects, particularly if overnight work is necessary. However, such lighting would conform to Metropolitan's standard construction specifications, which require contractors to direct floodlights downward and shield them to avoid nuisance. Therefore, the projects identified in the proposed CAP would not create substantial light or glare that would adversely affect day or nighttime views in the area. Impacts related to light and glare associated with aesthetics resources would be less than significant and no mitigation would be required.

5.2 Agriculture and Forestry

Pursuant to Appendix G of the *State CEQA Guidelines*, potentially significant agriculture and forestry impacts would occur if implementation of the proposed program would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use; or
- Conflict with existing zoning for agricultural use, or a Williamson Act contract; or
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)); or
- Result in the loss of forest land or conversion of forest land to non-forest use; or

- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

Most of the individual projects under the proposed CAP identified in Chapter 2, *Project Description*, are not related to agriculture and are not anticipated to have an impact on agricultural or forestry resources, either directly or indirectly, within the Plan Area. Activities that may occur on existing farmland include regenerative agriculture studies and investigation of carbon sequestration opportunities in the Palo Verde Valley (CAP measure CS-2) that would involve the use of small plots of existing agricultural land to study how current conventional agricultural practices may benefit from regenerative land management practices, including reduced soil loss, increased soil health, and reduced time, labor, and fuel use. Carbon sequestration and carbon capture pilot projects in the Sacramento-San Joaquin Delta (CAP measure CS-3) would utilize small plots of land to study how to improve soil health and reduce soil erosion, while protecting the Delta Islands from the impacts of climate change.

Individual projects under the proposed CAP would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to nonagricultural use or conflict with a Williamson Act contract. As discussed above, most projects to be implemented under the proposed CAP would occur at existing Metropolitan facilities and would not result in direct or indirect farmland or forestland conversion. Proposed activities that may occur on farmland pursuant to CAP measure CS-2 would involve the study of regenerative agricultural practices that would improve farming practices, reduce soil loss, and increase soil health to improve current farming practices and would not, therefore, conflict with land zoned for agricultural use or Williamson Act contracts. Proposed studies associated with CAP measure CS-3 would include carbon sequestration and carbon capture pilot programs on the Delta Islands aimed at reducing soil loss by studying the use of cover crops or planting tules at the margins of the islands and unfarmable areas to protect the islands from sea level rise while providing habitat for aquatic and avian species. The proposed CAP does not include construction of commercial or residential land uses on existing agricultural sites that would substantially preclude future agricultural use or productivity of such sites.

The proposed CAP does not include measures that would add new homes, businesses, or large increases in employment that would trigger expansion of development into agricultural or forested areas. Thus, the proposed program activities would not result in the loss of forest land or conflict with existing zoning for forest land, timberland, or timberland production or involve other changes in the existing environment that would result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use. Therefore, no impact related to farmland, Williamson Act contracts, forest land, and associated agricultural resources would occur, and no mitigation would be required.

5.3 Energy

Pursuant to Appendix G of the *State CEQA Guidelines*, a potentially significant impact to energy would occur if implementation of the proposed program would:

- Result in wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Construction associated with specific individual projects under the proposed CAP would result in short-term energy consumption. Short-term energy consumption includes consumption of petroleum-

based fuels used to power off-road construction equipment on individual project sites, worker travel to and from construction sites, and vehicles used to deliver construction materials to project sites during construction activities. Construction activities would be required to comply with all applicable regulations limiting wasteful or inefficient energy use, including compliance with the CARB In-Use Off-Road Diesel-Fueled Fleets Regulation, which imposes limits on idling and restricts the use of older, less fuel-efficient equipment. Compliance would reduce fuel consumption and lead to the use of more fuel-efficient vehicles and equipment on construction sites. Construction equipment would be maintained to applicable standards, and construction activity and associated fuel consumption and energy use would be temporary. In addition to Metropolitan's standard Environmental Requirements for Construction, Metropolitan implements environmental requirements for construction projects that are detailed in Metropolitan's engineering project specification package, which includes specific practices for contractors to implement during construction to reduce or avoid impacts to the environment, including limitations on engine idling to reduce unnecessary fuel consumption and emissions (refer to Chapter 2, *Project Description,* for more details).

As described in Chapter 2, *Project Description,* many of the individual projects under the proposed CAP would improve energy efficiency, increase procurement of renewable energy, and promote energy conservation. CAP measures include efforts to promote energy conservation at existing and planned Metropolitan facilities (CAP measures EE-1 through EE-5); reduce generated waste and increase waste diversion (CAP measures WA-1 through WA-4); encourage use of alternative transportation, alternative fuel types, and electric vehicles (CAP measures EC-1 through EC-6); and promote water conservation (CAP measures WC-1 through WC-6). The CAP promotes energy efficiency and, therefore, would not result in wasteful, inefficient, or unnecessary consumption of energy resources.

The proposed CAP itself is a plan that will enable Metropolitan to meet specific GHG reduction goals by increasing the use of renewable energy and promoting energy efficiency. As discussed above, the CAP includes various GHG reduction measures focused on improving energy efficiency and increasing procurement of renewable energy (e.g., CAP measures DC-2, E-1 through E-5, and EE-1 through EE-5). The CAP includes the proposed construction and operation of BESS facilities under CAP measure E-4 that will store renewable energy during peak periods and discharge that energy during periods when renewable energy may not be available. These facilities will be used to power existing or future Metropolitan facilities. Furthermore, SB 100 mandates 100 percent clean electricity for California by 2045. Future infrastructure projects would be connected to the existing electricity grid and would eventually be powered by renewable energy pursuant to SB 100 requirements. Therefore, the CAP would not conflict with or obstruct implementation of any state plan for renewable energy or energy efficiency and no impact would occur.

5.4 Geology and Soils

Pursuant to Appendix G of the *State CEQA Guidelines*, a potentially significant impact on geology and soils would occur if the proposed program would:

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
    - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42;
    - Strong seismic ground shaking;

- Seismic-related ground failure, including liquefaction;
- Landslides; or
- Result in substantial soil erosion or the loss of topsoil; or
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse; or
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property; or
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater; or
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Projects associated with implementation of the proposed CAP would be located within existing Metropolitan facilities. Of the facilities described in Chapter 2, *Project Description*, only portions of the Jensen WTP are located within or adjacent to a fault zone. Portions of the Jensen, Diemer, and Skinner WTPs are located within liquefaction and landslide hazard zones, and the Webb and Holland Tracts in the Sacramento-San Joaquin River Delta are located within a liquefaction hazard zone[25]. As such, the probability of damage to facilities from significant nearby surface fault rupture, seismic-related ground failure, or landslides is considered moderate to high. However, projects covered under the CAP involve the installation of small structures (such as BESS facilities; CAP measure E-4), replacing or refurbishing old or outdated equipment (CAP measures EE-4a through EE-4d), and the installation of new infrastructure to support zero-emission vehicles (CAP measure FL-4 and Cap measure EC-3). Design of the proposed projects would be developed in accordance with California Building Code (CBC) standards for seismic stability. None of the proposed projects would include the development of structures for human occupancy that would occur within 50 feet of an identified fault. Any proposed new structures that would be located on sites with liquefiable soils or at risk of landslides would similarly be constructed in accordance with the requirements of the CBC, which specifies foundation and other construction requirements for sites with unstable soils, as well as project-specific recommendations from any applicable geotechnical studies completed. If structures are proposed in areas subject to liquefaction or earthquake induced landslides, compliance with the applicable regulatory requirements and project-specific geotechnical recommendations would reduce the potential for adverse effects. Therefore, individual projects to be implemented under the CAP would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic shaking, liquefaction, or landslides. Impacts associated with earthquakes, seismic shaking, landslides, liquefaction, and expansive soils would be less than significant and no mitigation would be required.

While proposed construction activities could result in loss of topsoil or soil erosion, the implementation of BMPs, including a SWPPP would be required for sediment and erosion control, pollutant treatment, outlet protection, and general site management, and coverage under the National Pollutant Discharge Elimination System Construction General Permit would be required when construction would disturb an area greater than one acre in size. These standard measures would ensure that construction activities do not result in a substantial loss of topsoil or erosion. Implementation of other proposed CAP projects, such as regenerative agricultural practices and cover cropping conducted as part of carbon capture and sequestration initiatives (CAP measures CS-1

[25] Bouldin Island, Bacon Island, and land within the Palo Verde Valley are not located within a fault zone and have not been evaluated for liquefaction or landslide hazards.

through CS-3), would have the added benefit of reducing erosion and topsoil loss relative to traditional, intensive agricultural practices; therefore, loss of topsoil or soil erosion would be less than significant and no mitigation would be required.

None of the projects associated with the CAP would require the installation of a septic system or alternative wastewater disposal systems, therefore no impact would occur.

Paleontological resources, or fossils, are the evidence of once-living organisms preserved in the rock record. They include both the fossilized remains of ancient plants and animals and the traces thereof (e.g., trackways, imprints, burrows, etc.). Paleontological resources are not found in "soil" but are contained within the geologic deposits or bedrock that underlies the soil layer. The Plan Area spans six of the eleven major geomorphic provinces in California: the Great Central Valley, Basin and Range, Mojave Desert, Colorado Desert, Transverse Ranges, and Peninsular Ranges (California Geological Survey 2002). Each geomorphic province has its own unique geologic history, lithology, and potential to yield paleontological resources.

Paleontological sensitivity refers to the potential for a geologic unit to produce scientifically significant fossils. Sensitivity is determined by rock type, preservation potential (i.e., likelihood) of the geologic unit to yield significant fossils, and fossil localities recorded from that unit, if any. In general, ground disturbing activities located in areas of high paleontological sensitivity have the potential to damage or destroy a unique paleontological resource or site or unique geologic feature, if any such resources or features are present. Direct impacts to paleontological resources occur when earthwork activities, such as grading or trenching, cut into the geologic deposits within which fossils are buried and physically destroy the fossils. Since fossils are the remains of prehistoric animal and plant life, they are considered to be nonrenewable resources.

There are numerous paleontological resources known to occur within the Plan Area; however, assessing the unit-specific potential to yield sensitive paleontological resources for all geologic units present within the Plan Area is beyond the scope of this programmatic analysis. Regionally, the surface geology with the Plan Area includes a large number of igneous, metamorphic, and sedimentary units, with a corresponding paleontological sensitivity that ranges from no potential to high potential for containing significant non-renewable fossiliferous resources (Society of Vertebrate Paleontology 2010). However, most of the individual projects to be implemented under the CAP would be located at existing Metropolitan facilities that are currently heavily disturbed due to existing water infrastructure and its appurtenant development. For projects proposed in the CAP, excavation and/or grading activities would be shallow in nature and would occur in mostly previously disturbed areas. Planned studies in the Palo Verde Valley (CAP measure CS-2) and the San Joaquin-Sacramento Delta Islands (CAP measure CS-3) would occur on existing agricultural lands or would require ground disturbing activities on previously disturbed agricultural land. Activities under these CAP measures would be consistent with existing ground disturbance associated with the ongoing agricultural use of the area. Furthermore, in addition to Metropolitan's standard Environmental Requirements for Construction, Metropolitan implements environmental requirements for construction projects that are detailed in Metropolitan's engineering project specification package which includes specific practices for contractors to implement during construction to reduce or avoid impacts to the environment, including cessation of construction within 50 feet of an unplanned discovery, protection of the discovery area, and evaluation of the discovery by a qualified paleontologist (refer to Chapter 2, *Project Description,* for more details). Therefore, construction and post-construction activities involving trenching, excavation, or other ground disturbance for the proposed CAP projects would be located in previously disturbed areas and would have low potential to adversely impact paleontological resources. Given the location and nature of the individual projects proposed under the CAP and Metropolitan's standard project specifications, impacts to paleontological resources would be less than significant and no mitigation would be required.

5.5 Greenhouse Gases

Pursuant to Appendix G of the *State CEQA Guidelines*, a potentially significant GHG impact would occur if implementation of the proposed program would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Construction associated with individual projects proposed under the CAP would result in short-term increases of GHG emissions due to combustion of petroleum-based fuels, such as fuels used to power off-road construction equipment on individual project sites, fuel consumed from construction worker travel to and from project sites, and vendor vehicles used to deliver materials to sites. However, these short-term emissions would be balanced against long-term GHG emissions reductions that would be realized as a result of program measure implementation. It should be noted that construction GHG emissions were accounted for in the GHG forecast prepared for the CAP, on which the carbon budget is based. Projects under the proposed CAP are intended to increase the purchase of renewable energy (CAP measure E-3), develop battery storage (CAP measure E-4), identify carbon sequestration opportunities (CAP measures CS-1 through CS-3), increase CRA pump efficiency (CAP measures EE-4a through EE-4d), install recycled water infrastructure (CAP measure WC-6), and increase water conservation and waste diversion (CAP measures WC-1 through WC-6 and WA-1 through WA-4), which would result in a net decrease in overall GHG emissions. Furthermore, as discussed above under Section 5.3, *Energy*, construction activities would be subject to applicable state regulations and Metropolitan specifications intended to improve construction fleet efficiency through equipment idling restrictions and decommissioning of older, less efficient engines.

Post-construction implementation of the proposed CAP would result in a long-term reduction in Metropolitan's GHG emissions, as the CAP itself is a plan adopted for the purpose of reducing emissions of GHGs. As discussed in detail in Chapter 2, *Project Description*, the CAP adopts a per capita emissions reduction target intended to achieve carbon neutrality by 2045 using a carbon budget tracking mechanism. This reduction target is more aggressive than the emissions reduction target established by SB 32 (40 percent below 1990 levels by 2030, adopted in 2006) and consistent with the goal of carbon neutrality by 2045 established by Executive Order B-55-18. As such, the proposed CAP would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment and would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. The proposed program would result in a beneficial impact with respect to GHG and therefore, no impact would occur.

5.6 Hazards and Hazardous Materials

Pursuant to Appendix G of the *State CEQA Guidelines*, a potentially significant hazards and hazardous materials impact would occur if implementation of the proposed program would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; or

- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; or
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment; or
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area; or
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people, structures, either directly or indirectly, to a significant risk or loss, injury or death involving wildland fires.

Construction and operation of the proposed projects under the CAP would temporarily require the routine transport, use, storage, and disposal of hazardous materials and petroleum products (i.e., diesel fuel, lubricants, paints and solvents, and cement products potentially containing strong alkali or acidic chemicals) that are commonly used during construction and operational activities. Several federal and state laws regulate the routine use, transport, storage, and disposal of hazardous materials to minimize potential health risks, including the Toxic Substance Control Act, Resource Conservation and Recovery Act (RCRA), U.S. Department of Transportation (DOT) regulations, California Health and Safety Code (CHSC), Unified Program, and the California Hazardous Waste Control Act.

All individual projects to be implemented under the proposed CAP would be required to comply with applicable federal, state, and local regulatory requirements. Furthermore, Metropolitan's standard construction practices would ensure that all materials are stored safely within the project footprint. BMPs required pursuant to Metropolitan's standard construction specifications include the designation of special storage areas and labeling, containment berms, coverage from rain, and use of concrete washout areas. In addition to Metropolitan's standard Environmental Requirements for Construction, Metropolitan implements environmental requirements for construction projects that are detailed in Metropolitan's engineering project specification package which includes specific practices for contractors to implement during construction to reduce or avoid impacts to the environment, including implementation of drip pans below stationary equipment, proper storage and covering of stockpiled debris and soils, proper cleanup of spills in accordance with environmental regulations, and proper storage of all hazardous materials pursuant to state and federal requirements (refer to Chapter 2, *Project Description*, for more details). Finally, development and implementation of a Water Pollution Control Plan (WPCP) in accordance with the RWQCB guidance would be required during construction of individual projects under the CAP and would comply with local, state, and federal regulations. As such, the proposed program would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials and no reasonably foreseeable upset or accident conditions involving the release of hazardous substances used during construction are anticipated. Because construction activities would comply with federal, state, or local laws, standards, or requirements, impacts related to hazardous materials associated with construction of the proposed GHG emissions reduction measures would be less than significant and no mitigation would be required.

As described in Chapter 2, *Project Description*, individual projects that may be implemented under the proposed CAP are primarily located within existing Metropolitan facilities; however, schools are located within one-quarter mile of some proposed project locations. Table 35 lists schools located within one-quarter mile of potential project locations. For some GHG emissions reduction measures, construction, operation, and maintenance activities associated with implementation of the CAP would

require the handling of small quantities of hazardous materials as described above. The potential for accidental releases of hazardous materials, primarily fuel and lubricants from equipment fuel leaks and spills, could result from construction and maintenance activities. However, the small quantities of hazardous materials that would be handled would not create an impact to nearby schools. Additionally, none of the projects proposed under the CAP would use or generate acutely hazardous materials. Multiple local and state regulations require a discretionary process that results in the consultation of databases which store information related to contaminated sites, soils testing of potential project sites, project-level environmental assessments before grading, and compliance with various regulations which heavily restrict the use and storage of hazardous materials within one-quarter mile of a school. While grading and site preparation activities have the potential to pose health concerns to workers and nearby sensitive receptors, including schools, none of the projects are located near known hazardous waste clean-up sites or leaking underground storage sites within one-quarter mile of a school. Implementation of the GHG emissions reduction measures would comply with all applicable federal, state, and local laws, standards, and requirements regarding the handling of hazardous materials. Therefore, the impact would be less than significant, and no mitigation would be required.

Table 35 Schools within One-Quarter Mile of a Proposed Project Location

Metropolitan Facility	School Facility	Address
Weymouth WTP	Grace Miller Elementary School	1629 Holly Oak Street, La Verne
Weymouth WTP	Calvary Baptist School	2990 Damien Avenue, La Verne
Weymouth WTP	La Verne Parent Participation Preschool	909 Juanita Avenue, La Verne
Weymouth WTP	La Verne KinderCare	3602 Wheeler Avenue, La Verne
Weymouth WTP	Damien High School	2280 Damien Avenue, La Verne
Weymouth WTP	Ramona Middle School	3490 Ramona Avenue, La Verne
Weymouth WTP	Ramona Avenue Christian Church	909 E. Juanita Avenue, La Verne
Weymouth WTP	Joan Macy School	1350 3rd Street, La Verne
Jensen WTP	Van Gogh Charter School	17160 Van Gogh Street, Granada Hills

Because of the size of the Plan Area, there are numerous existing contaminated sites within the Plan Area listed in the Department of Toxic Substances Control's EnviroStor and the SWRCB's Geotracker databases, including Metropolitan's existing Skinner, Weymouth, and Diemer WTP facilities. However, all of these Metropolitan facilities are listed as case closed following necessary remediation actions. As such, none of the proposed project locations would be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and expected to create a significant hazard to the public or the environment as a result. Therefore, this impact would be less than significant.

As discussed in Chapter 2*, Project Description*, several GHG emissions reduction measures may require construction, demolition, excavation and/or renovation activities. Most of these projects would be completed within existing Metropolitan facilities that currently comply with any applicable airport land use plans. Of the individual project locations identified in Chapter 2, *Project Description*, only Weymouth WTP is located within the airport influence area of an existing airport (Brackett Field Airport; Los Angeles County Airport Land Use Commission 2015). The proposed CAP projects do not include construction of residential or other sensitive land uses that would result in exposure of people residing or working in the project area to excessive noise or safety hazards. Any proposed GHG emissions reduction projects in proximity to existing public use airports or private airstrips would be required to comply with applicable federal, state, and local aviation safety requirements,

including the facility's airport land use compatibility plan. Because projects covered under the proposed CAP would comply with applicable regulations, impacts associated with aviation hazards would be less than significant and no mitigation would be required.

Finally, most of the proposed projects to be implemented under the CAP would be completed within existing Metropolitan facilities and would not require street modifications such as road widening that would interfere with an adopted emergency response or evacuation plan. Other proposed projects, such as implementation of regenerative agricultural practices on agricultural lands in the Palo Verde Valley and Delta Islands pursuant to CAP measures CS-1 through CS-3, would involve similar land uses to those already occurring on these agricultural sites. Given that individual projects would generally either occur within the footprints of existing, developed Metropolitan facilities or involve similar land uses to those already occurring on individual project sites, construction and operation of the proposed CAP projects are unlikely to require closure of roadways, travel lanes, or create other impediments to emergency access, response, or evacuation. Implementation of the proposed CAP measures would not conflict or interfere with emergency response plans. Therefore, impacts would be less than significant and no mitigation would be required.

For discussion of potential impacts related to wildland fire, refer to Section 5.15, *Wildfire*.

5.7 Hydrology and Water Quality

Pursuant to Appendix G of the *State CEQA Guidelines*, a potentially significant hydrology impact would occur if implementation of the proposed program would:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface groundwater quality; or
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin; or
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
    - Result in substantial erosion or siltation on- or off-site;
    - Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
    - Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
    - Impede or redirect flood flows; or
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Individual projects implemented under the proposed CAP would generally be located at existing, developed Metropolitan facilities. As such, these projects would not result in substantial changes to drainage patterns resulting in siltation, erosion, runoff, or flooding. Individual project construction may result in minor ground disturbance, which has the potential to result in water quality impacts due to soil erosion and pollutant runoff during construction activities. Where the anticipated total disturbance for a project would be greater than one acre, coverage under the statewide Construction General Permit (SWRCB Water Quality Order 2009-0009-DWQ) would be fulfilled by compliance

with the Construction General Permit and SWPPP implementation. The SWPPP would include project-specific BMPs to control erosion, sedimentation, and release of hazardous materials from construction sites into surface waters. Additionally, project-construction BMPs and the SWPPP would be updated and amended, as necessary, during construction to ensure adequate compliance due to changes to the construction site conditions. In addition, the SWPPP must identify the following: equipment storage, cleaning, and maintenance areas/activities; points of ingress and egress to the construction site; material loading, unloading, and storage practices and areas, including construction materials, building materials, and waste materials; and materials, equipment, or vehicles that may come in contact with stormwater. Implementation of these measures would prevent excavated soils, construction materials, or debris from being transported to receiving waters.

As described in Chapter 2, *Project Description,* Metropolitan's standard construction specifications for all construction activities prohibit contractors from violating any applicable water quality standards for receiving waters associated with waste storage, and require use of drip pans, secondary containment, and prohibit storage of equipment within drainage channels. Furthermore, carbon capture and sequestration initiatives, such as regenerative agricultural practices implemented pursuant to CAP measures CS-1 through CS-3, may result in water quality benefits by promoting vegetation cover (i.e., cover crops) on agricultural land. Given the nature of individual projects under the proposed CAP and compliance with existing regulations, implementation of the CAP would not result in violation of water quality standards, degradation of groundwater or surface water quality, or substantial alterations to drainage patterns. Therefore, such impacts would be less than significant and no mitigation would be required.

Individual projects that may involve placement of structures, such as BESS projects implemented pursuant to the proposed CAP measure E-4, would be located at existing Metropolitan facilities. None of the facilities where BESS projects are proposed, as identified in Chapter 2, *Project Description*, are located within a flood, tsunami, or seiche hazard zone and, therefore, these projects would not risk release of pollutants due to inundation. Other projects under the proposed CAP, such as electrification or infrastructure efficiency improvements (e.g., CAP measures EE-4a through EE-4d), would also occur at existing Metropolitan facilities. These projects would not require the use of acutely hazardous pollutants that could be released in the event of inundation.

As discussed above, projects implemented under the CAP would occur primarily at existing Metropolitan facilities. They would not substantially increase impervious surface cover in a manner that would substantially impede groundwater recharge. Furthermore, the CAP does not involve any projects that would directly or indirectly increase water demand that could decrease groundwater supplies. Given the analysis above, impacts related to floods, tsunami, seiche, and groundwater impacts associated with hydrology and water quality would be less than significant and no mitigation would be required.

5.8 Land Use and Planning

Pursuant to Appendix G of the *State CEQA Guidelines*, a potentially significant land use and planning impact would occur if implementation of the proposed program would:

- Physically divide an established community; or
- Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

Implementation of individual projects under the proposed CAP would not result in land use and planning conflicts. Individual projects under the CAP include electrification (CAP measure DC-2), BESS (CAP measure E-4), and infrastructure efficiency improvements (CAP measures EE-4a

through EE-4d) at existing Metropolitan facilities and carbon capture and sequestration projects on agricultural land owned by Metropolitan (CAP measures CS-1 through CS-3). Existing facilities owned and operated by Metropolitan are currently developed with water and energy infrastructure, and agricultural land owned by Metropolitan proposed for carbon capture and sequestration projects is surrounded by existing agricultural land. Because projects would occur at facilities on land currently owned by Metropolitan and the nature of individual proposed projects would be consistent with the current land use at these locations, the proposed CAP would not physically divide an established community or cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, there are no impacts associated with land use and planning and no mitigation would be required.

5.9 Mineral Resources

Pursuant to Appendix G of the *State CEQA Guidelines*, a potentially significant mineral resources impact would occur if implementation of the proposed program would:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or
- Result in the loss of availability of a locally important mineral resources recovery site delineated on a local general plan, specific plan, or other land use plan.

Mineral resources found in the Plan Area include construction aggregate (sand, gravel, and crushed stone), clay, and petroleum. The Surface Mining and Reclamation Act of 1975 requires policy makers to consider mineral resource recovery areas that have been designated Mineral Resource Zone (MRZ)-2, which indicates significant mineral deposits are present or likely to be present. Furthermore, many local jurisdictions have general plan policies in place that provide oversight and management of mineral resources. Implementation of some of the proposed GHG reduction measures would necessitate earth moving or ground disturbing activities, the removal or installation of facilities and infrastructure, or placement of permanent structures. However, proposed new structures (e.g., BESS facilities constructed pursuant to CAP measure E-4) and other potential infrastructure improvements would be located at existing Metropolitan facilities, which are already developed with water treatment and conveyance infrastructure. These projects would not result in expansion of the footprints of existing Metropolitan facilities, would not convert land uses, and would not impact the availability of a known mineral resource. Other potential projects under the CAP would include carbon capture and sequestration projects on land currently in agricultural production (CAP measures CS-1 through CS-3). The proposed land use and extent of ground disturbance associated with these projects would be consistent with the current conditions at these agricultural sites. As such, individual projects under the proposed CAP would not damage or otherwise preclude access to mineral resources in the Plan Area beyond current conditions.

Implementation of individual projects under the proposed CAP would not result in the loss of availability of mineral resources that are of value to the region, to the residents of the state, or identified in any local jurisdiction’s land use plans. No impact to mineral resources would occur, and no mitigation would be required.

5.10 Population and Housing

Pursuant to Appendix G of the *State CEQA Guidelines*, a potentially significant impact to population and housing would occur if implementation of the proposed program would:

- Induce substantial unplanned population growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure); or
- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

Implementation of individual projects under the proposed CAP would not induce population growth directly or indirectly, remove existing housing, or displace existing populations because the CAP does not propose changes to policies related to land use or residential zoning. Construction activities for individual proposed projects would be temporary in nature and would require mobilization of construction crews to individual project sites. However, it is anticipated that construction labor would be sourced from the local/regional labor pool and would not result in substantial population growth in the Plan Area.

Operation of individual projects, such as BESS facilities pursuant to CAP measure E-4 or retrofitting and installing new equipment pursuant to CAP measures EE-4a through EE-4d, generally would not have a population-generating component and would not be expected to substantially increase population in the Plan Area. The proposed CAP does not include measures that would propose new homes or businesses, nor would projects require large increases in employment.

The proposed CAP would include projects on Metropolitan's existing facilities located throughout the Plan Area. Therefore, implementation of proposed CAP projects would not induce substantial unplanned population growth either directly or indirectly, nor displace substantial numbers of existing people or housing, thus there is no impact to population and housing associated with projects implemented under the proposed program, and no mitigation would be required.

5.11 Public Services

Pursuant to Appendix G of the *State CEQA Guidelines*, the proposed program would have a potentially significant impact on public services if it would:

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:
- Fire protection;
- Police protection;
- Schools;
- Parks; or
- Other public facilities.

Construction associated with individual projects proposed under the CAP would be temporary in nature and would involve mobilization of construction crews to project construction sites throughout

the Plan Area. It is anticipated that construction labor would be sourced from a local/regional labor pool. Future projects proposed under the CAP would not require the long-term relocation of workers or families that would increase demand on public services or increase in police or fire protection response times near construction sites. It is possible that construction activities may require temporary relocation of construction workers, such as projects occurring in more remote sites (e.g., desert locations) of the Plan Area. However, such relocation would be temporary in nature and not of a scale expected to result in an increased demand for public services necessitating new or physically altered facilities. As such, there would be no impact from construction to public services.

As described in Section 5.10, *Population and Housing*, the proposed CAP would not result in substantial population growth in the Plan Area. Post-construction implementation of proposed individual projects, such as operation of BESS projects (CAP measure E-4) and retrofitting and installing new equipment (CAP measures EE-4a through EE-4d), would not result in substantial population growth that would require the provision of new public services or physically altered government facilities because these projects do not have a population-generating component. If needed, minor increases in employment needed for operation and maintenance of new or improved infrastructure would not be expected to result in substantial population growth in the Plan Area, as such employment would generally be expected to be sourced from the regional labor pool. Based on the analysis above, construction and operation of individual projects under the proposed CAP would not result in a need for new police and fire protection facilities, schools, parks, or other public facilities that may result in significant environmental impacts. Therefore, there would be no impact related to governmental facilities such as police and fire protection, schools, and parks associated with public services, and no mitigation would be required.

5.12 Recreation

Pursuant to Appendix G of the *State CEQA Guidelines*, the proposed program would have a potentially significant impact on recreation if it would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

The projects proposed under the CAP would not increase the use of existing neighborhood or regional parks or other recreational facilities. As described in Section 5.11, *Public Services*, construction activities for projects under the CAP may result in a temporary increase in employment associated with construction workers at individual project sites. However, construction labor would generally be sourced locally or regionally and would not result in long-term relocation of construction workers that would increase the use of existing recreational facilities. Given the nature of projects under the CAP, any temporary increase in the use of neighborhood or regional parks or other recreational facilities resulting from construction workers would not be of a scale to result in substantial physical deterioration to such facilities.

Further, as discussed in Section 5.10, *Population and Housing*, post-construction implementation of the CAP would not result in substantial population growth in the Plan Area. As such, the program would not increase the use of existing neighborhood and regional parks or other recreational facilities in the Plan Area. Potential impacts related to parks and recreational facilities associated with recreation resources would be less than significant and no mitigation would be required.

5.13 Transportation

Pursuant to Appendix G of the *State CEQA Guidelines*, the proposed program would have a potentially significant impact on transportation if it would:

- Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities; or
- Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b); or
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or
- Result in inadequate emergency access.

As discussed in Section 5.10, *Population and Housing*, and Section 5.11, *Public Services,* proposed projects to be implemented under the CAP would be located at existing Metropolitan facilities throughout the Plan Area. Construction activities for individual projects implemented under the proposed program would be temporary in nature and would require mobilization of construction crews to individual project sites. It is anticipated that construction labor would be sourced from the local/regional labor pool. Operation of individual projects, such as BESS facilities pursuant to CAP measure E-4 or retrofitting and installing new equipment pursuant to CAP measures EE-4a through EE-4d, generally would not be expected to substantially increase employment to operate the proposed project. Studies proposed under CAP measure CS-2 and CS-3 would be small in nature and would not require substantial travel to and from the study sites. The CAP does not include measures that would propose new homes or businesses that would result in a substantial increase in vehicle miles travelled (VMT). Given the relatively small nature of the projects proposed under the CAP, VMT during construction and operation of the proposed projects are not expected to increase substantially.

Construction trips for individual projects that may be implemented under the proposed CAP can be estimated using established criteria for estimating worker and delivery trips by construction workers and vendors (e.g., material delivery, concrete truck, water truck)[26] using CalEEMod, which is also used for analyzing potential air quality impacts. Construction trips for example projects of similar sizes to those of representative projects proposed under the CAP, such as the construction of the BESS facilities (CAP measure E-4) are shown in Table 36.

Table 36 Construction Trips Associated with Example Projects

	Number of Daily One-Way Trips[1]	
Phase	**1-Acre Project**	**5-Acre Project**
Demolition	10 worker trips	16 worker trips
Site Preparation	6 worker trips	18 worker trips
Grading	10 worker trips	16 worker trips
Building Construction[2]	18 worker trips 8 vendor trips	92 worker trips 36 vendor trips
Paving	18 worker trips	20 worker trips
Architectural Coating	18 worker trips	92 worker trips

[1] Based on CalEEMod methodology, the number of construction worker trips for the demolition, site preparation, grading, and paving phases assumes 1.25 construction workers (or 2.5 daily one-way construction worker trips) per piece of construction equipment. For the building construction and architectural coating phases for commercial and industrial land uses, the number of construction worker trips assumes 0.42 daily one-way trips per 1,000 square feet and the number of vendor trips assumes 0.1639 daily one-way vendor trips per 1,000 square feet.

[2] Vendor trips include material delivery, concrete, and water trucks.

Source: California Air Pollution Control Officers Association 2017

[26] Given the nature of the proposed CAP measures, it is not anticipated that substantial soil import or export would be required.

As shown in Table 36, construction trips for "typical" construction activities would represent a negligible increase in daily traffic volumes in areas surrounding existing and potential future Metropolitan facilities where the majority of proposed individual CAP projects would be implemented (such as the locations of the proposed BESS projects at Metropolitan facilities in the cities of Los Angeles and La Verne; and unincorporated Riverside County pursuant to CAP measure E-4). Furthermore, individual projects proposed under the CAP would be located at existing Metropolitan facilities and would not be expected to require partial or full closures of public roadways. Therefore, construction activities associated with proposed individual projects would not conflict with an applicable plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities; substantially increase hazards due to a geometric design feature or incompatible uses; or result in inadequate emergency access. Construction-related impacts to the transportation network would be less than significant and no mitigation would be required.

During operation, traffic generated by proposed individual projects would include minimal employee maintenance, repair, and inspection trips (approximately two to 10 daily trips on days when maintenance, repair, or inspection is required). However, many program activities are anticipated to occur at existing Metropolitan facilities where maintenance trips to these existing facilities are already occurring. Furthermore, maintenance activities would likely be conducted on a monthly or weekly basis, rather than a daily basis. As a result, individual projects under the CAP would not substantially increase the number of required maintenance trips. Therefore, operation of the proposed program would not conflict with an applicable plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. In addition, implementation of the proposed CAP would not result in any permanent alterations to existing roadway alignments or intersections that could create a traffic hazard, incompatible use, or limit emergency access. Furthermore, as described in Chapter 2, *Project Description*, several of the proposed CAP measures would reduce vehicle trips including, but not limited to, expanding the subsidized transit commute program (CAP measure EC-1), providing employee education programs on public transportation and vanpools (CAP measure EC-2), incentivizing use of alternative transportation (CAP measure EC-4), and facilitating alternative work schedules (e.g., telecommuting and flexible schedules; CAP measure EC-5). Therefore, post-construction impacts to the transportation network would be less than significant and no mitigation would be required.

CEQA Guidelines Section 15064.3(b) identifies criteria for evaluating transportation impacts using VMT. VMT is a measurement of miles traveled by vehicles within a specified area over a specific time period. Unlike level of service, VMT does not measure delay or traffic congestion levels. Specifically, the guidelines state VMT exceeding an applicable threshold of significance may indicate a significant impact. According to CEQA Guidelines Section 15064.3(b)(3), a lead agency may include a qualitative analysis of operational and construction traffic. Currently, official measures and significance thresholds related to VMT are still being developed and have not yet been adopted by Metropolitan. A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. As discussed above, traffic on local roadways would be temporarily increased during construction of individual projects due to construction worker and vendor trips. Increases in VMT from construction would be limited to the duration of construction activities and temporary in nature. Because construction would not result in a permanent increase to area VMT and due to the minimal amount of construction work required for individual projects proposed under the CAP, construction crews would likely be locally or regionally sourced, rather than commuting large distances from another region, which would minimize construction-related VMT. Additionally, operation of individual projects under the proposed CAP would also involve minimal employee operations and maintenance trips at existing facilities. Thus, operation of individual projects under the CAP would not be expected to substantially increase VMT associated with travel to and from these facilities. Furthermore, as discussed above, several emissions reduction measures described in

Chapter 2, *Project Description*, would reduce VMT in the Plan Area by encouraging alternative transportation (CAP measure EC-4), telecommuting (CAP measure EC-5), and vanpool commuting options for Metropolitan employees (CAP measure EC-2). Therefore, the proposed program would not substantially increase VMT in the Plan Area. Impacts associated with VMT per CEQA Guidelines Section 15064.3(b) would be less than significant, and no mitigation would be required.

5.14 Utilities and Service Systems

Pursuant to Appendix G of the *State CEQA Guidelines*, the proposed program would have a potentially significant impact on utilities and service systems if it would:

- Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects; or
- Have insufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years; or
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments; or
- Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; or
- Not comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

Individual projects under the proposed CAP may involve replacement of existing water infrastructure (i.e., pump refurbishment pursuant to CAP measure EE-4a through EE-4d) or construction of new or expanded electric power infrastructure (i.e., BESS facilities pursuant to CAP measure E-4, EV charging stations pursuant to CAP measure FL-4 and CAP measure EC-3). However, as described in Chapter 2, *Project Description*, these infrastructure improvements would be located at and within the existing footprints of Metropolitan facilities. Furthermore, such improvements would serve to improve the efficiency of Metropolitan's operations by reducing energy consumption and emissions. Individual projects under the proposed CAP would not require new or relocated wastewater treatment, stormwater drainage, natural gas, or telecommunications facilities.

The proposed CAP includes measures intended to increase water conservation, such as turf removal programs and water conservation education (CAP measures WC-1 through WC-6). None of the individual projects to be implemented under the CAP would generate substantial new water demand. As such, there would be sufficient water supplies available to serve these projects and reasonably foreseeable future development during normal, dry, and multiple dry years.

Construction of individual projects under the proposed CAP would result in the temporary generation of solid waste, such as demolition debris. However, impacts to solid waste infrastructure associated with construction activities would be temporary and reduced by compliance with the California Green Building Code and Senate Bill 1016, which require that construction operations recycle a minimum of 50 percent of waste generated. Compliance with this requirement would ensure that solid waste generated from construction of individual projects would be minimized to the extent practical.

Non-diverted waste generated by construction and operation of individual projects would require disposal in area landfills. There are active landfills throughout the Plan Area with substantial remaining capacity for receiving construction waste. These facilities include, but are not limited to,

Scholl Canyon Landfill in Glendale (approximately 9,900,000 cubic yards [cy] remaining capacity), El Sobrante Landfill in Corona (approximately 143,977,170 cy remaining capacity) and Frank R. Bowerman Sanitary Landfill in Irvine (approximately 205,000,000 cy remaining capacity). In addition, AB 939 requires that all California counties provide at least 15 years of ongoing landfill capacity. With this long-range landfill capacity planning, adequate landfill capacity would exist or be constructed to accommodate the solid waste generated by individual projects under the proposed CAP.

Additionally, as described in Chapter 2, *Project Description*, the proposed CAP includes GHG reduction measures that would increase solid waste diversion through partnering programs with municipal waste agencies and reduce the existing solid waste generation from Metropolitan facilities to achieve zero waste (CAP measures WA-1 through WA-4). Implementation of the proposed CAP would have a less than significant impact to utilities and service systems, and no mitigation would be required.

5.15 Wildfire

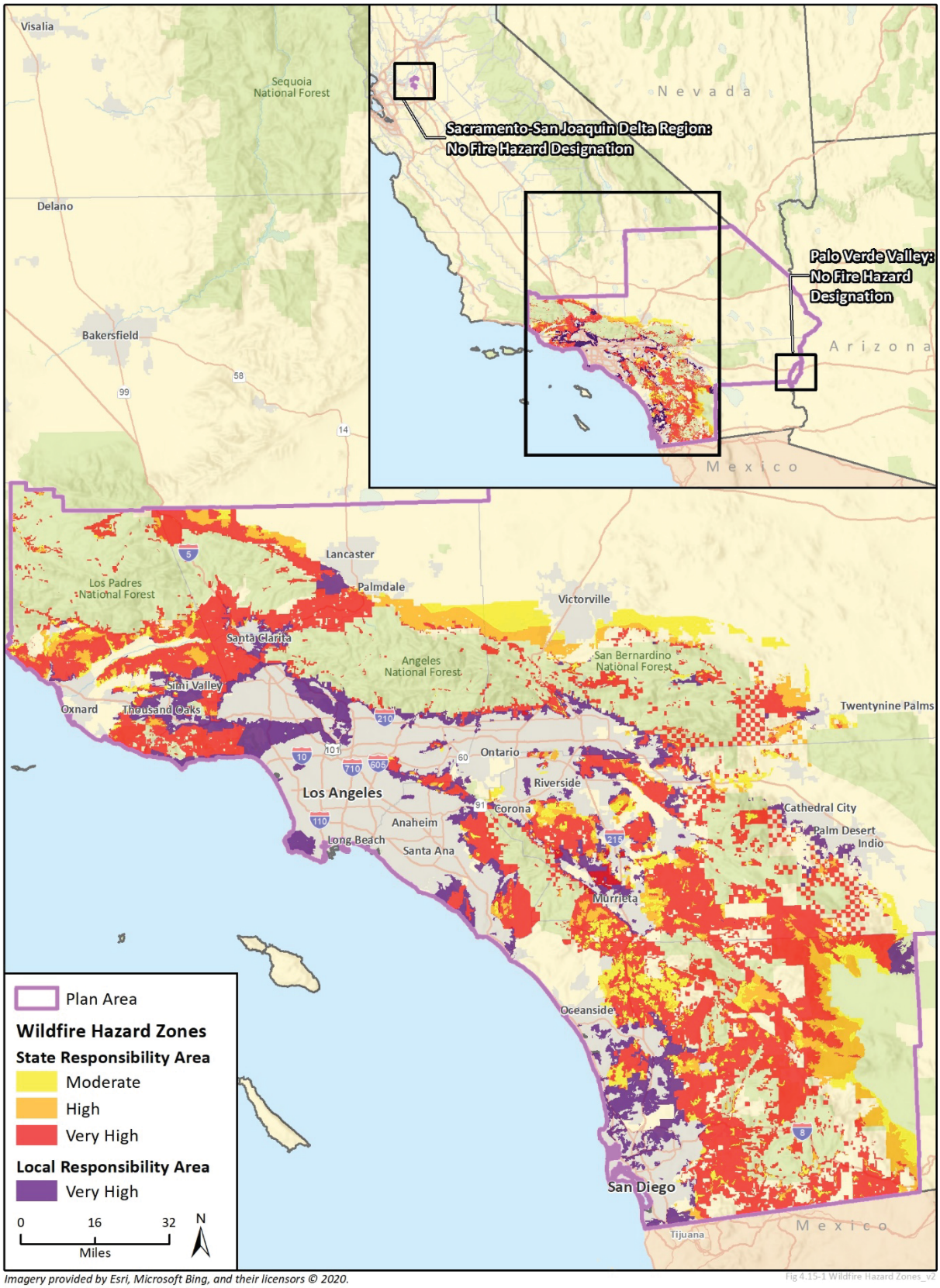
Pursuant to Appendix G of the *State CEQA Guidelines*, a potentially significant wildfire impact would occur if implementation of the proposed program would, within or near a State Responsibility Area (SRA) or Very High Fire Hazard Severity Zone (FHSZ):

- Substantially impair an adopted emergency response plan or emergency evacuation plan; or
- Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire; or
- Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or
- Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

In California, responsibility for wildfire prevention and suppression is shared by federal, state, and local agencies. Federal agencies are responsible for federal lands in Federal Responsibility Areas; California has determined that some non-federal lands in unincorporated areas with watershed value are of statewide interest and have classified those lands as SRA, which are managed by the California Department of Forestry and Fire Protection (CAL FIRE). All incorporated areas and other unincorporated lands are classified as Local Responsibility Areas (LRA).

While nearly all of California is subject to some degree of wildfire hazard, there are specific features that make certain areas more hazardous. CAL FIRE is required by PRC Section 4201-4204 and California Government Code Section 51175-89 to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. The primary factors that increase an area's susceptibility to fire hazards include slope, aspect, vegetation type and condition, and atmospheric conditions. CAL FIRE maps fire hazards based on zones, referred to as FHSZs. CAL FIRE maps three zones for SRA: 1) Moderate FHSZ; 2) High FHSZ; and 3) Very High FHSZ. Only the Very High FHSZs are mapped for LRA. Each of the zones influence how people construct buildings and protect property to reduce risk associated with wildfires. Under state regulations, areas within Very High FHSZ must comply with specific building and vegetation management requirements intended to reduce property damage and loss of life within these areas. Figure 17 shows the LRA Very High FHSZ and all FHSZ in SRA within the Plan Area.

Figure 17 Fire Hazard Severity Zones



Imagery provided by Esri, Microsoft Bing, and their licensors © 2020.
Additional data provided by USGS, 2017 and CALFIRE, 2007.

Fig 4.15-1 Wildfire Hazard Zones_v2

Individual projects to be implemented under the proposed CAP may include construction of BESS structures at Metropolitan facilities, electrification at existing Metropolitan facilities, and replacement of existing infrastructure. Several existing Metropolitan facilities where proposed CAP projects may be implemented are located within or near LRA Very High FHSZs or SRA of Moderate FHSZ, High FHSZ, and Very High FHSZ. However, as described in Section 5.6, *Hazards and Hazardous Materials*, the proposed projects that may be implemented at these sites would be completed within existing Metropolitan facilities and would not interfere with an adopted emergency response plan or emergency evacuation plan. Should individual projects require temporary roadway or lane closures, Metropolitan's engineering project specifications package requires contractors to prepare a traffic control plan for each construction site in public roadways pursuant to the local and/or state traffic authority's requirements. Therefore, if proposed projects were to encroach upon public roadways, the traffic control plan would implement measures to minimize traffic flow disruption and maintain emergency access routes to the extent feasible during construction. As such, impacts related to impairment of an adopted emergency response or emergency evacuation plan would be less than significant and no mitigation would be required.

Individual projects proposed under the CAP do not include the construction of housing or a substantial increase in total number of employees. Temporary construction employees would be anticipated to be sourced locally or regionally. Therefore, the proposed program would not introduce new permanent residents or permanent employees to sites in the Plan Area. Because there would be no new occupants in the Plan Area as a result of the CAP, the proposed program would not expose project occupants to pollutant concentrations resulting from wildfire. Accordingly, there would be no impact.

Construction of individual projects under the proposed program, including those related to installation of BESS facilities or removal of natural gas infrastructure at existing facilities, would involve the use of construction equipment powered by internal combustion engines. Use of heavy-duty equipment during construction of individual projects under the proposed program may produce sparks with the potential to ignite vegetation. However, California PRC Section 4442 mandates the use of spark arresters, which prevent the emission of flammable debris from exhaust on earth-moving and portable construction equipment with internal combustion engines operating on any forest-covered, brush-covered, or grass-covered land. Furthermore, PRC Sections 4427 and 4431 specify standards for conducting construction activities on days when a burning permit is required (excessive smog or high fire danger), and PRC Section 4428 requires construction contractors to maintain fire suppression equipment during the highest fire danger period (April 1 to December 1) when operating on or near any forest-covered, brush-covered, or grass-covered land. Furthermore, Metropolitan's standard specifications for construction projects require gasoline-powered or diesel-powered machinery used during construction to be equipped with standard exhaust controls and muffling devices that will act as spark arrestors. The specifications also require fire containment and extinguishing equipment to be located on site and remain accessible during construction activities. Construction workers must be trained in the use of fire suppression equipment. Therefore, with compliance with applicable PRC provisions and Metropolitan's standard specifications, construction-related activities for projects implemented under the CAP would not exacerbate wildfire risk. This impact would be less than significant, and no mitigation would be required.

Operation and maintenance of the individual projects constructed under the proposed program would not exacerbate fire risk, as the purpose of maintenance activities is to ensure the proper operation of installed facilities. This includes evaluating and ensuring that equipment is in proper working condition, with a low risk of creating sparks that could start a wildfire.

Projects implemented under the proposed program would be subject to the requirements of the California Fire Code. Chapter 49 of the California Fire Code includes requirements for projects in Wildland-Urban Interface Fire Areas, including hazardous vegetation and fuel management for

buildings and structures in LRA Very High FHSZ or SRA. Some jurisdictions have amended the California Fire Code to adopt more stringent fire-reduction measures. For example, Orange County Fire Authority requires all new buildings in wildfire risk areas to submit a fuel modification plan for approval prior to construction.

Chapter 12 of the California Fire Code includes standards for construction of energy systems, including BESS facilities. Such requirements include minimum separation distances between BESS facilities and buildings or combustible materials and preparation of hazard mitigation analyses at the request of the local fire code official. Compliance with these regulatory requirements would substantially reduce wildfire risk associated with individual projects under the proposed program. This impact would be less than significant, and no mitigation would be required.

As discussed above, construction of individual projects under the proposed CAP would be required to adhere to existing regulations requiring the use of spark arresters on equipment with internal combustion engines, maintenance of fire suppression equipment, and construction standards for days when a burning permit is required. Consequently, construction of individual projects under the proposed program would not be expected to substantially increase wildfire risk, and therefore would not increase exposure of people or structures to post-fire slope instability, landslides, or downstream flooding. This impact would be less than significant, and no mitigation would be required.

Individual projects implemented under the proposed program would not substantially affect slopes, soil stability, or the drainage of sites in the Plan Area, as most would be located at existing Metropolitan facilities which are heavily graded and developed. Individual projects requiring substantial changes to site drainage patterns would be subject to applicable regulations of the SWRCB and RWQCB related to post-construction drainage patterns and stormwater retention, reducing the potential for downstream flooding impacts or drainage changes. Compliance with the California Building Code and implementation of the recommendations of site-specific geotechnical evaluations would reduce risks to people or structures associated with flooding or landslides resulting from post-fire runoff, slope instability, or drainage changes. Therefore, post-construction impacts would be less than significant, and no mitigation would be required.

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6 Other Required CEQA Discussion

This section discusses other topics for which CEQA requires analysis in addition to the specific resource areas discussed in Chapter 4, *Environmental Impact Analysis*. CEQA requires an EIR to evaluate a project's foreseeable effects in relationship to other broader changes that may be occurring in the environment (*State CEQA Guidelines* Section 15126; PRC Section 21002.1). Accordingly, this chapter includes a discussion of the other CEQA-mandated analyses, including the following:

- Section 6.1, Significant and Unavoidable Environmental Impacts
- Section 6.2, Significant and Irreversible Environmental Impacts
- Section 6.3, Growth Inducement

6.1 Significant and Unavoidable Environmental Impacts

State CEQA Guidelines Sections 15126(b) and 15126.2(c) require an EIR to describe any significant impacts, including those that can be mitigated but not to a less-than-significant level, the implications of any impacts that cannot be avoided and reasons why the project is being proposed, despite these effects.

Due to the lack of project-specific details about the individual projects proposed under the CAP, three resource areas are identified that may have the potential for significant and unavoidable impacts. Implementation of mitigation measures would reduce environmental impacts to the extent feasible; however, due to the lack of project-specific details about the individual projects proposed under the CAP, it is unknown at this time whether the impact can be reduced to less than significant. Therefore, a significant an unavoidable impact has been assumed. Table 37 lists the potential significant and unavoidable impacts, as well as the mitigation measures proposed for each impact (see Section 4.1 *Air Quality,* Section 4.3 *Cultural Resources,* and Section 4.4, *Noise*, for further discussion of each resource area). As proposed projects are implemented under the CAP and project-specific details become available, subsequent CEQA analysis will be conducted at the project level to determine the impact significance level for each resource area.

Table 37 Significant and Unavoidable Impacts and Mitigation Measures

Impact	Significance Before Mitigation	Mitigation	Significance After Mitigation
AQ-A: Would the proposed program conflict with or obstruct implementation of the applicable air quality plan?	Significant	AQ-1: Construction Air Quality Assessment AQ-2: Implement Emissions Reduction Measures	Significant and unavoidable
AQ-B: Would the proposed program result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	Significant	AQ-1 and AQ-2	Significant and unavoidable
CUL-A: Would the proposed program cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	Significant	CUL-1(a): Built Environment Investigation CUL-1(b): Built Environment Documentation Program CUL-3: Previously Unidentified Resources Encountered During Construction.	Significant and unavoidable
CUL-B: Would the proposed program cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	Significant	CUL-2(a): Phase 1 Archaeological Resource Investigation CUL-2(b): Extended Phase 1 Investigation CUL-2(c): Avoidance of Archaeological Resources CUL-2(d): Phase 2 Archaeological Resources Investigation and Evaluation CUL-2(e): Phase 3 Archaeological Data Recovery Program CUL-2(f): Processing and Curation of Archaeological Materials CUL-2(g): Cultural Resources Monitoring CUL-3: Previously Unidentified Resources Encountered During Construction	Significant and unavoidable
NOI-A: Would the proposed program result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Significant	NOI-1: Locate Excavation Sites Away from Noise-Sensitive Receivers, Where Feasible NOI-2(a): Conduct Project-Level Noise Studies for Construction Activities Where Noise-Sensitive Receptors are Present NOI-2(b): Implement Noise Reduction Measures NOI-2(c): Conduct Project-Level Noise Studies for Post-Construction Activities Where Noise Sensitive Receivers are Present	Significant and unavoidable
NOI-B: Would the proposed program result in the generation of excessive groundborne noise levels?	Significant	NOI-3(a): Locate Excavation Sites Away from Vibration-Sensitive Receivers, Where Feasible NOI-3(b): Conduct Project-Level Vibration Analysis for Construction Activities Where Vibration-Sensitive Receivers are Present	Significant and unavoidable

6.1.1 Significant and Irreversible Environmental Impacts

Pursuant to Section 15126.2(d) of the *State CEQA Guidelines*, an EIR must consider any significant irreversible environmental changes that would be caused by the proposed program should it be implemented. Specifically, Section 15126.2(d) of the *CEQA Guidelines* describes significant irreversible environmental changes as follows:

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as a highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified (14 CCR 15126.2[d]).

Determining whether the proposed program may result in significant and irreversible effects requires a determination of whether key resources would be degraded or destroyed in such a way that there would be little possibility of restoring them.

The proposed program does not include individual projects that would result in irreversible damage to the environment through the commitment of resources or environmental accidents. The proposed CAP would reduce Metropolitan's GHG emissions by implementing emissions reduction measures such as energy-efficient retrofits, installation of BESS facilities at existing Metropolitan treatment and pumping plants, fleet conversion, and waste reduction. By reducing GHG emissions, the proposed CAP would also provide a number of co-benefits, such as reduced energy consumption, criteria pollutant emissions, water use, and demand for solid waste facilities, that would improve the environment within the Plan Area.

As discussed throughout Chapter 4, *Environmental Impact Analysis*, several of the individual projects to be implemented under the proposed CAP would involve construction. While construction activities would require the consumption of natural resources and construction materials, such as petroleum, the use of construction materials and nonrenewable resources would not be unusual or extraordinary and would not negatively impact the availability of these resources. Furthermore, the commitment of these resources to temporary construction activities would not negate the long-term benefits of the proposed CAP associated with reductions in the use of nonrenewable resources.

As discussed throughout the PEIR and specifically in Chapter 5, *Effects Found Not to be Significant*, the proposed CAP does not include any changes that would alter the planned population or employment growth anticipated under applicable regional plans within the Plan Area. The CAP would not directly or indirectly increase population or commit future generations to similar uses within the Plan Area as it does not propose new housing, employment, or the expansion of water supply infrastructure to new areas where they do not already exist. Given the small amounts of hazardous substances used during construction activities and the federal, state, and local regulations governing the use of such substances and the minimal use of such materials during the operation of projects implemented under the proposed program, the proposed program would not damage the environment or pose a risk to public health. Overall, the proposed CAP would result in the conservation of energy and nonrenewable resources within the Plan Area by improving energy-efficiency of buildings and operations (CAP Strategy 5), reducing petroleum use by improving vehicle and equipment efficiencies (CAP measures EC-3 and FL-4), and conserving water (CAP Strategy 8). Therefore, the proposed CAP does not include any measures that would create a wasteful commitment of energy or nonrenewable resources or result in an environmental accident that would cause significant and irreversible impacts.

6.1.2 Growth Inducement

Section 15126.2(e) of the *State CEQA Guidelines* requires a discussion of a proposed project's potential to foster economic or population growth, including ways in which a project could remove an obstacle to growth. Growth itself does not necessarily create significant physical changes to the environment. However, depending upon the type, magnitude, and location of growth, it can result in significant adverse environmental effects. Generally, a project may be considered growth-inducing if it results in one or more of the conditions identified below:

- Induces population growth;
- Induces economic expansion;
- Establishes a precedent-setting action (e.g., an innovation, a radical change in zoning or general plan designation);
- Results in development or encroachment in an isolated or adjacent area of open space (i.e., being distinct from "infill" development); or
- Removes an impediment to growth (e.g., the establishment of an essential public service or the provision of new access to an area).

A proposed project's growth-inducing potential is considered significant if project-induced growth could result in significant physical effects in one or more environmental resource areas.

6.1.3 Population Growth

The proposed program would focus on the reduction of GHG emissions resulting from Metropolitan's operations within the Plan Area. As discussed in Chapter 5, *Effects Found Not to be Significant*, the proposed CAP would not directly induce population growth because it does not include residential land uses or the construction of housing. Furthermore, the CAP would not indirectly induce population growth because it would not expand any existing infrastructure to serve new areas.

6.1.4 Economic Expansion

The proposed CAP would include measures that require construction and maintenance activities. Construction activities associated with individual projects would likely be performed by workers hired from the local region. Because construction workers would be expected to be drawn from the existing regional workforce, construction of individual projects would not be growth-inducing from a temporary employment standpoint. The proposed CAP includes GHG reduction measures that would result in changes to Metropolitan's existing and ongoing operations such as equipment fuel conversion (CAP Strategy 3), building energy and utility equipment efficiency improvements (CAP Strategy 5), BESS facilities (CAP measure E-4), carbon capture and sequestration projects (CAP measures CS-2 through and CS-3), and expansion of alternative transportation options for employees (CAP Strategy 6). These changes may result in new maintenance activities conducted by existing Metropolitan employees, which may result in the hiring of a limited number of new employees. However, program activities would not result in large increases in employment. Similar to construction-related impacts, new employees, if warranted for operation and maintenance of CAP projects, would be expected to be sourced from the regional workforce and are unlikely to result in substantial relocation of workers to the Plan Area. Therefore, the proposed program would not induce growth from an economic expansion.

6.1.5 Precedent-Setting Action

The proposed CAP does not include any General Plan or zoning amendments or create opportunities to expand existing water supplies. Rather, the CAP proposes measures that Metropolitan can undertake in order to improve the sustainability of its operations and reduce GHG emissions, including infrastructure upgrades and improvements at existing Metropolitan facilities in the Plan Area. As discussed above and in Chapter 5, *Effects Found Not to be Significant*, the CAP does not contain measures that would result in substantial population growth either directly or indirectly. As such, the proposed CAP would not set a precedent that would result in new growth-inducing impacts in the area.

6.1.6 Development of Open Space/Vacant Land

Development of open space is considered growth-inducing when it occurs outside urban boundaries or in isolated locations instead of infill areas. The proposed CAP does not include new residential, commercial, or other development that would result in the development of open space or vacant land in isolated areas that could induce growth at the periphery of developed areas within the Plan Area. The CAP would involve implementation of carbon capture and sequestration projects on agricultural land in the Palo Verde Valley and Delta Islands pursuant to CAP measures CS-2 and CS-3; however, these efforts would involve implementation of regenerative agricultural practices (i.e., cover cropping), which would be substantially similar to existing land use occurring on these sites. As such, the proposed CAP would not involve development of open space or vacant land in the Plan Area.

6.1.7 Removal of an Impediment to Growth

The proposed CAP includes improvements to Metropolitan's operations that would reduce GHG emissions and does not include any measures that would expand water supply infrastructure, public roadways, or other utilities to areas currently lacking these services. Any infrastructure improvements proposed under the CAP would be for the purpose of reducing GHG emissions and improving Metropolitan's environmental sustainability, rather than for the expansion of services to new areas. Accordingly, the proposed program would not remove existing obstacles to growth within the Plan Area.

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7 Alternatives

7.1 Introduction

During consideration of a project or program that could have a potentially significant effect to the environment, CEQA requires that alternatives that could avoid or lessen the project's significant effect(s) be considered (*State CEQA Guidelines,* Section 15126.6). This chapter presents potential alternatives to the proposed program and evaluates them as required by CEQA. The *State CEQA Guidelines* also require EIRs to identify the environmentally superior alternative from among the alternatives (including the proposed program). The environmentally superior alternative is identified in Section 7.5, *Identification of the Environmentally Superior Alternative*.

7.2 Summary of Program Objectives and Significant Impacts

7.2.1 Program Objectives

The objectives of the proposed program, the CAP, include the following:

- Identify and quantify emissions associated with Metropolitan operations to prepare a baseline GHG emissions inventory in order to track emissions reduction progress over time
- Adopt an emissions reduction target that is both consistent with existing state emissions reduction targets while preparing Metropolitan to meet future state targets
- Identify and quantify specific reduction actions and policies that Metropolitan may implement to achieve the goal of reducing GHG emissions from its construction and operational activities
- Provide a roadmap for future activities to achieve consistency with the CAP and use CEQA streamlining tools for analysis of GHG emissions pursuant to the requirements of CEQA Guidelines Section 15183.5

7.2.2 Significant Environmental Impacts

The proposed program would potentially result in the following significant impacts (or potentially significant impacts) that could not be reduced to less than significant levels with mitigation, as described in Chapter 6, *Other Required CEQA Discussion*.

- Conflict with or obstruct implementation of the applicable air quality plan (AQ-A)
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (AQ-B)

- Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5 (CUL-A)
- Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5 (CUL-B)
- Result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (NOI-A)
- Result in the generation of excessive groundborne vibration levels (NOI-B)

7.3 Alternatives Considered but Rejected

Section 15126.6(a) of the *State CEQA Guidelines* states that an EIR shall describe "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project," as well as provide an evaluation of "the comparative merits of the alternatives." Under Section 15126.6(a), an EIR does not need to consider alternatives that are not feasible, nor need it address every conceivable alternative to the project. Section 15126.6(f) of the *State CEQA Guidelines* states that the range of alternatives "is governed by the 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice." The focus is on informed decision-making and public participation rather than providing a set of alternatives simply to satisfy format.

As described below, two types of alternatives to the proposed program were considered—alternative locations and alternative methods—along with a No Program Alternative. Except for the No Program Alternative, all these potential alternatives have been rejected, as described below.

7.3.1 Alternative Locations

Metropolitan's proposed CAP is a programmatic approach to reduce GHG emissions within the Plan Area in accordance with state GHG emissions reduction targets. The proposed CAP accomplishes this by adopting strategies and measures that reduce GHG emissions. As described in Chapter 2, *Project Description*, these strategies and measures would be implemented at Metropolitan facilities and land holdings under Metropolitan's jurisdiction throughout the Plan Area. The proposed project locations have been selected at the most operationally feasible location or are proposed because they are located in areas where improvements can be made to existing Metropolitan operational facilities for which an alternative location does not exist. Constructing new facilities or acquiring property for other locations would not enable Metropolitan to improve the existing facilities or take advantage of existing infrastructure that would support the CAP measures and could create new impacts of its own. Additionally, alternative locations would not enable Metropolitan to create emissions reductions at existing facilities, which would conflict with the goal of reducing Metropolitan's operational GHG emissions. Therefore, an alternative site where the program could be implemented would not be appropriate because it would exclude land, facilities, and infrastructure under Metropolitan's control where emissions reduction measures could feasibly be implemented. As such, consideration of an alternative location has been eliminated from further analysis in this PEIR.

7.3.2 Alternative Methods

The proposed CAP includes GHG reduction measures, which would result in total mass GHG emissions reductions from direct and indirect GHG emissions related to Metropolitan operations. The categories of emissions reduction measures where most potentially significant environmental impacts would result are the Electricity (E) and Energy Efficiency (EE) categories (measures associated with producing renewable energy and transitioning existing uses to clean energy) and the Carbon Sequestration (CS) category (measures associated with sequestering carbon on Metropolitan-owned land). Metropolitan could consider varying degrees of implementation of each GHG reduction measure to reach its ultimate 2030 target and make progress toward the 2045 goal. However, the CAP that is proposed and evaluated throughout this PEIR has recommended the full spectrum of feasible GHG reduction measures at the levels that reductions can be feasibly estimated, attained, and substantiated. This PEIR has programmatically evaluated the potential environmental impacts of implementation of the suite of reduction measures based on the best available information regarding the technical and economic feasibility of those measures. Therefore, this PEIR appropriately evaluates the landscape of environmental impacts that could potentially occur with all reduction measures considered.

The purpose of an alternatives analysis is to identify alternatives that reduce or avoid the significant impacts of the project. As summarized above and evaluated throughout the PEIR, significant and unavoidable environmental impacts could occur in relation to air quality, cultural resources, and noise, depending on project-level designs. These significant and unavoidable impacts are typically related to construction of individual projects under the proposed CAP. As described in Chapter 2, *Project Description*, emissions reduction measures under the CAP are grouped into various emissions reduction strategies, which include phasing out natural gas combustion at facilities, improving energy efficiency, and incentivizing more sustainable commutes. While many individual emissions reduction measures may not result in physical impacts to the environment, most of these reduction strategies include at least some measures with the potential to result in construction-related impacts. Because construction-related impacts would occur across most of the emissions reduction strategies, an alternative that would reduce the construction-related impacts under one strategy, would likely require implementation of additional projects under another strategy in order to achieve the GHG reduction target, such that the overall magnitude and type of construction-related impacts would not change substantially. Within the context of CEQA, this would not offer an alternative that would reduce the impacts of the project.

While commenters may suggest that certain GHG reduction measures be pursued, funded, or supported to a greater degree than others, as described above, Metropolitan has proposed a CAP that based on its assessment of local conditions, regulatory requirements, and feasibility, provides a full spectrum of GHG reduction measures at levels that can be feasibly achieved and quantified based upon the information and technology available today. As described in *State CEQA Guidelines* Section 15126.6(a),

An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives.

The draft PEIR provides a reasonable range of alternatives for consideration by decisionmakers. Metropolitan has considered and evaluated the categories of alternatives that reduce or avoid the significant impacts of the project. As such, evaluation of additional combinations or levels of implementation of the GHG reduction measures is not required nor would it be meaningful to the analysis.

7.4 No Program Alternative

Under the No Program Alternative, the proposed CAP would not be adopted or implemented. As a result, the CAP's coordinated program of proposed GHG emission reduction measures and policies would not be adopted or implemented in a coordinated manner to achieve consistency with the statewide goals. This alternative would not provide a clear pathway for Metropolitan to meet and exceed the statewide 2030 GHG reduction goal identified in Senate Bill (SB) 32 or meet the 2045 carbon neutrality goal established by Executive Order (EO) B-55-18. Under CEQA, each of Metropolitan's capital improvement projects would still be required to implement GHG emission reduction strategies, but rather than relying on consistency with the CAP, each project would have to identify and implement GHG reductions specific to the individual project only.

7.4.1 Comparison of the Impacts of the No Program Alternative to the Proposed Program

Under the No Program Alternative, compliance with legislative requirements under CEQA would be achieved through individual project-level analysis for all Metropolitan projects subject to discretionary review. Because Metropolitan would still need to comply with applicable statewide GHG reduction requirements, local and statewide air quality regulations, and water conservation requirements, many of the individual projects identified under this alternative would still be built (e.g., E-4, BESS; FL-4, install ZEV infrastructure; CS-2 and CS-3, regenerative agriculture and carbon sequestration), thus many of the physical environmental impacts identified in this PEIR could still occur. Therefore, impacts under the No Program Alternative may be similar to those of the proposed program. However, with the No Program Alternative, Metropolitan would identify and reduce individual project emissions on a project-by-project basis, and forgo the opportunity to reduce emissions from all of its activities (e.g., operational and construction). Nevertheless, because emissions reduction efforts under the No Program Alternative would not be as aggressive as those occurring under the proposed CAP, the No Program Alternative may result in reduced physical impacts to some resource areas.

Table 38 Alternatives Impact Comparison Table

Environmental Resource Area	Proposed Program Impacts	No Program Alternative Impacts
Aesthetics	Less than significant	Similar, but reduced.
Agriculture and Forestry	No impact	Similar
Air quality	AQ-A: Significant and unavoidable AQ-B: Significant and unavoidable AQ-C: Less than significant AQ-D: Less than significant	Similar, but reduced.
Biological Resources	BIO-A: Less than significant with mitigation BIO-B: Less than significant with mitigation BIO-C: Less than significant with mitigation BIO-D: Less than significant BIO-E: Less than significant BIO-F: Less than significant	Similar, but reduced
Cultural Resources	CUL-A: Significant and unavoidable CUL-B: Significant and unavoidable CUL-C: Less than significant	Similar, but reduced
Energy	No impact	Similar
Geology and Soils	Less than significant	Similar, but reduced
Greenhouse Gas Emissions	No impact	Greater: GHG reductions for individual projects would be analyzed and implemented. However, this would forgo an opportunity to realize GHG emissions reductions for all of Metropolitan's emissions.
Hazards and Hazardous Materials	Less than significant	Similar, but reduced
Hydrology and Water Quality	Less than significant	Similar, but reduced
Land Use Planning	No impact	Similar, but reduced
Mineral Resources	No impact	Similar
Noise	NOI-A: Significant and unavoidable NOI-B: Significant and unavoidable NOI-C: Less than significant	Similar, but reduced
Population and Housing	No impact	Similar
Public Services	No impact	Similar
Recreation	Less than significant	Similar, but reduce
Transportation	Less than significant	Similar, but reduced
Tribal Cultural Resources	TCR-A: Less than significant TCR-B: Less than significant	Similar, but reduced
Utilities and Service Systems	Less than significant	Similar, but reduced
Wildfire	Less than significant	Similar, but reduced

7.5 Identification of the Environmentally Superior Alternative

7.5.1 Environmentally Superior Alternative

If an alternative is considered clearly superior to the proposed project relative to identified impacts, Section 15126.6 of the *State CEQA Guidelines* requires that alternative to be identified as the environmentally superior alternative. By statute, if the environmentally superior alternative is the No Project Alternative, an EIR must also identify an environmentally superior alternative among the other alternatives.

Two alternatives to the proposed program, other than the No Program Alternative, were considered; however, these alternatives were not further considered and analyzed for the reasons stated in Section 7.3, *Alternatives Considered but Rejected*.

Based on the analysis provided in Section 7.4, *No Program Alternative*, the No Program Alternative would have "similar" or "similar but reduced" environmental impacts as the proposed program with regard to: aesthetics, agriculture, air quality, biological resources, cultural resources, energy, geology and soils, hazards and hazardous materials, hydrology and water quality, land use planning, mineral resources, noise, population and housing, public services, recreation transportation, tribal cultural resources, utilities and service systems, and wildfire. The No Program Alternative would result in reduced impacts due to the smaller scope of this alternative, however, the No Program Alternative would not necessarily avoid any significant and unavoidable impacts, and beneficial impacts to GHG and Energy discussed in Chapter 5, *Effects Found Not to be Significant*, would not be realized to the same extent as under proposed CAP implementation. Individual projects could be implemented that would reduce GHG emissions for Metropolitan, but to the extent that the proposed CAP is a commitment by Metropolitan to reduce its emissions to carbon neutrality by 2045, the No Program Alternative would not meet the program objectives identified by Metropolitan. In particular, this alternative does not meet the objective of providing a mechanism for CEQA streamlining of GHG emissions analysis.

The proposed program would implement GHG emission reduction measures, which would advance compliance with statewide GHG reduction goals and provide specific measures that would reduce GHG emissions from natural gas use, fossil fuel consumption, electricity use, water use, wastewater generation, and other resource use modifications. The proposed program, therefore, is considered to be the environmentally superior alternative.

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8.2 Preparers

Metropolitan Water District of Southern California

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Appendix A

Notice of Preparation and Comment Letters

Date: June 23, 2020

To: State Clearinghouse, State Responsible Agencies, State Trustee Agencies, Other Public Agencies, Interested Organizations

From: The Metropolitan Water District of Southern California

Subject: **Notice of Preparation of a Draft Program Environmental Impact Report for The Metropolitan Water District of Southern California Climate Action Plan**

The Metropolitan Water District of Southern California (Metropolitan) will be the Lead Agency under the California Environmental Quality Act (CEQA) and will prepare a Draft Program Environmental Impact Report (PEIR) for The Metropolitan Water District of Southern California Climate Action Plan (CAP) (proposed project). This Notice of Preparation (NOP) and Scoping Meeting is being sent to responsible, trustee, and other public agencies as part of the review process under CEQA for projects of statewide, regional, or areawide significance (Sections 21080.4 and 21080.9 of the Public Resources Code).

Metropolitan is requesting input from responsible, trustee, and other public agencies, as well as interested organizations and individuals, regarding the scope and content of the environmental information to be included in the Draft PEIR. If you are a responsible or trustee agency, you are requested to indicate your statutory responsibilities in connection with the proposed project.

The description and location of the proposed project and information on the potential environmental effects resulting from the proposed project are provided in this NOP. Due to the time limits mandated by state law (*State CEQA Guidelines* §15082 - Notice of Preparation and Determination of Scope of EIR), written comments must be sent at the earliest possible date, but not later than the end of the public review period, which begins June 23, 2020 and ends July 22, 2020.

Project Title: **The Metropolitan Water District of Southern California Climate Action Plan**

Applicant: **The Metropolitan Water District of Southern California**

OPPORTUNITY FOR PUBLIC REVIEW AND COMMENT

Copies of the NOP are available for public review at:

The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, California 90012

Additionally, a copy of the NOP is available online for public review at:

Metropolitan's website at: http://www.mwdh2o.com/CEQA

Written comments should be sent to the address shown below or via e-mail at EP@mwdh2o.com (reference "CAP PEIR" in the subject line) and should include the name, mailing address, telephone number, and email address, if available, of a contact person.

Ms. Malinda Stalvey, Senior Environmental Specialist
The Metropolitan Water District of Southern California
Environmental Planning Section
P.O. Box 54153
Los Angeles, California 90054-0153
(213) 217-5545

Please contact Malinda Stalvey via telephone or email at EP@mwdh2o.com to make arrangements for viewing or to receive a hard copy if you are not able to access the document online or view a copy at the location listed above.

All parties who have submitted their names and mailing addresses will be placed on the mailing list to receive notifications during the course of this CEQA environmental review process.

Scoping Meeting: Metropolitan will hold a virtual scoping meeting in conjunction with the NOP to present the proposed project and the PEIR process. The meeting will provide an opportunity for agency representatives and the public to assist the lead agency in determining the scope and content of the environmental analysis for the PEIR. The scoping meeting will be held online on July 15, 2020 at 10:00 a.m. To participate in the meeting, please register here: https://us02web.zoom.us/webinar/register/WN_UohxhPynTW6jwvyl_bDUkw.
The public can submit written comments via e-mail at EP@mwdh2o.com (reference "CAP PEIR Scoping" in the subject line) or can provide oral comments during the meeting.

Signature: Jennifer Harriger Date: 6-16-2020

Jennifer Harriger
Manager, Environmental Planning Section

INTRODUCTION

The Metropolitan Water District of Southern California (Metropolitan) is a regional wholesaler that provides water for 26 member public agencies to deliver either directly or through their sub-agencies to nearly 19 million people, across a 5,200 square mile service area in six counties in Southern California. On average, Metropolitan moves more than 1.7 billion gallons of water daily through its distribution system, which includes an extensive water system including the Colorado River Aqueduct, 16 small hydroelectric facilities, nine reservoirs, 819 miles of large-scale pipes and five water treatment plants, four of which are among the 10 largest plants in the world. Metropolitan imports water from the California Department of Water Resources' State Water Project and the Colorado River to supplement local supplies. It also helps its member agencies develop water recycling, storage and other local resource programs to provide additional supplies and conservation programs to reduce regional demands.

PROJECT DESCRIPTION

Metropolitan is preparing a Climate Action Plan (CAP) to outline a strategy for reducing greenhouse gas (GHG) emissions associated with future construction, operation, and maintenance activities. The CAP is a comprehensive roadmap that analyzes historical GHG emissions, prepares a forecast of future GHG emissions, sets a GHG reduction target for reducing emissions consistent with applicable state policies, and identifies a suite of specific reduction actions that Metropolitan can choose from to achieve the adopted target consistent with Section 15183.5 of the State CEQA Guidelines. The CAP is a customized roadmap for making informed decisions and understanding where and how to achieve emissions reductions that conform to Metropolitan's mission/goals in a meaningful and cost-effective manner. While a CAP identifies potential projects that may be implemented to meet GHG reduction goals, no specific projects will be implemented without further CEQA review.

Emissions Inventory

Metropolitan's operations inherently result in GHG emissions. Understanding the processes that generate these emissions is essential to identifying strategies to reduce GHG emissions and achieve the identified GHG reduction target. Metropolitan's activities can be categorized into the following GHG generating sectors:

- **Water Conveyance and Treatment.** A majority of Metropolitan's emissions are a direct result of the energy consumed to pump, treat and deliver water throughout Metropolitan's extensive service area.
- **Buildings/Infrastructure.** Infrastructure including offices, facilities, control buildings, lighting, computers, air conditioners, and other equipment that is required to support the treatment and delivery of water.
- **Transportation.** This includes the transportation of employees and equipment to and from offices and worksites. Emissions stem from both Metropolitan's fleet vehicles and employee commute emissions.
- **Waste Disposal.** Waste falls into three categories: mixed solids waste, mixed recyclables, and organics. Metropolitan generates waste from various sources, ranging from employee lunches to office waste, which results in indirect GHG emissions as it decomposes in landfills.
- **Water Use.** Water sector GHG emissions by Metropolitan result from water use in facilities and irrigation.
- **Construction.** As Metropolitan's infrastructure ages, there is a continued need for construction of new facilities and infrastructure or rehabilitation of existing facilities and infrastructure. Construction activities result in direct GHG emissions from fuel combustion associated with construction equipment use and transportation of workers and materials.

The CAP will include an inventory of Metropolitan's emissions, including an estimate of emissions associated with Metropolitan's operations from 1990 through 2017. The inventory will describe methodologies used to calculate Scope 1, Scope 2, and Scope 3 emissions. Scope 1 emissions include those from direct fuel combustion, including natural gas, propane, welding gasses, and gasoline and diesel used to power Metropolitan's vehicle fleet. Scope 2 emissions include indirect GHG emissions associated with the purchase and consumption of electricity. Scope 3 emissions are indirect emissions resulting from employee commute, waste generation, water consumption in Metropolitan-owned buildings, and construction projects. The emissions inventory will also provide a forecast of future emissions based on current operations and construction of capital improvement projects.

GHG Reduction Target

The CAP will establish a GHG reduction target aligned with applicable state GHG reduction policies including Senate Bill 32, which establishes a statewide GHG reduction target of 40 percent below 1990 levels by the year 2030, and Executive Order B-55-18, which sets a statewide goal of carbon neutrality by 2045. Metropolitan will measure and track its emissions inventory using:

- **Per Capita Emissions Calculation.** Per capita emissions uses Metropolitan's calculated mass emissions and divides by the service population.
- **Carbon Budget Tracking**. Sets a carbon budget that is incrementally reduced over time to reach the adopted target.

In addition to establishing a reduction target, the CAP will provide a detailed analysis of the emissions reductions necessary for Metropolitan to achieve its target based on the emissions inventory and forecast described above.

Reduction Measures

The CAP will identify a suite of GHG emissions reduction measures that can be implemented to achieve the adopted emissions reduction target. At this time, GHG emission reduction measures are anticipated to span the following categories:

- Energy Use
- Waste
- Transportation
- Reduce Downstream Emissions
- Colorado River Aqueduct Pumping
- Off-road Construction
- Water Conservation
- Carbon Sequestration
- Conventional Treatment Plants
- Advanced Water Treatment Facilities
- New Pump Specifications
- General Engineering

It is anticipated that a majority of GHG reduction measures will be administrative in nature and, consequently, will not result in physical impacts to the environment. Nevertheless, all potential GHG reduction measures will be evaluated in the Draft PEIR.

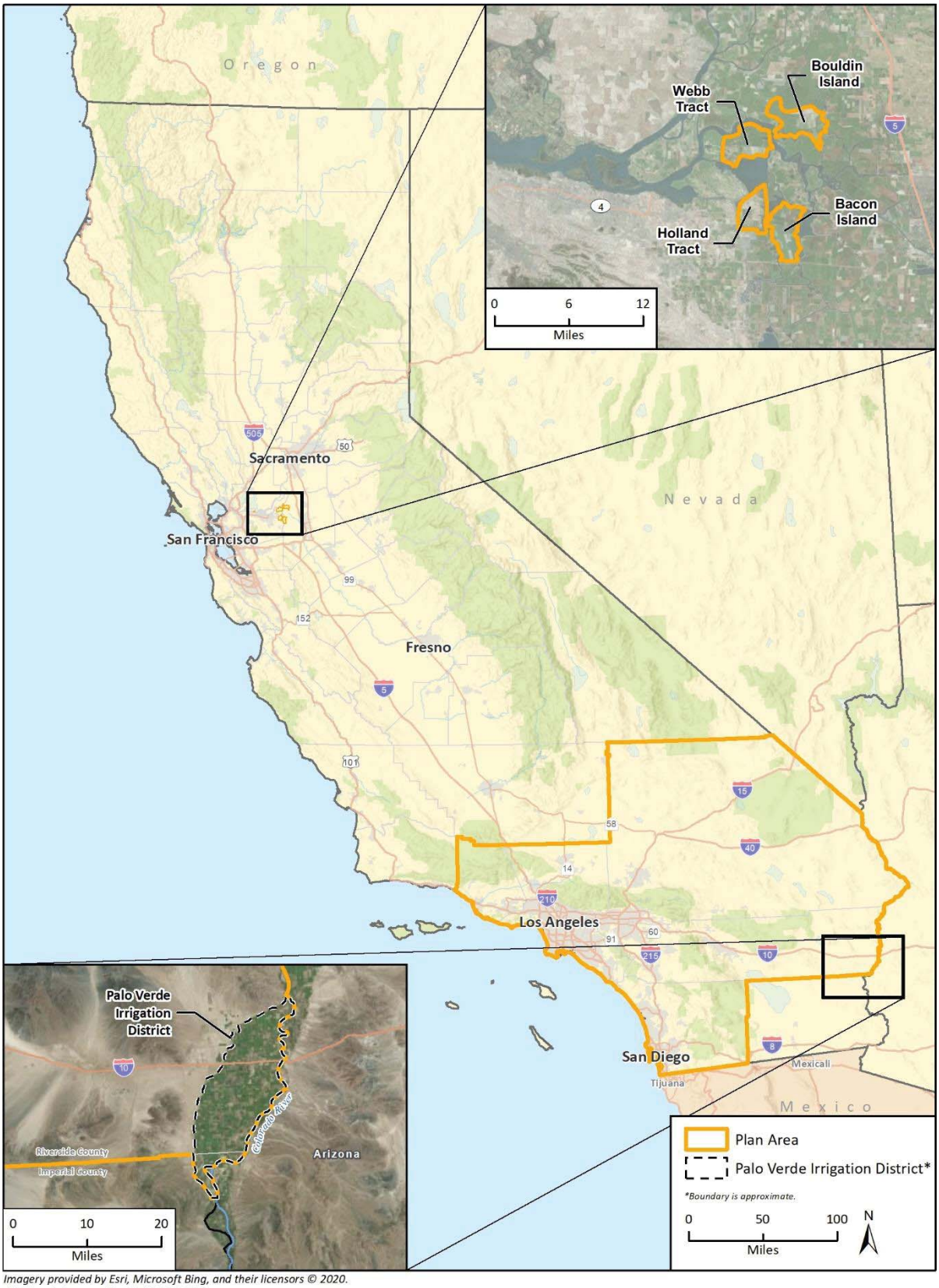
PROJECT LOCATION

The CAP will include reduction measures to reduce GHG emissions from Metropolitan's construction, operation, and maintenance activities. It is anticipated that most reduction measures would be implemented throughout a six-county Southern California region comprised of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. These counties include all of Metropolitan's service area and most of its infrastructure facilities. The CAP may also involve implementation of GHG emissions reduction measures or programs at Metropolitan land holdings in Imperial County, specifically within the Palo Verde Irrigation District; as well as land holdings in San Joaquin and Contra Costa Counties, specifically on lands commonly known as Bacon Island, Bouldin Island, Holland Tract, and Webb Tract in the Sacramento-San Joaquin Delta region. Figure 1 shows the project location.

POTENTIAL ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT

The Draft PEIR will include an analysis of all required impact areas, as well as feasible mitigation measures and a reasonable range of alternatives to avoid or reduce potentially significant impacts, if any. Environmental resource areas where it is determined that the proposed project would result in a less than significant impact will be summarized in an "Effects Found to be Less than Significant" section of the Draft PEIR.

Figure 1 Project Location



Imagery provided by Esri, Microsoft Bing, and their licensors © 2020.
Additional data provided by USGS, 2017.

STATE OF CALIFORNIA Gavin Newsom, Governor

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June 23, 2020

Malinda Stalvey
The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

Re: 2020060450, The Metropolitan Water District of Southern California Climate Action Plan Project, Contra Costa, Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Joaquin, and Ventura Counties

Dear Ms. Stalvey:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

a. A brief description of the project.

b. The lead agency contact information.

c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).

d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

a. Alternatives to the project.

b. Recommended mitigation measures.

c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

a. Type of environmental review necessary.

b. Significance of the tribal cultural resources.

c. Significance of the project's impacts on tribal cultural resources.

d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

a. Whether the proposed project has a significant impact on an identified tribal cultural resource.

b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.

b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

cc: State Clearinghouse

From: Saunders, Joseph@CHP
To: state.clearinghouse@opr.ca.gov; Environmental Planning Team - EPT
Cc: Enciso, Blanca@CHP
Subject: RE: 063-BE - Environmental Document Review - SCH# 2020060450 - Due to Lead Agency by 07/16/2020
Date: Monday, July 13, 2020 11:17:50 AM
Attachments: SCH 2020060450 Southern.pdf
Area-Section EIR RESPONSE CHECKLIST.DOCX

Good Morning,

No impact to CHP Southern Division local Area Operations and/or Public Safety by SCH 2020060450 due to the SPS analyst listed on the Environmental Document review and response memorandum. The Project locations are not located within our jurisdiction.

Thank you,

Joseph Saunders, Sergeant
Southern Division
Staff Services
411 N. Central Avenue, suite 410
Glendale, CA 91203
(818) 240-8200
(818) 240-1496 (fax)
Email: jcsaunders@chp.ca.gov

From: Enciso, Blanca@CHP
Sent: Friday, July 3, 2020 4:39 PM
To: Hammond, Melissa@CHP <MEHammond@chp.ca.gov>
Subject: RE: 063-BE - Environmental Document Review - SCH# 2020060450 - Due to Lead Agency by 07/16/2020

Good afternoon,

Special Projects Section (SPS) recently received the referenced Notice of Environmental Impact document from the State Clearinghouse (SCH) outlined in the following Web site:

https://ceqanet.opr.ca.gov/2020060450/2

Due to the project's geographical proximity to the Southern Division, please use the attached checklist to assess its potential impact to local Area/Section operations and public safety.

Please feel free to e-mail me if you have any questions.

Thank you!

Kind Regards,

Blanca Enciso
Special Projects Section- 063
Transportation Planning Unit
California Highway Patrol
Office: (916) 843-3365

Memorandum

Date: July 3, 2020

To: Southern Division

From: **DEPARTMENT OF CALIFORNIA HIGHWAY PATROL**
Special Projects Section

File No.: 063.A10212.A18109.Nop.Doc

Subject: ENVIRONMENTAL DOCUMENT REVIEW AND RESPONSE
SCH#2020060450

Special Projects Section (SPS) recently received the referenced "Notice of Preparation" environmental impact document from the State Clearinghouse (SCH).

Please use the attached checklist to assess its potential impact to local operations and public safety. Due to the project's geographical proximity to multiple divisions, SPS will coordinate the response. If it is determined that departmental input is advisable, your written comments referencing the above SCH number must be sent to SPS no later than **July 16, 2020**. For reference, additional information can be found in General Order 41.2, Environmental Impact Documents.

Please e-mail a copy of Division's response to Associate Governmental Program Analyst Blanca Enciso at blanca.enciso@ca.gov. For questions or concerns, please contact Ms. Enciso at (916) 843-3370.

L. NARVAEZ, SSM III
Commander

Attachments: Checklist
Project File

NOTICE OF PREPARATION AND SCOPING MEETING

Date: June 23, 2020

To: State Clearinghouse, State Responsible Agencies, State Trustee Agencies, Other Public Agencies, Interested Organizations

From: The Metropolitan Water District of Southern California

Subject: **Notice of Preparation of a Draft Program Environmental Impact Report for The Metropolitan Water District of Southern California Climate Action Plan**

The Metropolitan Water District of Southern California (Metropolitan) will be the Lead Agency under the California Environmental Quality Act (CEQA) and will prepare a Draft Program Environmental Impact Report (PEIR) for The Metropolitan Water District of Southern California Climate Action Plan (CAP) (proposed project). This Notice of Preparation (NOP) and Scoping Meeting is being sent to responsible, trustee, and other public agencies as part of the review process under CEQA for projects of statewide, regional, or areawide significance (Sections 21080.4 and 21080.9 of the Public Resources Code).

Metropolitan is requesting input from responsible, trustee, and other public agencies, as well as interested organizations and individuals, regarding the scope and content of the environmental information to be included in the Draft PEIR. If you are a responsible or trustee agency, you are requested to indicate your statutory responsibilities in connection with the proposed project.

The description and location of the proposed project and information on the potential environmental effects resulting from the proposed project are provided in this NOP. Due to the time limits mandated by state law (*State CEQA Guidelines* §15082 - Notice of Preparation and Determination of Scope of EIR), written comments must be sent at the earliest possible date, but not later than the end of the public review period, which begins June 23, 2020 and ends July 22, 2020.

Project Title: **The Metropolitan Water District of Southern California Climate Action Plan**

Applicant: **The Metropolitan Water District of Southern California**

OPPORTUNITY FOR PUBLIC REVIEW AND COMMENT

Copies of the NOP are available for public review at:

The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, California 90012

Additionally, a copy of the NOP is available online for public review at:

Metropolitan's website at: http://www.mwdh2o.com/CEQA

Written comments should be sent to the address shown below or via e-mail at EP@mwdh2o.com (reference "CAP PEIR" in the subject line) and should include the name, mailing address, telephone number, and email address, if available, of a contact person.

Ms. Malinda Stalvey, Senior Environmental Specialist
The Metropolitan Water District of Southern California
Environmental Planning Section
P.O. Box 54153
Los Angeles, California 90054-0153
(213) 217-5545

Please contact Malinda Stalvey via telephone or email at EP@mwdh2o.com to make arrangements for viewing or to receive a hard copy if you are not able to access the document online or view a copy at the location listed above.

All parties who have submitted their names and mailing addresses will be placed on the mailing list to receive notifications during the course of this CEQA environmental review process.

Scoping Meeting: Metropolitan will hold a virtual scoping meeting in conjunction with the NOP to present the proposed project and the PEIR process. The meeting will provide an opportunity for agency representatives and the public to assist the lead agency in determining the scope and content of the environmental analysis for the PEIR. The scoping meeting will be held online on July 15, 2020 at 10:00 a.m. To participate in the meeting, please register here:
https://us02web.zoom.us/webinar/register/WN_UohxhPynTW6jwvyl_bDUkw.
The public can submit written comments via e-mail at EP@mwdh2o.com (reference "CAP PEIR Scoping" in the subject line) or can provide oral comments during the meeting.

Signature: Jennifer Harriger Date: 6-16-2020

Jennifer Harriger
Manager, Environmental Planning Section

INTRODUCTION

The Metropolitan Water District of Southern California (Metropolitan) is a regional wholesaler that provides water for 26 member public agencies to deliver either directly or through their sub-agencies to nearly 19 million people, across a 5,200 square mile service area in six counties in Southern California. On average, Metropolitan moves more than 1.7 billion gallons of water daily through its distribution system, which includes an extensive water system including the Colorado River Aqueduct, 16 small hydroelectric facilities, nine reservoirs, 819 miles of large-scale pipes and five water treatment plants, four of which are among the 10 largest plants in the world. Metropolitan imports water from the California Department of Water Resources' State Water Project and the Colorado River to supplement local supplies. It also helps its member agencies develop water recycling, storage and other local resource programs to provide additional supplies and conservation programs to reduce regional demands.

PROJECT DESCRIPTION

Metropolitan is preparing a Climate Action Plan (CAP) to outline a strategy for reducing greenhouse gas (GHG) emissions associated with future construction, operation, and maintenance activities. The CAP is a comprehensive roadmap that analyzes historical GHG emissions, prepares a forecast of future GHG emissions, sets a GHG reduction target for reducing emissions consistent with applicable state policies, and identifies a suite of specific reduction actions that Metropolitan can choose from to achieve the adopted target consistent with Section 15183.5 of the State CEQA Guidelines. The CAP is a customized roadmap for making informed decisions and understanding where and how to achieve emissions reductions that conform to Metropolitan's mission/goals in a meaningful and cost-effective manner. While a CAP identifies potential projects that may be implemented to meet GHG reduction goals, no specific projects will be implemented without further CEQA review.

Emissions Inventory

Metropolitan's operations inherently result in GHG emissions. Understanding the processes that generate these emissions is essential to identifying strategies to reduce GHG emissions and achieve the identified GHG reduction target. Metropolitan's activities can be categorized into the following GHG generating sectors:

- **Water Conveyance and Treatment.** A majority of Metropolitan's emissions are a direct result of the energy consumed to pump, treat and deliver water throughout Metropolitan's extensive service area.
- **Buildings/Infrastructure.** Infrastructure including offices, facilities, control buildings, lighting, computers, air conditioners, and other equipment that is required to support the treatment and delivery of water.
- **Transportation.** This includes the transportation of employees and equipment to and from offices and worksites. Emissions stem from both Metropolitan's fleet vehicles and employee commute emissions.
- **Waste Disposal.** Waste falls into three categories: mixed solids waste, mixed recyclables, and organics. Metropolitan generates waste from various sources, ranging from employee lunches to office waste, which results in indirect GHG emissions as it decomposes in landfills.
- **Water Use.** Water sector GHG emissions by Metropolitan result from water use in facilities and irrigation.
- **Construction.** As Metropolitan's infrastructure ages, there is a continued need for construction of new facilities and infrastructure or rehabilitation of existing facilities and infrastructure. Construction activities result in direct GHG emissions from fuel combustion associated with construction equipment use and transportation of workers and materials.

The CAP will include an inventory of Metropolitan's emissions, including an estimate of emissions associated with Metropolitan's operations from 1990 through 2017. The inventory will describe methodologies used to calculate Scope 1, Scope 2, and Scope 3 emissions. Scope 1 emissions include those from direct fuel combustion, including natural gas, propane, welding gasses, and gasoline and diesel used to power Metropolitan's vehicle fleet. Scope 2 emissions include indirect GHG emissions associated with the purchase and consumption of electricity. Scope 3 emissions are indirect emissions resulting from employee commute, waste generation, water consumption in Metropolitan-owned buildings, and construction projects. The emissions inventory will also provide a forecast of future emissions based on current operations and construction of capital improvement projects.

GHG Reduction Target

The CAP will establish a GHG reduction target aligned with applicable state GHG reduction policies including Senate Bill 32, which establishes a statewide GHG reduction target of 40 percent below 1990 levels by the year 2030, and Executive Order B-55-18, which sets a statewide goal of carbon neutrality by 2045. Metropolitan will measure and track its emissions inventory using:

- **Per Capita Emissions Calculation.** Per capita emissions uses Metropolitan's calculated mass emissions and divides by the service population.
- **Carbon Budget Tracking**. Sets a carbon budget that is incrementally reduced over time to reach the adopted target.

In addition to establishing a reduction target, the CAP will provide a detailed analysis of the emissions reductions necessary for Metropolitan to achieve its target based on the emissions inventory and forecast described above.

Reduction Measures

The CAP will identify a suite of GHG emissions reduction measures that can be implemented to achieve the adopted emissions reduction target. At this time, GHG emission reduction measures are anticipated to span the following categories:

- Energy Use
- Waste
- Transportation
- Reduce Downstream Emissions
- Colorado River Aqueduct Pumping
- Off-road Construction
- Water Conservation
- Carbon Sequestration
- Conventional Treatment Plants
- Advanced Water Treatment Facilities
- New Pump Specifications
- General Engineering

It is anticipated that a majority of GHG reduction measures will be administrative in nature and, consequently, will not result in physical impacts to the environment. Nevertheless, all potential GHG reduction measures will be evaluated in the Draft PEIR.

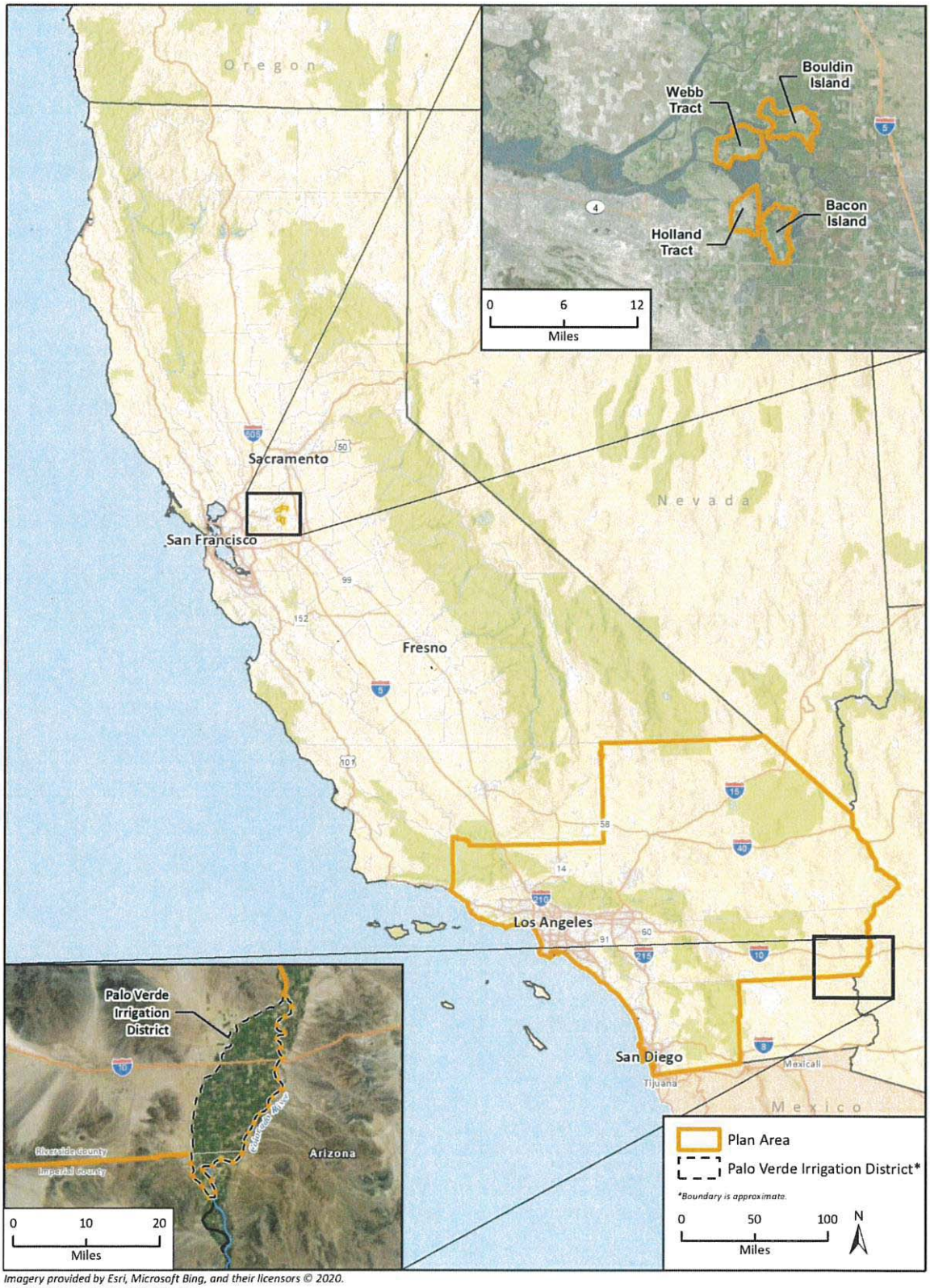
PROJECT LOCATION

The CAP will include reduction measures to reduce GHG emissions from Metropolitan's construction, operation, and maintenance activities. It is anticipated that most reduction measures would be implemented throughout a six-county Southern California region comprised of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. These counties include all of Metropolitan's service area and most of its infrastructure facilities. The CAP may also involve implementation of GHG emissions reduction measures or programs at Metropolitan land holdings in Imperial County, specifically within the Palo Verde Irrigation District; as well as land holdings in San Joaquin and Contra Costa Counties, specifically on lands commonly known as Bacon Island, Bouldin Island, Holland Tract, and Webb Tract in the Sacramento-San Joaquin Delta region. Figure 1 shows the project location.

POTENTIAL ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT

The Draft PEIR will include an analysis of all required impact areas, as well as feasible mitigation measures and a reasonable range of alternatives to avoid or reduce potentially significant impacts, if any. Environmental resource areas where it is determined that the proposed project would result in a less than significant impact will be summarized in an "Effects Found to be Less than Significant" section of the Draft PEIR.

Figure 1 Project Location



Imagery provided by Esri, Microsoft Bing, and their licensors © 2020.
Additional data provided by USGS, 2017.

Print From

Summary Form for Electronic Document Submittal

Form F

Lead agencies may include 15 hardcopies of this document when submitting electronic copies of Environmental Impact Reports, Negative Declarations, Mitigated Negative Declarations, or Notices of Preparation to the State Clearinghouse (SCH). The SCH also accepts other summaries, such as EIR Executive Summaries prepared pursuant to CEQA Guidelines Section 15123. Please include one copy of the Notice of Completion Form (NOC) with your submission and attach the summary to each electronic copy of the document.

SCH #: _____

Project Title: The Metropolitan Water District of Southern California Climate Action Plan (CAP)

Lead Agency: The Metropolitan Water District of Southern California

Contact Name: Malinda Stalvey

Email: mstalvey@mwdh2o.com Phone Number: (213) 217-5545

Project Location: Multiple counties
City *County*

Project Description (Proposed actions, location, and/or consequences).

Metropolitan is preparing a Program EIR for a Climate Action Plan (CAP) that will outline a strategy for reducing greenhouse gas (GHG) emissions associated with future construction, operation, and maintenance activities. The CAP is a roadmap that analyzes historical and forecasts future GHG emissions; sets a GHG reduction target for reducing emissions consistent with state policies; and identifies a suite of reduction actions that Metropolitan can choose from to achieve the adopted target consistent with Section 15183.5 of the CEQA Guidelines. The CAP is a customized roadmap for making informed decisions and understanding where and how to achieve emissions reductions that conform to Metropolitan's mission/goals in a meaningful and cost-effective manner. While a CAP identifies potential projects that may be implemented to meet GHG reduction goals, no specific projects will be implemented without further CEQA review.
See attached for additional description of proposed actions and location.

Identify the project's significant or potentially significant effects and briefly describe any proposed mitigation measures that would reduce or avoid that effect.

See attached for potentially significant effects that could occur and potential mitigation measures under consideration for each issue area.

Revised September 2011

continued

If applicable, describe any of the project's areas of controversy known to the Lead Agency, including issues raised by agencies and the public.

There are no areas of known controversy for the proposed project.

Provide a list of the responsible or trustee agencies for the project.

Summary Form for Electronic Document Submittal - Attachment

Project Description (Proposed actions, location, and/or consequences) *(continued)*

It is anticipated that most reduction measures would be implemented throughout a six-county Southern California region comprised of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. These counties include all of Metropolitan's service area and most of its infrastructure facilities. The CAP may also involve implementation of GHG reduction measures or programs at Metropolitan land holdings in Imperial County, specifically within the Palo Verde Irrigation District, as well as land holdings in San Joaquin and Contra Costa counties, specifically on lands commonly known Bacon Island, Bouldin Island, Holland Tract, and Webb Tract in the Sacramento-San Joaquin Delta region.

Identify the project's significant or potentially significant effects and briefly describe any proposed mitigation measures that would reduce or avoid that effect. *(continued)*

Potentially significant effects could occur in the below listed areas. Potential mitigation measures under consideration are also listed for each issue area.

- Aesthetics - Light spillover reduction, design modifications, vegetation replacement, geologic formation avoidance
- Agriculture and Forestry Resources - Avoidance of farmland and Williamson Act contracted land, mitigation
- Air Quality - Construction fugitive dust control, odor minimization plans, health risk assessment
- Biological Resources - Biological resources assessment, worker environmental awareness program, wetland restoration
- Cultural Resources - Historical resource implementation program, archaeological resources investigation
- Hazards and Hazardous Materials - Prepare Phase I and II Environmental Site Assessments
- Land Use and Planning - Coordinate with jurisdictions, maintain access to community facilities during construction
- Mineral Resources - Mineral resources surveys
- Noise - Project-level noise and vibration analyses, construction and staging avoidance of sensitive receptors
- Paleontological Resources - Paleontological resources studies and construction monitoring, salvage of fossils
- Transportation - Construction transportation management plans at project level
- Tribal Cultural Resources – To be determined based on results of tribal outreach
- Utilities and Service Systems – Construction and operational water and energy conservation measures
- Wildfire - Construction traffic management plan to maintain emergency access, spark arresters, avoidance of landslide-susceptible areas and slopes hillsides for new structures

ENVIRONMENTAL IMPACT REPORT EVALUATION/RESPONSE CHECKLIST FOR AREA/SECTION

Reference: General Order 41.2

	Action	Reference GO 41.2
☐	Review memorandum for the due date(s).	
☐	Determine if the proposed project might impact local operations and/or public safety. Examples include: housing developments, large commercial projects, large recreational developments or expansions, landfill or quarry operations, hazardous materials storage and/or dump sites, highway construction/improvement projects, new schools, airport improvements, annexations/incorporations, off-highway vehicle facilities, and Indian gaming facilities.	Page 5
☐	Review environmental impact documents to identify issues or concerns with possible impact to departmental operations (i.e., increased response times, enforcement, emergency services, service calls, telecommunications, public safety).	
	Responses	
☐	**<u>If comments are advisable</u>:**	
☐	Correspondence should focus primarily on traffic safety, congestion, or other impacts to the CHP's mission; however, **Areas shall not indicate to the lead agency that additional personnel, facilities, vehicles, etc., are a means to mitigate departmental service issues**.	Page 7
☐	Ensure the State Clearinghouse number (SCH#) is included in all correspondence.	
☐	Comments shall be provided directly to the lead agency and emailed to State Clearinghouse at state.clearinghouse@opr.ca.gov no later than the designated due date. Provide a copy to Special Projects Section (SPS) via electronic mail (e-mail).	
	For project tracking purposes, SPS must be notified of Area/Section's assessment of the project. After mailing your comments to the SCH or lead agency, send a scanned copy via e-mail to SPS.	
☐	<u>If no impact is determined</u>:	
☐	Via e-mail, please respond "no impact to _____ Area's local operations and/or public safety by SCH# _____ was identified," by the designated SCH due date to the SPS analyst listed on the Environmental Document Review and Response memorandum. Ensure the SCH# is included.	

Mojave Desert Air Quality Management District
Brad Poiriez, *Executive Director*
14306 Park Avenue, Victorville, CA 92392-2310
760.245.1661 • Fax 760.245.2022
www.MDAQMD.ca.gov • @MDAQMD

June 23, 2020

Ms. Malinda Stalvey, Senior Environmental Specialist
The Metropolitan Water District of Southern California
Environmental Planning Section
P.O. Box 54153
Los Angeles, CA 90054-0153

Project: Notice of Preparation of a Draft Program Environmental Impact Report for The Metropolitan Water District of Southern California Climate Action Plan

Dear Ms. Stalvey:

The Mojave Desert Air Quality Management District (District) has received a Notice of Preparation and Scoping Meeting for The Metropolitan Water District (MWD) of Southern California Climate Action Plan (CAP). MWD is requesting input regarding the scope and content of environmental information to be included in the Draft PEIR.

The District has reviewed the Notice of Preparation and Scoping Meeting Notice. The District recommends the Draft PEIR should analyze potential short-term and long-term air quality impacts associated with the proposed plan, and recommends the use of URBEMIS or CalEEMod as the appropriate computer model to be used to estimate associated emissions. District California Environmental Quality Act (CEQA) significance thresholds can be found in the "MDAQMD CEQA and Federal Conformity Guidelines" (available for download at the MDAQMD website https://www.mdaqmd.ca.gov/rules/overview).

Thank you for the opportunity to review this planning document. If you have any questions regarding this letter, please contact me at (760) 245-1661, extension 6726, or Tracy Walters at extension 6122.

Sincerely,

Alan J. De Salvio
Deputy Director – Mojave Desert Operations

AJD/tw MWD DPEIR CAP NOP and Scoping Meeting.doc

San Joaquin Valley AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

July 21, 2020

Malinda Stalvey
The Metropolitan Water District of Southern California
Environmental Planning Section
P.O. Box 54153
Los Angeles, California 90054-0153

Project: The Metropolitan Water District of Southern California Climate Action Plan Notice of Preparation

District CEQA Reference No: 20200538

Dear Ms. Stalvey,

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the project referenced above from the Metropolitan Water District of Southern California consisting of a Climate Action Plan (CAP) to outline a strategy for reducing greenhouse gas (GHG) emissions associated with future construction, operation, and maintenance activities (Project). The Project is located at Bacon Island, Bouldin Island, Holland Tract, and Webb Tract in the Sacramento-San Joaquin Delta Region. The District offers the following comments:

Project Description

The Metropolitan Water District of Southern California is proposing in the CAP a comprehensive roadmap that analyzes historical GHG emissions, prepares a forecast of future GHG emissions, sets a GHG reduction target for reducing emissions consistent with applicable state policies, and identifies a suite of specific reduction actions that Metropolitan can chose from to achieve the adopted target consistent with Section 15183.5 of the State CEQA Guidelines.

The District offers the following comments:

1) Project Related Emissions

The District recommends that a more detailed preliminary review of the Project be conducted. The additional environmental review of the Project's potential impact on air quality should consider the following items:

Samir Sheikh
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
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Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: (661) 392-5500 FAX: (661) 392-5585

www.valleyair.org www.healthyairliving.com

1a) Recommended Model: Project related criteria pollutant emissions from construction and operation non-permitted (limited to equipment not subject to District permits) should be identified and quantified. Emissions analysis should be performed using CalEEMod (California Emission Estimator Model), which uses the most recent approved version of relevant Air Resources Board (ARB) emissions models and emission factors. CalEEMod is available to the public and can be downloaded from the CalEEMod website at: www.caleemod.com.

1b) Project Related Construction Emissions: Construction emissions are short-term emissions and should be evaluated separately from operational emissions. Equipment exhaust, as well as fugitive dust emissions should be quantified.

For reference, the District's annual criteria thresholds of significance for construction are: 100 tons per year of carbon monoxide (CO), 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), 27 tons per year of oxides of sulfur (SOx), 15 tons per year of particulate matter of 10 microns or less in size (PM10), or 15 tons per year of particulate matter of 2.5 microns or less in size (PM2.5).

1c) Project Related Operational Emissions – Cleanest Available Truck: Permitted (stationary sources) and non-permitted (mobile sources) sources should be analyzed separately. For reference, the District's annual criteria thresholds of significance for operational emissions are listed above.

The San Joaquin Valley will not be able to attain stringent health-based federal air quality standards without significant reductions in emissions from heavy-heavy duty (HHD) Trucks, the single largest source of NOx emissions in the San Joaquin Valley. The District recently adopted the 2018 PM2.5 Plan which includes significant new reductions from HHD Trucks, including emissions reductions by 2023 through the implementation of the California Air Resources Board (CARB) Statewide Truck and Bus Regulation, which requires truck fleets operating in California to meet the 2010 0.2 g/bhp-hr NOx standard by 2023. Additionally, to meet the federal air quality standards by the 2020 to 2024 attainment deadlines, the District's Plan relies on a significant and immediate transition of heavy duty truck fleets to zero or near-zero emissions technologies, including the near-zero truck standard of 0.02 g/bhp-hr NOx established by the California Air Resources Board.

For development projects which typically generate a high volume of heavy duty truck traffic (e.g. "high-cube" warehouse or distribution center), there are heavy duty trucks traveling to-and-from from the project location at longer trip length

distances for potential distribution. To reduce impacts from operational mobile source emissions, the District recommends that the following mitigation measures be considered for inclusion in the EIR.

- Advise fleets associated with Project operational activities to utilize the cleanest available HHD truck technologies, including zero and near-zero (0.02 g/bhp-hr NOx) technologies as feasible.

- Advise all on-site service equipment (cargo handling, yard hostlers, forklifts, pallet jacks, etc.) to utilize zero-emissions technologies as feasible.

- Advise fleets associated with future development projects to be subject to the best practices (i.e. eliminating unnecessary idling).

In addition, the District recommends that the mitigation measures be included to reduce project related operational impacts through incorporation of design elements, for example, increased energy efficiency, reducing vehicle miles traveled, etc. More information on mitigation measures can be found on the District's website at http://www.valleyair.org/transportation/Mitigation-Measures.pdf.

1d) Project Related Operational Emissions – Truck Routing

Truck routing involves the path/roads heavy-duty trucks take to and from their destination. The air emissions from heavy-duty trucks can impact residential communities and sensitive receptors.

The District recommends the EIR evaluate heavy-duty truck routing patterns to help limit emission exposure to residential communities and sensitive receptors. More specifically, this measure would assess current truck routes, in consideration of the number and type of each vehicle, destination/origin of each vehicular trip, time of day/week analysis, vehicle miles traveled and emissions. The truck routing study would also identify alternative truck routes and their impacts on VMT, GHG emissions, and air quality.

2) District Rules and Regulations

The District issues permits for many types of air pollution sources and regulates some activities not requiring permits. A project subject to District rules and regulation would reduce its impacts on air quality through compliance with regulatory requirements. In general, a regulation is a collection of rules, each of which deals with a specific topic. Here are a couple of example, Regulation II (Permits) deals with permitting emission

sources and includes rules such as District permit requirements (Rule 2010), New and Modified Stationary Source Review (Rule 2201), and implementation of Emission Reduction Credit Banking (Rule 2301).

The list of rules below is neither exhaustive nor exclusive. Current District rules can be found online at: www.valleyair.org/rules/1ruleslist.htm. To identify other District rules or regulations that apply to this Project or to obtain information about District permit requirements, the applicant is strongly encouraged to contact the District's Small Business Assistance (SBA) Office at (209) 557-6446.

2a) District Rules 2010 and 2201 - Air Quality Permitting for Stationary Sources

Stationary Source emissions include any building, structure, facility, or installation which emits or may emit any affected pollutant directly or as a fugitive emission. District Rule 2010 requires operators of emission sources to obtain an Authority to Construct (ATC) and Permit to Operate (PTO) from the District. District Rule 2201 requires that new and modified stationary sources of emissions mitigate their emissions using best available control technology (BACT).

This future developments may be subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and will require District permits. Prior to construction, the Project proponent should submit to the District an application for an Authority to Construct (ATC). For further information or assistance, the project proponent may contact the District's Small Business Assistance (SBA) Office at (209) 557-6446.

2b) District Rule 9510 (Indirect Source Review)

The purpose of District Rule 9510 is to reduce the growth in both NOx and PM10 emissions associated with development and transportation projects from mobile and area sources associated with construction and operation of development projects. The rule encourages clean air design elements to be incorporated into development projects. In case the proposed development project clean air design elements are insufficient to meet the targeted emission reductions, the rule requires developers to pay a fee used to fund projects to achieve off-site emissions reductions.

Accordingly, future development projects within the Project would be subject to District Rule 9510 if:

(1) Upon full build-out, the project would receive a project-level discretionary approval from a public agency and would equal or exceed any one of the following applicability thresholds:

- 50 dwelling units
- 2,000 square feet of commercial space;
- 25,000 square feet of light industrial space;
- 100,000 square feet of heavy industrial space;
- 20,000 square feet of medical office space;
- 39,000 square feet of general office space; or
- 9,000 square feet of educational space; or
- 10,000 square feet of government space; or
- 20,000 square feet of recreational space; or
- 9,000 square feet of space not identified above

(2) Or would equal or exceed any of the applicability thresholds in section 2.2 of the rule.

District Rule 9510 also applies to any transportation or transit development projects where construction exhaust emissions equal or exceed two (2.0) tons of NOx or two (2.0) tons of PM10.

In the case the future development project(s) are subject to District Rule 9510, an Air Impact Assessment (AIA) application is required and the District recommends that demonstration of compliance with District Rule 9510, before issuance of the first building permit, be made a condition of Project approval.

Information about how to comply with District Rule 9510 can be found online at: http://www.valleyair.org/ISR/ISRHome.htm.

The AIA application form can be found online at: http://www.valleyair.org/ISR/ISRFormsAndApplications.htm.

District staff is available to provide assistance with determining if future development projects will be subject to Rule 9510, and can be reached by phone at (559) 230-6000 or by email at ISR@valleyair.org.

2c) Other District Rules and Regulations

Future projects may also be subject to the following District rules: Regulation VIII, (Fugitive PM10 Prohibitions), Rule 4102 (Nuisance), Rule 4601 (Architectural Coatings), and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving

and Maintenance Operations). In the event an existing building will be renovated, partially demolished or removed, the project may be subject to District Rule 4002 (National Emission Standards for Hazardous Air Pollutants).

If you have any questions or require further information, please contact Will Worthley by e-mail at will.worthley@valleyair.org or by phone at (559) 230-5925.

Sincerely,

For Arnaud Marjollet
Director of Permit Services

AM: ww

SENT VIA E-MAIL: July 21, 2020
EP@mwdh2o.com
Malinda Stalvey, Senior Environmental Specialist
The Metropolitan Water District of Southern California
Environmental Planning Section
P.O. Box 54153
Los Angeles, CA 90054-0153

Notice of Preparation of a Draft Program Environmental Impact Report for The Metropolitan Water District of Southern California Climate Action Plan

South Coast Air Quality Management District (South Coast AQMD) staff appreciates the opportunity to comment on the above-mentioned document. South Coast AQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the Proposed Project that should be included in the Draft Program Environmental Impact Report (PEIR). Please send a copy of the Draft PEIR upon its completion and public release directly to South Coast AQMD at the address shown in the letterhead. Note that copies of the Draft PEIR that are submitted to the State Clearinghouse are not forwarded to South Coast AQMD. **In addition, please send with the Draft PEIR all appendices or technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files[1]. These include emission calculation spreadsheets and modeling input and output files (not PDF files). Without all files and supporting documentation, South Coast AQMD staff will be unable to complete our review of the air quality analyses in a timely manner. Any delays in providing all supporting documentation will require additional time for review beyond the end of the comment period.**

CEQA Air Quality Analysis

South Coast AQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. South Coast AQMD staff recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analyses. Copies of the Handbook are available from the South Coast AQMD's Subscription Services Department by calling (909) 396-3720. More recent guidance developed since this Handbook was published is also available on South Coast AQMD's website at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993). South Coast AQMD staff also recommends that the Lead Agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: www.caleemod.com.

On March 3, 2017, the South Coast AQMD's Governing Board adopted the 2016 Air Quality Management Plan (2016 AQMP), which was later approved by the California Air Resources Board on March 23, 2017.

[1] Pursuant to the CEQA Guidelines Section 15174, the information contained in an EIR shall include summarized technical data, maps, plot plans, diagrams, and similar relevant information sufficient to permit full assessment of significant environmental impacts by reviewing agencies and members of the public. Placement of highly technical and specialized analysis and data in the body of an EIR should be avoided through inclusion of supporting information and analyses as appendices to the main body of the EIR. Appendices to the EIR may be prepared in volumes separate from the basic EIR document, but shall be readily available for public examination and shall be submitted to all clearinghouses which assist in public review.

Built upon the progress in implementing the 2007 and 2012 AQMPs, the 2016 AQMP provides a regional perspective on air quality and the challenges facing the South Coast Air Basin. The most significant air quality challenge in the Basin is to achieve an additional 45 percent reduction in nitrogen oxide (NOx) emissions in 2023 and an additional 55 percent NOx reduction beyond 2031 levels for ozone attainment. The 2016 AQMP is available on South Coast AQMD's website at: http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan.

South Coast AQMD staff recognizes that there are many factors Lead Agencies must consider when making local planning and land use decisions. To facilitate stronger collaboration between Lead Agencies and South Coast AQMD to reduce community exposure to source-specific and cumulative air pollution impacts, South Coast AQMD adopted the Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning in 2005[2]. This Guidance Document provides suggested policies that local governments can use in their General Plans or through local planning to prevent or reduce potential air pollution impacts and protect public health. South Coast AQMD staff recommends that the Lead Agency review this Guidance Document as a tool when making local planning and land use decisions. Additional guidance on siting incompatible land uses (such as placing homes near freeways or other polluting sources) can be found in the California Air Resources Board's *Air Quality and Land Use Handbook: A Community Health Perspective*, which can be found at: http://www.arb.ca.gov/ch/handbook.pdf. Guidance[3] on strategies to reduce air pollution exposure near high-volume roadways can be found at: https://www.arb.ca.gov/ch/rd_technical_advisory_final.PDF.

South Coast AQMD has developed both regional and localized significance thresholds. South Coast AQMD staff recommends that the Lead Agency quantify criteria pollutant emissions and compare the emissions to South Coast AQMD's CEQA regional pollutant emissions significance thresholds[4] and localized significance thresholds (LSTs)[5] to determine the Proposed Project's air quality impacts. The localized analysis can be conducted by either using the LST screening tables or performing dispersion modeling.

When specific development is reasonably foreseeable as result of the goals, policies, and guidelines in the Proposed Project, the Lead Agency should identify any potential adverse air quality impacts and sources of air pollution that could occur using its best efforts to find out and a good-faith effort at full disclosure in the EIR. The degree of specificity will correspond to the degree of specificity involved in the underlying activity which is described in the EIR (CEQA Guidelines Section 15146). When quantifying air quality emissions, emissions from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips, and hauling trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, such as sources that generate or attract vehicular trips, should be included in the analysis. Furthermore, emissions from the overlapping construction and operational activities should be combined and compared to South Coast AQMD's regional air quality CEQA ***operational*** thresholds to determine the level of significance.

[2] South Coast AQMD. 2005. Accessed at: http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf.

[3] In April 2017, CARB published a technical advisory, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory*, to supplement CARB's Air Quality and Land Use Handbook: A Community Health Perspective. This technical advisory is intended to provide information on strategies to reduce exposures to traffic emissions near high-volume roadways to assist land use planning and decision-making in order to protect public health and promote equity and environmental justice. The technical advisory is available at: https://www.arb.ca.gov/ch/landuse.htm.

[4] South Coast AQMD's CEQA regional pollutant emissions significance thresholds can be found here: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf.

[5] Guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

If the Proposed Project generates or attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the Lead Agency perform a mobile source health risk assessment[6]. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included.

Mitigation Measures

If the Proposed Project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate these impacts. Pursuant to CEQA Guidelines Section 15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Several resources are available to assist the Lead Agency with identifying possible mitigation measures for the Proposed Project, including:

- Chapter 11 "Mitigating the Impact of a Project" of South Coast AQMD's *CEQA Air Quality Handbook*
- South Coast AQMD's CEQA web pages available here: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies
- South Coast AQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook for controlling construction-related emissions and Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities
- California Air Pollution Control Officers Association's (CAPCOA) *Quantifying Greenhouse Gas Mitigation Measures* available here: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

Permits

If implementation of the Proposed Project requires a permit from South Coast AQMD, South Coast AQMD should be identified as a Responsible Agency for the Proposed Project in the EIR. For more information on permits, please visit South Coast AQMD's webpage at: http://www.aqmd.gov/home/permits. Questions on permits can be directed to South Coast AQMD's Engineering and Permitting staff at (909) 396-3385.

Data Sources

South Coast AQMD rules and relevant air quality reports and data are available by calling South Coast AQMD's Public Information Center at (909) 396-2001 or at South Coast AQMD's website at: http://www.aqmd.gov.

South Coast AQMD staff is available to work with the Lead Agency to ensure that project air quality and health risk impacts are accurately evaluated and mitigated to the extent feasible. If you have any questions regarding this letter, please contact me at lsun@aqmd.gov.

Sincerely,

Lijin Sun

Lijin Sun, J.D.
Program Supervisor, CEQA IGR
Planning, Rule Development & Area Sources

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[6] Guidance for performing a mobile source health risk assessment ("*Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*") can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis.

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Dr. Laki Tisopulos
Air Pollution Control Officer

VENTURA COUNTY
AIR POLLUTION CONTROL DISTRICT
Memorandum

TO: Malinda Stalvey, Sr. Environmental Specialist DATE: July 20, 2020

FROM: Nicole Collazo, Air Quality Specialist

SUBJECT: Request for Review of Notice of Preparation of a Draft Environmental Impact Report for the Metropolitan Water District of Southern California Climate Action Plan (RMA 20-005)

Ventura County Air Pollution Control District (APCD) staff has reviewed the subject Notice of Preparation (NOP) for the draft environmental impact report (DEIR) of the Metropolitan Water District of Southern California's (Metropolitan) Climate Action Plan (CAP), outlining its strategy for reducing greenhouse gas emissions associated with future construction, operation and maintenance activities at the Metropolitan. The Project Location spans 6 Southern California counties, including Ventura County. The Lead Agency for the project is the Metropolitan Water District of Southern California.

General Comments

Air Quality Section- The air quality assessment should consider project consistency with the 2016 Air Quality Management Plan (AQMP) for emissions expected in the Ventura County region. The 2016 AQMP presents Ventura County's strategy (including related mandated elements) to attain the 2008 federal 8-hour ozone standard by 2020, as required by the federal Clean Air Act Amendments of 1990 and applicable U.S. EPA clean air regulations. The 2016 AQMP uses an updated 2012 emissions inventory as baseline for forecasting data, SCAG RTP 2016 data, and CARB's EMFAC2014 emission factors for mobile sources. The AQMP can be downloaded from our website at http://www.vcapcd.org/AQMP-2016.htm.

The Ventura County Air Quality Assessment Guidelines (AQAG) should also be used to evaluate all potential air quality impacts the proposed project will have in Ventura County. The AQAG are also downloadable from our website here: http://www.vcapcd.org/environmental-review.htm. Specifically, the air quality assessment should consider reactive organic compound, nitrogen oxide emissions and particulate matter from all project-related motor vehicles, sources not permitted with APCD, and construction equipment that may result from potential buildout, as appropriate to future development policies and implementation measures. We note that the AQAG has not been updated since 2003 and serves as a reference and is not required or mandated by the APCD (AQAG Page 1-1). Current air quality determinations follow the same process but using different tools (CalEEMod vs. URBEMIS, CO Hotspots analysis no longer

required, etc.). The recommended list of mitigation measures in the AQAG are also limited and outdated. For example, the following template is currently being recommended by APCD as a Commenting Agency for projects that include construction equipment, reflecting state laws adopted since the AQAG was last updated in 2003:

Construction Equipment

Purpose: In order to ensure that ozone precursor and particulate emissions from diesel-powered mobile construction equipment are reduced to the greatest amount feasible.

Requirement: The Permittee shall comply with the provisions of all applicable California State Laws and APCD Rules and Regulations regarding portable construction equipment and construction vehicles.

Documentation: The project applicant shall ensure compliance with the following State Laws and APCD requirements:

I. Construction equipment shall not have visible emissions greater than 20% opacity, as required by APCD Rule 50, Opacity.

II. All portable diesel-powered equipment over 50 BHP shall be registered with the State's Portable Equipment Registration Program (PERP) or an APCD Portable Permit.

III. Off-Road Heavy-Duty trucks shall comply with the California State Regulation for In-Use Off-Road Diesel Vehicles (Title 13, CCR §2449), the purpose of which is to reduce NO_x and diesel particulate matter exhaust emissions.

IV. On-Road Heavy-Duty trucks shall comply with the California State Regulation for In-Use On-Road Diesel Vehicles (Title 13, CCR §2025), the purpose of which is to reduce NO_x and diesel particulate matter exhaust emissions.

V. All commercial on-road and off-road diesel vehicles are subject to the idling limits of Title 13, CCR §2485, §2449(d)(3), respectively. Construction equipment shall not idle for more than five (5) consecutive minutes. The idling limit does not apply to: (1) idling when queuing; (2) idling to verify that the vehicle is in safe operating condition; (3) idling for testing, servicing, repairing or diagnostic purposes; (4) idling necessary to accomplish work for which the vehicle was designed (such as operating a crane); (5) idling required to bring the machine system to operating temperature, and (6) idling necessary to ensure safe operation of the vehicle. It is the Permittee's responsibility to have a written idling policy that is made available to operators of the vehicles and equipment and informs them that idling is limited to 5 consecutive minutes or less, except as exempted in subsection a. above.

The following are recommended measures for construction equipment and vehicles:

I. Diesel powered equipment should be replaced by electric equipment whenever feasible.

II. Maintain equipment engines in good condition and in proper tune as per manufacturer's specifications.

III. Lengthen the construction period during smog season (May through October), to minimize the number of vehicles and equipment operating at the same time.

IV. Use alternatively fueled construction equipment, such as compressed natural gas (CNG), liquefied natural gas (LNG), or electric, if feasible.

V. Minimum Tier 3 diesel off-road equipment shall be used, or Tier 4 if commercially available.

GHG Section- Neither APCD nor the County has adopted a threshold of significance applicable to Greenhouse Gas (GHG) emissions from projects subject to the County's discretionary land use permitting authority. APCD published a report as a request by the Ventura County Air Pollution Control Board to report back on possible GHG thresholds options on November 8, 2011. The District will be looking into what GHG threshold is best suitable for Ventura County in the near future which will undergo a public review process. The County of Ventura is currently in the public review process of adopting a Climate Action Plan, to be included in their General Plan Update. For more information, including draft CAP and DEIR, please visit https://vc2040.org/review/documents.

The following are recommended guidance documents that may be used to address the impacts of climate change and greenhouse gases in Ventura County.

On May 2016, the CARB published a Mobile Source Strategy. In this report, ARB staff is outlining a mobile source strategy that simultaneously meets air quality standards, achieves GHG emission reduction targets, decreases toxics health risk, and reduces petroleum consumption from transportation emissions over the next fifteen years. These goals and targets include These include 1) Attaining federal health-based air quality standards for ozone in 2023 and 2031 in the South Coast and San Joaquin Valley, and fine particulate matter (PM2.5) standards in the next decade; 2) Achieving greenhouse gas (GHG) emission reduction targets of 40 percent below 1990 levels by 2030, with continued progress towards an 80 percent reduction by 2050; 3) Minimizing health risk from exposure to toxic air contaminants; 4) Reducing our petroleum use by up to 50 percent by 2030; and 5) Increasing energy efficiency and deriving 50 percent of our electricity from renewable sources by 2030. The report can be found here: https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.htm.

On November 2017, the California Air Resources Board published it latest Climate Change Scoping Plan. The Scoping Plan lays out a strategy for achieving California's 2030 Greenhouse Gas target and builds on the state's successes to date, proposing to strengthen major programs that have been a hallmark of success, while further integrating efforts to reduce both GHGs and air pollution. California's climate efforts will 1) Lower GHG emissions on a trajectory to avoid the worst impacts of climate change; 2) Support a clean energy economy which provides more opportunities for all Californians; 3) Provide a more equitable future with good jobs and less pollution for all communities; 4) Improve the health of all Californians by reducing air and water pollution and making it easier to bike and walk; and 5) Make California an even better place to live, work, and play by improving our natural and working lands. The 2017 Climate Change Scoping Plan can be accessed here https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

Finally, on December 2018, the Governor's Office of Planning and Research (OPR) published a Draft Technical Advisory. This document incorporates developments since the June 2008 Technical Advisory publication, including regulatory changes made to the regulations that implement CEQA (commonly known as the "CEQA Guidelines" in late 2018 by the California Natural Resources Agency (Agency). Although this document largely focuses on project-level

analyses of greenhouse gas impacts, Section IV.7 briefly addresses community-scale greenhouse gas reduction plans as one pathway to streamline CEQA analyses. This discussion draft is intended to address some common issues and topics that arise in greenhouse gas emissions analyses under CEQA but is not intended to address every single issue and topic. More information on the OPR's Technical Advisory can be found here http://opr.ca.gov/ceqa/technical-advisories.html.

The APCD would like to make the Metropolitan aware of its Incentives Program that are directed at reducing criteria pollutants by reducing the amount of nitrous oxides (NOx) generated from mobile sources. NOx when combined with reactive organic compounds (ROC or VOCs) can react with sunlight to create ground-level smog. The two types of programs, Incentives Program and Transportation Outreach Program, have a co-benefit in indirectly reducing GHG emissions as older, dirtier equipment and vehicles are traded in for newer engines that have stricter air quality emission standards or as Vehicle Miles Travelled (VMT) are reduced due to an increase in alternative modes of transportation, respectively. More information can be found online here on our District Incentive Programs and here on the Transportation Outreach Program. These existing programs may be included in the Metropolitan's CAP as the implementation programs, if the Metropolitan should qualify for funding. Some of these programs include Lower Emission School Bus Program, EV Charging Stations Funding and Funding Agricultural Replacement Measures for Emission Reductions (FARMER).

Environmental Justice- The AB 617 legislation sets out an ambitious implementation schedule for APCD. The California Air Resources Board (CARB) must set the overall direction of the program by October 1, 2018. This includes identifying impacted communities, establishing the criteria for air monitoring and local emissions reduction programs, and developing statewide strategies for reducing emissions. The local air districts also have specific roles and responsibilities. On April 27, 2018, the VCAPCD submitted to CARB a technical assessment to develop an initial list of candidate communities for Ventura County.

On July 31, 2018 the Ventura County Air Pollution Control Board approved the District staff's recommendation that the greater Oxnard/Port Hueneme area be the highest priority region in Ventura County for inclusion in CARB's Community Air Protection Program. District staff's recommendation is based on our assessment that we have not identified a single or multiple sources of significant air emissions that would lead us to identify a smaller region adjacent to these source(s). This is in part based on our review of our permitted sources in the area. The greater Oxnard/Port Hueneme area is also home to several agricultural operations and these operations generally utilize pesticides and diesel equipment. In addition, the Port of Hueneme and several warehouse type distribution centers are located in the area. Heavy-duty trucks associated with these goods movement facilities move throughout the area. In summary, we are looking at a diffuse inventory of air pollution sources in this area. This will likely require additional research including community level air monitoring in several locations to identify any sources of concern. In addition, by having a larger area, the VCAPCD will have flexibility to target our incentive funds within the area as we learn more about potential issues with air pollutant sources in and adjacent to the area.

As amended by Assembly Bill 617 (C. Garcia, Chapter 136, Statutes of 2017), Health and Safety Code section 40920.6(c) requires that on or before January 1, 2019, each local air district that is a

nonattainment area for one or more air pollutants must adopt an expeditious schedule for the implementation of BARCT by the earliest feasible date, but in any event not later than December 31, 2023.

District staff has created a BARCT rule development schedule to comply with this statutory requirement. CARB has identified four affected facilities that are subject to AB 617 BARCT requirements; the facilities are operated by Procter and Gamble, New Indy Container, California Resources (Santa Clara Valley Gas Plant), and Trinity ESC. District staff then evaluated which District rules are applicable to these facilities that may not meet BARCT requirements including Rule 74.23, *Stationary Gas Turbines*; Rule 74.15, *Boilers, Steam Generators and Process Heaters*; Rule 71.3, *Transfer of Reactive Organic Compound Liquids*; and Rule 74.10, *Components at Crude Oil and Natural Gas Production and Processing Facilities*.

Thank you for the opportunity to comment on the NOP and we look forward to reading Metropolitan's DEIR for the proposed project.

Should you have any questions, you may reach me at nicole@vcapcd.org.

CHIEF EXECUTIVE OFFICE

Jody L. Hayes
Chief Executive Officer

Patrice M. Dietrich
Assistant Executive Officer

Raul L. Mendez
Assistant Executive Officer

STANISLAUS COUNTY ENVIRONMENTAL REVIEW COMMITTEE

July 21, 2020

Ms. Malinda Stalvey, Senior Environmental Specialist
The Metropolitan Water District of Southern California
Environmental Planning Section
P.O. Box 54153
Los Angeles, CA 90054-0153

SUBJECT: ENVIRONMENTAL REFERRAL – THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA – THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA (METROPOLITAN) CLIMATE ACTION PLAN – NOTICE OF PREPARATION OF A DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT

Ms. Stalvey:

Thank you for the opportunity to review the above-referenced project.

The Stanislaus County Environmental Review Committee (ERC) has reviewed the subject project and has no comments at this time.

The ERC appreciates the opportunity to comment on this project.

Sincerely,

Patrick Cavanah
Sr. Management Consultant
Environmental Review Committee

PC:ss

cc: ERC Members

1010 10th Street, Ste. 6800, Modesto, CA 95354 Post Office Box 3404
Modesto, California 95353 Phone: 209.525.6333 Fax: 209.544.6226

From: Ramon Salinas
To: Environmental Planning Team - EPT
Cc: Planning
Subject: RE: Stanislaus County ERC Referral - Metropolitan Water District of Southern CA - NOP of a Draft PEIR and Scoping Meeting - Please respond by July 22, 2020
Date: Tuesday, June 30, 2020 1:57:50 PM

Good Afternoon,

Public Works has no comments.

Thank you.

Ramon Salinas
Assistant Engineer
Stanislaus County Public Works
1010 10th Street, Suite 4204
Modesto, CA 95354
Phone: 209-525-7564
Cell: 209-278-5734
Fax: 209-525-6507
Email: salinasr@stancounty.com

From: Planning
Sent: Tuesday, June 23, 2020 8:33 AM
To: Kelly Covello <covellok@stancounty.com>; Sheryl Swartz <swartzs@stancounty.com>; Patrick Cavanah <cavanahp@stancounty.com>; Angela Freitas <ANGELA@stancounty.com>; Kristin Doud <Doudk@stancounty.com>; Miguel Galvez <GALVEZM@stancounty.com>; Milton O'Haire <miltono@stancounty.com>; Dan Bernaciak <danielb@stancounty.com>; Amit Sandhu <amits@stancounty.com>; Randy Crook <RCROOK@stanoes.com>; Matthew Jenkins <MJENKINS@stanoes.com>; Michael Ziman <zimanm@stancounty.com>; Cesar Acevedo <cacevedo@envres.org>; JAMI AGGERS <JAGGERS@envres.org>; Jennifer Marchy <jmarchy@envres.org>; RACHEL RIESS <rariess@envres.org>; JANIS MEIN <JMEIN@envres.org>; KIT MCCLURG <KMCCLURG@envres.org>; WALLACE LOW <WLOW@envres.org>; Ryan Barney <rabarney@envres.org>; WALEED YOSIF <WYOSIF@envres.org>; Walter Ward <wward@envres.org>; KARL QUINN <KQUINN@envres.org>; Lane Avilla <lavilla@envres.org>; Alexandria Fontana <afontana@envres.org>; MARY-KATE COOK <MKCOOK@envres.org>; Parminder Dhillon <pdhillon@envres.org>; Mandip Dhillon <mdhillon@envres.org>; Emily Grimes <egrimes@envres.org>; ALVIN LAL <ALAL@envres.org>; Gloria Romero <gromero@envres.org>; Michael Parker <mparker@stansheriff.com>; raduncan@ucanr.edu; Frederic Clark <CLARKF@stancounty.com>; Ramon Salinas <SALINASR@stancounty.com>; Lynnette Henson <hensonl@stancounty.com>; David Leamon <Leamond@stancounty.com>; Andrew Malizia <Maliziaa@stancounty.com>; Sara Lytle-Pinhey <pinheys@stancounty.com>; Erica Inacio <inacioe@stancounty.com>

Cc: Jennifer Akin <AKINJ@stancounty.com>; Angelica Duenas <DUENASA@stancounty.com>; Arcelia Garcia <garciaar@stancounty.com>
Subject: Stanislaus County ERC Referral - Metropolitan Water District of Southern CA - NOP of a Draft PEIR and Scoping Meeting - Please respond by July 22, 2020
Importance: High

Good Morning,

ERC-20. The Metropolitan Water District of Southern California - Notice of Preparation of a Draft PEIR for the Climate Action Plan and Scoping Meeting is attached for your review and comments.

Scoping Meeting: Will be held online on July 15, 2020 at 10:00 a.m.
To participate in the meeting, please register here:
https://us02web.zoom.us/webinar/register/WN_UohxhPynTW6jwvyl_bDUkw

Thank you,

Arcelia Garcia
Administrative Clerk III
Stanislaus County Planning & Community Development

RESOURCE MANAGEMENT AGENCY
county of ventura
Planning Division
Dave Ward, AICP
Director

July 22, 2020

Ms. Malinda Stalvey, Senior Environmental Specialist
The Metropolitan Water District of Southern California
Environmental Planning Section
P.O. Box 54153
Los Angeles, California 90054-0153

Subject: The Metropolitan Water District of Southern California Climate Action Plan

Dear Ms. Stalvey,

Thank you for the opportunity to review and comment on the subject document. Attached are the comments that we have received resulting from intra-county review of the subject document. Additional comments may have been sent directly to you by other County agencies.

Your proposed responses to these comments should be sent directly to the commenter, with a copy to Anthony Ciuffetelli, Ventura County Planning Division, L#1740, 800 S. Victoria Avenue, Ventura, CA 93009.

If you have any questions regarding any of the comments, please contact the appropriate respondent. Overall questions may be directed to Anthony Ciuffetelli at (805) 654-2443.

Sincerely,

Denice Thomas, AICP, Manager
Planning Programs Section

Attachments

County RMA Reference Number 20-005

PUBLIC WORKS
VENTURA COUNTY

WATERSHED PROTECTION
WATERSHED PLANNING AND PERMITS DIVISION
800 South Victoria Avenue, Ventura, California 93009
Sergio Vargas, Deputy Director – (805) 650-4077

M E M O R A N D U M

DATE: July 21, 2020

TO: Anthony Ciuffetelli, RMA Planner
County of Ventura

FROM: Sergio Vargas, Deputy Director S.V.

SUBJECT: RMA20-005 Climate Action Plan NOP
Various Zones
Watershed Protection Project Number: WC2020-0027

Pursuant to your request dated June 24, 2020, this office has reviewed the submitted materials and provides the following comments.

PROJECT LOCATION:

Throughout a six-county Southern California region comprised of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties.

PROJECT DESCRIPTION:

Metropolitan is preparing a Climate Action Plan (CAP) to outline a strategy for reducing greenhouse gas (GHG) emissions associated with future construction, operation, and maintenance activities. The CAP is a comprehensive roadmap that analyzes historical GHG emissions, prepares a forecast of future GHG emissions, sets a GHG reduction target for reducing emissions consistent with applicable state policies, and identifies a suite of specific reduction actions that Metropolitan can choose from to achieve the adopted target consistent with Section 15183.5 of the State CEQA Guidelines. The CAP is a customized roadmap for making informed decisions and understanding where and how to achieve emissions reductions that conform to Metropolitan's mission/goals in a meaningful and cost-effective manner. While a CAP identifies potential projects that may be implemented to meet GHG reduction goals, no specific projects will be implemented without further CEQA review.

WATERSHED PROTECTION DISTRICT COMMENTS:

Flood Control Facilities / Watercourses – Ventura County Watershed Protection District

Activities Within Jurisdictional Channel Limits Will Require Watercourse/Encroachment Permits

To comply with the *Ventura County Watershed Protection District (WP) Ordinance*, and mitigate potential impacts, any activities proposed in, on, over, under, or across a jurisdictional channel or WP's Right of Way will require a permit. The applicant shall obtain the appropriate WP permit prior to obtaining a building permit or grading permit or prior to project start date if no grading or building permits are required. Prior to permit closure, Watershed Protection District staff shall inspect the project site to assure that construction was completed in accordance with the any approved plans and the Permit.

If you have any questions, please feel free to contact Sergio Vargas by email at Sergio.Vargas@ventura.org or by phone at (805) 640-4077.

END OF TEXT

Appendix B

Air Quality CalEEMod Data

Sample Met CAP Program Activity

Statewide , Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	5.00	Acre	5.00	217,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	1			**Operational Year**	2022
Utility Company	Statewide Average				
CO2 Intensity (lb/MWhr)	1001.57	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Sample Met CAP Program Activity - Statewide , Annual

Project Characteristics - Assumed 12-month construction schedule.

Land Use -

Construction Phase - Adjusted schedule to be one year.

Off-road Equipment - Use of equipment for eight hours per day.

Off-road Equipment - Use of all equipment for eight hours each day.

Off-road Equipment - Reduced default equipment list.

Off-road Equipment - Reduced default equipment list.

Off-road Equipment - Default equpiment list.

Off-road Equipment - Reduced default equipment list.

Demolition - Assumed 20,000 square feet of demolition.

Grading - Assumed 1,000 CY import and 1,000 CY export.

Architectural Coating - Assumed 10,000 sf of painted area for interior and exterior.

Construction Off-road Equipment Mitigation - Assumed Tier 2 for all equipment

Trips and VMT - Added water truck trips.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	0.00	10,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	0.00	10,000.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

Sample Met CAP Program Activity - Statewide , Annual

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	230.00	176.00
tblConstructionPhase	NumDays	8.00	16.00
tblGrading	MaterialExported	0.00	1,000.00
tblGrading	MaterialImported	0.00	1,000.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00

Sample Met CAP Program Activity - Statewide , Annual

tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00

2.0 Emissions Summary

Sample Met CAP Program Activity - Statewide , Annual

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.4589	2.5311	2.2245	4.8300e-003	0.1688	0.1154	0.2843	0.0615	0.1082	0.1697	0.0000	430.0560	430.0560	0.0769	0.0000	431.9790
Maximum	**0.4589**	**2.5311**	**2.2245**	**4.8300e-003**	**0.1688**	**0.1154**	**0.2843**	**0.0615**	**0.1082**	**0.1697**	**0.0000**	**430.0560**	**430.0560**	**0.0769**	**0.0000**	**431.9790**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.3116	2.0423	2.4154	4.8300e-003	0.1263	0.1015	0.2278	0.0414	0.1015	0.1428	0.0000	430.0556	430.0556	0.0769	0.0000	431.9787
Maximum	**0.3116**	**2.0423**	**2.4154**	**4.8300e-003**	**0.1263**	**0.1015**	**0.2278**	**0.0414**	**0.1015**	**0.1428**	**0.0000**	**430.0556**	**430.0556**	**0.0769**	**0.0000**	**431.9787**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**32.10**	**19.31**	**-8.58**	**0.00**	**25.22**	**12.04**	**19.87**	**32.81**	**6.20**	**15.85**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Sample Met CAP Program Activity - Statewide , Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2021	3-31-2021	0.7098	0.4719
2	4-1-2021	6-30-2021	0.8154	0.6583
3	7-1-2021	9-30-2021	0.8244	0.6656
		Highest	0.8244	0.6656

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0217	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0217**	**0.0000**	**5.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**1.0000e-004**

Sample Met CAP Program Activity - Statewide , Annual

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0217	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0217**	**0.0000**	**5.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**1.0000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Sample Met CAP Program Activity - Statewide , Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2021	1/28/2021	5	20	
2	Site Preparation	Site Preparation	1/29/2021	2/4/2021	5	5	
3	Grading	Grading	2/5/2021	2/26/2021	5	16	
4	Construction/Installation	Building Construction	3/1/2021	11/1/2021	5	176	
5	Paving	Paving	11/2/2021	11/25/2021	5	18	
6	Architectural Coating	Architectural Coating	11/26/2021	12/21/2021	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 8

Acres of Paving: 5

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 10,000; Non-Residential Outdoor: 10,000; Striped Parking Area: 13,068 (Architectural Coating – sqft)

OffRoad Equipment

Sample Met CAP Program Activity - Statewide , Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	1	8.00	158	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Construction/Installation	Cranes	1	8.00	231	0.29
Construction/Installation	Forklifts	3	8.00	89	0.20
Construction/Installation	Generator Sets	1	8.00	84	0.74
Construction/Installation	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Construction/Installation	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48

Trips and VMT

Sample Met CAP Program Activity - Statewide , Annual

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	0.00	91.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	4.00	250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Construction/Installation	9	91.00	36.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.8400e-003	0.0000	9.8400e-003	1.4900e-003	0.0000	1.4900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0166	0.1616	0.1098	2.0000e-004		8.1000e-003	8.1000e-003		7.5900e-003	7.5900e-003	0.0000	17.4198	17.4198	4.2100e-003	0.0000	17.5250
Total	**0.0166**	**0.1616**	**0.1098**	**2.0000e-004**	**9.8400e-003**	**8.1000e-003**	**0.0179**	**1.4900e-003**	**7.5900e-003**	**9.0800e-003**	**0.0000**	**17.4198**	**17.4198**	**4.2100e-003**	**0.0000**	**17.5250**

Sample Met CAP Program Activity - Statewide , Annual

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.3000e-004	0.0116	2.1800e-003	4.0000e-005	7.7000e-004	4.0000e-005	8.1000e-004	2.1000e-004	4.0000e-005	2.5000e-004	0.0000	3.4114	3.4114	1.8000e-004	0.0000	3.4159
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	2.0000e-004	2.1400e-003	1.0000e-005	6.4000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5542	0.5542	2.0000e-005	0.0000	0.5545
Total	**6.1000e-004**	**0.0118**	**4.3200e-003**	**5.0000e-005**	**1.4100e-003**	**4.0000e-005**	**1.4500e-003**	**3.8000e-004**	**4.0000e-005**	**4.2000e-004**	**0.0000**	**3.9655**	**3.9655**	**2.0000e-004**	**0.0000**	**3.9704**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.4300e-003	0.0000	4.4300e-003	6.7000e-004	0.0000	6.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6100e-003	0.0936	0.1231	2.0000e-004		4.7200e-003	4.7200e-003		4.7200e-003	4.7200e-003	0.0000	17.4198	17.4198	4.2100e-003	0.0000	17.5250
Total	**4.6100e-003**	**0.0936**	**0.1231**	**2.0000e-004**	**4.4300e-003**	**4.7200e-003**	**9.1500e-003**	**6.7000e-004**	**4.7200e-003**	**5.3900e-003**	**0.0000**	**17.4198**	**17.4198**	**4.2100e-003**	**0.0000**	**17.5250**

Sample Met CAP Program Activity - Statewide , Annual

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.3000e-004	0.0116	2.1800e-003	4.0000e-005	7.7000e-004	4.0000e-005	8.1000e-004	2.1000e-004	4.0000e-005	2.5000e-004	0.0000	3.4114	3.4114	1.8000e-004	0.0000	3.4159
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	2.0000e-004	2.1400e-003	1.0000e-005	6.4000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.5542	0.5542	2.0000e-005	0.0000	0.5545
Total	**6.1000e-004**	**0.0118**	**4.3200e-003**	**5.0000e-005**	**1.4100e-003**	**4.0000e-005**	**1.4500e-003**	**3.8000e-004**	**4.0000e-005**	**4.2000e-004**	**0.0000**	**3.9655**	**3.9655**	**2.0000e-004**	**0.0000**	**3.9704**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	8.2800e-003	0.0000	8.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5500e-003	0.0369	0.0214	4.0000e-005		1.8900e-003	1.8900e-003		1.7400e-003	1.7400e-003	0.0000	3.2413	3.2413	1.0500e-003	0.0000	3.2675
Total	**3.5500e-003**	**0.0369**	**0.0214**	**4.0000e-005**	**0.0151**	**1.8900e-003**	**0.0170**	**8.2800e-003**	**1.7400e-003**	**0.0100**	**0.0000**	**3.2413**	**3.2413**	**1.0500e-003**	**0.0000**	**3.2675**

Sample Met CAP Program Activity - Statewide , Annual

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	1.0300e-003	2.4000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.2621	0.2621	1.0000e-005	0.0000	0.2625
Worker	7.0000e-005	5.0000e-005	5.4000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1385	0.1385	0.0000	0.0000	0.1386
Total	**1.0000e-004**	**1.0800e-003**	**7.8000e-004**	**0.0000**	**2.3000e-004**	**0.0000**	**2.3000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.4007**	**0.4007**	**1.0000e-005**	**0.0000**	**0.4012**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.7700e-003	0.0000	6.7700e-003	3.7200e-003	0.0000	3.7200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-004	0.0188	0.0230	4.0000e-005		9.9000e-004	9.9000e-004		9.9000e-004	9.9000e-004	0.0000	3.2413	3.2413	1.0500e-003	0.0000	3.2675
Total	**9.0000e-004**	**0.0188**	**0.0230**	**4.0000e-005**	**6.7700e-003**	**9.9000e-004**	**7.7600e-003**	**3.7200e-003**	**9.9000e-004**	**4.7100e-003**	**0.0000**	**3.2413**	**3.2413**	**1.0500e-003**	**0.0000**	**3.2675**

Sample Met CAP Program Activity - Statewide , Annual

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-005	1.0300e-003	2.4000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.2621	0.2621	1.0000e-005	0.0000	0.2625
Worker	7.0000e-005	5.0000e-005	5.4000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1385	0.1385	0.0000	0.0000	0.1386
Total	**1.0000e-004**	**1.0800e-003**	**7.8000e-004**	**0.0000**	**2.3000e-004**	**0.0000**	**2.3000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.4007**	**0.4007**	**1.0000e-005**	**0.0000**	**0.4012**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0525	0.0000	0.0525	0.0270	0.0000	0.0270	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0138	0.1524	0.0726	1.6000e-004		6.6000e-003	6.6000e-003		6.0700e-003	6.0700e-003	0.0000	14.2916	14.2916	4.6200e-003	0.0000	14.4072
Total	**0.0138**	**0.1524**	**0.0726**	**1.6000e-004**	**0.0525**	**6.6000e-003**	**0.0591**	**0.0270**	**6.0700e-003**	**0.0330**	**0.0000**	**14.2916**	**14.2916**	**4.6200e-003**	**0.0000**	**14.4072**

Sample Met CAP Program Activity - Statewide , Annual

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.1000e-004	0.0320	5.9800e-003	1.0000e-004	2.1300e-003	1.0000e-004	2.2300e-003	5.8000e-004	1.0000e-004	6.8000e-004	0.0000	9.3719	9.3719	4.9000e-004	0.0000	9.3842
Vendor	1.0000e-004	3.3000e-003	7.6000e-004	1.0000e-005	2.1000e-004	1.0000e-005	2.2000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.8389	0.8389	5.0000e-005	0.0000	0.8400
Worker	2.3000e-004	1.6000e-004	1.7200e-003	0.0000	5.1000e-004	0.0000	5.1000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4433	0.4433	1.0000e-005	0.0000	0.4436
Total	**1.2400e-003**	**0.0354**	**8.4600e-003**	**1.1000e-004**	**2.8500e-003**	**1.1000e-004**	**2.9600e-003**	**7.8000e-004**	**1.1000e-004**	**8.9000e-004**	**0.0000**	**10.6541**	**10.6541**	**5.5000e-004**	**0.0000**	**10.6679**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0236	0.0000	0.0236	0.0121	0.0000	0.0121	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.9900e-003	0.0771	0.0957	1.6000e-004		3.1300e-003	3.1300e-003		3.1300e-003	3.1300e-003	0.0000	14.2916	14.2916	4.6200e-003	0.0000	14.4072
Total	**3.9900e-003**	**0.0771**	**0.0957**	**1.6000e-004**	**0.0236**	**3.1300e-003**	**0.0268**	**0.0121**	**3.1300e-003**	**0.0153**	**0.0000**	**14.2916**	**14.2916**	**4.6200e-003**	**0.0000**	**14.4072**

Sample Met CAP Program Activity - Statewide , Annual

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.1000e-004	0.0320	5.9800e-003	1.0000e-004	2.1300e-003	1.0000e-004	2.2300e-003	5.8000e-004	1.0000e-004	6.8000e-004	0.0000	9.3719	9.3719	4.9000e-004	0.0000	9.3842
Vendor	1.0000e-004	3.3000e-003	7.6000e-004	1.0000e-005	2.1000e-004	1.0000e-005	2.2000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	0.8389	0.8389	5.0000e-005	0.0000	0.8400
Worker	2.3000e-004	1.6000e-004	1.7200e-003	0.0000	5.1000e-004	0.0000	5.1000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4433	0.4433	1.0000e-005	0.0000	0.4436
Total	**1.2400e-003**	**0.0354**	**8.4600e-003**	**1.1000e-004**	**2.8500e-003**	**1.1000e-004**	**2.9600e-003**	**7.8000e-004**	**1.1000e-004**	**8.9000e-004**	**0.0000**	**10.6541**	**10.6541**	**5.5000e-004**	**0.0000**	**10.6679**

3.5 Construction/Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1780	1.6499	1.5550	2.5300e-003		0.0902	0.0902		0.0847	0.0847	0.0000	218.4246	218.4246	0.0539	0.0000	219.7719
Total	**0.1780**	**1.6499**	**1.5550**	**2.5300e-003**		**0.0902**	**0.0902**		**0.0847**	**0.0847**	**0.0000**	**218.4246**	**218.4246**	**0.0539**	**0.0000**	**219.7719**

Sample Met CAP Program Activity - Statewide , Annual

3.5 Construction/Installation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.9100e-003	0.3263	0.0757	8.7000e-004	0.0209	7.6000e-004	0.0217	6.0400e-003	7.2000e-004	6.7600e-003	0.0000	83.0458	83.0458	4.7200e-003	0.0000	83.1638
Worker	0.0285	0.0202	0.2147	6.1000e-004	0.0637	4.7000e-004	0.0641	0.0169	4.3000e-004	0.0174	0.0000	55.4703	55.4703	1.5700e-003	0.0000	55.5095
Total	**0.0384**	**0.3465**	**0.2904**	**1.4800e-003**	**0.0846**	**1.2300e-003**	**0.0858**	**0.0230**	**1.1500e-003**	**0.0241**	**0.0000**	**138.5161**	**138.5161**	**6.2900e-003**	**0.0000**	**138.6732**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0634	1.3393	1.6840	2.5300e-003		0.0847	0.0847		0.0847	0.0847	0.0000	218.4243	218.4243	0.0539	0.0000	219.7717
Total	**0.0634**	**1.3393**	**1.6840**	**2.5300e-003**		**0.0847**	**0.0847**		**0.0847**	**0.0847**	**0.0000**	**218.4243**	**218.4243**	**0.0539**	**0.0000**	**219.7717**

Sample Met CAP Program Activity - Statewide , Annual

3.5 Construction/Installation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.9100e-003	0.3263	0.0757	8.7000e-004	0.0209	7.6000e-004	0.0217	6.0400e-003	7.2000e-004	6.7600e-003	0.0000	83.0458	83.0458	4.7200e-003	0.0000	83.1638
Worker	0.0285	0.0202	0.2147	6.1000e-004	0.0637	4.7000e-004	0.0641	0.0169	4.3000e-004	0.0174	0.0000	55.4703	55.4703	1.5700e-003	0.0000	55.5095
Total	**0.0384**	**0.3465**	**0.2904**	**1.4800e-003**	**0.0846**	**1.2300e-003**	**0.0858**	**0.0230**	**1.1500e-003**	**0.0241**	**0.0000**	**138.5161**	**138.5161**	**6.2900e-003**	**0.0000**	**138.6732**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0113	0.1163	0.1319	2.1000e-004		6.1000e-003	6.1000e-003		5.6100e-003	5.6100e-003	0.0000	18.0211	18.0211	5.8300e-003	0.0000	18.1668
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0113**	**0.1163**	**0.1319**	**2.1000e-004**		**6.1000e-003**	**6.1000e-003**		**5.6100e-003**	**5.6100e-003**	**0.0000**	**18.0211**	**18.0211**	**5.8300e-003**	**0.0000**	**18.1668**

Sample Met CAP Program Activity - Statewide , Annual

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.4000e-004	3.6200e-003	1.0000e-005	1.0700e-003	1.0000e-005	1.0800e-003	2.9000e-004	1.0000e-005	2.9000e-004	0.0000	0.9351	0.9351	3.0000e-005	0.0000	0.9358
Total	**4.8000e-004**	**3.4000e-004**	**3.6200e-003**	**1.0000e-005**	**1.0700e-003**	**1.0000e-005**	**1.0800e-003**	**2.9000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**0.9351**	**0.9351**	**3.0000e-005**	**0.0000**	**0.9358**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.0500e-003	0.1017	0.1557	2.1000e-004		5.4800e-003	5.4800e-003		5.4800e-003	5.4800e-003	0.0000	18.0211	18.0211	5.8300e-003	0.0000	18.1668
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.0500e-003**	**0.1017**	**0.1557**	**2.1000e-004**		**5.4800e-003**	**5.4800e-003**		**5.4800e-003**	**5.4800e-003**	**0.0000**	**18.0211**	**18.0211**	**5.8300e-003**	**0.0000**	**18.1668**

Sample Met CAP Program Activity - Statewide , Annual

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.4000e-004	3.6200e-003	1.0000e-005	1.0700e-003	1.0000e-005	1.0800e-003	2.9000e-004	1.0000e-005	2.9000e-004	0.0000	0.9351	0.9351	3.0000e-005	0.0000	0.9358
Total	**4.8000e-004**	**3.4000e-004**	**3.6200e-003**	**1.0000e-005**	**1.0700e-003**	**1.0000e-005**	**1.0800e-003**	**2.9000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**0.9351**	**0.9351**	**3.0000e-005**	**0.0000**	**0.9358**

3.7 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1916					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6300e-003	0.0183	0.0218	4.0000e-005		1.1300e-003	1.1300e-003		1.1300e-003	1.1300e-003	0.0000	3.0639	3.0639	2.1000e-004	0.0000	3.0692
Total	**0.1942**	**0.0183**	**0.0218**	**4.0000e-005**		**1.1300e-003**	**1.1300e-003**		**1.1300e-003**	**1.1300e-003**	**0.0000**	**3.0639**	**3.0639**	**2.1000e-004**	**0.0000**	**3.0692**

3.7 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	4.1000e-004	4.3400e-003	1.0000e-005	1.2900e-003	1.0000e-005	1.3000e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.1222	1.1222	3.0000e-005	0.0000	1.1229
Total	**5.8000e-004**	**4.1000e-004**	**4.3400e-003**	**1.0000e-005**	**1.2900e-003**	**1.0000e-005**	**1.3000e-003**	**3.4000e-004**	**1.0000e-005**	**3.5000e-004**	**0.0000**	**1.1222**	**1.1222**	**3.0000e-005**	**0.0000**	**1.1229**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1916					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.1000e-004	0.0163	0.0220	4.0000e-005		1.1400e-003	1.1400e-003		1.1400e-003	1.1400e-003	0.0000	3.0639	3.0639	2.1000e-004	0.0000	3.0692
Total	**0.1923**	**0.0163**	**0.0220**	**4.0000e-005**		**1.1400e-003**	**1.1400e-003**		**1.1400e-003**	**1.1400e-003**	**0.0000**	**3.0639**	**3.0639**	**2.1000e-004**	**0.0000**	**3.0692**

Sample Met CAP Program Activity - Statewide , Annual

3.7 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.8000e-004	4.1000e-004	4.3400e-003	1.0000e-005	1.2900e-003	1.0000e-005	1.3000e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.1222	1.1222	3.0000e-005	0.0000	1.1229
Total	**5.8000e-004**	**4.1000e-004**	**4.3400e-003**	**1.0000e-005**	**1.2900e-003**	**1.0000e-005**	**1.3000e-003**	**3.4000e-004**	**1.0000e-005**	**3.5000e-004**	**0.0000**	**1.1222**	**1.1222**	**3.0000e-005**	**0.0000**	**1.1229**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Sample Met CAP Program Activity - Statewide , Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.552843	0.039396	0.193030	0.116235	0.017695	0.005634	0.019549	0.044452	0.002104	0.001859	0.005467	0.000816	0.000920

5.0 Energy Detail

Historical Energy Use: N

Sample Met CAP Program Activity - Statewide , Annual

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Sample Met CAP Program Activity - Statewide , Annual

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Sample Met CAP Program Activity - Statewide , Annual

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0217	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Unmitigated	0.0217	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004

Sample Met CAP Program Activity - Statewide , Annual

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.5700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0141					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Total	**0.0217**	**0.0000**	**5.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**1.0000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.5700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0141					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	5.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.0000e-005	9.0000e-005	0.0000	0.0000	1.0000e-004
Total	**0.0217**	**0.0000**	**5.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**1.0000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Sample Met CAP Program Activity - Statewide , Annual

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

Sample Met CAP Program Activity - Statewide , Annual

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Sample Met CAP Program Activity

Statewide , Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	5.00	Acre	5.00	217,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	1			**Operational Year**	2022
Utility Company	Statewide Average				
CO2 Intensity (lb/MWhr)	1001.57	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Sample Met CAP Program Activity - Statewide , Winter

Project Characteristics - Assumed 12-month construction schedule.

Land Use -

Construction Phase - Adjusted schedule to be one year.

Off-road Equipment - Use of equipment for eight hours per day.

Off-road Equipment - Use of all equipment for eight hours each day.

Off-road Equipment - Reduced default equipment list.

Off-road Equipment - Reduced default equipment list.

Off-road Equipment - Default equpiment list.

Off-road Equipment - Reduced default equipment list.

Demolition - Assumed 20,000 square feet of demolition.

Grading - Assumed 1,000 CY import and 1,000 CY export.

Architectural Coating - Assumed 10,000 sf of painted area for interior and exterior.

Construction Off-road Equipment Mitigation - Assumed Tier 2 for all equipment

Trips and VMT - Added water truck trips.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	0.00	10,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	0.00	10,000.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

Sample Met CAP Program Activity - Statewide , Winter

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	230.00	176.00
tblConstructionPhase	NumDays	8.00	16.00
tblGrading	MaterialExported	0.00	1,000.00
tblGrading	MaterialImported	0.00	1,000.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00

Sample Met CAP Program Activity - Statewide , Winter

tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00

2.0 Emissions Summary

Sample Met CAP Program Activity - Statewide , Winter

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	21.6498	23.4482	21.0115	0.0453	6.9326	1.0392	7.7715	3.4698	0.9758	4.2420	0.0000	4,440.4073	4,440.4073	0.7567	0.0000	4,459.3237
Maximum	**21.6498**	**23.4482**	**21.0115**	**0.0453**	**6.9326**	**1.0392**	**7.7715**	**3.4698**	**0.9758**	**4.2420**	**0.0000**	**4,440.4073**	**4,440.4073**	**0.7567**	**0.0000**	**4,459.3237**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	21.4372	19.1273	22.4769	0.0453	3.3210	0.9762	3.7263	1.6165	0.9754	2.0211	0.0000	4,440.4073	4,440.4073	0.7567	0.0000	4,459.3237
Maximum	**21.4372**	**19.1273**	**22.4769**	**0.0453**	**3.3210**	**0.9762**	**3.7263**	**1.6165**	**0.9754**	**2.0211**	**0.0000**	**4,440.4073**	**4,440.4073**	**0.7567**	**0.0000**	**4,459.3237**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.98**	**18.43**	**-6.97**	**0.00**	**52.10**	**6.06**	**52.05**	**53.41**	**0.04**	**52.36**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Sample Met CAP Program Activity - Statewide , Winter

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1187	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1187**	**0.0000**	**5.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**	**0.0000**	**1.1700e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.1187	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.1187**	**0.0000**	**5.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**	**0.0000**	**1.1700e-003**

Sample Met CAP Program Activity - Statewide , Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2021	1/28/2021	5	20	
2	Site Preparation	Site Preparation	1/29/2021	2/4/2021	5	5	
3	Grading	Grading	2/5/2021	2/26/2021	5	16	
4	Construction/Installation	Building Construction	3/1/2021	11/1/2021	5	176	
5	Paving	Paving	11/2/2021	11/25/2021	5	18	
6	Architectural Coating	Architectural Coating	11/26/2021	12/21/2021	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 8

Acres of Paving: 5

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 10,000; Non-Residential Outdoor: 10,000; Striped Parking Area: 13,068 (Architectural Coating – sqft)

OffRoad Equipment

Sample Met CAP Program Activity - Statewide , Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	1	8.00	158	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Construction/Installation	Cranes	1	8.00	231	0.29
Construction/Installation	Forklifts	3	8.00	89	0.20
Construction/Installation	Generator Sets	1	8.00	84	0.74
Construction/Installation	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Construction/Installation	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48

Trips and VMT

Sample Met CAP Program Activity - Statewide , Winter

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	0.00	91.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	4.00	250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Construction/Installation	9	91.00	36.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.9844	0.0000	0.9844	0.1490	0.0000	0.1490			0.0000			0.0000
Off-Road	1.6604	16.1626	10.9836	0.0200		0.8100	0.8100		0.7591	0.7591		1,920.2088	1,920.2088	0.4638		1,931.8031
Total	**1.6604**	**16.1626**	**10.9836**	**0.0200**	**0.9844**	**0.8100**	**1.7944**	**0.1490**	**0.7591**	**0.9081**		**1,920.2088**	**1,920.2088**	**0.4638**		**1,931.8031**

Sample Met CAP Program Activity - Statewide , Winter

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0337	1.1561	0.2293	3.4900e-003	0.0796	3.7400e-003	0.0833	0.0218	3.5800e-003	0.0254		371.4752	371.4752	0.0205		371.9881
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0313	0.0209	0.2125	6.0000e-004	0.0657	4.7000e-004	0.0662	0.0174	4.3000e-004	0.0179		60.0129	60.0129	1.7000e-003		60.0554
Total	**0.0650**	**1.1770**	**0.4418**	**4.0900e-003**	**0.1453**	**4.2100e-003**	**0.1495**	**0.0393**	**4.0100e-003**	**0.0433**		**431.4881**	**431.4881**	**0.0222**		**432.0435**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4430	0.0000	0.4430	0.0671	0.0000	0.0671			0.0000			0.0000
Off-Road	0.4613	9.3569	12.3072	0.0200		0.4722	0.4722		0.4722	0.4722	0.0000	1,920.2088	1,920.2088	0.4638		1,931.8030
Total	**0.4613**	**9.3569**	**12.3072**	**0.0200**	**0.4430**	**0.4722**	**0.9151**	**0.0671**	**0.4722**	**0.5392**	**0.0000**	**1,920.2088**	**1,920.2088**	**0.4638**		**1,931.8030**

Sample Met CAP Program Activity - Statewide , Winter

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0337	1.1561	0.2293	3.4900e-003	0.0796	3.7400e-003	0.0833	0.0218	3.5800e-003	0.0254		371.4752	371.4752	0.0205		371.9881
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0313	0.0209	0.2125	6.0000e-004	0.0657	4.7000e-004	0.0662	0.0174	4.3000e-004	0.0179		60.0129	60.0129	1.7000e-003		60.0554
Total	**0.0650**	**1.1770**	**0.4418**	**4.0900e-003**	**0.1453**	**4.2100e-003**	**0.1495**	**0.0393**	**4.0100e-003**	**0.0433**		**431.4881**	**431.4881**	**0.0222**		**432.0435**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0221	0.0000	6.0221	3.3102	0.0000	3.3102			0.0000			0.0000
Off-Road	1.4209	14.7629	8.5583	0.0147		0.7560	0.7560		0.6955	0.6955		1,429.1523	1,429.1523	0.4622		1,440.7078
Total	**1.4209**	**14.7629**	**8.5583**	**0.0147**	**6.0221**	**0.7560**	**6.7781**	**3.3102**	**0.6955**	**4.0058**		**1,429.1523**	**1,429.1523**	**0.4622**		**1,440.7078**

Sample Met CAP Program Activity - Statewide , Winter

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0130	0.4079	0.1027	1.0700e-003	0.0271	9.8000e-004	0.0281	7.8000e-003	9.3000e-004	8.7300e-003		113.5241	113.5241	6.9100e-003		113.6969
Worker	0.0313	0.0209	0.2125	6.0000e-004	0.0657	4.7000e-004	0.0662	0.0174	4.3000e-004	0.0179		60.0129	60.0129	1.7000e-003		60.0554
Total	**0.0442**	**0.4288**	**0.3151**	**1.6700e-003**	**0.0928**	**1.4500e-003**	**0.0943**	**0.0252**	**1.3600e-003**	**0.0266**		**173.5370**	**173.5370**	**8.6100e-003**		**173.7523**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7099	0.0000	2.7099	1.4896	0.0000	1.4896			0.0000			0.0000
Off-Road	0.3610	7.5115	9.2147	0.0147		0.3964	0.3964		0.3964	0.3964	0.0000	1,429.1523	1,429.1523	0.4622		1,440.7078
Total	**0.3610**	**7.5115**	**9.2147**	**0.0147**	**2.7099**	**0.3964**	**3.1064**	**1.4896**	**0.3964**	**1.8860**	**0.0000**	**1,429.1523**	**1,429.1523**	**0.4622**		**1,440.7078**

Sample Met CAP Program Activity - Statewide , Winter

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0130	0.4079	0.1027	1.0700e-003	0.0271	9.8000e-004	0.0281	7.8000e-003	9.3000e-004	8.7300e-003		113.5241	113.5241	6.9100e-003		113.6969
Worker	0.0313	0.0209	0.2125	6.0000e-004	0.0657	4.7000e-004	0.0662	0.0174	4.3000e-004	0.0179		60.0129	60.0129	1.7000e-003		60.0554
Total	**0.0442**	**0.4288**	**0.3151**	**1.6700e-003**	**0.0928**	**1.4500e-003**	**0.0943**	**0.0252**	**1.3600e-003**	**0.0266**		**173.5370**	**173.5370**	**8.6100e-003**		**173.7523**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5665	0.0000	6.5665	3.3696	0.0000	3.3696			0.0000			0.0000
Off-Road	1.7285	19.0493	9.0768	0.0203		0.8246	0.8246		0.7586	0.7586		1,969.2283	1,969.2283	0.6369		1,985.1505
Total	**1.7285**	**19.0493**	**9.0768**	**0.0203**	**6.5665**	**0.8246**	**7.3911**	**3.3696**	**0.7586**	**4.1282**		**1,969.2283**	**1,969.2283**	**0.6369**		**1,985.1505**

Sample Met CAP Program Activity - Statewide , Winter

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1158	3.9702	0.7874	0.0120	0.2733	0.0128	0.2862	0.0749	0.0123	0.0872		1,275.6703	1,275.6703	0.0705		1,277.4317
Vendor	0.0130	0.4079	0.1027	1.0700e-003	0.0271	9.8000e-004	0.0281	7.8000e-003	9.3000e-004	8.7300e-003		113.5241	113.5241	6.9100e-003		113.6969
Worker	0.0313	0.0209	0.2125	6.0000e-004	0.0657	4.7000e-004	0.0662	0.0174	4.3000e-004	0.0179		60.0129	60.0129	1.7000e-003		60.0554
Total	**0.1600**	**4.3990**	**1.1026**	**0.0137**	**0.3661**	**0.0143**	**0.3804**	**0.1002**	**0.0137**	**0.1138**		**1,449.2073**	**1,449.2073**	**0.0791**		**1,451.1840**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9549	0.0000	2.9549	1.5163	0.0000	1.5163			0.0000			0.0000
Off-Road	0.4984	9.6366	11.9644	0.0203		0.3909	0.3909		0.3909	0.3909	0.0000	1,969.2283	1,969.2283	0.6369		1,985.1505
Total	**0.4984**	**9.6366**	**11.9644**	**0.0203**	**2.9549**	**0.3909**	**3.3459**	**1.5163**	**0.3909**	**1.9073**	**0.0000**	**1,969.2283**	**1,969.2283**	**0.6369**		**1,985.1505**

Sample Met CAP Program Activity - Statewide , Winter

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1158	3.9702	0.7874	0.0120	0.2733	0.0128	0.2862	0.0749	0.0123	0.0872		1,275.6703	1,275.6703	0.0705		1,277.4317
Vendor	0.0130	0.4079	0.1027	1.0700e-003	0.0271	9.8000e-004	0.0281	7.8000e-003	9.3000e-004	8.7300e-003		113.5241	113.5241	6.9100e-003		113.6969
Worker	0.0313	0.0209	0.2125	6.0000e-004	0.0657	4.7000e-004	0.0662	0.0174	4.3000e-004	0.0179		60.0129	60.0129	1.7000e-003		60.0554
Total	**0.1600**	**4.3990**	**1.1026**	**0.0137**	**0.3661**	**0.0143**	**0.3804**	**0.1002**	**0.0137**	**0.1138**		**1,449.2073**	**1,449.2073**	**0.0791**		**1,451.1840**

3.5 Construction/Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0228	18.7492	17.6706	0.0288		1.0251	1.0251		0.9625	0.9625		2,736.0438	2,736.0438	0.6751		2,752.9212
Total	**2.0228**	**18.7492**	**17.6706**	**0.0288**		**1.0251**	**1.0251**		**0.9625**	**0.9625**		**2,736.0438**	**2,736.0438**	**0.6751**		**2,752.9212**

Sample Met CAP Program Activity - Statewide , Winter

3.5 Construction/Installation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1165	3.6711	0.9242	9.6700e-003	0.2438	8.7900e-003	0.2526	0.0702	8.4000e-003	0.0786		1,021.7170	1,021.7170	0.0622		1,023.2720
Worker	0.3559	0.2371	2.4166	6.8500e-003	0.7475	5.3000e-003	0.7528	0.1983	4.8800e-003	0.2032		682.6466	682.6466	0.0194		683.1305
Total	**0.4724**	**3.9082**	**3.3409**	**0.0165**	**0.9914**	**0.0141**	**1.0055**	**0.2685**	**0.0133**	**0.2818**		**1,704.3635**	**1,704.3635**	**0.0816**		**1,706.4025**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7201	15.2191	19.1360	0.0288		0.9621	0.9621		0.9621	0.9621	0.0000	2,736.0438	2,736.0438	0.6751		2,752.9212
Total	**0.7201**	**15.2191**	**19.1360**	**0.0288**		**0.9621**	**0.9621**		**0.9621**	**0.9621**	**0.0000**	**2,736.0438**	**2,736.0438**	**0.6751**		**2,752.9212**

Sample Met CAP Program Activity - Statewide , Winter

3.5 Construction/Installation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1165	3.6711	0.9242	9.6700e-003	0.2438	8.7900e-003	0.2526	0.0702	8.4000e-003	0.0786		1,021.7170	1,021.7170	0.0622		1,023.2720
Worker	0.3559	0.2371	2.4166	6.8500e-003	0.7475	5.3000e-003	0.7528	0.1983	4.8800e-003	0.2032		682.6466	682.6466	0.0194		683.1305
Total	**0.4724**	**3.9082**	**3.3409**	**0.0165**	**0.9914**	**0.0141**	**1.0055**	**0.2685**	**0.0133**	**0.2818**		**1,704.3635**	**1,704.3635**	**0.0816**		**1,706.4025**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235		2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2556**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**		**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

Sample Met CAP Program Activity - Statewide , Winter

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0587	0.0391	0.3984	1.1300e-003	0.1232	8.7000e-004	0.1241	0.0327	8.0000e-004	0.0335		112.5242	112.5242	3.1900e-003		112.6039
Total	**0.0587**	**0.0391**	**0.3984**	**1.1300e-003**	**0.1232**	**8.7000e-004**	**0.1241**	**0.0327**	**8.0000e-004**	**0.0335**		**112.5242**	**112.5242**	**3.1900e-003**		**112.6039**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5609	11.2952	17.2957	0.0228		0.6093	0.6093		0.6093	0.6093	0.0000	2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5609**	**11.2952**	**17.2957**	**0.0228**		**0.6093**	**0.6093**		**0.6093**	**0.6093**	**0.0000**	**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

Sample Met CAP Program Activity - Statewide , Winter

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0587	0.0391	0.3984	1.1300e-003	0.1232	8.7000e-004	0.1241	0.0327	8.0000e-004	0.0335		112.5242	112.5242	3.1900e-003		112.6039
Total	**0.0587**	**0.0391**	**0.3984**	**1.1300e-003**	**0.1232**	**8.7000e-004**	**0.1241**	**0.0327**	**8.0000e-004**	**0.0335**		**112.5242**	**112.5242**	**3.1900e-003**		**112.6039**

3.7 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	21.2875					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2919	2.0358	2.4234	3.9600e-003		0.1255	0.1255		0.1255	0.1255		375.2641	375.2641	0.0258		375.9079
Total	**21.5794**	**2.0358**	**2.4234**	**3.9600e-003**		**0.1255**	**0.1255**		**0.1255**	**0.1255**		**375.2641**	**375.2641**	**0.0258**		**375.9079**

Sample Met CAP Program Activity - Statewide , Winter

3.7 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0704	0.0469	0.4780	1.3600e-003	0.1479	1.0500e-003	0.1489	0.0392	9.7000e-004	0.0402		135.0290	135.0290	3.8300e-003		135.1247
Total	**0.0704**	**0.0469**	**0.4780**	**1.3600e-003**	**0.1479**	**1.0500e-003**	**0.1489**	**0.0392**	**9.7000e-004**	**0.0402**		**135.0290**	**135.0290**	**3.8300e-003**		**135.1247**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	21.2875					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0792	1.8093	2.4432	3.9600e-003		0.1268	0.1268		0.1268	0.1268	0.0000	375.2641	375.2641	0.0258		375.9079
Total	**21.3668**	**1.8093**	**2.4432**	**3.9600e-003**		**0.1268**	**0.1268**		**0.1268**	**0.1268**	**0.0000**	**375.2641**	**375.2641**	**0.0258**		**375.9079**

Sample Met CAP Program Activity - Statewide , Winter

3.7 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0704	0.0469	0.4780	1.3600e-003	0.1479	1.0500e-003	0.1489	0.0392	9.7000e-004	0.0402		135.0290	135.0290	3.8300e-003		135.1247
Total	**0.0704**	**0.0469**	**0.4780**	**1.3600e-003**	**0.1479**	**1.0500e-003**	**0.1489**	**0.0392**	**9.7000e-004**	**0.0402**		**135.0290**	**135.0290**	**3.8300e-003**		**135.1247**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Sample Met CAP Program Activity - Statewide , Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.552843	0.039396	0.193030	0.116235	0.017695	0.005634	0.019549	0.044452	0.002104	0.001859	0.005467	0.000816	0.000920

5.0 Energy Detail

Historical Energy Use: N

Sample Met CAP Program Activity - Statewide , Winter

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1187	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Unmitigated	0.1187	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003

Sample Met CAP Program Activity - Statewide , Winter

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0415					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0771					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1187**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0415					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0771					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-005	0.0000	5.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		1.0900e-003	1.0900e-003	0.0000		1.1700e-003
Total	**0.1187**	**0.0000**	**5.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**1.0900e-003**	**1.0900e-003**	**0.0000**		**1.1700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

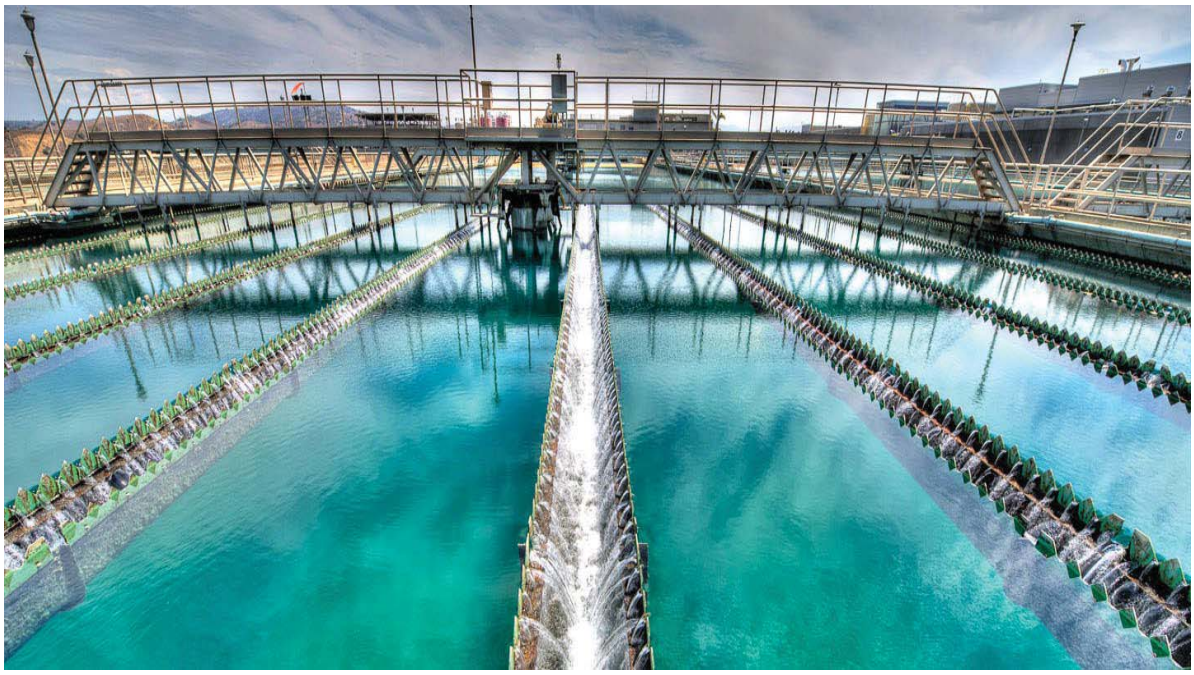
User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix C

Biological Resources Existing Conditions



Climate Action Plan
Program Environmental Impact Report

Biological Resources Existing Conditions

prepared by

The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, California 90012

prepared with the assistance of

Rincon Consultants, Inc.
250 East 1st Street, Suite 1400
Los Angeles, California 90012

October 2021

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October 2021

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Table of Contents

Tables

Figures

1 Biological Resources Existing Conditions

The Plan Area includes all of Metropolitan's service area and spans approximately 38,280 square miles, including the following six counties: Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties, as well as the portion of Palo Verde Valley in Imperial County and Bacon Island, Bouldin Island, Holland Tract, and Webb Tract, in the Sacramento-San Joaquin Delta region (San Joaquin County and Contra Costa County). It is anticipated that construction of planned projects would occur at Metropolitan facilities or within Metropolitan rights-of-way. Specifically, the following Metropolitan locations have been identified as potential project sites for projects that would be implemented under the CAP: Robert B. Diemer (Diemer) Water Treatment Plant (WTP) (Orange County), Joseph Jensen (Jensen) WTP (Los Angeles County), Robert A. Skinner (Skinner) WTP (Riverside County), F.E. Weymouth WTP (Los Angeles County), Metropolitan-owned agricultural land at southwest corner of 35th Avenue and Keim Boulevard (Riverside County), and Webb Tract, Holland Tract, Bouldin Island, and Bacon Island in the Bay Delta (San Joaquin/Contra Costa Counties). However, because the precise locations of all planned projects that may be implemented under the CAP are not known at this time, this section includes a discussion of sensitive biological resources, including habitat classifications, drainages and wetlands, sensitive natural communities, special status plants and wildlife, and wildlife movement corridors that are known to occur in the Plan Area.

1.1 Habitat Classifications

Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties; Palo Verde Valley in Imperial County; and the Sacramento-San Joaquin Delta region contain a wide diversity of tree (hardwood and coniferous forest, oak woodland, riparian woodland), shrub (chaparral, coastal scrub, creosote bush scrub), and herbaceous (grassland, wetlands) habitat types. Vegetation communities are important biological resources because they provide habitat for special status plants and wildlife and provide wildlife movement corridors. The following 12 habitat classification are mapped within the Plan Area using the LANDFIRE (2020) Landscape Fire and Resource Management Planning Tools (Table 1; Figure 1 through Figure 8): Agricultural, Conifer, Conifer-Hardwood, Developed, Exotic Herbaceous, Exotic Tree-Shrub, Grassland, Hardwood, Open Water, Riparian, Shrubland, and Sparsely Vegetated.

LANDFIRE is a shared program between the wildland fire management programs of the U.S. Department of Agriculture Forest Service and U.S. Department of the Interior. It provides landscape-scale geo-spatial products. A description of each of these habitat classifications is provided below as adapted from the U.S. National Vegetation Classification (USNVC) (2020) system.

Due to the large scale of the Plan Area and the level at which habitats are mapped using the LANDFIRE/USNVC classification system, habitat classifications are generalized and site-specific variation is likely present. Further, the LANDFIRE classification system maps habitats from a broad perspective, and in many areas two or more habitats may converge with one another.[1] Table 1 provides the percentage of each habitat type within each county in the Plan Area.

[1] Vernal pools, wetlands and drainages are discussed separately in subsection *Drainages and Wetlands* utilizing sources of information that better capture aquatic and wetland habitats that are of smaller scale in the landscape such as the National Wetlands Inventory.

Table 1 Habitat Communities by County/Region

	Los Angeles		Orange		Riverside		San Bernardino		San Diego		Ventura		Sacramento-San Joaquin Delta Region		Palo Verde Valley		
Habitat	**Acres**	**% of Total**	**Acres**	**% of Total**	**Acres**	**% of Total**	**Acres**	**% of Total**	**Acres**	**% of Total**	**Acres**	**% of Total**	**Acres**	**% of Total**	**Acres**	**% of Total**	**Total**
Agricultural	60,854	2.41%	2,322	0.45%	209,432	4.48%	21,445	0.17%	43,040	1.59%	91,859	7.79%	18,784	87.95%	94,999	87.50%	**428,952**
Conifer	129,271	5.11%	8,658	1.69%	84,174	1.80%	192,615	1.50%	65,848	2.43%	98,730	8.38%	0	0%	106	0.10%	**579,297**
Conifer-Hardwood	1,392	0.06%	0	0.00%	429	0.01%	777	0.01%	817	0.03%	550	0.05%	0	0%	0	0%	**3,965**
Developed	964,135	38.12%	332,992	65.13%	587,948	12.58%	585,962	4.55%	604,881	22.31%	180,302	15.30%	227	1.06%	9,982	9.19%	**3,256,220**
Exotic Herbaceous	63,817	2.52%	9,324	1.82%	73,667	1.58%	92,817	0.72%	92,006	3.39%	32,262	2.74%	119	0.56&	44	0.04%	**363,894**
Exotic Tree-Shrub	7,709	0.30%	2,956	0.58%	24,167	0.52%	5,460	0.04%	26,203	0.97%	9,371	0.80%	180	0.84%	581	0.54%	**75,866**
Grassland	24,281	0.96%	4,953	0.97%	25,800	0.55%	45,100	0.35%	27,118	1.00%	16,386	1.39%	10	0.04%	7	0.01%	**143,639**
Hardwood	79,324	3.14%	19,870	3.89%	42,273	0.90%	48,274	0.38%	123,334	4.55%	68,107	5.78%	3	001%	0	0%	**381,184**
Open Water	8,778	0.35%	2,790	0.55%	62,363	1.33%	20,667	0.16%	8,551	0.32%	4,474	0.38%	561	2.63%	1,948	1.79%	**107,624**
Riparian	10,084	0.40%	4,755	0.93%	21,302	0.46%	12,219	0.09%	49,254	1.82%	12,742	1.08%	1,370	6.41%	219	0.20%	**110,355**
Shrubland	1,052,227	41.61%	121,503	23.77%	2,509,347	53.70%	8,895,942	69.14%	1,320,776	48.72%	636,745	54.03%	0	0%	658	0.60%	**14,536,540**
Sparsely Vegetated	127,048	5.02%	1,119	0.22%	1,032,051	22.09%	2,944,497	22.89%	349,224	12.88%	26,928	2.29%	1	0.004%	28	0.03%	**4,480,867**
Total	**2,528,920**	**100.00%**	**511,244**	**100.00%**	**4,672,955**	**100.00%**	**12,865,776**	**100.00%**	**2,711,051**	**100.00%**	**1,178,458**	**100.00%**	**21,358**	**100.00%**	**108,572**	**100.00%**	**24,468,404**

Figure 1 Habitat Classifications in Los Angeles County

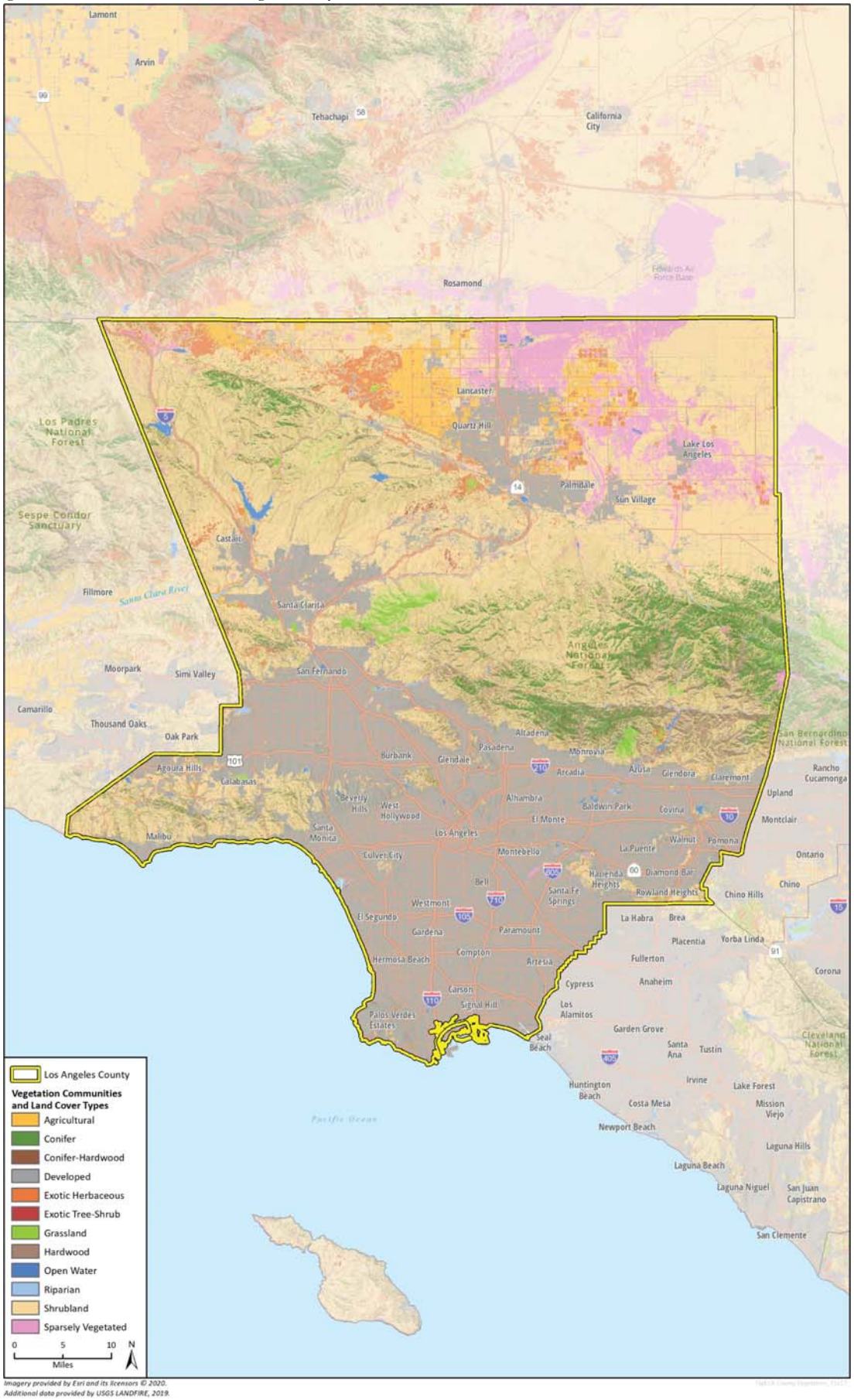


Figure 2 Habitat Classifications in Orange County

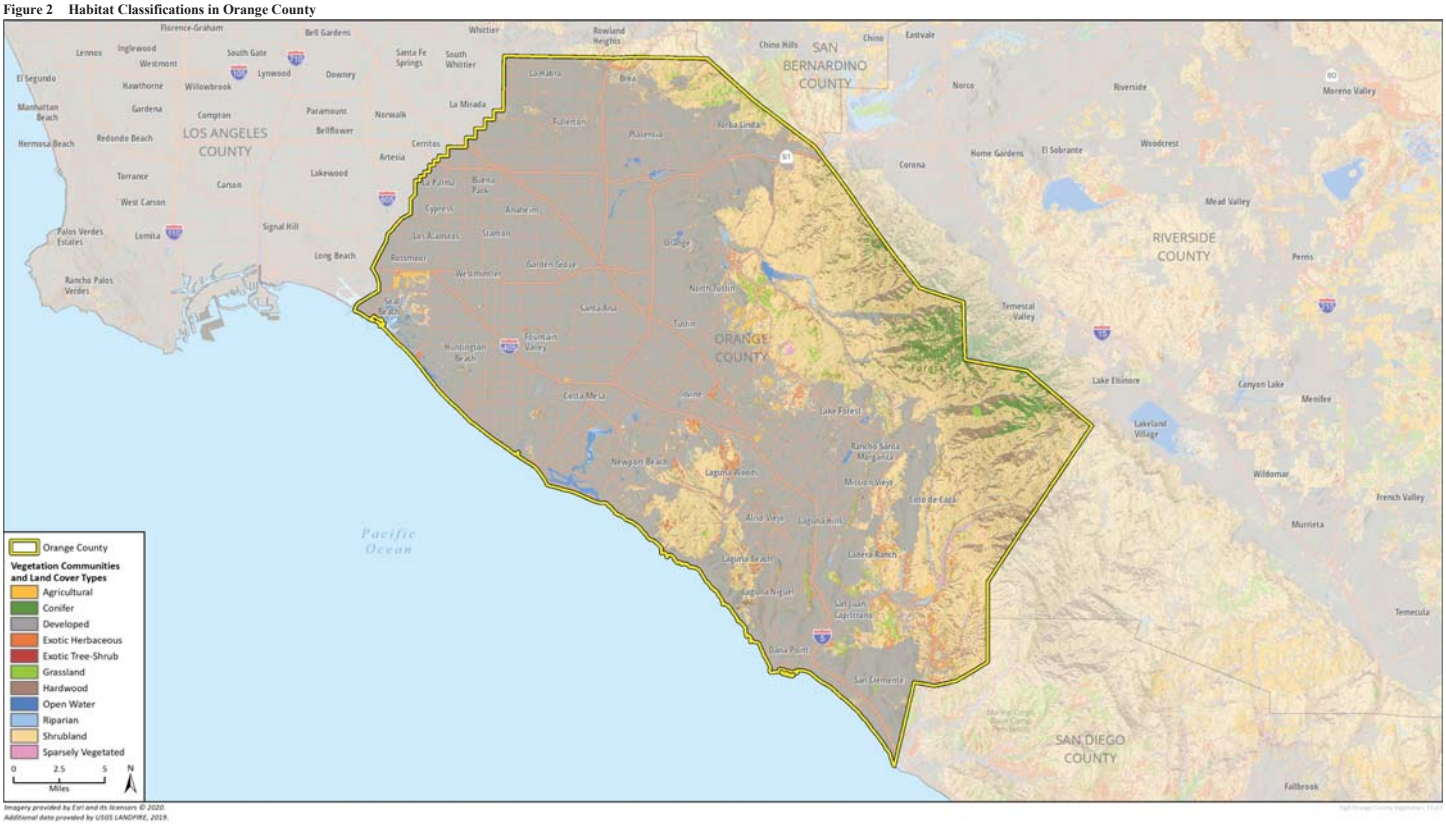


Figure 3 Habitat Classifications in Riverside County

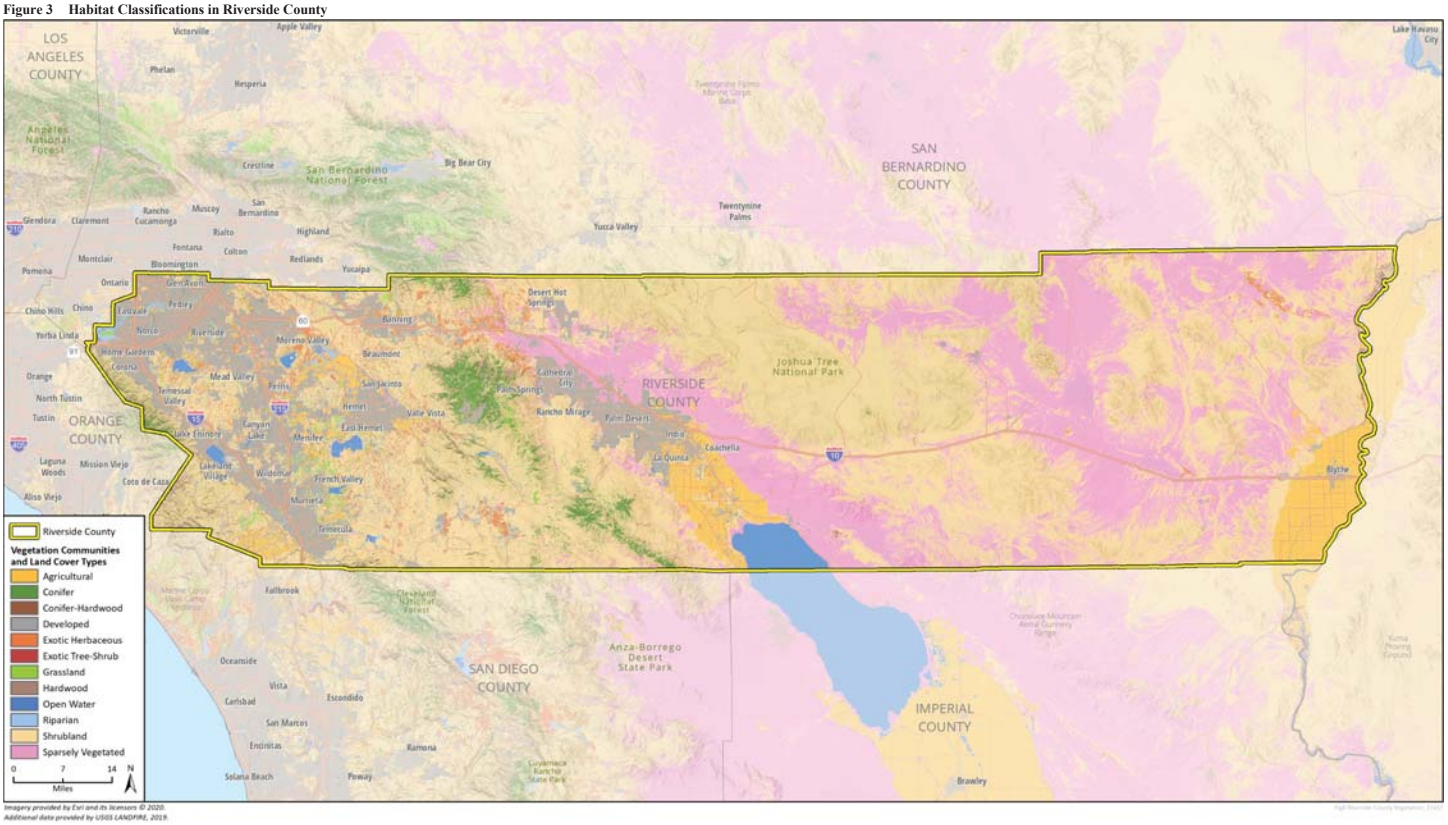


Figure 4 Habitat Classifications in San Bernardino County

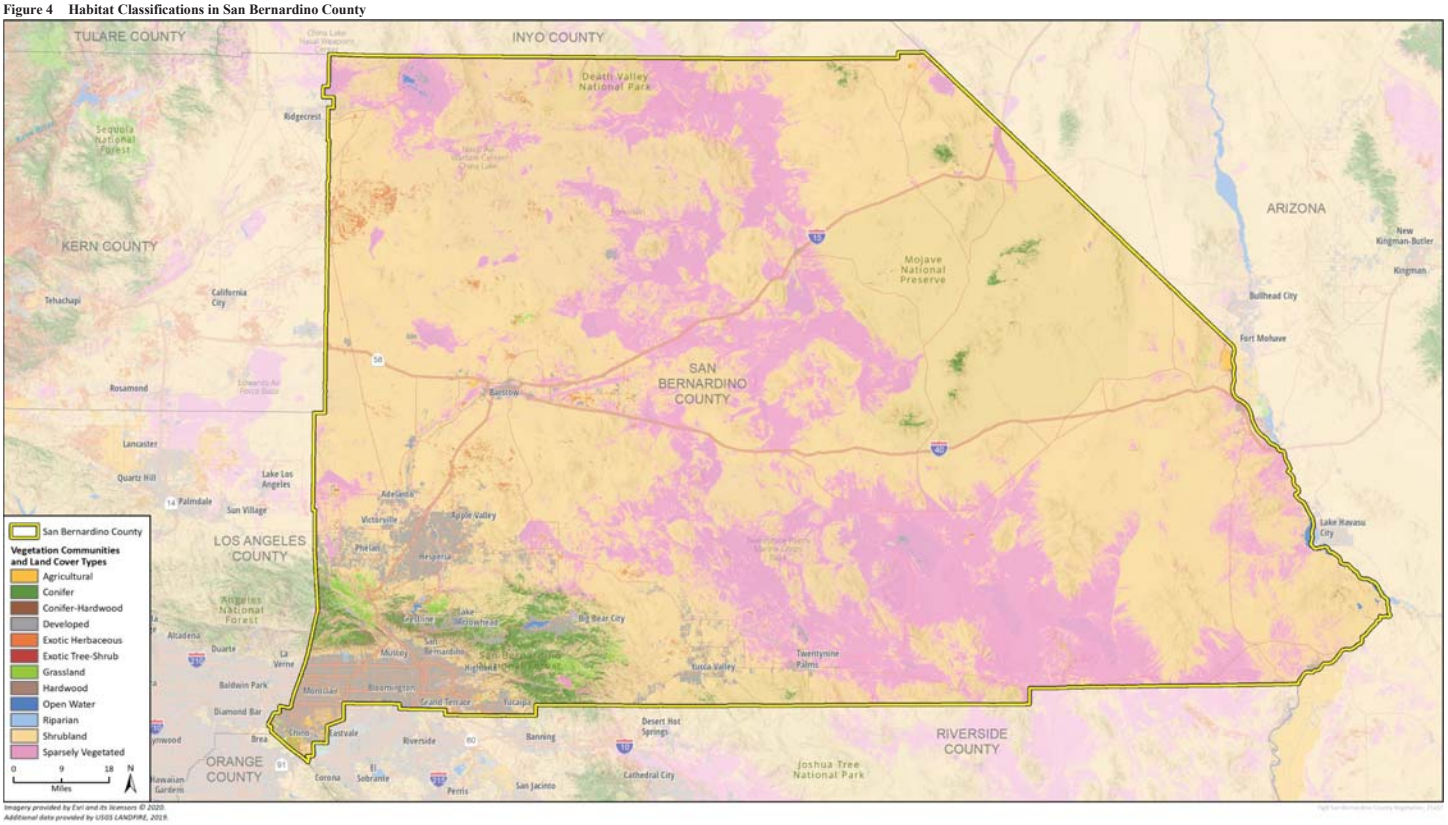


Figure 5 Habitat Classification in San Diego County

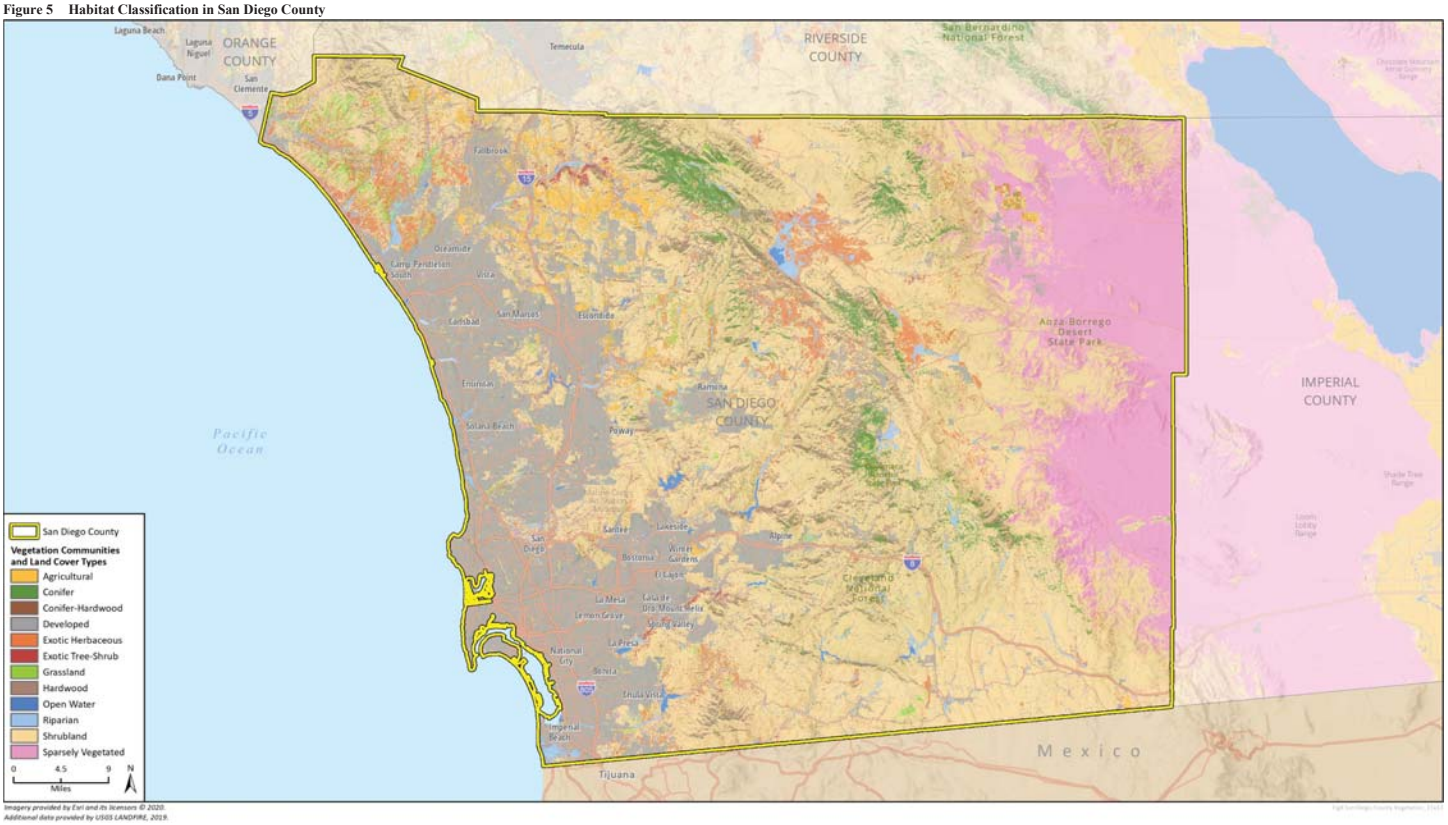


Figure 6 Habitat Classifications in Ventura County

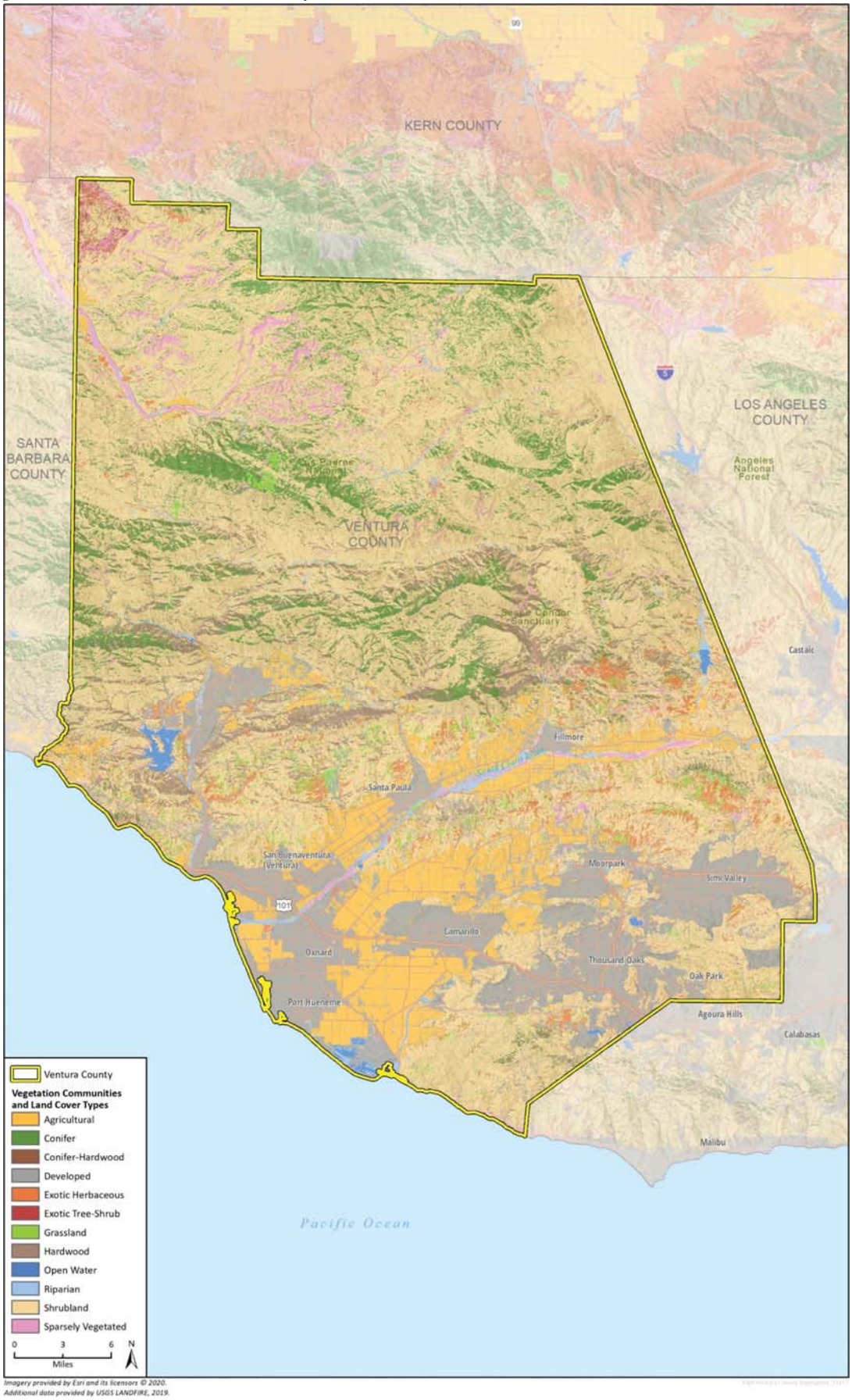


Figure 7 Habitat Classifications in the Sacramento-San Joaquin Delta Region

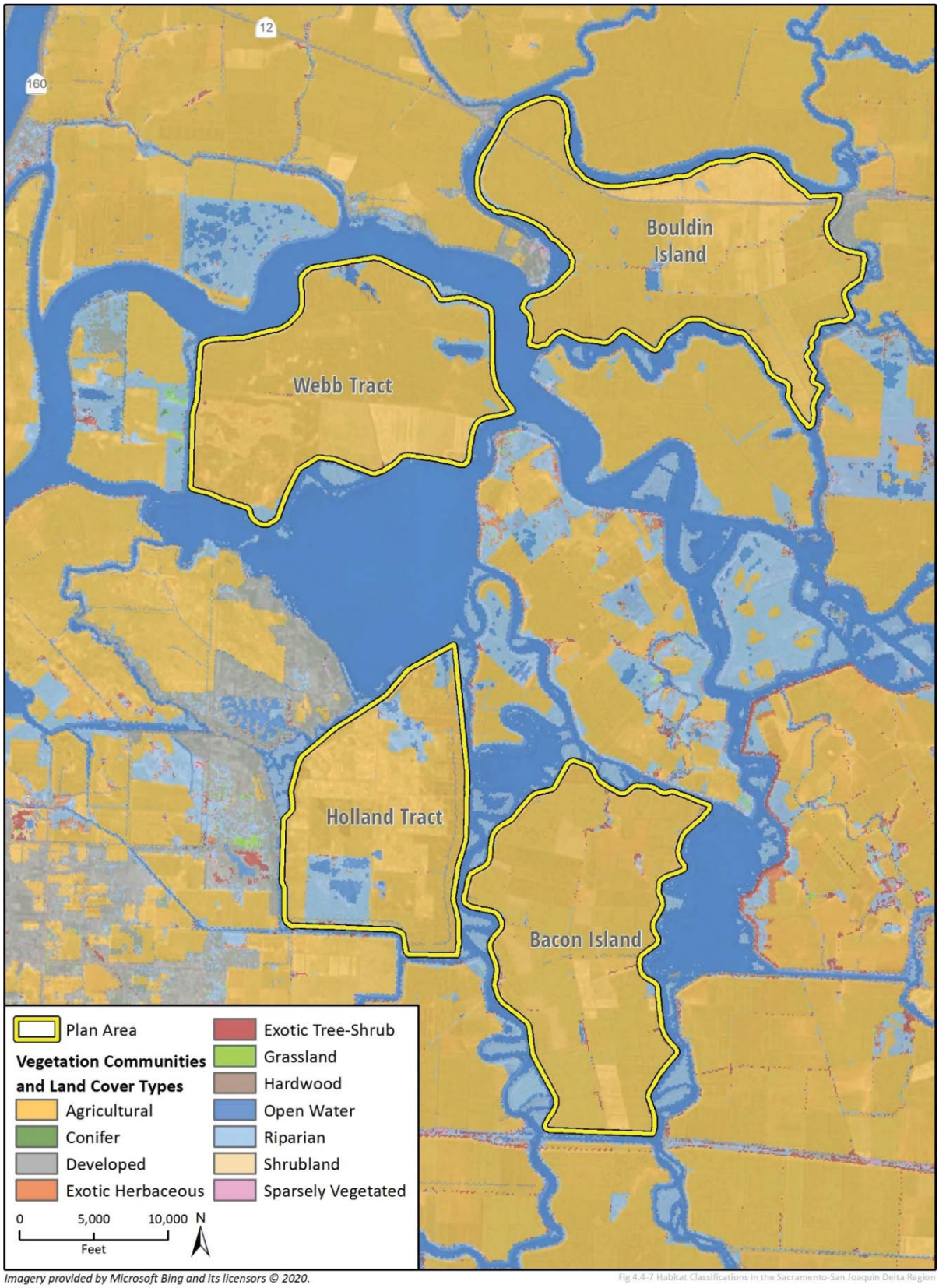
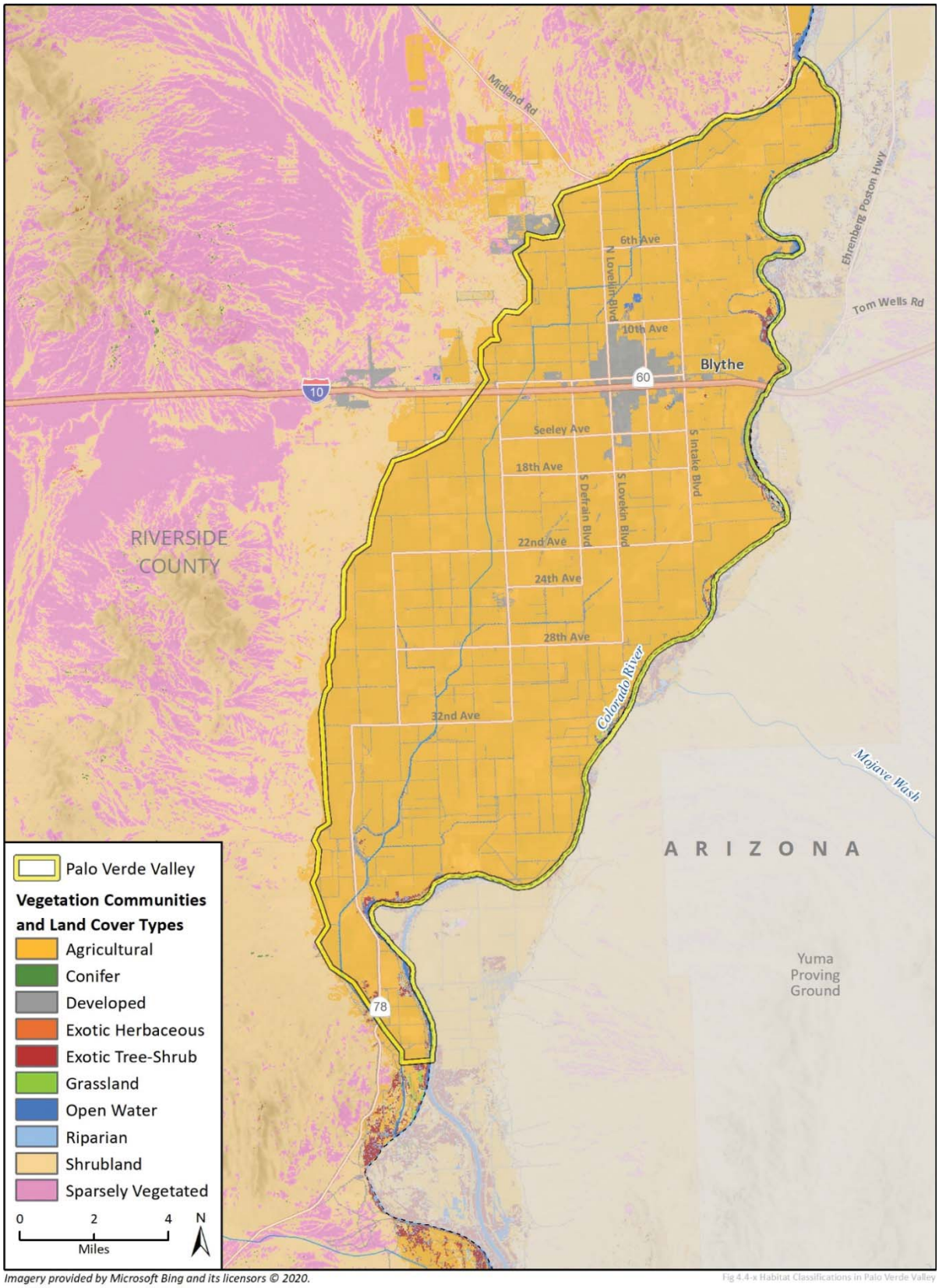


Figure 8 Habitat Classifications in the Palo Verde Valley



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Additional data provided by USGS LANDFIRE, 2019.

Fig 4.4-x Habitat Classifications in Palo Verde Valley

Agricultural

This classification includes agricultural vegetation, including row crops, planted grain crops, pastures, hayfields, horticultural crops (such as commercial flower operations), fallow fields and early-successional weed fields, and wetland rice and taro crop fields. Large areas of agricultural land occur surrounding the cities of Palmdale and Lancaster in Los Angeles County; east of the city of Indio and near Blythe in Riverside County; near the city of Fallbrook in San Diego County; surrounding developed areas in much of Ventura County; and encompasses the majority of terrestrial landcover in the Sacramento-San Joaquin Delta region and the Palo Verde Valley.

Conifer

This classification consists of coniferous forests and woodlands below about 2,450 meters (8,000 feet) above mean sea level, primarily found along the immediate coast or within the coastal ranges. Dominant species in this classification include cypress (*Hesperocyparis* sp.) and pines (*Pinus* sp.), with limited oaks (*Quercus* sp.) and other hardwoods. Large areas of conifer habitats occur in the San Gabriel Mountains in Los Angeles County; in the Santa Ana Mountains in Orange County; in the San Jacinto and San Bernardino Mountains in Riverside County; in the San Bernardino and San Gabriel Mountains in San Bernardino County; in the Palomar and Cuyamaca Mountains in San Diego County; and in the Santa Ynez and San Rafael Mountains in Ventura County.

Conifer-Hardwood

This forest classification is characterized by a mix of coniferous and broad-leaved evergreen trees. Species in this classification include pines, oaks, beech (*Chrysolepis* sp.), Douglas fir (*Pseudotsuga* sp.), and bays (*Umbellularia* sp.). Conifer-hardwood habitats generally serve as the transition between conifer and hardwood habitats and do not represent a large portion of the habitats of any county or region.

Developed

Developed areas include a mixture of some constructed materials and vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent to 100 percent of the total cover. These areas include commercial/industrial, apartment complexes, row houses, single-family housing units, large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes. As shown in the LANDFIRE figures, large areas of developed land occur in metropolitan (metro) Los Angeles, the San Fernando Valley, the San Gabriel Valley, and Palmdale in Los Angeles County; across much of Orange County; in metro Riverside and Palm Springs in Riverside County; in metro San Bernardino and Victorville in San Bernardino County; in metro San Diego from Oceanside to the Mexican border in San Diego County; in metro Ventura, Oxnard, and the Conejo Valley in Ventura County; and in and around Blythe in southeastern Riverside County.

Exotic Herbaceous

This classification occurs in temperate areas throughout western North America and is comprised of disturbed upland grasslands, meadows and shrublands dominated by non-native and generalist native species. Large areas of exotic herbaceous habitats occur near the cities of Palmdale and Lancaster in Los Angeles County; near Laguna Woods and scattered throughout south Orange County; between Banning and Desert Hot Springs in Riverside County; in Marine Corps Base Camp Pendleton and near San Ysabel in San Diego County; and near Fillmore in Ventura County. Large areas of exotic herbaceous habitats are mainly absent from San Bernardino County. Exotic herbaceous habitats are

mostly found along the edges of other habitats in the Sacramento-San Joaquin Delta region but do not occur in large expanses.

Exotic Tree-shrub

This classification is generally found on mountainsides in California. Stands are typically 5-50 meters (16 to 164 feet) tall and can have an open canopy to dense tree canopy (greater than 10 percent tree cover) that is strongly dominated (greater than 90 percent relative cover) by exotic tree species such as gum (*Eucalyptus* sp.). Large areas of exotic tree-shrub habitats occur surrounding the San Luis Rey River in San Diego County and on the side of the San Rafael Mountains near Pine Mountain Club.

Grassland

This classification includes native perennial grasslands, native annual grasslands and native annual forb meadows. Species in this classification include grasses (*Bromus* sp. and *Festuca* sp.), fiddleneck (*Amsinckia* sp.) and poppies (*Eschscholzia* sp.). Large areas of grassland habitats occur near Santa Clarita and along the foothills of the San Gabriel Mountains in Los Angeles County; the foothills of the Santa Ana Mountains in Orange County; scattered throughout southern Riverside County; in the foothills of the San Bernardino Mountains in San Bernardino County; in Marine Corps Base Camp Pendleton in San Diego County; and within the San Rafael Mountains in Ventura County.

Hardwood

This classification consists of oak and other broadleaf woodlands which are primarily dominated by various oak species. Large areas of hardwood habitats occur along the foothills of the San Gabriel Mountains in Los Angeles County; along the foothills of the Palomar and Cuyamaca Mountain Ranges in San Diego County; and along the foothills of the Santa Ynez Mountains in Ventura County.

Open Water

This classification includes areas of open water, generally with less than 25 percent cover of vegetation or soil. Large areas of open water within the Plan Area include Castaic Lake in Los Angeles County; Newport Back Bay and Irvine Lake in Orange County; Lake Matthews, Lake Elsinore, Perris Reservoir, Diamond Valley Lake, the Salton Sea, and the Colorado River in Riverside County; Big Bear Lake, Lake Havasu, and the Colorado River in San Bernardino County; Lake Henshaw and the San Vincente Reservoir in San Diego County; Lake Casitas in Ventura County; and the Sacramento-San Joaquin Delta in the Sacramento-San Joaquin Delta region.

Riparian

This classification consists of riparian, floodplain, seep, and oasis habitats dominated by trees. Riparian habitats are dependent on a water source such as a river, stream, lake, or pond. Dominant species in this classification include sycamore (*Platanus* sp.), cottonwoods (*Populus* sp.), and willows (*Salix* spp.). Riparian habitats are considered rare and, as such, do not represent a large portion of the Plan Area. Riparian habitat is found along the edges of Bacon Island, Bouldin Island, Holland Tract and Webb Tract in the Sacramento-San Joaquin Delta region.

Shrubland

This classification is dominated by a variety of native scrub or chaparral habitats but may also include annual and perennial native and non-native grass and herb vegetation endemic to the Mediterranean climate zone of California. Shrubland habitats make up one of the largest habitat classifications. Large areas of shrubland habitats can be found throughout the Plan Area.

Sparsely Vegetated

This classification includes open deserts and other regions where vegetation is very sparse. It is characterized by areas where the ground layer consists of sand, stony desert pavements, or salt crust (bare rock, often with nonvascular mats is placed in lithomorphic vegetation). Sparsely vegetated habitats are mainly limited to the desert regions of Los Angeles, Riverside, San Bernardino, and San Diego Counties.

1.2 Drainages and Wetlands

Watersheds and Drainages

The Plan Area contains seven primary watersheds: the Los Angeles River, Santa Ana River, Santa Margarita River, Whitewater River, Laguna-San Diego Coastal, Ventura-San Gabriel Coastal, and San Joaquin. Many rivers, creeks and tributaries are associated with each of these watersheds. The National Wetlands Inventory (USFWS 2020a) provides an overview of the drainages within the Plan Area (Figure 9 through Figure 16). Certain drainages and wetlands are regulated by the California Department of Fish and Wildlife (CDFW), U.S. Army Corps of Engineers (USACE), and the Regional Water Quality Control Boards (RWQCB).[2] The drainages within these watersheds are of biological importance as they may provide valuable foraging habitat, breeding habitat and movement habitat for a wide variety of animal species, including sensitive species such as steelhead (*Oncorhynchus mykiss*) and California red-legged frog (*Rana draytonii*). Many of these rivers and their tributaries are also federally designated critical habitat for salmonid species. The seven primary watersheds found within the Plan Area are described by county/region below (United States Geological Survey [USGS] 2018):

Los Angeles County

Los Angeles County contains one primary watershed, the Los Angeles River watershed, which conveys water from the Santa Monica Mountains through the Los Angeles River out to the Pacific Ocean and from the San Gabriel Mountains through the San Gabriel River to the Los Angeles River and out to the Pacific Ocean.

Orange County

Orange County contains one primary watershed, the Santa Ana River watershed, which conveys water from the San Bernardino Mountains in San Bernardino County through the Santa Ana River out to the Pacific Ocean. Other major waterways in the watershed include San Diego Creek, San Juan Creek, Aliso Creek, and Arroyo Trabuco.

[2] Section 4.2.3 discusses the regulatory framework in more detail.

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Figure 9 National Wetlands Inventory, Los Angeles County

Figure 10 National Wetlands Inventory, Orange County

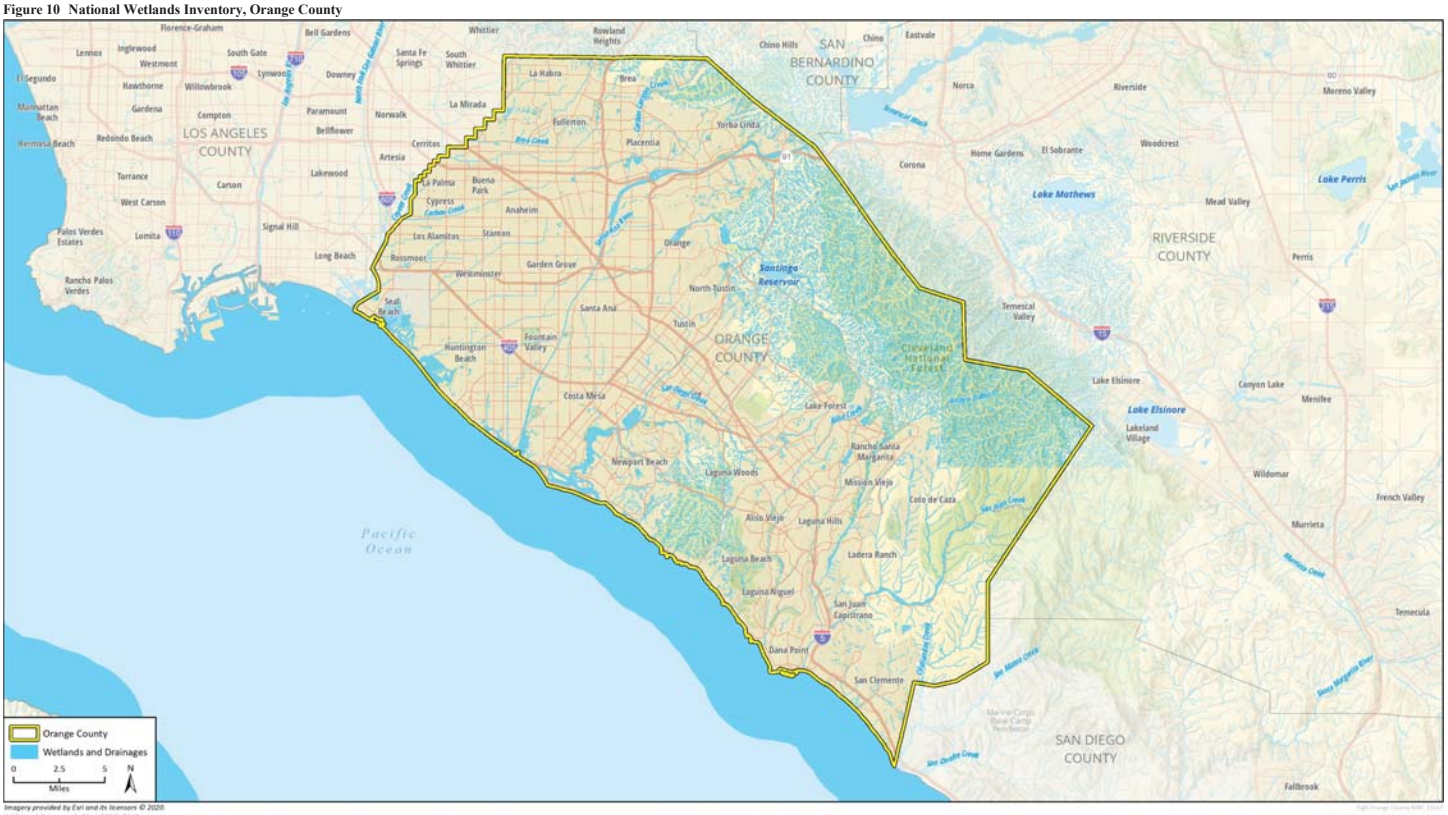


Figure 11 National Wetlands Inventory, Riverside County

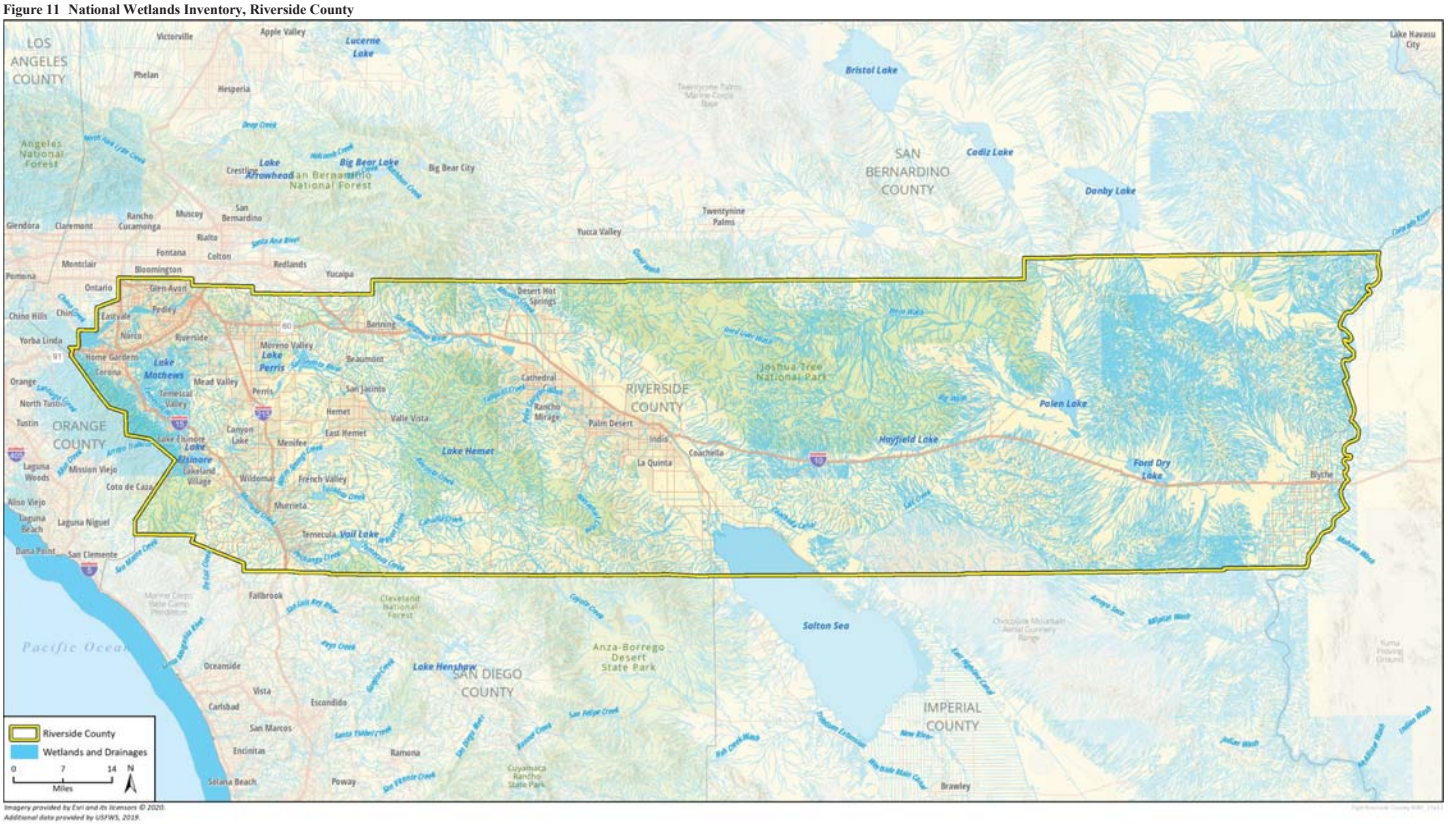


Figure 12 National Wetlands Inventory, San Bernardino County

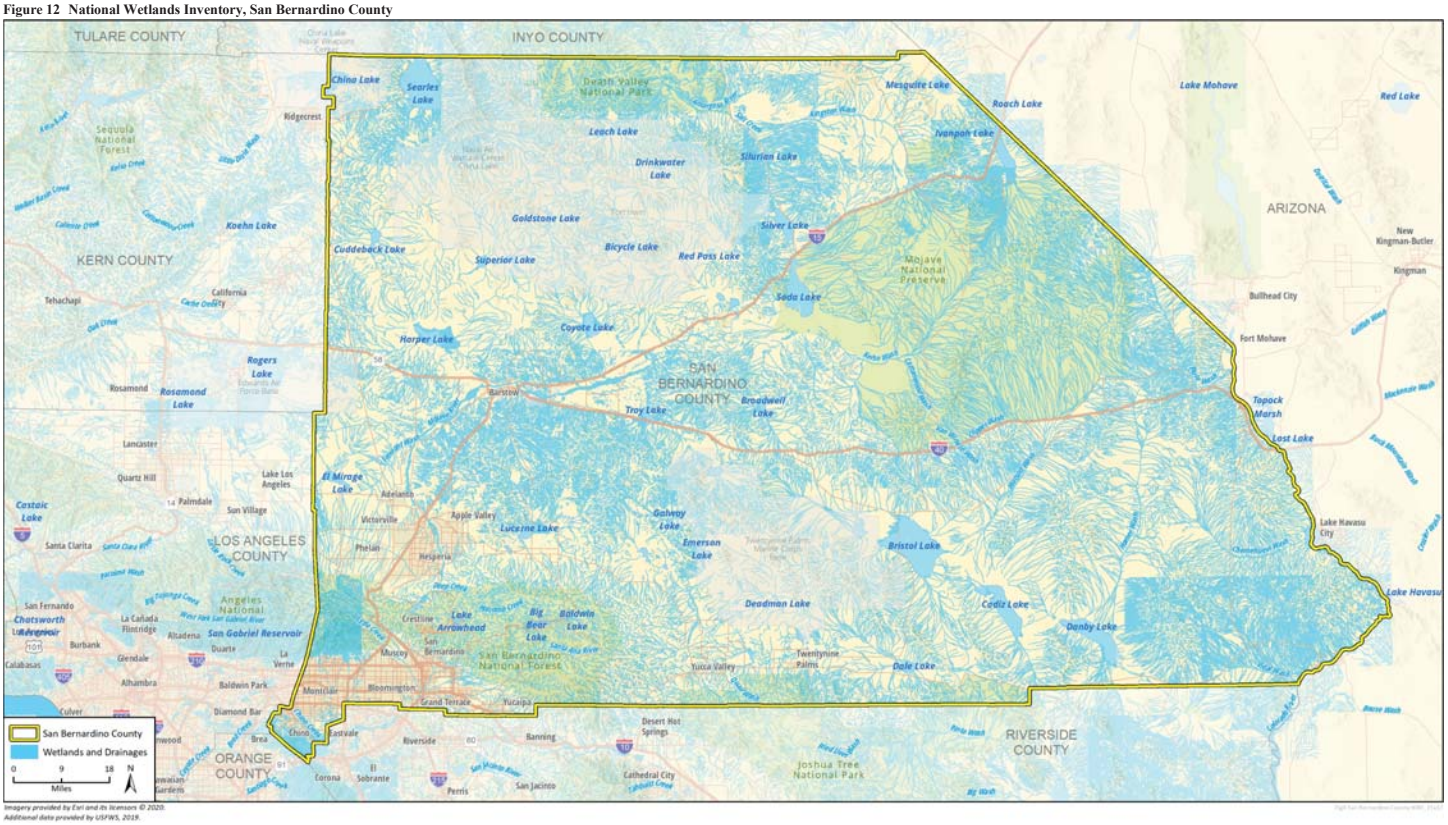
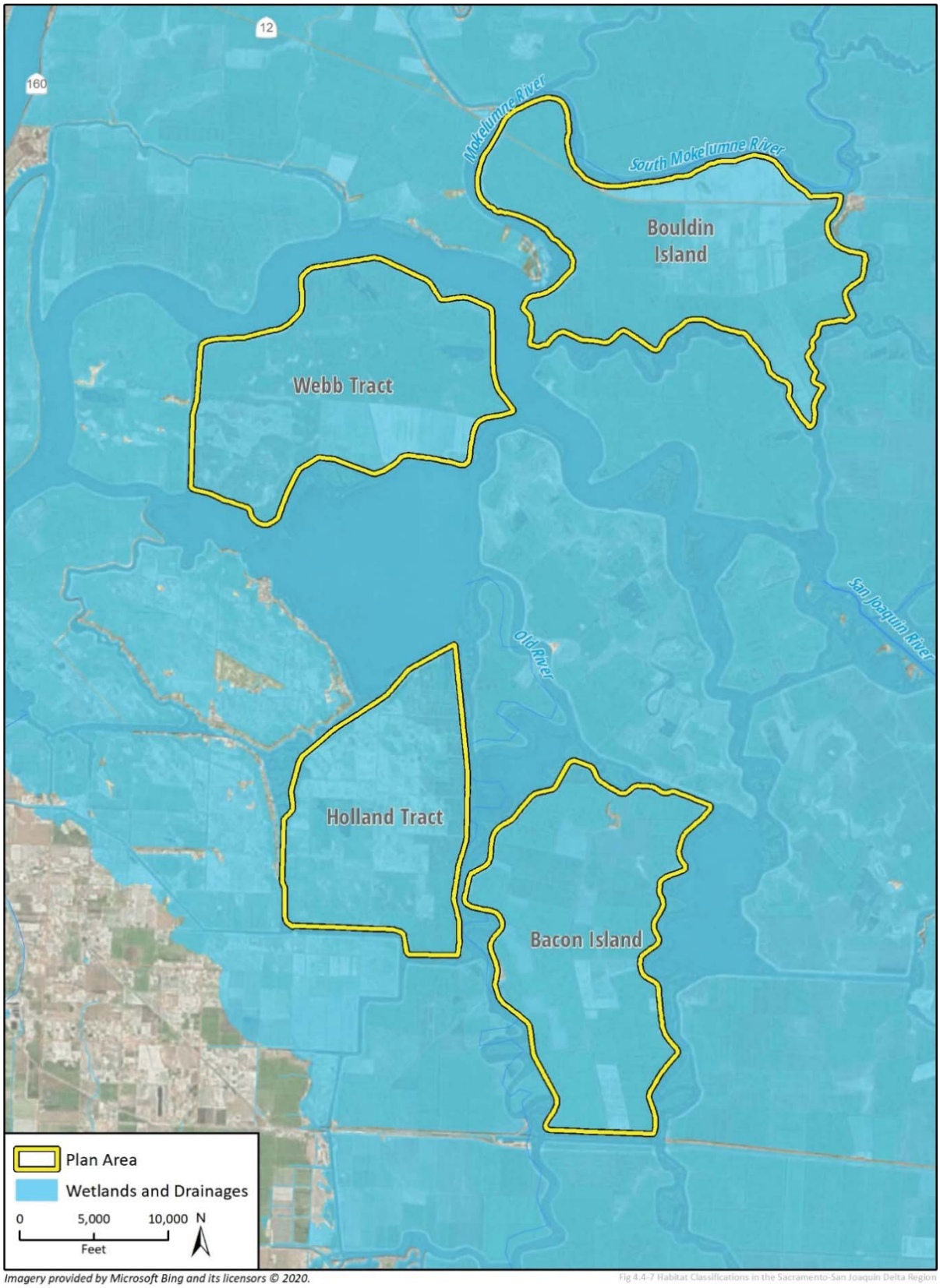


Figure 13 National Wetlands Inventory, San Diego County

Figure 14 National Wetlands Inventory, Ventura County

Figure 15 National Wetlands Inventory, Sacramento-San Joaquin Delta Region



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Additional data provided by USFWS, 2019.

Fig 4.4-7 Habitat Classifications in the Sacramento-San Joaquin Delta Region

Figure 16 National Wetlands Inventory, Palo Verde Valley

Riverside County

Riverside County contains three primary watersheds: the Santa Ana River, Santa Margarita River, and Whitewater River watersheds. The Santa Ana watershed conveys water from the San Bernardino Mountains through the Santa Ana River out to the Pacific Ocean and from the San Jacinto Mountains through the San Jacinto River to the Santa Ana River and out to the Pacific Ocean. The Santa Margarita watershed conveys water from the Santa Margarita Mountains through the Santa Margarita River from Riverside County into San Diego County. The Whitewater watershed conveys water from the San Bernardino Mountains through the Whitewater River to the Salton Sea and Sonoran Desert. Additionally, the eastern boundary of the County is the Colorado River, which originates in Colorado, travels through Utah, Arizona, and Nevada; travels along California's southeastern border; and ends in the Gulf of California in Mexico.

San Bernardino County

San Bernardino County contains one primary watershed, the Santa Ana River watershed, which conveys water from the San Bernardino Mountains through the Santa Ana River out to the Pacific Ocean. Other major waterways in the watershed include the Mojave River, Amargosa River, and Lytle Creek. The Colorado River is also located along a portion of the eastern boundary of San Bernardino County.

San Diego County

San Diego County contains one primary watershed, the Laguna-San Diego Coastal watershed, which conveys water from the Julian, Laguna, and Cuyamaca Mountains through the Santa Margarita River, San Luis Rey River, San Dieguito River, Poway Creek, Chollas Creek, and the Tijuana River out to the Pacific Ocean.

Ventura County

Ventura County contains one primary watershed, the Ventura-San Gabriel Coastal watershed, which conveys water from the Santa Monica, Santa Susana, Santa Ynez, and San Emigdio Mountains through the Ventura River, Santa Clara River, and Calleguas Creek out to the Pacific Ocean.

Sacramento-San Joaquin Delta Region

The Sacramento-San Joaquin Delta region contains one primary watershed, the San Joaquin watershed, which conveys water from the Eastern Sierra Nevada mountain range to the San Joaquin Valley floor and out to the Sacramento-San Joaquin Delta via the Sacramento and San Joaquin Rivers.

Palo Verde Valley

The Palo Verde Valley contains one primary watershed, the Lower Colorado watershed, which conveys water to the Colorado River toward the Gulf of California. The Colorado River is also located along the eastern boundary of Palo Verde Valley.

Wetlands and Aquatic Habitats

Wetlands are important biological resources both because of their rarity and because they provide a variety of ecosystem services. Several types of wetlands exist throughout the Plan Area as described in more detail below. The classifications below are used by the National Wetland Inventory (USFWS 2020a). For simplicity, the various wetland and aquatic habitats have been grouped together and are shown in blue on Figure 9 through Figure 16.

Vernal Pools

These seasonal wetlands are small depressions that fill with water during the winter, gradually drying during the spring and becoming completely dry in the summer. These pools are found in only a few places in the world outside of California. Vernal pool vegetation is adapted to the cycle of brief inundation followed by seasonal drying. Vernal pools are characterized by herbaceous plants that may begin their growth as aquatic or semi-aquatic plants and transition to a dry land environment as the pool dries, while other species germinate in the mud as the pool begins to dry. Most vernal pool plants are annual herbs, many of which are endemic to vernal pools.

Estuarine and Marine Deep-Water Wetlands

These deep-water wetlands are composed of the deep-water portion of estuarine or marine systems. Estuarine systems are composed of tidal habitats and adjacent tidal wetlands that are influenced by water runoff from and often semi-enclosed by land. They are located along low-energy coastlines (i.e., beaches and spits) and have variable salinity. Marine systems of this type are generally open ocean and occur along high energy coastlines with salinities exceeding 30 parts per thousand (ppt) and little or no dilution except outside the mouths of estuaries.

Estuarine and Marine Wetlands

These wetlands are composed of estuarine and marine systems as described above; however, they are not deep-water. These areas can be subtidal or intertidal with a variety of vegetated and non-vegetated bottoms. Beaches, bars and flats are also included as estuarine and marine wetlands.

Freshwater Emergent Wetlands

Freshwater emergent wetlands include all non-tidal waters dominated by emergent herbaceous plant species, mosses and/or lichens. Wetlands of this type are also low in salinity. The National Wetland Inventory also includes in this category wetlands that lack vegetation if they are less than 20 acres in size, do not have an active wave-formed or bedrock shoreline feature, and/or have a low water depth less than 6.6 feet. Freshwater emergent wetlands are characterized by erect, rooted herbaceous hydrophytes. Dominant vegetation is generally perennial monocots. All emergent wetlands are inundated or saturated frequently enough that the roots of the vegetation prosper in an anaerobic environment. The wetlands may vary in size from small clumps to vast areas covering several kilometers. The acreage of Freshwater Emergent Wetlands in California has decreased dramatically since the turn of the century due to drainage and conversion to other uses, primarily agriculture.

Freshwater Forested/Shrub Wetlands

These wetlands include non-tidal waters that are dominated by trees and shrubs, with emergent herbaceous plants, mosses and/or lichens. Freshwater forested/shrub wetlands are generally dominated by woody vegetation such as shrubs and trees. This wetland category can also include riparian habitats.

Freshwater Ponds

Freshwater ponds include non-tidal waters, typically less than 20 acres in size and typically with vegetative cover along the edges such as trees, shrubs, emergent herbaceous plants, mosses and/or lichens. Freshwater ponds can be man-made or natural and typically consist of an area of standing water with variable amounts of shoreline. These wetlands and deep-water habitats are dominated by plants that grow on or below the surface of the water.

Lakes

Lakes are lacustrine systems which include wetlands and deep-water habitats located in a topographic depression or dammed river channel. These areas tend to be greater than 20 acres. Vegetation cover within this habitat type is generally less than 30 percent and often occurs in the form of emergent or surface vegetation. Substrates are composed of at least 25 percent cover of particles smaller than stones.

Riverine

Riverine habitats are stream systems that include all wetlands and deep-water habitats contained in natural or artificial channels that contain periodically or continuously flowing water. This system may also form a connecting link between two bodies of standing water. Substrates generally consist of rock, cobble, gravel or sand.

1.3 Sensitive Natural Communities

The CDFW California Sensitive Natural Communities list identifies sensitive natural communities throughout California, based in part on global and state rarity ranks. According to the CDFW Vegetation Program, alliances with state ranks of S1-S3 are classified as imperiled and thus, potentially of special concern. Several natural communities considered sensitive by the CDFW occur within the six counties which comprise the Plan Area. The California Natural Diversity Database (CNDDB) lists 48 natural communities that occur with the Plan Area which are listed by county/region in Table 2 below (CDFW 2020a).

Because this analysis is programmatic and biological resources in this document are assessed at a general, county-wide scale, vegetation mapping and analysis at the alliance and association level has not been conducted; that level of analysis would be more appropriate at the project level.

Table 2 Sensitive Natural Communities by County/Region

Communities Considered Sensitive by the CDFW	Status	County/Region
Alkali Seep	S2.1	San Bernardino
Amargosa River	SNR	San Bernardino
Arizonan Woodland	S1.2	San Bernardino
California Walnut Woodland	S2.1	Los Angeles, Orange, San Bernardino, Ventura
Canyon Live Oak Ravine Forest	S3.3	Los Angeles, Orange, Riverside, San Bernardino, Ventura
Cismontane Alkali Marsh	S1.1	Ventura
Coastal and Valley Freshwater Marsh	S2.1	Riverside, San Bernardino, Ventura, Sacramento-San Joaquin Delta
Coastal Brackish Marsh	S2.1	San Diego
Crucifixion Thorn Woodland	S1.2	San Bernardino
Desert Fan Palm Oasis Woodland	S3.2	Riverside, San Bernardino, San Diego
Island Cherry Forest	S2.1	Los Angeles
Island Ironwood Forest	S2.1	Los Angeles
Mainland Cherry Forest	S1.1	Los Angeles
Maritime Succulent Scrub	S1.1	Los Angeles, San Diego, Ventura
Mesquite Bosque	S2.1	Riverside, San Bernardino, San Diego
Mojave Mixed Steppe	S2.2	San Bernardino, San Diego
Mojave Riparian Forest	S1.1	Los Angeles, San Bernardino, San Diego

Communities Considered Sensitive by the CDFW	Status	County/Region
Mojave Yucca Scrub and Steppe	S3.2	San Bernardino
Open Engelmann Oak Woodland	S2.2	Los Angeles
Pebble Plains	S1.1	San Bernardino
Riversidian Alluvial Fan Sage Scrub	S1.1	Los Angeles, Orange, Riverside, San Bernardino
San Diego Mesa Claypan Vernal Pool	S2.1	San Diego
San Diego Mesa Hardpan Vernal Pool	S2.1	San Diego
Sonoran Cottonwood Willow Riparian Forest	S1.1	Riverside, San Diego, Palo Verde Valley
Southern California Arroyo Chub/Santa Ana Sucker Stream	SNR	Los Angeles, Orange, Riverside, San Bernardino
Southern California Coastal Lagoon	SNR	Los Angeles, Ventura
Southern California Steelhead Stream	SNR	Los Angeles, Ventura
Southern California Threespine Stickleback Stream	SNR	Los Angeles, San Bernardino, Ventura
Southern Coast Live Oak Riparian Forest	S4	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura
Southern Coastal Bluff Scrub	S1.1	Los Angeles, Ventura
Southern Coastal Salt Marsh	S2.1	Los Angeles, Orange, San Diego, Ventura
Southern Cottonwood Willow Riparian Forest	S3.2	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura
Southern Dune Scrub	S1.1	Los Angeles, Orange, San Diego, Ventura
Southern Foredunes	S2.1	Los Angeles, Orange, San Diego, Ventura
Southern Interior Basalt Flow Vernal Pool	S1.2	Riverside
Southern Interior Cypress Forest	S2.1	Orange, Riverside, San Diego
Southern Maritime Chaparral	S1.1	San Diego
Southern Mixed Riparian Forest	S2.1	Los Angeles, Orange, Riverside, San Bernardino, Ventura
Southern Riparian Forest	S4	Los Angeles, Riverside, San Bernardino, San Diego, Ventura
Southern Riparian Scrub	S3.2	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura
Southern Sycamore Alder Riparian Woodland	S4	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura
Southern Willow Scrub	S2.1	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura
Torrey Pine Forest	S1.1	San Diego
Transmontane Alkali Marsh	S2.1	San Bernardino
Valley Needlegrass Grassland	S3.1	Los Angeles, Orange, Riverside, San Diego, Ventura
Valley Oak Woodland	S2.1	Los Angeles, Ventura
Walnut Forest	S1.1	Los Angeles, Ventura
Wildflower Field	S2.2	Los Angeles

Sources: CNDDB (CDFW 2020a)

1.4 Special Status Plants and Animals

For the purpose of this analysis, special status species are those plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered by the United States Fish and Wildlife Service (USFWS) under the federal Endangered Species Act (FESA); those listed or proposed for listing as rare, threatened, or endangered by the CDFW under the California Endangered Species Act (CESA); and animals designated as "Species of Special Concern," "Fully Protected," or "Watch List" by the CDFW. The CNDDB also provides records of other special animals that CDFW is tracking but are not currently designated a special status, including NatureServe Element Rankings which include a global and state rank (CDFW 2019a). The global rank provides a status over a species' entire distribution, and the state rank provides a status across California. Due to the programmatic nature of the CAP, a precise, project-level analysis of the specific impacts associated with individual activities is not possible, thus, these species were also included as "special status" considering the CDFW is currently collecting data and tracking these species and therefore there is potential for their status to be elevated in the future.

The NatureServe Element Rankings are defined as:

- GX: Presumed Extinct – Not located despite intensive searches and virtually no likelihood of rediscovery.
- GH: Possibly Extinct – Known from only historical occurrences but still some hope of rediscovery. Examples of evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species has been searched for unsuccessfully, but not thoroughly enough to presume that it is extinct throughout its range.
- G1: Critically Imperiled – At very high risk of extinction due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
- G2: Imperiled – At high risk of extinction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
- G3: Vulnerable – At moderate risk of extinction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
- G4: Apparently Secure – At fairly low risk of extinction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
- G5: Secure – At very low risk of extinction due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
- GNR: Unranked – Global rank not yet assessed.
- SX: Presumed Extirpated – Species is believed to be extirpated from the state Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
- SH: Possibly Extirpated – Known from only historical records but still some hope of rediscovery. There is evidence that the species may no longer be present in the state, but not enough to state this with certainty. Examples of such evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species has been searched for

unsuccessfully, but not thoroughly enough to presume that it is no longer present in the jurisdiction.

- S1: Critically Imperiled – At very high risk of extirpation in the state due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.
- S2: Imperiled – At high risk of extirpation in the state due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
- S3: Vulnerable – At moderate risk of extirpation in the state due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
- S4: Apparently Secure – At a fairly low risk of extirpation in the state due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
- S5: Secure – At very low or no risk of extirpation in the state due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
- SNR: Unranked – State rank not yet assessed.

Additional NatureServe Element rank qualifiers:

- Taxa which are subspecies receive a taxon rank (T-rank) in addition to the G-rank. Whereas the G-rank reflects the condition of the entire species, the T-rank reflects the global status of just the subspecies. For example, the Point Reyes mountain beaver, *Aplodontia rufa* ssp. *phaea*, is ranked G5T2. The G-rank refers to the whole species, i.e., *Aplodontia rufa*; the T-rank refers only to the global condition of ssp. *phaea*.
- C = Captive or Cultivated Only — taxon at present is presumed or possibly extinct or eliminated in the wild across their entire native range but is extant in cultivation, in captivity, as a naturalized population (or populations) outside their native range, or as a reintroduced population not yet established. The “C” modifier is only used at a global level and not at a state level. Possible ranks are GXC or GHC.
- Q = Questionable taxonomy that may reduce conservation priority — Distinctiveness of this entity as a taxon at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon in another taxon, with the resulting taxon having a lower-priority (numerically higher) conservation status rank. The “Q” modifier is only used at the global level, not at the state level.

Uncertainty about the status of an element is expressed in two major ways:

- By expressing the ranks as a range of values: e.g., S2S3 indicates the rank is somewhere between S2 and S3.
- By adding a “?” to the rank: e.g., S2?; this represents more certainty than S2S3, but less certainty than S2.

Other considerations used when ranking a species include the pattern of distribution of the element on the landscape, fragmentation of the population, and historical extent as compared to its modern range. It is important to take an overall view when ranking sensitive elements rather than simply counting element occurrences

Additionally, special status plants with California Rare Plant Rank (CRPR) designations of 1 through 4 were included. CDFW standards state that plants with a CRPR 1A, 1B, 2A and 2B may meet definitions of rare or endangered under CEQA Sections 15380 (b) and (d) (CDFW 2020b). By California Native Plant Society (CNPS) standards, the plants of CRPR Ranks 1A, 1B, 2A and 2B meet the definitions of Sections 2062 and 2067 (CESA) of the California Fish and Game Code (CFGC), and are eligible for state listing, thus should be considered under CEQA Section 15380. In general, CNPS Rank 3 plants (plants about which more information is needed) and Rank 4 plants (plants of limited distribution) may not warrant consideration under CEQA Section 15380. However, at the discretion of various jurisdictions, these plants may be included on special status plant lists where they would be required to be addressed under CEQA Section 15380. Factors such as regional rarity versus. statewide rarity should be considered in determining whether cumulative impacts to a Rank 4 plant are significant even if individual program activity impacts are not. Due to the programmatic nature of the CAP, a precise, project-level analysis of the specific impacts associated with individual program activities is not possible, thus, the evaluation of Rank 3 and 4 species in context of type localities, unique vegetation types and local designation of special status would need to be completed on a case-by-case basis and requires site-specific knowledge of the vegetation type in which the plant occurs on a given site. To provide a conservative analysis, all plants with a CRPR rank are included.

Plants with a CRPR of 1, 2, 3 and 4 are defined as:

- CRPR 1A = Plants presumed extinct in California;
- CRPR 1B.1 = Rare or endangered in California and elsewhere; seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat);
- CRPR 1B.2 = Rare or endangered in California and elsewhere; fairly endangered in California (20-80 percent occurrences threatened);
- CRPR 1B.3 = Rare or endangered in California and elsewhere, not very endangered in California (<20 percent of occurrences threatened or no current threats known);
- CRPR 2 = Rare, threatened or endangered in California, but more common elsewhere;
- CRPR 3 = Plants needing more information (most are species that are taxonomically unresolved; some species on this list meet the definitions of rarity under CNPS and CESA);
- CRPR 4.1 = Plants of limited distribution (watch list), seriously endangered in California;
- CRPR 4.2 = Plants of limited distribution (watch list), fairly endangered in California (20-80 percent occurrences threatened); and
- CRPR 4.3 = Plants of limited distribution (watch list), not very endangered in California.

Species of Special Concern (SSC) is a category used by the CDFW for those species which are considered indicators of regional habitat changes or may be potential future protected species. Species of Special Concern do not have any special legal status except that which may be afforded by the CFGC (e.g., nesting birds). The SSC category is intended by the CDFW for use as a management tool to include these species into special consideration when decisions are made concerning the development of natural lands, and these species are considered special status as described under the CEQA Appendix G questions.

Queries of the USFWS Information, Planning and Conservation (IPaC) species database (USFWS 2020b), CNDDB (CDFW 2020a) and CNPS Online Inventory of Rare and Endangered Plants of California (CNPS 2020) were conducted to obtain comprehensive information regarding state and federally listed species considered to have potential to occur within Los Angeles, Orange, Riverside,

San Bernardino, San Diego, and Ventura Counties; the Palo Verde Valley in Imperial County; and the Sacramento-San Joaquin Delta region.

The Plan Area is home to several species protected by federal and state agencies. Special status animal species can be found in a variety of habitats these counties host. The CNDDB, CNPS, and USFWS IPaC together list 1,148 special status plant and animal species that have been identified within Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties; the Palo Verde Valley in Imperial County; and the Sacramento-San Joaquin Delta region. The status and habitat requirements of those species are presented in Appendix D.

Critical habitats are specific geographic area(s) designated by the USFWS as essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat may include areas not currently occupied by the species but potentially needed for its recovery. Federally designated critical habitat for 54 species occurs within the Plan Area (Table 3; Figure 17 through Figure 24). Table 3 includes the critical habitat available for species in each County/Region in the Plan Area. The equals sign , "=" denotes the former accepted name for the species.

Table 3 Federally Designated Critical Habitat by County/Region

Critical Habitat	County/Region
Arroyo (=arroyo southwestern) toad (*Anaxyrus californicus*)	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura
Ash-grey paintbrush (*Castilleja cinerea*)	San Bernardino
Bear Valley sandwort (*Arenaria ursina*)	San Bernardino
Bonytail (*Gila elegans)*	San Bernardino
Braunton's milk-vetch (*Astragalus brauntonii)*	Los Angeles, Orange, Ventura
California condor (*Gymnogyps californianus*)	Los Angeles, Ventura
California red-legged frog (*Rana draytonii*)	Los Angeles, Ventura
California taraxacum (*Taraxacum californicum*)	San Bernardino
Casey's june beetle (*Dinacoma caseyi*)	Riverside
Chinook Salmon (*Oncorhynchus tshawytscha*)	Sacramento-San Joaquin Delta
Coachella Valley fringe-toed lizard (*Uma inornata*)	Riverside
Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*)	Riverside
Coastal California gnatcatcher (*Polioptila californica californica*)	Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura
Conservancy fairy shrimp (*Branchinecta conservatio*)	Ventura
Cushenbury buckwheat (*Eriogonum ovalifolium* var. *vineum*)	San Bernardino
Cushenbury milk-vetch (*Astragalus albens*)	San Bernardino
Cushenbury oxytheca (*Oxytheca parishii* var. *goodmaniana*)	San Diego
Delta smelt (*Hypomesus transpacificus*)	Sacramento-San Joaquin Delta
Desert tortoise (*Gopherus agasazzi*)	Los Angeles, Riverside, San Bernardino
Green sturgeon (*Acipenser medirostris*), Southern DPS	Sacramento-San Joaquin Delta
Laguna Mountains skipper (*Pyrgus ruralis lagunae*)	San Diego
Lane Mountain milk-vetch (*Astragalus jaegerianus*)	San Bernardino
Least Bell's vireo (*Vireo bellii pusillus*)	Los Angeles, Riverside, San Bernardino, San Diego, Ventura
Lyon's pentachaeta (*Pentachaeta lyonii*)	Los Angeles, Ventura

Critical Habitat	County/Region
Mexican flannelbush (*Fremontodendron mexicanum*)	San Diego
Mountain yellow-legged frog (*Rana muscosa*)	Los Angeles, Riverside, San Bernardino
Munz's onion (*Allium munzii*)	Riverside
Nevin's barberry (*Berberis nevinii*)	Riverside
Otay tarplant (*Deinandra* (=*Hemizonia*) *conjugens*)	San Diego
Palos Verde blue butterfly (*Glaucopsyche lygdamus palosverdesensis*)	Los Angeles
Parish's daisy (*Erigeron parishii*)	San Bernardino
Peninsular bighorn sheep (*Ovis canadensis nelsoni*)	Riverside, San Diego
Quino checkerspot butterfly (*Euphydryas editha quino* (=*E. e. wrighti*))	Riverside, San Diego
Razorback sucker (*Xyrauchen texanus*)	Riverside, San Bernardino, Palo Verde Valley
Riverside fairy shrimp (*Streptocephalus woottoni*)	Orange, San Diego, Ventura
San Bernardino bluegrass (*Poa atropurpurea*)	San Bernardino, San Diego
San Bernardino Merriam's kangaroo rat (*Dipodomys merriami parvus*)	Riverside
San Bernardino Mountains bladderpod (*Lesquerella kingii* ssp. *bernardina*)	San Bernardino
Santa Ana sucker (*Catostomus santaanae*)	Los Angeles, Orange, Riverside, San Bernardino
San Diego ambrosia (*Ambrosia pumila*)	Riverside, San Diego
San Diego fairy shirmp (*Branchinecta sandiegonensis*)	Orange, San Diego
San Diego thornmint (*Acanthomintha ilicifolia*)	San Diego
Southern mountain wild-buckwheat (*Eriogonum kennedyi* var. *austromontanum*)	San Bernardino
Southwestern willow flycatcher (*Empidonax traillii extimus*)	Los Angeles, Riverside, San Bernardino, San Diego, Ventura
Spreading navarretia (*Navarretia fossalis*)	Los Angeles, Riverside, San Diego
Steelhead (*Oncorhynchus mykiss irideus*)	Los Angeles, Orange, San Diego, Ventura, Sacramento-San Joaquin Delta
Thread-leaved brodiaea (*Brodiaea filifolia*)	Los Angeles, Orange, Riverside, San Bernardino, San Diego
Tidewater goby (*Eucyclogobius newberryi*)	Los Angeles, Orange, San Diego, Ventura
Vail Lake ceanothus (*Ceanothus ophiochilus*)	Riverside
Ventura Marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*)	Ventura
Vernal pool fairy shrimp (*Branchinecta lynchi*)	Ventura
Western snowy plover (*Charadrius alexandrinus nivosus*)	Los Angeles, Orange, San Diego, Ventura
Willowy monardella (*Monardella viminea*)	San Diego
Yellow-billed cuckoo (*Coccyzus americanus*)	Riverside, San Bernardino, Palo Verde Valley

Sources: USFWS IPaC (2020b)

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Figure 17 Critical Habitat in Los Angeles County

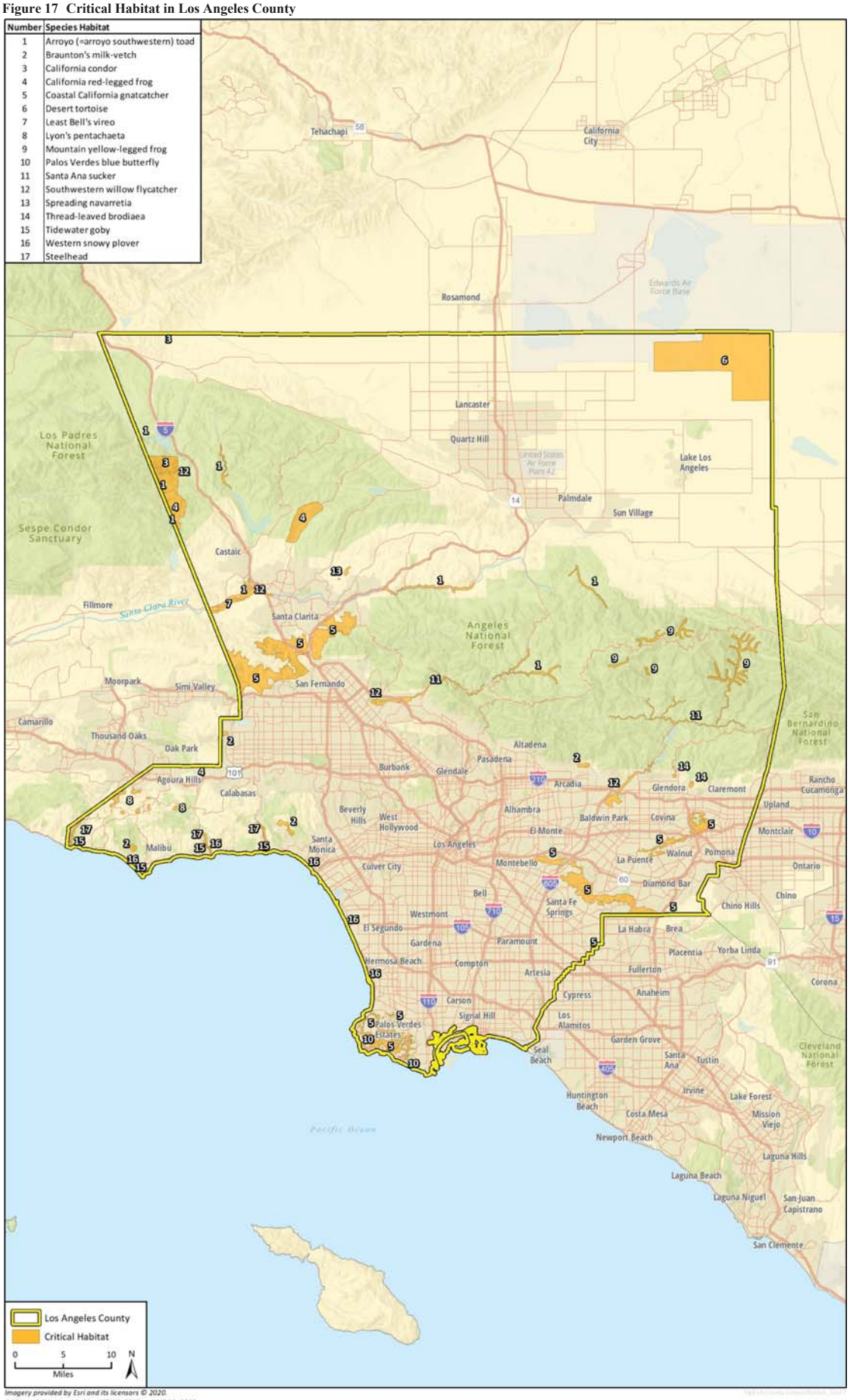


Figure 18 Critical Habitat in Orange County

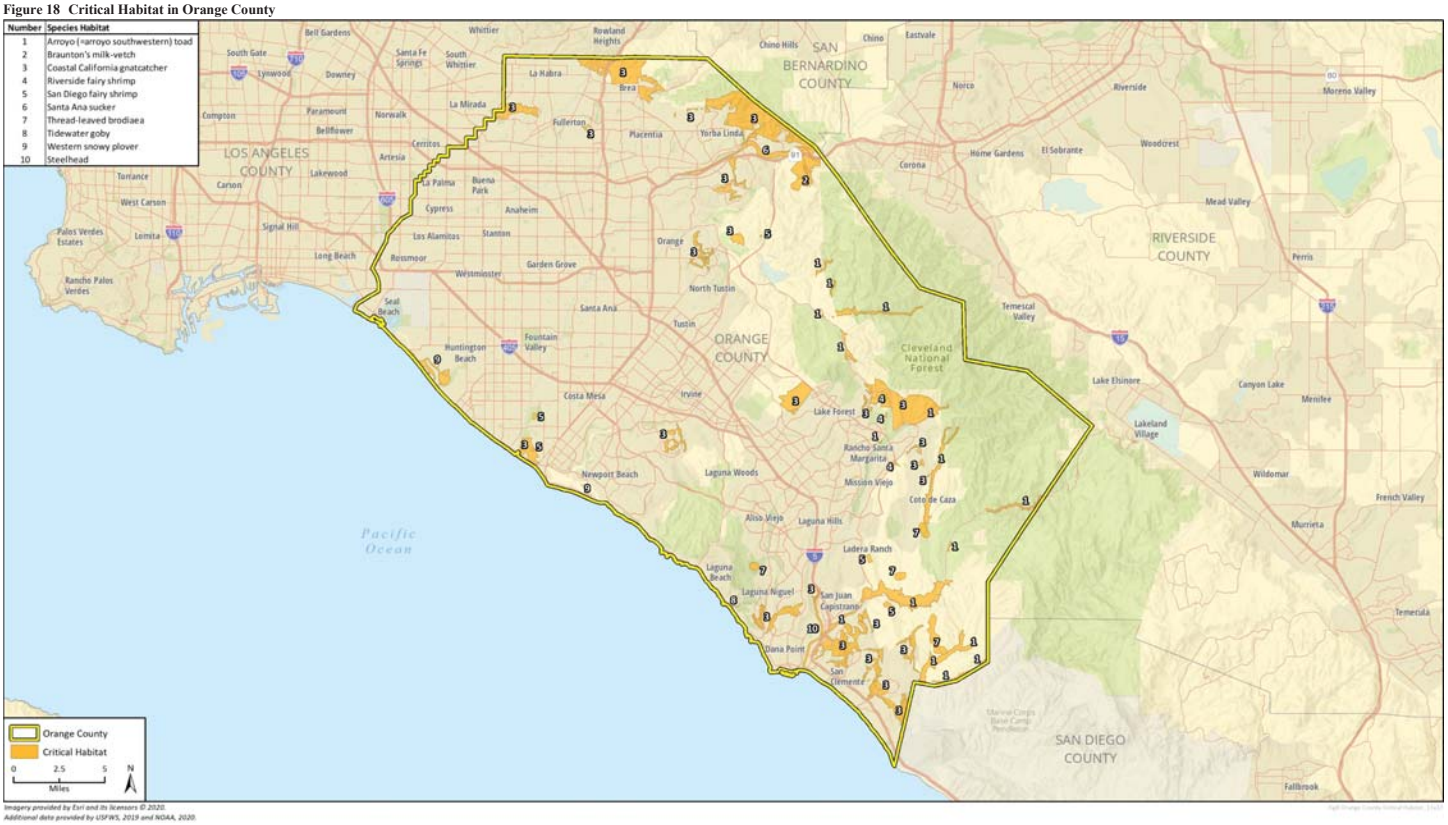


Figure 19 Critical Habitat in Riverside County

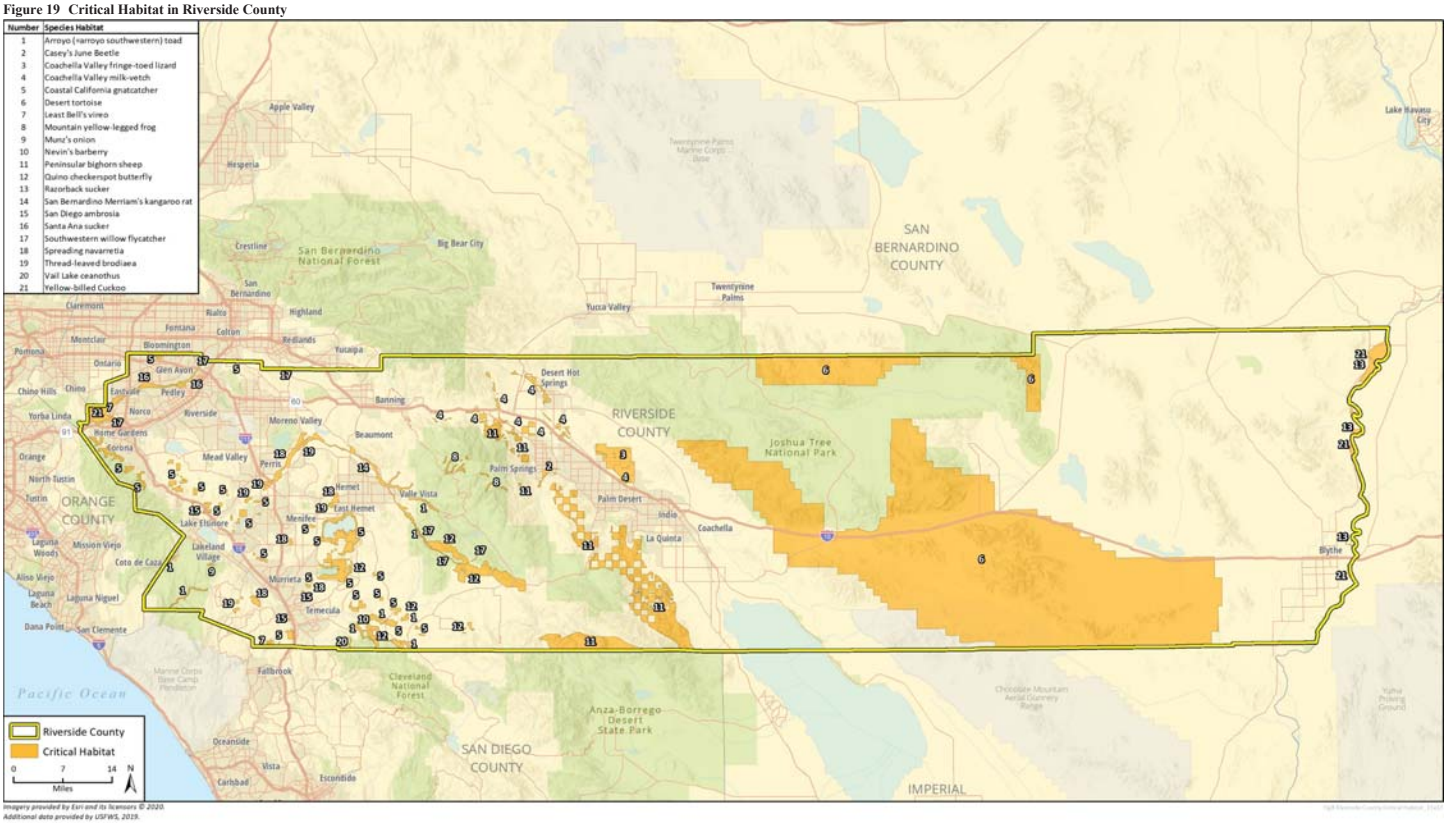


Figure 20 Critical Habitat in San Bernardino County

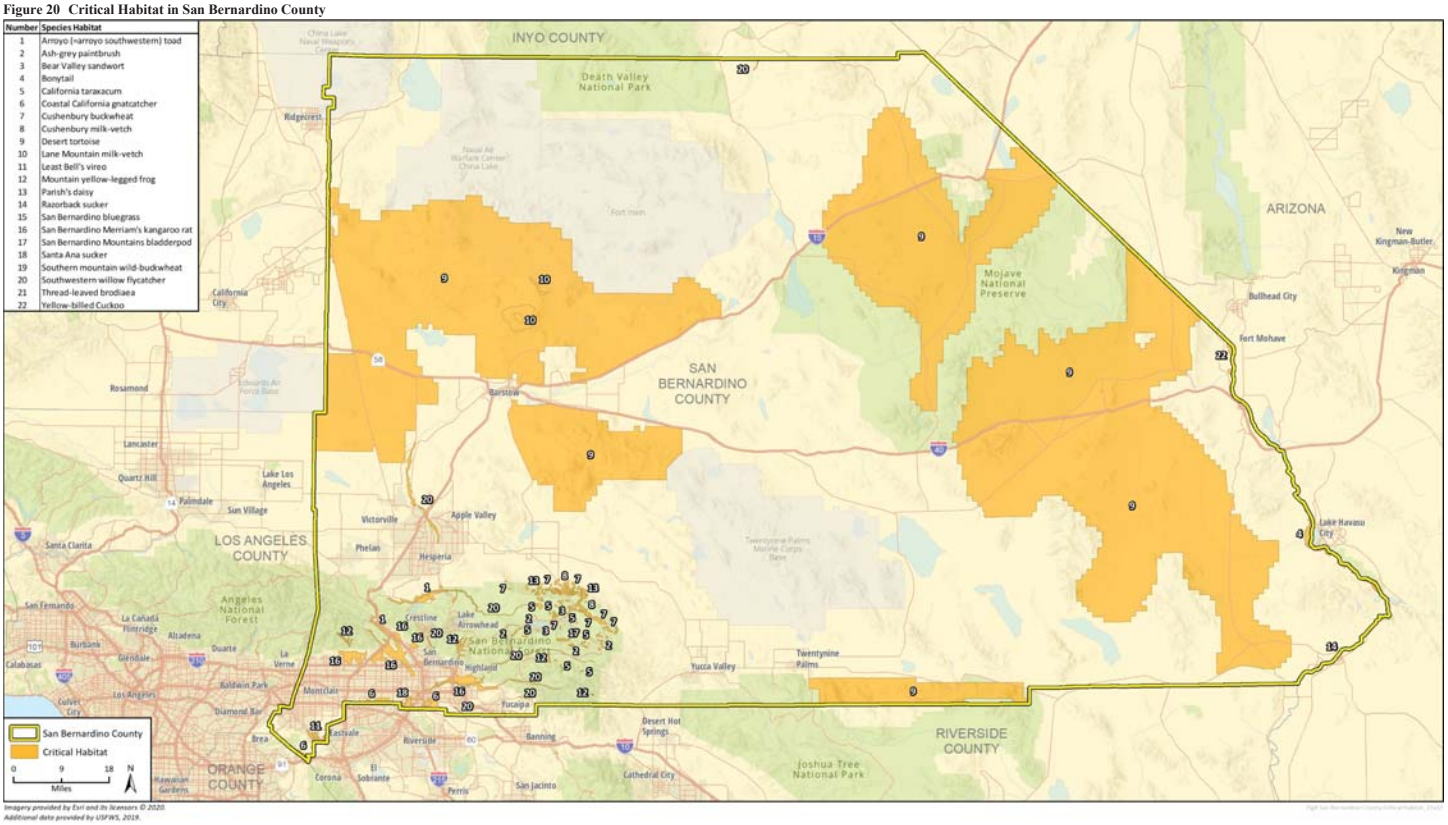


Figure 21 Critical Habitat in San Diego County

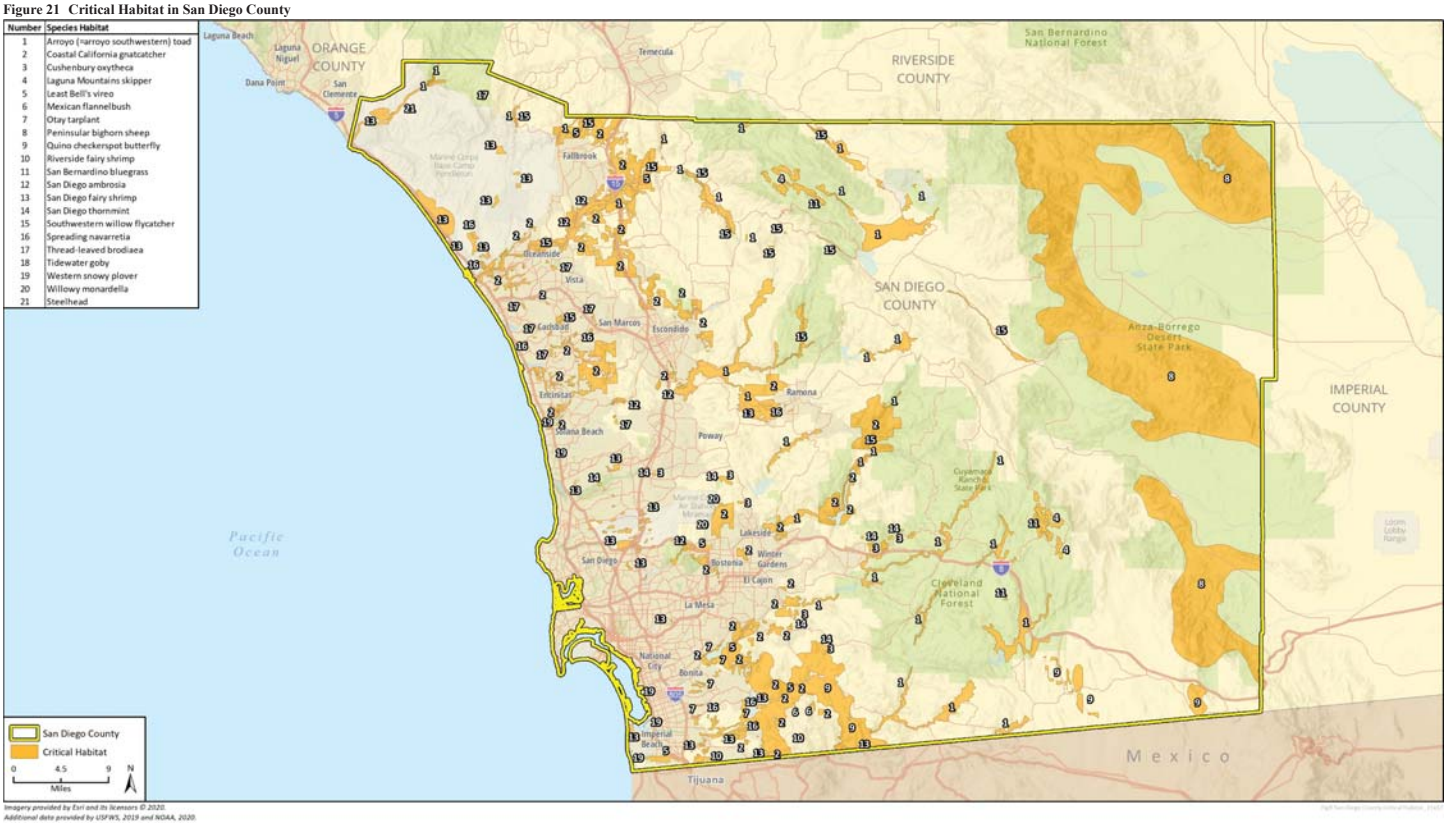


Figure 22 Critical Habitat in Ventura County

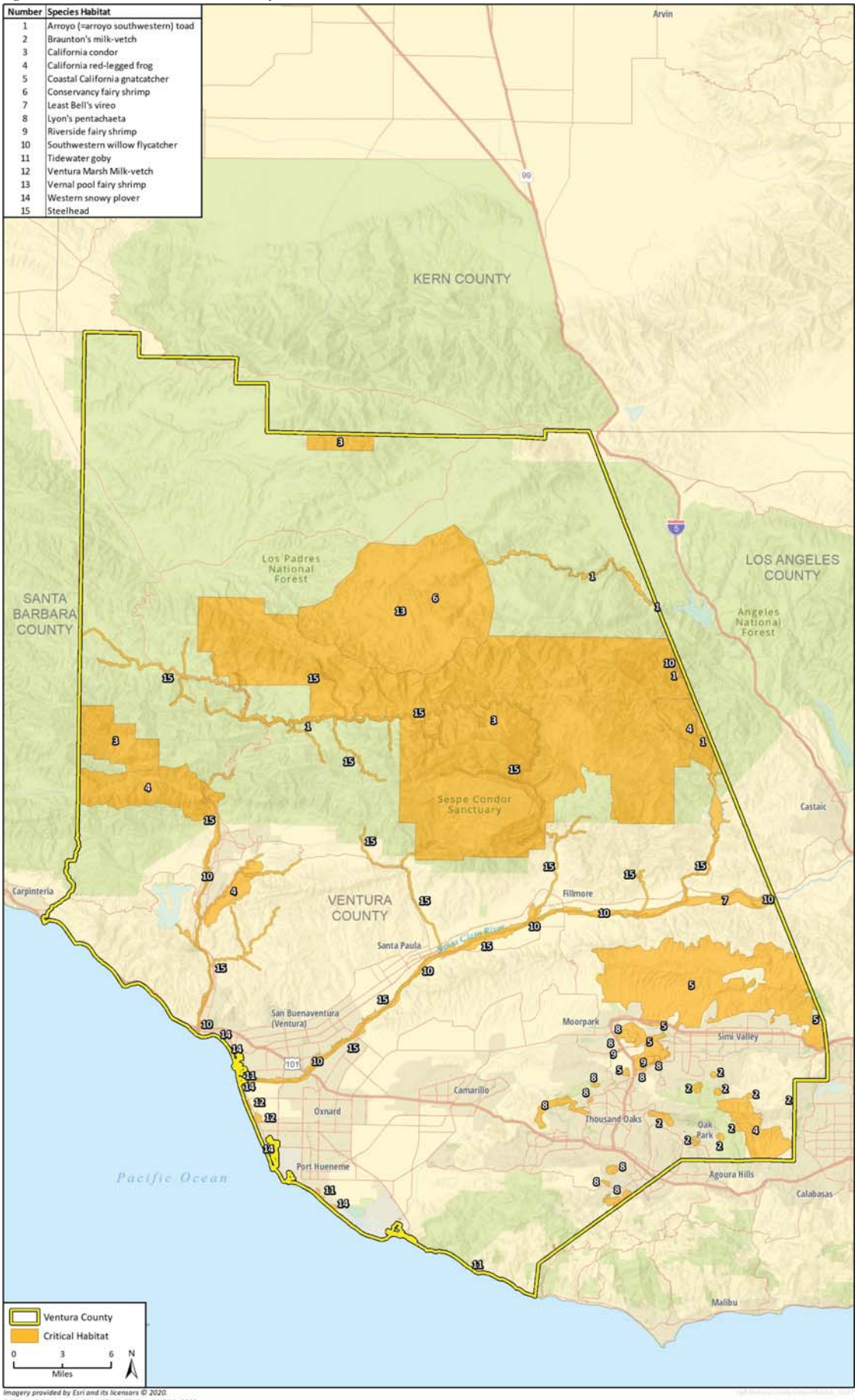
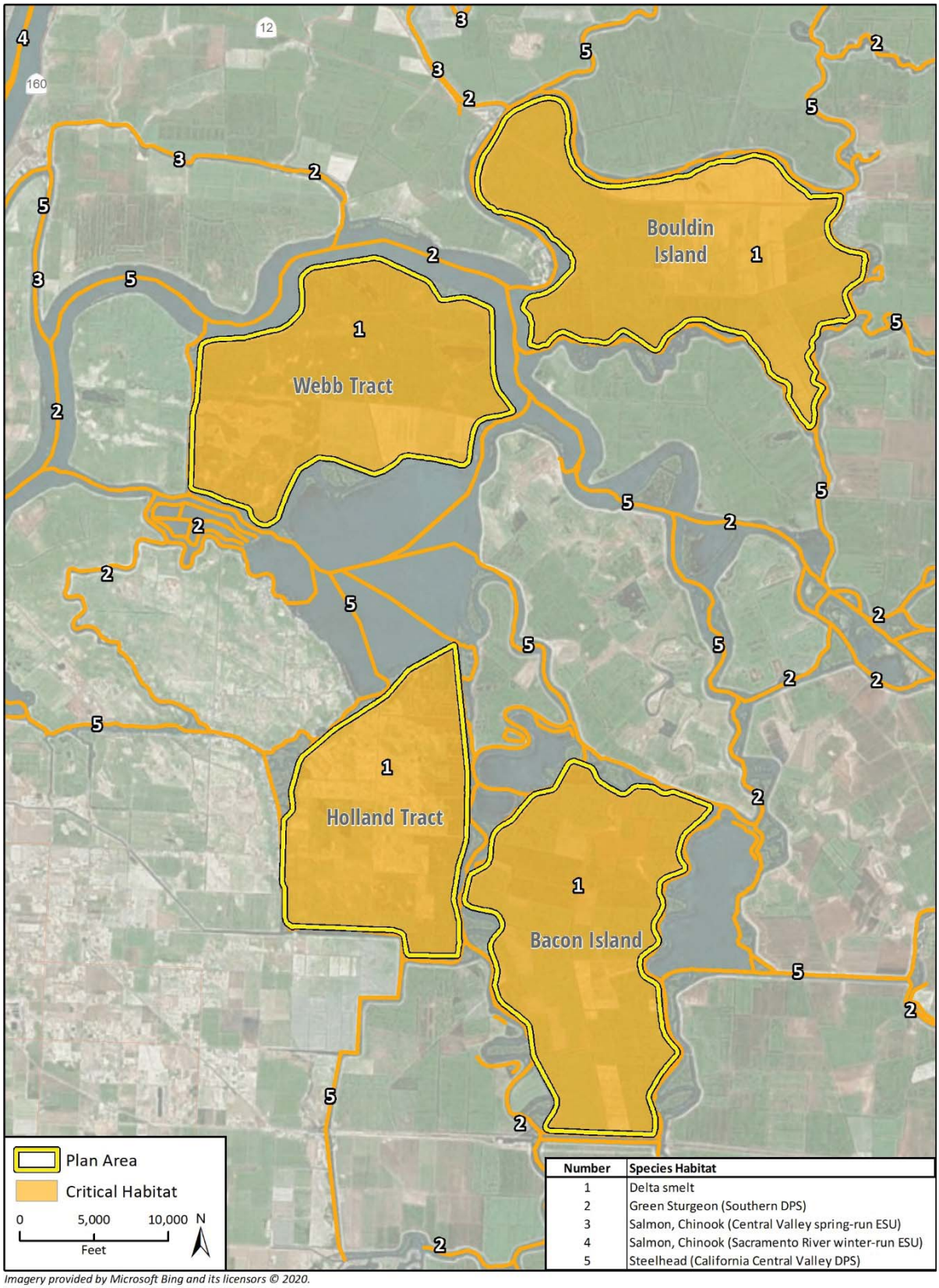


Figure 23 Critical Habitat in the Sacramento-San Joaquin Delta Region



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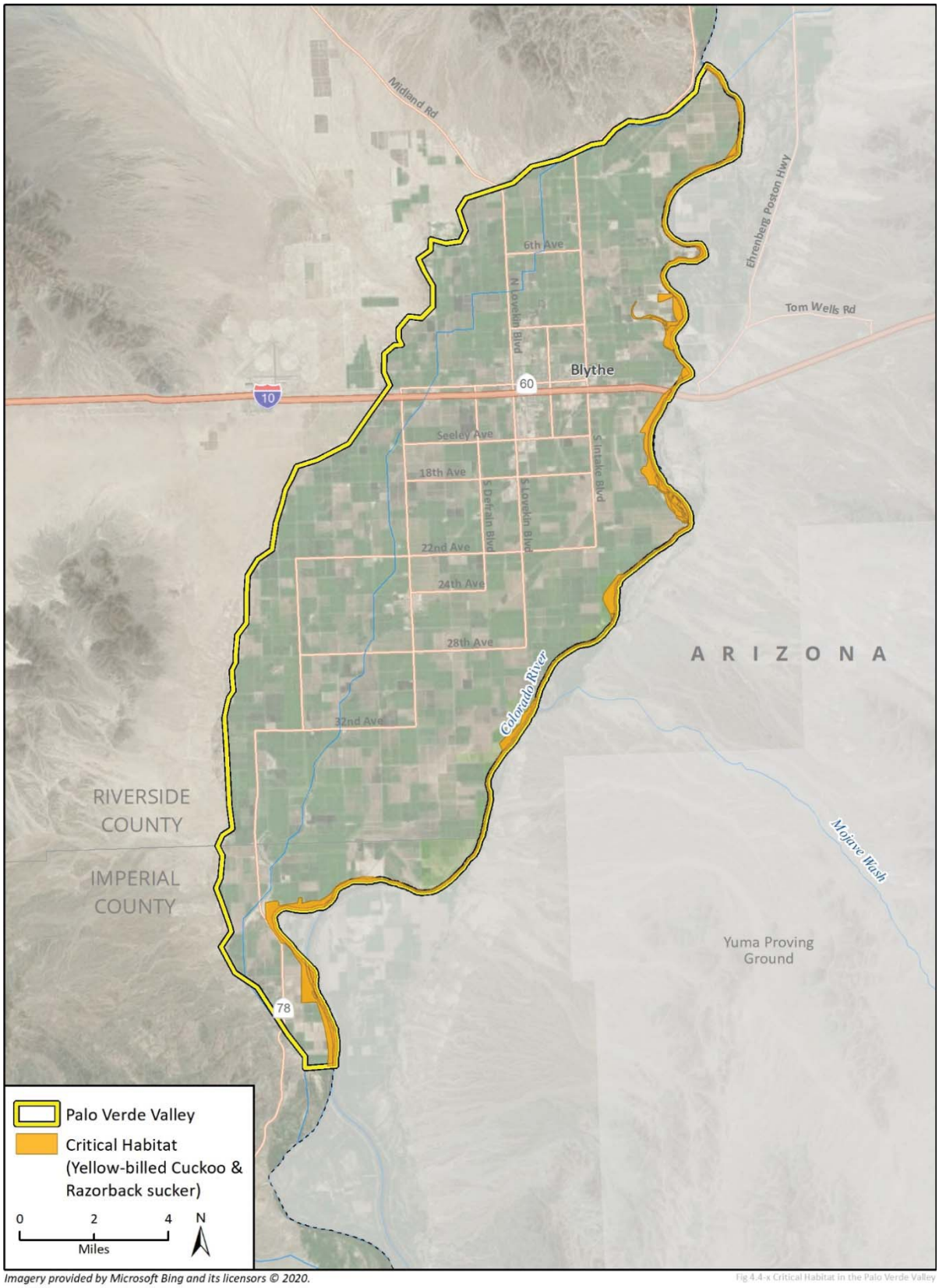
Additional data provided by USFWS, NOAA, 2020.

Figure 24 Critical Habitat in the Palo Verde Valley



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Additional data provided by USFWS, 2019.

Fig 4.4-x Critical Habitat in the Palo Verde Valley

1.5 Wildlife Movement Corridors

Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

The habitats within the linkage do not necessarily need to be the same as the habitats that are being linked. Rather, the linkage merely needs to contain sufficient cover and forage to allow temporary inhabitation by ground-dwelling species. Typically, habitat linkages are contiguous strips of natural areas, though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending upon the species using a corridor, specific physical resources (such as rock outcroppings, vernal pools, or oak trees) may need to be located within the habitat linkage at certain intervals to allow slower-moving species to traverse the linkage. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a short period of time. Wildlife movement corridors can be both large and small scale.

The mountainous regions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties support wildlife movement on a regional scale while riparian corridors and waterways, provide more local scale opportunities for wildlife movement throughout each county. No wildlife movement corridors were identified the Sacramento-San Joaquin Delta region or the Palo Verde Valley portion of the Plan Area. The CDFW Biogeographic Information and Observation System (BIOS) (CDFW 2020c) mapped multiple natural landscape blocks and essential connectivity areas within Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties (Figure 25 through Figure 32). Many of these areas are restricted to higher elevation landscapes such as Angeles National Forest, the Santa Monica Mountains, Cleveland National Forest, San Bernardino National Forest, the Chocolate Mountains, Cuyamaca Rancho State Park, and Los Padres National Forest. Large blocks of desert habitats also provide significant movement corridors and include Joshua Tree National Park, Mojave National Preserve, Death Valley National Park, and Anza-Borrego Desert State Park.

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Figure 25 Wildlife Movement Corridors in Los Angeles County

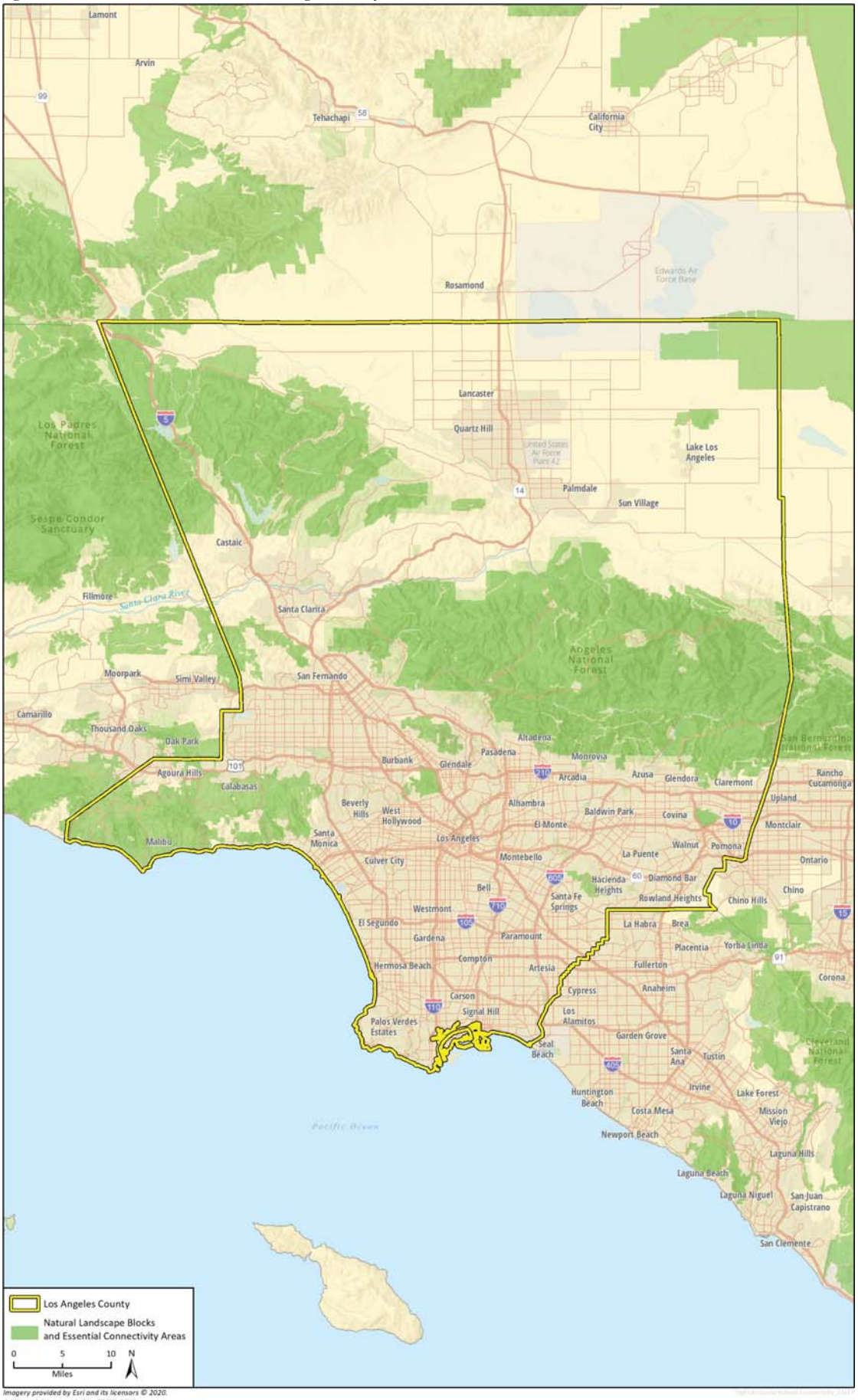


Figure 26 Wildlife Movement Corridors in Orange County

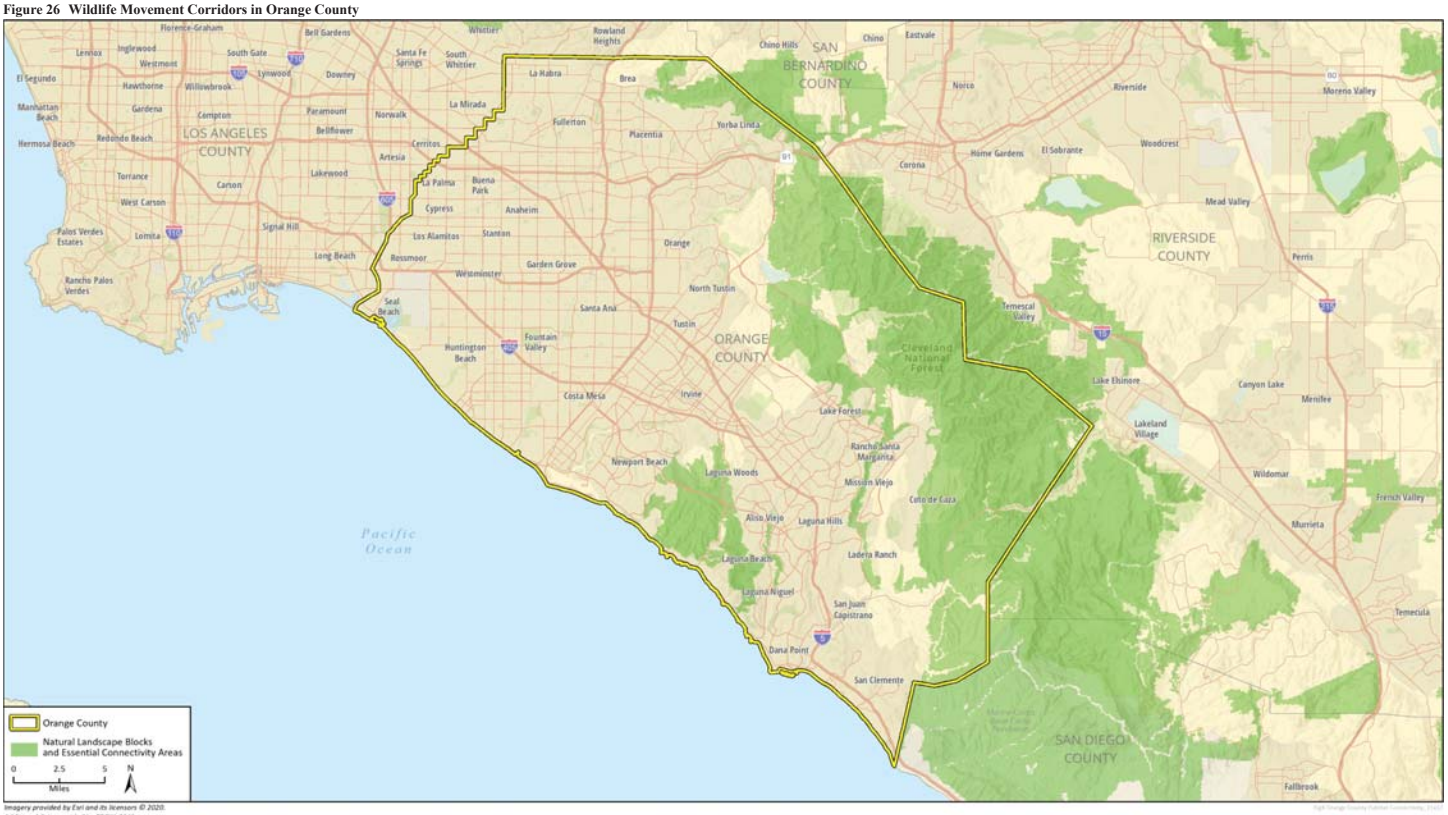


Figure 27 Wildlife Movement Corridors in Riverside County

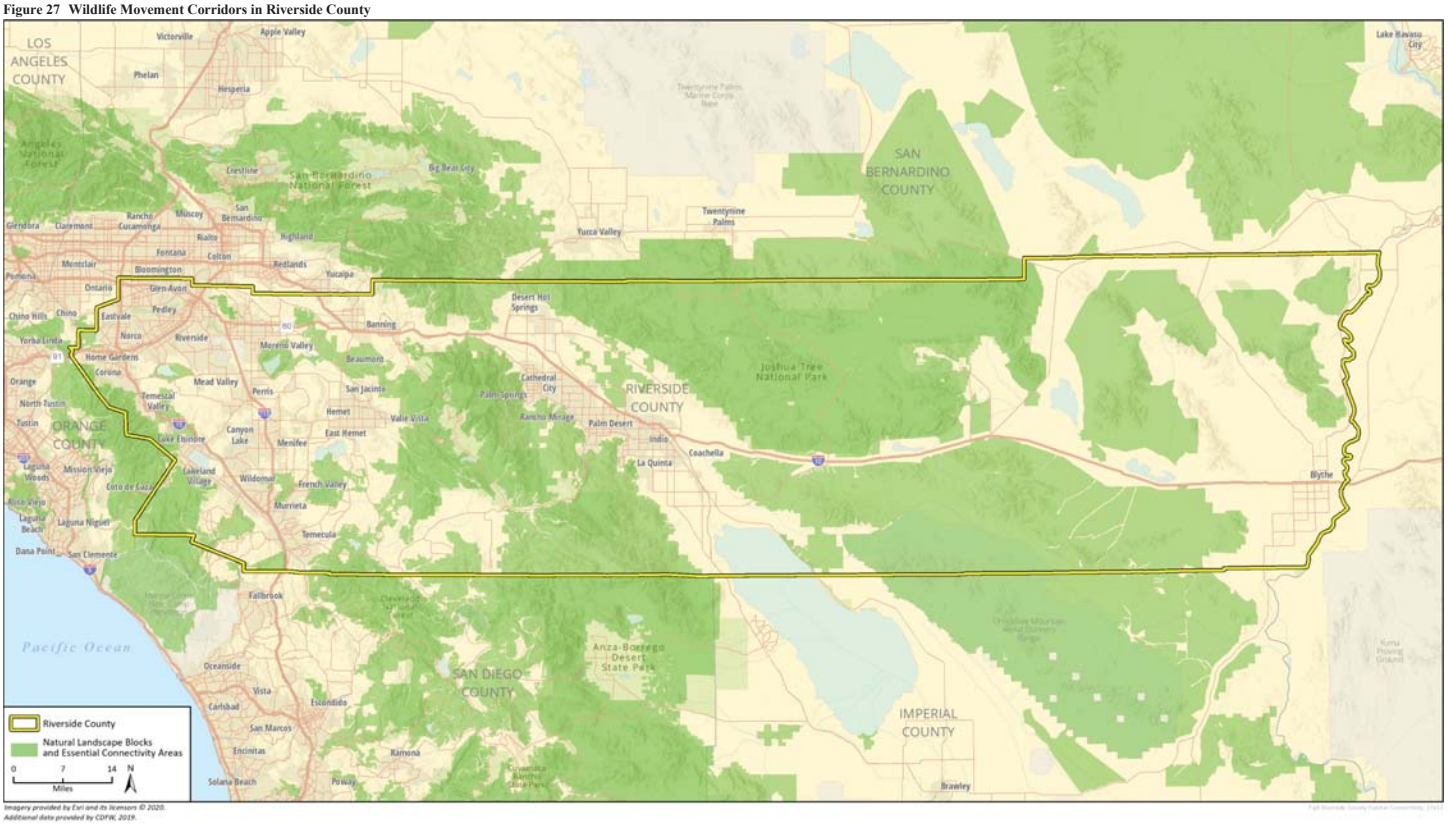


Figure 28 Wildlife Movement Corridors in San Bernardino County

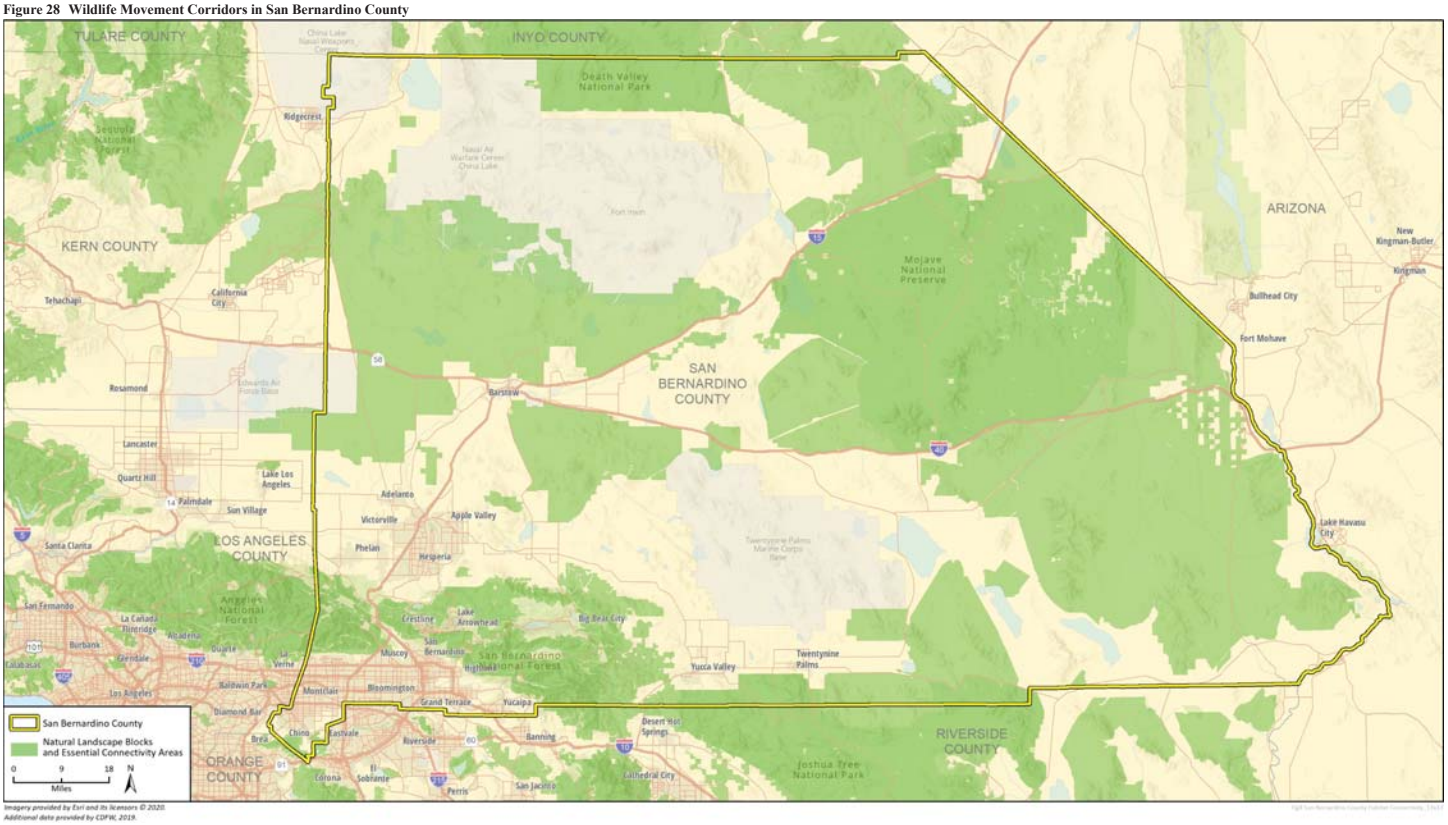


Figure 29 Wildlife Movement Corridors in San Diego County

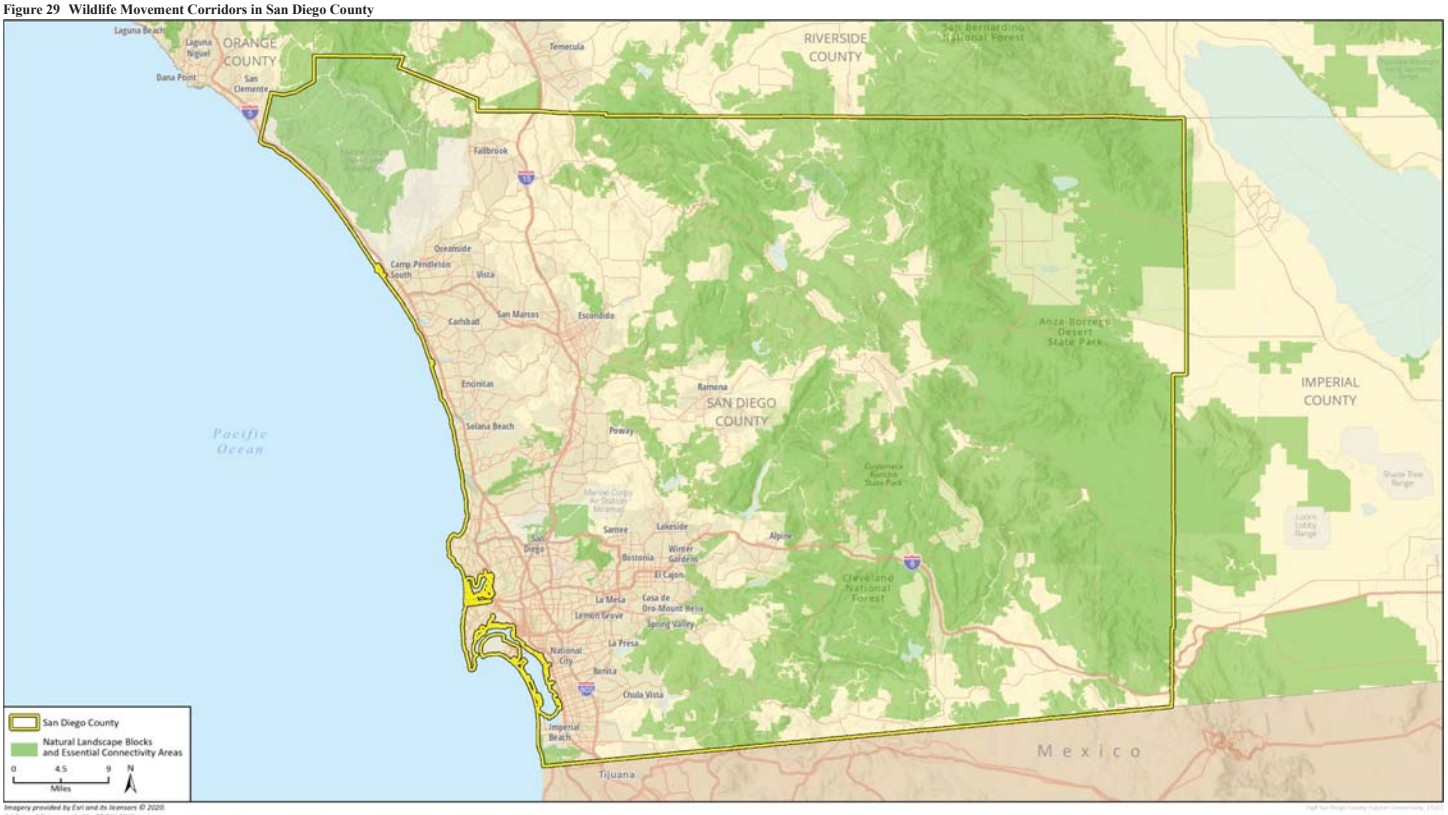


Figure 30 Wildlife Movement Corridors in Ventura County

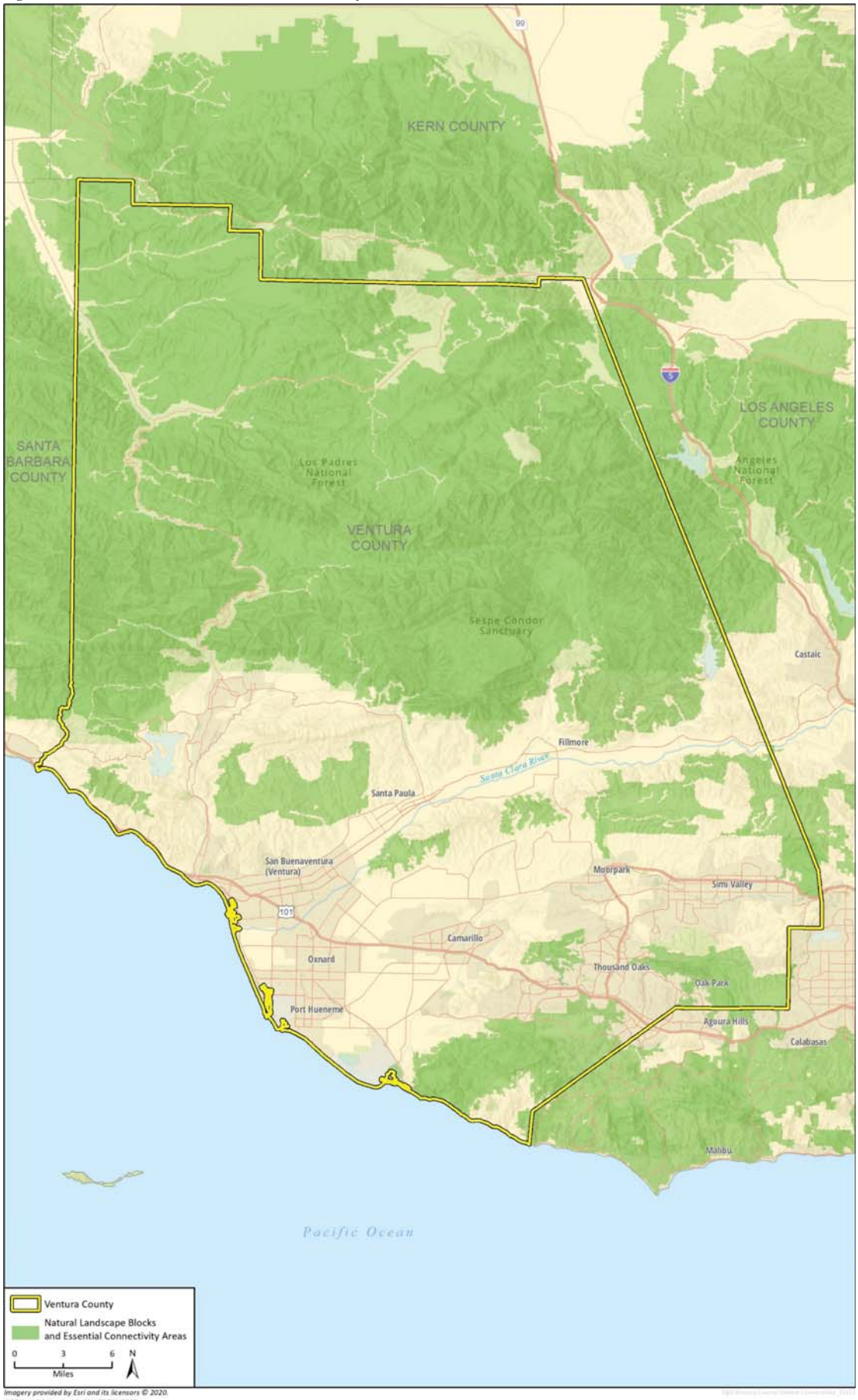
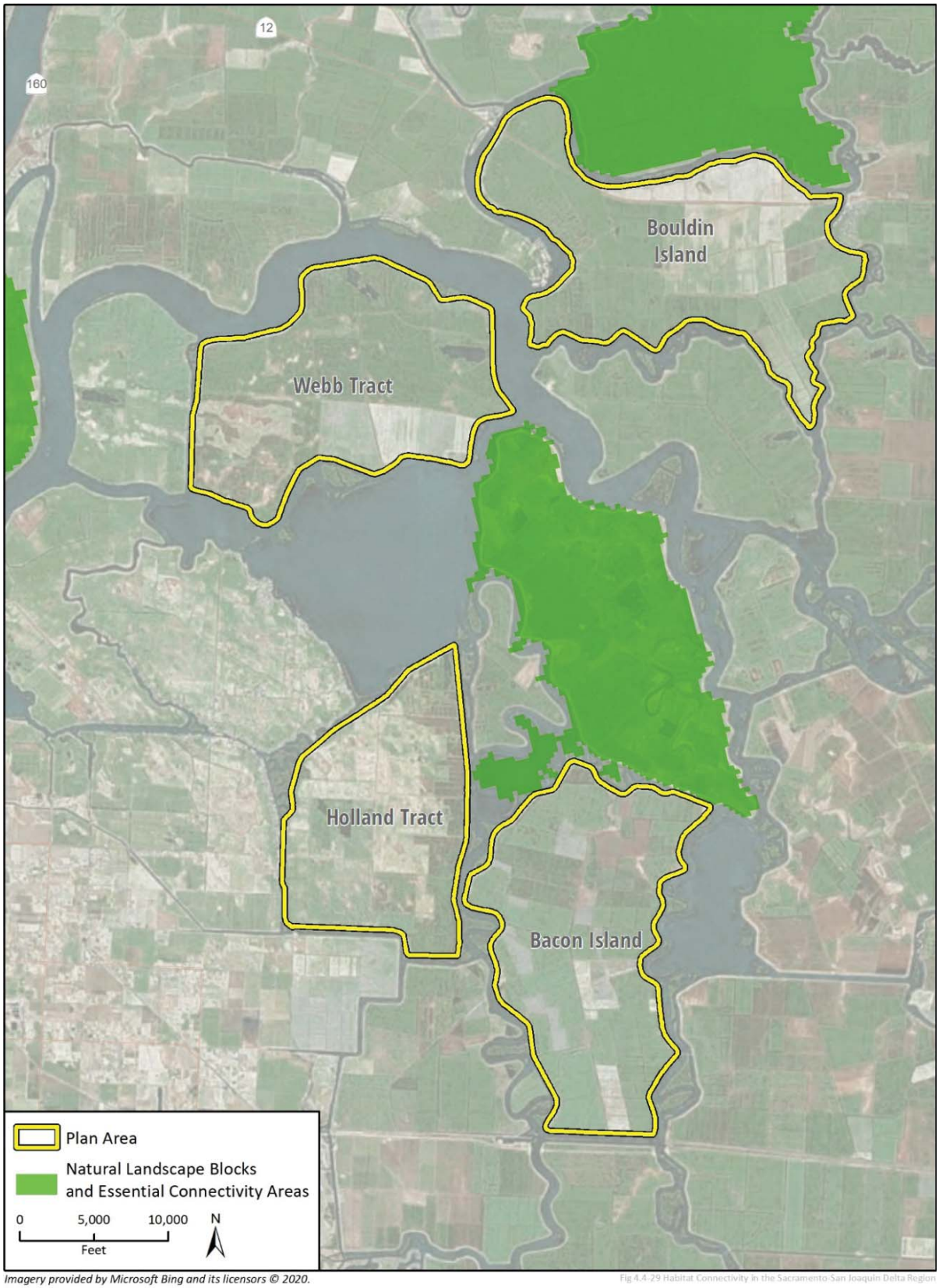


Figure 31 Wildlife Movement Corridors in the Sacramento-San Joaquin Delta Region



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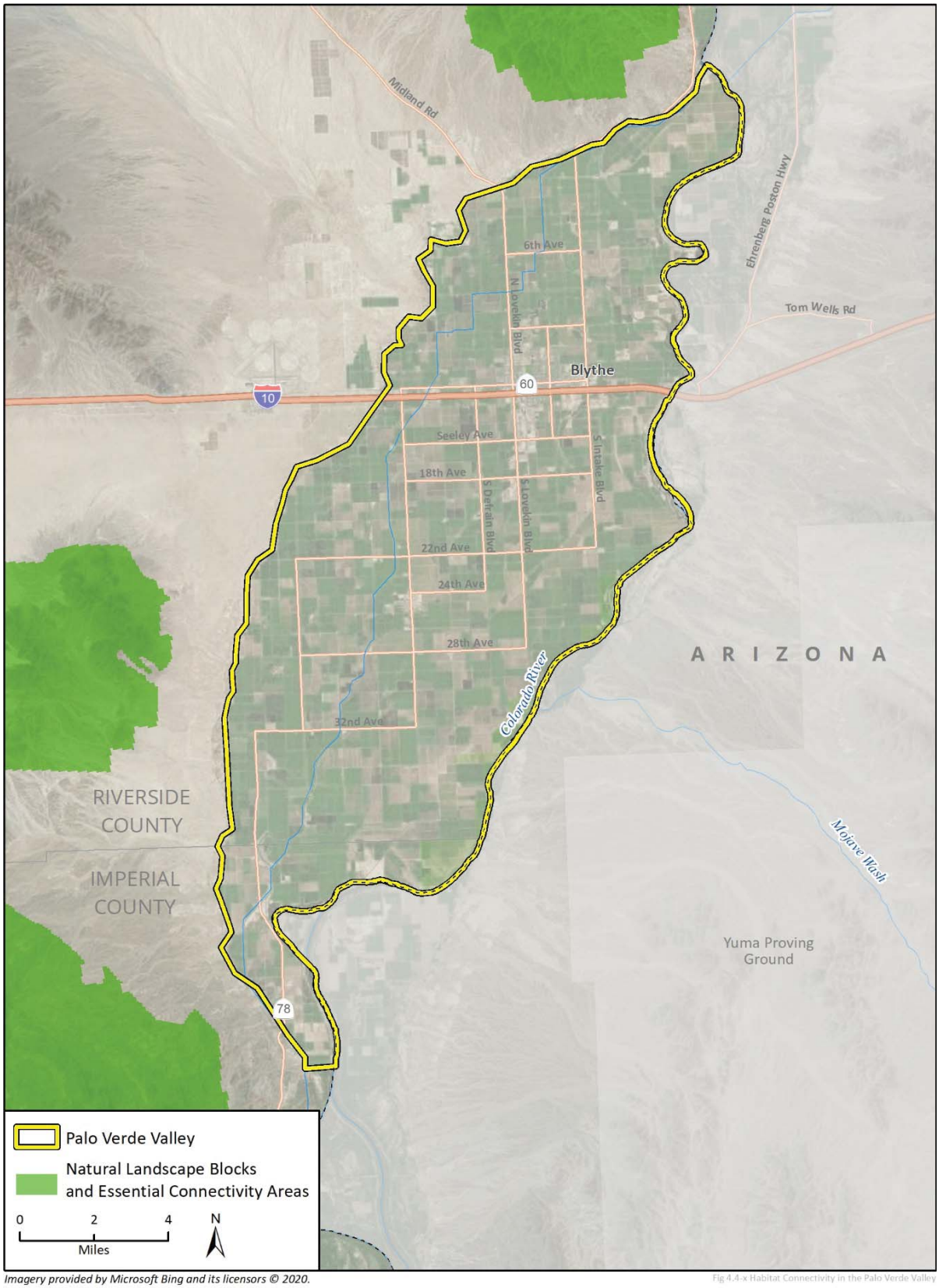
Additional data provided by CDFW, 2019.

Fig 4.4-29 Habitat Connectivity in the Sacramento-San Joaquin Delta Region

Figure 32 Wildlife Movement Corridors in the Palo Verde Valley



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Additional data provided by CDFW, 2019.

Fig 4.4-x Habitat Connectivity in the Palo Verde Valley

Table 4 Special Status Species List

Scientific Name Common Name	Status	Habitat Requirements
Plants and Lichens		
Abronia maritima red sand-verbena	None/None G4/S3? 4.2	Coastal dunes. 0 - 100 m. perennial herb. Blooms Feb-Nov
Abronia nana var. *covillei* Coville's dwarf abronia	None/None G4T3/S3 4.2	Great Basin scrub, Joshua tree woodland, Pinyon and juniper woodland, Subalpine coniferous forest, Upper montane coniferous forest. carbonate, sandy. 1524 - 3100 m. perennial herb. Blooms May-Aug
Abronia villosa var. *aurita* chaparral sand-verbena	None/None G5T2?/S2 1B.1	Chaparral, Coastal scrub, Desert dunes. sandy. 75 - 1600 m. annual herb. Blooms (Jan)Mar-Sep
Abutilon abutiloides shrubby Indian mallow	None/None G5/S1 2B.1	Sonoran desert scrub. Rocky, granitic. 855 - 900 m. perennial herb. Blooms Aug,Nov
Abutilon parvulum dwarf abutilon	None/None G5/S2S3 2B.3	Chenopod scrub (rocky). 900 - 1360 m. perennial herb. Blooms Apr-May
Acanthomintha ilicifolia San Diego thorn-mint	FT/SCE G1/S1 1B.1	Chaparral, Coastal scrub, Valley and foothill grassland, Vernal pools. Clay, openings. 10 - 960 m. annual herb. Blooms Apr-Jun
Acanthomintha obovata ssp. *cordata* heart-leaved thorn-mint	None/None G4T3/S3 4.2	Chaparral (openings), Cismontane woodland, Pinyon and juniper woodland, Valley and foothill grassland. clay. 785 - 1540 m. annual herb. Blooms Apr-Jul
Acanthoscyphus parishii var. *abramsii* Abrams' oxytheca	None/None G4?T1T2/S1S2 1B.2	Chaparral (sandy or shale). 1143 - 2057 m. annual herb. Blooms Jun-Aug
Acanthoscyphus parishii var. *cienegensis* Cienega Seca oxytheca	None/None G4?T2/S2 1B.3	Joshua tree woodland, Pinyon and juniper woodland, Upper montane coniferous forest (sandy, granitic). 2105 - 2450 m. annual herb. Blooms (May)Jun-Sep
Acanthoscyphus parishii var. *goodmaniana* Cushenbury oxytheca	FE/None G4?T1/S1 1B.1	Pinyon and juniper woodland (carbonate, talus). sandy, carbonate. 1219 - 2377 m. annual herb. Blooms May-Oct
Acanthoscyphus parishii var. *parishii* Parish's oxytheca	None/None G4?T3T4/S3S4 4.2	Chaparral, Lower montane coniferous forest. sandy or gravelly. 1220 - 2600 m. annual herb. Blooms Jun-Sep
Acleisanthes longiflora angel trumpets	None/None G5/S1 2B.3	Sonoran desert scrub (carbonate). 90 - 95 m. perennial herb. Blooms May
Acleisanthes nevadensis desert wing-fruit	None/None G4?/S1 2B.1	Joshua tree woodland, Mojavean desert scrub. rocky, gravelly. 795 - 1250 m. perennial herb. Blooms Apr-Sep
Acmispon argophyllus var. *adsurgens* San Clemente Island bird's-foot trefoil	None/SCE G5T2/S2 1B.1	Coastal bluff scrub, Coastal scrub. rocky. 15 - 395 m. perennial herb. Blooms Apr-Jun
Acmispon argyraeus var. *multicaulis* scrub lotus	None/None G4?T2/S2 1B.3	Pinyon and juniper woodland (granitic). 1200 - 1500 m. perennial herb. Blooms Apr-Jun
Acmispon argyraeus var. *notitius* Providence Mountains lotus	None/None G4?T2/S2 1B.3	Pinyon and juniper woodland. 1200 - 2000 m. perennial herb. Blooms May-Aug

Scientific Name Common Name	Status	Habitat Requirements
Acmispon dendroideus var. *traskiae* San Clemente Island lotus	FT/SCE G4T3/S3 1B.3	Coastal bluff scrub, Coastal scrub, Valley and foothill grassland. 15 - 365 m. perennial shrub. Blooms Feb-Aug
Acmispon haydonii pygmy lotus	None/None G3/S3 1B.3	Pinyon and juniper woodland, Sonoran desert scrub. rocky. 520 - 1200 m. perennial herb. Blooms Jan-Jun
Acmispon prostratus Nuttall's acmispon	None/None G1G2/S1 1B.1	Coastal dunes, Coastal scrub (sandy). 0 - 10 m. annual herb. Blooms Mar-Jun(Jul)
Adolphia californica California adolphia	None/None G3/S2 2B.1	Chaparral, Coastal scrub, Valley and foothill grassland. Clay. 10 - 740 m. perennial deciduous shrub. Blooms Dec-May
Agave shawii var. *shawii* Shaw's agave	None/None G2G3T2/S1 2B.1	Coastal bluff scrub, Coastal scrub. Maritime succulent scrub. 3 - 120 m. perennial leaf succulent. Blooms Sep-May
Agave utahensis var. *nevadensis* Clark Mountain agave	None/None G4T4?/S3 4.2	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. carbonate or volcanic. 900 - 1585 m. perennial leaf succulent. Blooms May-Jul
Ageratina herbacea desert ageratina	None/None G5/S3 2B.3	Pinyon and juniper woodland (rocky). 1525 - 2200 m. perennial herb. Blooms Jul-Oct
Aliciella ripleyi Ripley's aliciella	None/None G3/S2 2B.3	Mojavean desert scrub (carbonate). 305 - 1950 m. perennial herb. Blooms May-Jul
Aliciella triodon coyote gilia	None/None G5/S2 2B.2	Great Basin scrub, Pinyon and juniper woodland. sometimes sandy. 610 - 1700 m. annual herb. Blooms Apr-Jun
Allium atrorubens var. *atrorubens* Great Basin onion	None/None G4T4/S2 2B.3	Great Basin scrub, Pinyon and juniper woodland. rocky or sandy. 1200 - 2315 m. perennial bulbiferous herb. Blooms May-Jun
Allium atrorubens var. *cristatum* Inyo onion	None/None G4T4/S4 4.3	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. sandy or rocky. 1200 - 2560 m. perennial bulbiferous herb. Blooms Apr-Jun
Allium howellii var. *clokeyi* Mt. Pinos onion	None/None G4T2/S2 1B.3	Great Basin scrub, Meadows and seeps (edges), Pinyon and juniper woodland. 1300 - 1850 m. perennial bulbiferous herb. Blooms Apr-Jun
Allium marvinii Yucaipa onion	None/None G1/S1 1B.2	Chaparral (clay, openings). 760 - 1065 m. perennial bulbiferous herb. Blooms Apr-May
Allium munzii Munz's onion	FE/SCT G1/S1 1B.1	Chaparral, Cismontane woodland, Coastal scrub, Pinyon and juniper woodland, Valley and foothill grassland. mesic, clay. 297 - 1070 m. perennial bulbiferous herb. Blooms Mar-May
Allium nevadense Nevada onion	None/None G4/S3 2B.3	Pinyon and juniper woodland (sandy or gravelly). 810 - 1700 m. perennial bulbiferous herb. Blooms Apr-May
Allium parishii Parish's onion	None/None G3/S3 4.3	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. rocky. 900 - 1735 m. perennial bulbiferous herb. Blooms Apr-May
Almutaster pauciflorus alkali marsh aster	None/None G4/S1S2 2B.2	Meadows and seeps. alkaline. 240 - 800 m. perennial herb. Blooms Jun-Oct

Scientific Name Common Name	Status	Habitat Requirements
Aloysia wrightii Wright's beebrush	None/None G5/S4 4.3	Joshua tree woodland, Pinyon and juniper woodland. rocky, often carbonate. 900 - 1600 m. perennial evergreen shrub. Blooms Apr-Oct
Amaranthus watsonii Watson's amaranth	None/None G5?/S3 4.3	Mojavean desert scrub, Sonoran desert scrub. 20 - 1700 m. annual herb. Blooms Apr-Sep
Ambrosia chenopodiifolia San Diego bur-sage	None/None G2G3/S1 2B.1	Coastal scrub. 55 - 155 m. perennial shrub. Blooms Apr-Jun
Ambrosia monogyra singlewhorl burrobrush	None/None G5/S2 2B.2	Chaparral, Sonoran desert scrub. sandy. 10 - 500 m. perennial shrub. Blooms Aug-Nov
Ambrosia pumila San Diego ambrosia	FE/None G1/S1 1B.1	Chaparral, Coastal scrub, Valley and foothill grassland, Vernal pools. sandy loam or clay, often in disturbed areas, sometimes alkaline. 20 - 415 m. perennial rhizomatous herb. Blooms Apr-Oct
Androsace elongata ssp. *acuta* California androsace	None/None G5?T3T4/S3S4 4.2	Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland. 150 - 1305 m. annual herb. Blooms Mar-Jun
Androstephium breviflorum small-flowered androstephium	None/None G4/S2? 2B.2	Desert dunes, Mojavean desert scrub (bajadas). 210 - 890 m. perennial bulbiferous herb. Blooms Mar-Apr
Anomobryum julaceum slender silver moss	None/None G5?/S2 4.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest. damp rock and soil on outcrops, usually on roadcuts. 100 - 1000 m. moss. Blooms
Antennaria marginata white-margined everlasting	None/None G4G5/S1 2B.3	Lower montane coniferous forest, Upper montane coniferous forest. 2120 - 3353 m. perennial stoloniferous herb. Blooms May-Aug
Aphanisma blitoides aphanisma	None/None G3G4/S2 1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub. sandy or gravelly. 1 - 305 m. annual herb. Blooms Feb-Jun
Arctomecon merriamii white bear poppy	None/None G3/S3 2B.2	Chenopod scrub, Mojavean desert scrub. rocky. 490 - 1800 m. perennial herb. Blooms (Mar) Apr-May
Arctostaphylos catalinae Santa Catalina Island manzanita	None/None G2?/S2? 1B.2	Chaparral (volcanic). 75 - 600 m. perennial evergreen shrub. Blooms (Feb)Mar-Apr (May)
Arctostaphylos crustacea ssp. *subcordata* Santa Cruz Island manzanita	None/None G4T3/S3 4.2	Closed-cone coniferous forest, Chaparral. rocky. 100 - 730 m. perennial evergreen shrub. Blooms Jan, Mar-Apr
Arctostaphylos glandulosa ssp. *crassifolia* Del Mar manzanita	FE/None G5T2/S2 1B.1	Chaparral (maritime, sandy). 0 - 365 m. perennial evergreen shrub. Blooms Dec-Jun
Arctostaphylos glandulosa ssp. *gabrielensis* San Gabriel manzanita	None/None G5T3/S3 1B.2	Chaparral (rocky). 595 - 1500 m. perennial evergreen shrub. Blooms Mar
Arctostaphylos otayensis Otay manzanita	None/None G1/S1 1B.2	Chaparral, Cismontane woodland. metavolcanic. 275 - 1700 m. perennial evergreen shrub. Blooms Jan-Apr
Arctostaphylos parryana ssp. *tumescens* interior manzanita	None/None G4T3T4/S3S4 4.3	Chaparral (montane), Cismontane woodland. 2100 - 2310 m. perennial evergreen shrub. Blooms Feb-Apr

Scientific Name Common Name	Status	Habitat Requirements
Arctostaphylos rainbowensis Rainbow manzanita	None/None G2/S2 1B.1	Chaparral. 205 - 670 m. perennial evergreen shrub. Blooms Dec-Mar
Arctostaphylos refugioensis Refugio manzanita	None/None G3/S3 1B.2	Chaparral (sandstone). 274 - 820 m. perennial evergreen shrub. Blooms Dec-Mar (May)
Arenaria lanuginosa var. *saxosa* rock sandwort	None/None G5T5/S2 2B.3	Subalpine coniferous forest, Upper montane coniferous forest. mesic, sandy. 1455 - 2600 m. perennial herb. Blooms Jul-Aug
Arenaria paludicola marsh sandwort	FE/SCE G1/S1 1B.1	Marshes and swamps (freshwateror brackish). sandy, openings. 3 - 170 m. perennial stoloniferous herb. Blooms May-Aug
Argyrochosma limitanea ssp. *limitanea* southwestern false cloak-fern	None/None G4G5T3T4/S1 2B.1	Pinyon and juniper woodland (carbonate, rocky). 1800 - 1800 m. perennial rhizomatous herb. Blooms Apr-Oct
Artemisia palmeri San Diego sagewort	None/None G3?/S3? 4.2	Chaparral, Coastal scrub, Riparian forest, Riparian scrub, Riparian woodland. sandy, mesic. 15 - 915 m. perennial deciduous shrub. Blooms (Feb)May-Sep
Asclepias asperula ssp. *asperula* antelope-horns	None/None G5T5/S3 4.3	Mojavean desert scrub, Pinyon and juniper woodland. rocky. 915 - 2195 m. perennial herb. Blooms May-Sep
Asclepias nyctaginifolia Mojave milkweed	None/None G4?/S2 2B.1	Mojavean desert scrub, Pinyon and juniper woodland. 875 - 1700 m. perennial herb. Blooms May-Jun
Asplenium vespertinum western spleenwort	None/None G4/S4 4.2	Chaparral, Cismontane woodland, Coastal scrub. rocky. 180 - 1000 m. perennial rhizomatous herb. Blooms Feb-Jun
Astragalus albens Cushenbury milk-vetch	FE/None G1/S1 1B.1	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. usually carbonate, rarely granitic. 1095 - 2000 m. perennial herb. Blooms Mar-Jun
Astragalus allochrous var. *playanus* playa milk-vetch	None/None G4T4/S2 2B.2	Mojavean desert scrub (sandy). 800 - 800 m. perennial herb. Blooms Apr
Astragalus bernardinus San Bernardino milk-vetch	None/None G3/S3 1B.2	Joshua tree woodland, Pinyon and juniper woodland. Often granitic or carbonate. 900 - 2000 m. perennial herb. Blooms Apr-Jun
Astragalus bicristatus crested milk-vetch	None/None G3/S3 4.3	Lower montane coniferous forest, Upper montane coniferous forest. sandy or rocky, mostly carbonate. 1700 - 2745 m. perennial herb. Blooms May-Aug
Astragalus brauntonii Braunton's milk-vetch	FE/None G2/S2 1B.1	Chaparral, Coastal scrub, Valley and foothill grassland. recent burns or disturbed areas, usually sandstone with carbonate layers. 4 - 640 m. perennial herb. Blooms Jan-Aug
Astragalus cimae var. *cimae* Cima milk-vetch	None/None G3T2T3/S2? 1B.2	Great Basin scrub, Joshua tree woodland, Pinyon and juniper woodland. clay. 890 - 1850 m. perennial herb. Blooms Apr-May
Astragalus crotalariae Salton milk-vetch	None/None G4G5/S4 4.3	Sonoran desert scrub (sandy or gravelly). -60 - 250 m. perennial herb. Blooms Jan-Apr
Astragalus deanei Dean's milk-vetch	None/None G1/S1 1B.1	Chaparral, Cismontane woodland, Coastal scrub, Riparian forest. 75 - 695 m. perennial herb. Blooms Feb-May

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Astragalus didymocarpus var. *milesianus* Miles' milk-vetch	None/None G5T2/S2 1B.2	Coastal scrub (clay). 20 - 90 m. annual herb. Blooms Mar-Jun
Astragalus douglasii var. *perstrictus* Jacumba milk-vetch	None/None G5T3?/S2S3 1B.2	Chaparral, Cismontane woodland, Pinyon and juniper woodland, Riparian scrub, Valley and foothill grassland. rocky. 900 - 1370 m. perennial herb. Blooms Apr-Jun
Astragalus hornii var. *hornii* Horn's milk-vetch	None/None G4G5T1T2/S1 1B.1	Meadows and seeps, Playas. lake margins, alkaline. 60 - 850 m. annual herb. Blooms May-Oct
Astragalus insularis var. *harwoodii* Harwood's milk-vetch	None/None G5T4/S2 2B.2	Desert dunes, Mojavean desert scrub. sandy or gravelly. 0 - 710 m. annual herb. Blooms Jan-May
Astragalus jaegerianus Lane Mountain milk-vetch	FE/None G2/S2 1B.1	Joshua tree woodland, Mojavean desert scrub. granitic, sandy or gravelly. 900 - 1200 m. perennial herb. Blooms Apr-Jun
Astragalus lentiginosus var. *antonius* San Antonio milk-vetch	None/None G5T2/S2 1B.3	Lower montane coniferous forest, Upper montane coniferous forest. 1500 - 2600 m. perennial herb. Blooms Apr-Jul
Astragalus lentiginosus var. *borreganus* Borrego milk-vetch	None/None G5T5?/S4 4.3	Mojavean desert scrub, Sonoran desert scrub. sandy. 30 - 895 m. annual herb. Blooms Feb-May
Astragalus lentiginosus var. *coachellae* Coachella Valley milk-vetch	FE/None G5T1/S1 1B.2	Desert dunes, Sonoran desert scrub (sandy). 40 - 655 m. annual/perennial herb. Blooms Feb-May
Astragalus lentiginosus var. *sierrae* Big Bear Valley milk-vetch	None/None G5T2/S2 1B.2	Mojavean desert scrub, Meadows and seeps, Pinyon and juniper woodland, Upper montane coniferous forest. gravelly or rocky. 1800 - 2600 m. perennial herb. Blooms Apr-Aug
Astragalus leucolobus Big Bear Valley woollypod	None/None G2/S2 1B.2	Lower montane coniferous forest, Pebble (Pavement) plain, Pinyon and juniper woodland, Upper montane coniferous forest. rocky. 1100 - 2885 m. perennial herb. Blooms May-Jul
Astragalus magdalenae var. *peirsonii* Peirson's milk-vetch	FT/SCE G3G4T1/S1 1B.2	Desert dunes. 60 - 225 m. perennial herb. Blooms Dec-Apr
Astragalus nevinii San Clemente Island milk-vetch	None/None G3/S3 1B.2	Coastal dunes, Coastal scrub, Valley and foothill grassland. 5 - 225 m. perennial herb. Blooms Feb-Jul
Astragalus nutans Providence Mountains milk-vetch	None/None G3/S3 4.3	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland, Sonoran desert scrub. sandy or gravelly. 450 - 1950 m. annual herb. Blooms Mar-Jun (Oct)
Astragalus oocarpus San Diego milk-vetch	None/None G2?/S2? 1B.2	Chaparral (openings), Cismontane woodland. 305 - 1524 m. perennial herb. Blooms May-Aug
Astragalus pachypus var. *jaegeri* Jaeger's bush milk-vetch	None/None G4T1/S1 1B.1	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland. sandy or rocky. 365 - 975 m. perennial shrub. Blooms Dec-Jun
Astragalus preussii var. *laxiflorus* Lancaster milk-vetch	None/None G4T2/S1 1B.1	Chenopod scrub. 700 - 700 m. perennial herb. Blooms Mar-May
Astragalus preussii var. *preussii* Preuss' milk-vetch	None/None G4T4/S1 2B.1	Chenopod scrub, Mojavean desert scrub. clay. 750 - 805 m. perennial herb. Blooms Apr-Jun

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Astragalus pycnostachyus var. *lanosissimus* Ventura marsh milk-vetch	FE/SCE G2T1/S1 1B.1	Coastal dunes, Coastal scrub, Marshes and swamps (edges, coastal salt or brackish). 1 - 35 m. perennial herb. Blooms (Jun)Aug-Oct
Astragalus sabulonum gravel milk-vetch	None/None G4G5/S2 2B.2	Desert dunes, Mojavean desert scrub, Sonoran desert scrub. Usually sandy, sometimes gravelly. Flats, washes, and roadsides. -60 - 930 m. annual/perennial herb. Blooms Feb-Jun
Astragalus tener var. *tener* alkali milk-vetch	None/None G2T1/S1 1B.2	Playas, Valley and foothill grassland (adobe clay), Vernal pools. alkaline. 1 - 60 m. annual herb. Blooms Mar-Jun
Astragalus tener var. *titi* coastal dunes milk-vetch	FE/SCE G2T1/S1 1B.1	Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie (mesic). often vernally mesic areas. 1 - 50 m. annual herb. Blooms Mar-May
Astragalus tidestromii Tidestrom's milk-vetch	None/None G4/S2 2B.2	Mojavean desert scrub. carbonate, sandy or gravelly. 600 - 1785 m. perennial herb. Blooms (Jan)Apr-Jul
Astragalus traskiae Trask's milk-vetch	None/SCR G3/S3 1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub. 5 - 245 m. perennial herb. Blooms Feb-Jul
Astragalus tricarinatus triple-ribbed milk-vetch	FE/None G2/S2 1B.2	Joshua tree woodland, Sonoran desert scrub. sandy or gravelly. 450 - 1190 m. perennial herb. Blooms Feb-May
Astrolepis cochisensis ssp. *cochisensis* scaly cloak fern	None/None G5?T4/S2 2B.3	Joshua tree woodland, Pinyon and juniper woodland. carbonate. 900 - 1800 m. perennial rhizomatous herb. Blooms Apr-Oct
Atriplex coronata var. *coronata* crownscale	None/None G4T3/S3 4.2	Chenopod scrub, Valley and foothill grassland, Vernal pools. alkaline, often clay. 1 - 590 m. annual herb. Blooms Mar-Oct
Atriplex coronata var. *notatior* San Jacinto Valley crownscale	FE/None G4T1/S1 1B.1	Playas, Valley and foothill grassland (mesic), Vernal pools. alkaline. 139 - 500 m. annual herb. Blooms Apr-Aug
Atriplex coulteri Coulter's saltbush	None/None G3/S1S2 1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, Valley and foothill grassland. alkaline or clay. 3 - 460 m. perennial herb. Blooms Mar-Oct
Atriplex pacifica South Coast saltscale	None/None G4/S2 1B.2	Coastal bluff scrub, Coastal dunes, Coastal scrub, Playas. 0 - 140 m. annual herb. Blooms Mar-Oct
Atriplex parishii Parish's brittlescale	None/None G1G2/S1 1B.1	Chenopod scrub, Playas, Vernal pools. alkaline. 25 - 1900 m. annual herb. Blooms Jun-Oct
Atriplex serenana var. *davidsonii* Davidson's saltscale	None/None G5T1/S1 1B.2	Coastal bluff scrub, Coastal scrub. alkaline. 10 - 200 m. annual herb. Blooms Apr-Oct
Ayenia compacta California ayenia	None/None G4/S3 2B.3	Mojavean desert scrub, Sonoran desert scrub. rocky. 150 - 1095 m. perennial herb. Blooms Mar-Apr
Azolla microphylla Mexican mosquito fern	None/None G5/S4 4.2	Marshes and swamps (ponds, slow water). 30 - 100 m. annual/perennial herb. Blooms Aug
Baccharis malibuensis Malibu baccharis	None/None G1/S1 1B.1	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland. 150 - 305 m. perennial deciduous shrub. Blooms Aug

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Baccharis plummerae ssp. *plummerae* Plummer's baccharis	None/None G3T3/S3 4.3	Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub. rocky. 5 - 425 m. perennial deciduous shrub. Blooms May, Aug-Sep-Oct
Baccharis vanessae Encinitas baccharis	FT/SCE G1/S1 1B.1	Chaparral (maritime), Cismontane woodland. sandstone. 60 - 720 m. perennial deciduous shrub. Blooms Aug, Oct-Nov
Bahia neomexicana many-flowered bahia	None/None G5/S2S3 2B.3	Pinyon and juniper woodland (sandy). 1500 - 1700 m. annual herb. Blooms Sep-Oct
Berberis fremontii Fremont barberry	None/None G5/S3 2B.3	Joshua tree woodland, Pinyon and juniper woodland. Rocky, sometimes granitic. 1145 - 1720 m. perennial evergreen shrub. Blooms Mar-May
Berberis harrisoniana Kofa Mountain barberry	None/None G2/S1 1B.2	Chaparral, Mojavean desert scrub. usually north-facing talus slopes, sometimes volcanic (breccia). 780 - 840 m. perennial evergreen shrub. Blooms Jan-Mar
Berberis higginsiae Higgins? barberry	None/None G3Q/S1 3.2	Chaparral, Sonoran desert scrub. Rocky, sometimes granitic. 800 - 1065 m. perennial shrub. Blooms Mar-Apr
Berberis nevinii Nevin's barberry	FE/SCE G1/S1 1B.1	Chaparral, Cismontane woodland, Coastal scrub, Riparian scrub. sandy or gravelly. 70 - 825 m. perennial evergreen shrub. Blooms (Feb) Mar-Jun
Berberis pinnata ssp. *insularis* island barberry	FE/SCE G5T1/S1 1B.2	Closed-cone coniferous forest, Chaparral, Cismontane woodland, Coastal scrub. rocky. 75 - 400 m. perennial evergreen shrub. Blooms Feb-May
Bergerocactus emoryi golden-spined cereus	None/None G2G3/S2 2B.2	Closed-cone coniferous forest, Chaparral, Coastal scrub. sandy. 3 - 395 m. perennial stem succulent. Blooms May-Jun
Blepharidachne kingii King's eyelash grass	None/None G4/S2 2B.3	Great Basin scrub (usually carbonate). 1065 - 2135 m. perennial herb. Blooms May
Bloomeria clevelandii San Diego goldenstar	None/None G2/S2 1B.1	Chaparral, Coastal scrub, Valley and foothill grassland, Vernal pools. clay. 50 - 465 m. perennial bulbiferous herb. Blooms Apr-May
Boechera dispar pinyon rockcress	None/None G3/S3 2B.3	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. granitic, gravelly. 1200 - 2540 m. perennial herb. Blooms Mar-Jun
Boechera hirshbergiae Hirshberg's rockcress	None/None G1Q/S1 1B.2	Pebble (Pavement) plain. 1400 - 1415 m. perennial herb. Blooms Mar-May
Boechera hoffmannii Hoffmann's rockcress	FE/None G1G2/S1S2 1B.1	Coastal bluff scrub, Chaparral, Coastal scrub. sandy, rocky, volcanic. 60 - 395 m. perennial herb. Blooms Feb-Apr
Boechera johnstonii Johnston's rockcress	None/None G1/S1 1B.2	Chaparral, Lower montane coniferous forest. often on eroded clay. 1350 - 2150 m. perennial herb. Blooms Feb-Jun
Boechera lincolnensis Lincoln rockcress	None/None G4G5/S3 2B.3	Chenopod scrub, Mojavean desert scrub. carbonate. 1100 - 2705 m. perennial herb. Blooms Mar-May
Boechera parishii Parish's rockcress	None/None G2/S2 1B.2	Pebble (Pavement) plain, Pinyon and juniper woodland, Upper montane coniferous forest. rocky, quartzite on clay, or sometimes carbonate. 1770 - 2990 m. perennial herb. Blooms Apr-May

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Boechera peirsonii San Bernardino rockcress	None/None G1/S1 1B.2	Subalpine coniferous forest (rocky). 2700 - 3200 m. perennial herb. Blooms Mar-Aug
Boechera shockleyi Shockley's rockcress	None/None G3/S2 2B.2	Pinyon and juniper woodland (carbonate or quartzite, rocky or gravelly). 875 - 2310 m. perennial herb. Blooms May-Jun
Botrychium ascendens upswept moonwort	None/None G3G4/S2 2B.3	Lower montane coniferous forest, Meadows and seeps. mesic. 1115 - 3045 m. perennial rhizomatous herb. Blooms (Jun) Jul-Aug
Botrychium crenulatum scalloped moonwort	None/None G4/S3 2B.2	Bogs and fens, Lower montane coniferous forest, Meadows and seeps, Marshes and swamps (freshwater), Upper montane coniferous forest. 1268 - 3280 m. perennial rhizomatous herb. Blooms Jun-Sep
Botrychium minganense Mingan moonwort	None/None G4G5/S3 2B.2	Bogs and fens, Lower montane coniferous forest, Meadows and seeps (edges), Upper montane coniferous forest. Mesic. 1455 - 2180 m. perennial rhizomatous herb. Blooms Jul-Sep
Bouteloua eriopoda black grama	None/None G5/S4 4.2	Joshua tree woodland, Pinyon and juniper woodland. 900 - 1900 m. perennial stoloniferous herb. Blooms May-Aug
Bouteloua trifida three-awned grama	None/None G4G5/S3 2B.3	Mojavean desert scrub (carbonate, rocky). 700 - 2000 m. perennial herb. Blooms (Apr) May-Sep
Brasenia schreberi watershield	None/None G5/S3 2B.3	Marshes and swamps (freshwater). 30 - 2200 m. perennial rhizomatous herb (aquatic). Blooms Jun-Sep
Brodiaea filifolia thread-leaved brodiaea	FT/SCE G2/S2 1B.1	Chaparral (openings), Cismontane woodland, Coastal scrub, Playas, Valley and foothill grassland, Vernal pools. often clay. 25 - 1120 m. perennial bulbiferous herb. Blooms Mar-Jun
Brodiaea kinkiensis San Clemente Island brodiaea	None/None G2/S2 1B.2	Valley and foothill grassland (clay). 305 - 600 m. perennial bulbiferous herb. Blooms May-Jun
Brodiaea orcuttii Orcutt's brodiaea	None/None G2/S2 1B.1	Closed-cone coniferous forest, Chaparral, Cismontane woodland, Meadows and seeps, Valley and foothill grassland, Vernal pools. mesic, clay. 30 - 1692 m. perennial bulbiferous herb. Blooms May-Jul
Brodiaea santarosae Santa Rosa Basalt brodiaea	None/None G1/S1 1B.2	Valley and foothill grassland. basaltic. 565 - 1045 m. perennial bulbiferous herb. Blooms May-Jun
Bursera microphylla little-leaf elephant tree	None/None G4/S2 2B.3	Sonoran desert scrub (rocky). 200 - 700 m. perennial deciduous tree. Blooms Jun-Jul
Calandrinia breweri Brewer's calandrinia	None/None G4/S4 4.2	Chaparral, Coastal scrub. sandy or loamy, disturbed sites and burns. 10 - 1220 m. annual herb. Blooms (Jan)Mar-Jun
Calliandra eriophylla pink fairy-duster	None/None G5/S3 2B.3	Sonoran desert scrub (sandy or rocky). 120 - 1500 m. perennial deciduous shrub. Blooms Jan-Mar
Calochortus catalinae Catalina mariposa lily	None/None G3G4/S3S4 4.2	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland. 15 - 700 m. perennial bulbiferous herb. Blooms (Feb) Mar-Jun

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Calochortus clavatus var. *clavatus* club-haired mariposa lily	None/None G4T3/S3 4.3	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland. usually serpentinite, clay, rocky. 75 - 1300 m. perennial bulbiferous herb. Blooms (Mar)May-Jun
Calochortus clavatus var. *gracilis* slender mariposa lily	None/None G4T2T3/S2S3 1B.2	Chaparral, Coastal scrub, Valley and foothill grassland. 320 - 1000 m. perennial bulbiferous herb. Blooms Mar-Jun (Nov)
Calochortus dunnii Dunn's mariposa lily	None/SCR G2G3/S2S3 1B.2	Closed-cone coniferous forest, Chaparral, Valley and foothill grassland. gabbroic or metavolcanic, rocky. 185 - 1830 m. perennial bulbiferous herb. Blooms (Feb) Apr-Jun
Calochortus fimbriatus late-flowered mariposa lily	None/None G3/S3 1B.3	Chaparral, Cismontane woodland, Riparian woodland. often serpentinite. 275 - 1905 m. perennial bulbiferous herb. Blooms Jun-Aug
Calochortus palmeri var. *munzii* San Jacinto mariposa lily	None/None G3T3/S3 1B.2	Chaparral, Lower montane coniferous forest, Meadows and seeps. 855 - 2200 m. perennial bulbiferous herb. Blooms Apr-Jul
Calochortus palmeri var. *palmeri* Palmer's mariposa lily	None/None G3T2/S2 1B.2	Chaparral, Lower montane coniferous forest, Meadows and seeps. mesic. 710 - 2390 m. perennial bulbiferous herb. Blooms Apr-Jul
Calochortus plummerae Plummer's mariposa lily	None/None G4/S4 4.2	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland. granitic, rocky. 100 - 1700 m. perennial bulbiferous herb. Blooms May-Jul
Calochortus striatus alkali mariposa lily	None/None G3?/S2S3 1B.2	Chaparral, Chenopod scrub, Mojavean desert scrub, Meadows and seeps. alkaline, mesic. 70 - 1595 m. perennial bulbiferous herb. Blooms Apr-Jun
Calochortus weedii var. *intermedius* intermediate mariposa lily	None/None G3G4T2/S2 1B.2	Chaparral, Coastal scrub, Valley and foothill grassland. rocky, calcareous. 105 - 855 m. perennial bulbiferous herb. Blooms May-Jul
Calyptridium arizonicum Arizona pussypaws	None/None G3?/S1 2B.1	Sonoran desert scrub. Metamorphic, washes. 610 - 790 m. annual herb. Blooms Mar-Apr
Calyptridium pygmaeum pygmy pussypaws	None/None G1G2/S1S2 1B.2	Subalpine coniferous forest, Upper montane coniferous forest. sandy or gravelly. 1980 - 3110 m. annual herb. Blooms Jun-Aug
Calystegia felix lucky morning-glory	None/None G1Q/S1 1B.1	Meadows and seeps (sometimes alkaline), Riparian scrub (alluvial). Historically associated with wetland and marshy places, but possibly in drier situations as well. Possibly silty loam and alkaline. 30 - 215 m. annual rhizomatous herb. Blooms Mar-Sep
Calystegia peirsonii Peirson's morning-glory	None/None G4/S4 4.2	Chaparral, Chenopod scrub, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland. 30 - 1500 m. perennial rhizomatous herb. Blooms Apr-Jun
Calystegia sepium ssp. *binghamiae* Santa Barbara morning-glory	None/None G5TXQ/SX 1A	Marshes and swamps (coastal). 5 - 5 m. perennial rhizomatous herb. Blooms Aug
Camissoniopsis guadalupensis ssp. *clementina* San Clemente Island evening-primrose	None/None G3T2/S2 1B.2	Coastal dunes. 0 - 30 m. annual herb. Blooms Apr-Jun
Camissoniopsis lewisii Lewis' evening-primrose	None/None G4/S4 3	Coastal bluff scrub, Cismontane woodland, Coastal dunes, Coastal scrub, Valley and foothill grassland. sandy or clay. 0 - 300 m. annual herb. Blooms Mar-May (Jun)

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Canbya candida white pygmy-poppy	None/None G3G4/S3S4 4.2	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. gravelly, sandy, granitic. 600 - 1460 m. annual herb. Blooms Mar-Jun
Carex comosa bristly sedge	None/None G5/S2 2B.1	Coastal prairie, Marshes and swamps (lake margins), Valley and foothill grassland. 0 - 625 m. perennial rhizomatous herb. Blooms May-Sep
Carex obispoensis San Luis Obispo sedge	None/None G3?/S3? 1B.2	Closed-cone coniferous forest, Chaparral, Coastal prairie, Coastal scrub, Valley and foothill grassland. often serpentinite seeps, sometimes gabbro; often on clay soils. 10 - 820 m. perennial herb. Blooms Apr-Jun
Carex occidentalis western sedge	None/None G4/S3 2B.3	Lower montane coniferous forest, Meadows and seeps. 1645 - 3135 m. perennial rhizomatous herb. Blooms Jun-Aug
Carlowrightia arizonica Arizona carlowrightia	None/None G4G5/S2 2B.2	Sonoran desert scrub (sandy, granitic alluvium). 285 - 430 m. perennial deciduous shrub. Blooms Mar-May
Carnegiea gigantea saguaro	None/None G5/S1 2B.2	Sonoran desert scrub (rocky). 50 - 1500 m. perennial stem succulent. Blooms May-Jun
Castela emoryi Emory's crucifixion-thorn	None/None G3G4/S2S3 2B.2	Mojavean desert scrub, Playas, Sonoran desert scrub. gravelly. 90 - 725 m. perennial deciduous shrub. Blooms (Apr) Jun-Jul (Sep-Oct)
Castilleja cinerea ash-gray paintbrush	FT/None G1G2/S1S2 1B.2	Mojavean desert scrub, Meadows and seeps, Pebble (Pavement) plain, Pinyon and juniper woodland, Upper montane coniferous forest (clay openings). 1800 - 2960 m. perennial herb (hemiparasitic). Blooms Jun-Aug
Castilleja gleasoni Mt. Gleason paintbrush	None/SCR G2/S2 1B.2	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland. granitic. 665 - 2170 m. perennial herb (hemiparasitic). Blooms May-Jun (Sep)
Castilleja grisea San Clemente Island paintbrush	FT/SCE G3/S3 1B.3	Coastal bluff scrub, Coastal scrub. rocky, often canyons. 10 - 535 m. perennial herb (hemiparasitic). Blooms (Dec)Feb-Aug
Castilleja hololeuca island white-felted paintbrush	None/None G3/S3 1B.2	Closed-cone coniferous forest, Chaparral, Coastal scrub. rocky. 20 - 365 m. perennial herb (hemiparasitic). Blooms Feb-Sep
Castilleja lasiorhyncha San Bernardino Mountains owl's-clover	None/None G2?/S2? 1B.2	Chaparral, Meadows and seeps, Pebble (Pavement) plain, Riparian woodland, Upper montane coniferous forest. mesic. 1300 - 2390 m. annual herb (hemiparasitic). Blooms May-Aug
Castilleja montigena Heckard's paintbrush	None/None G3/S3 4.3	Lower montane coniferous forest, Pinyon and juniper woodland, Upper montane coniferous forest. 1950 - 2800 m. perennial herb (hemiparasitic). Blooms May-Aug
Castilleja plagiotoma Mojave paintbrush	None/None G4/S4 4.3	Great Basin scrub (alluvial), Joshua tree woodland, Lower montane coniferous forest, Pinyon and juniper woodland. 300 - 2500 m. perennial herb (hemiparasitic). Blooms Apr-Jun
Caulanthus lemmonii Lemmon's jewelflower	None/None G3/S3 1B.2	Pinyon and juniper woodland, Valley and foothill grassland. 80 - 1580 m. annual herb. Blooms Feb-May
Caulanthus simulans Payson's jewelflower	None/None G4/S4 4.2	Chaparral, Coastal scrub. sandy, granitic. 90 - 2200 m. annual herb. Blooms (Feb) Mar-May (Jun)

Scientific Name Common Name	Status	Habitat Requirements
Ceanothus cyaneus Lakeside ceanothus	None/None G2/S2 1B.2	Closed-cone coniferous forest, Chaparral. 235 - 755 m. perennial evergreen shrub. Blooms Apr-Jun
Ceanothus foliosus var. *viejasensis* Viejas Mountain ceanothus	None/None G5T1/S1 1B.2	Chaparral. Gabbro. 785 - 1370 m. perennial shrub. Blooms Mar-Jun
Ceanothus ophiochilus Vail Lake ceanothus	FT/SCE G1/S1 1B.1	Chaparral (gabbroic or pyroxenite-rich outcrops). 580 - 1065 m. perennial evergreen shrub. Blooms Feb-Mar
Ceanothus otayensis Otay Mountain ceanothus	None/None G1G2/S1 1B.2	Chaparral (metavolcanic or gabbroic). 600 - 1100 m. perennial evergreen shrub. Blooms Jan-Apr
Ceanothus pendletonensis Pendleton ceanothus	None/None G1/S1 1B.2	Chaparral, Cismontane woodland. Granitic. 110 - 870 m. perennial shrub. Blooms Mar-Jun
Ceanothus verrucosus wart-stemmed ceanothus	None/None G2/S2? 2B.2	Chaparral. 1 - 380 m. perennial evergreen shrub. Blooms Dec-May
Centromadia parryi ssp. *australis* southern tarplant	None/None G3T2/S2 1B.1	Marshes and swamps (margins), Valley and foothill grassland (vernally mesic), Vernal pools. 0 - 480 m. annual herb. Blooms May-Nov
Centromadia pungens ssp. *laevis* smooth tarplant	None/None G3G4T2/S2 1B.1	Chenopod scrub, Meadows and seeps, Playas, Riparian woodland, Valley and foothill grassland. alkaline. 0 - 640 m. annual herb. Blooms Apr-Sep
Cercocarpus betuloides var. *blancheae* island mountain-mahogany	None/None G5T4/S4 4.3	Closed-cone coniferous forest, Chaparral. 30 - 600 m. perennial evergreen shrub. Blooms Feb-May
Cercocarpus traskiae Catalina Island mountain-mahogany	FE/SCE G1/S1 1B.1	Chaparral, Coastal scrub. rocky, sausserite gabbro. 100 - 250 m. perennial evergreen shrub. Blooms Mar-May
Chaenactis carphoclinia var. *peirsonii* Peirson's pincushion	None/None G5T2/S2 1B.3	Sonoran desert scrub (sandy). 3 - 500 m. annual herb. Blooms Mar-Apr
Chaenactis glabriuscula var. *orcuttiana* Orcutt's pincushion	None/None G5T1T2/S1 1B.1	Coastal bluff scrub (sandy), Coastal dunes. 0 - 100 m. annual herb. Blooms Jan-Aug
Chaenactis parishii Parish's chaenactis	None/None G3G4/S3 1B.3	Chaparral (rocky). 1300 - 2500 m. perennial herb. Blooms May-Jul
Chamaebatia australis southern mountain misery	None/None G4/S4 4.2	Chaparral (gabbroic or metavolcanic). 300 - 1020 m. perennial evergreen shrub. Blooms Nov-May
Chenopodium littoreum coastal goosefoot	None/None G1/S1 1B.2	Coastal dunes. 10 - 30 m. annual herb. Blooms Apr-Aug
Chloropyron maritimum ssp. *maritimum* salt marsh bird's-beak	FE/SCE G4?T1/S1 1B.2	Coastal dunes, Marshes and swamps (coastal salt). 0 - 30 m. annual herb (hemiparasitic). Blooms May-Oct (Nov)
Chloropyron molle ssp. *molle* soft bird's-beak	FE/SCR G2T1/S1 1B.2	Marshes and swamps (coastal salt). 0 - 3 m. annual herb (hemiparasitic). Blooms Jun-Nov

Scientific Name Common Name	Status	Habitat Requirements
Chloropyron tecopense Tecopa bird's-beak	None/None G2/S1 1B.2	Mojavean desert scrub, Meadows and seeps. Mesic, alkaline. 60 - 900 m. annual herb (hemiparasitic). Blooms Jul-Oct
Chorizanthe blakleyi Blakley's spineflower	None/None G2/S2 1B.3	Chaparral, Pinyon and juniper woodland. 600 - 1600 m. annual herb. Blooms Apr-Jun
Chorizanthe leptotheca Peninsular spineflower	None/None G3/S3 4.2	Chaparral, Coastal scrub, Lower montane coniferous forest. alluvial fan, granitic. 300 - 1900 m. annual herb. Blooms May-Aug
Chorizanthe orcuttiana Orcutt's spineflower	FE/SCE G1/S1 1B.1	Closed-cone coniferous forest, Chaparral (maritime), Coastal scrub. sandy openings. 3 - 125 m. annual herb. Blooms Mar-May
Chorizanthe parryi var. *fernandina* San Fernando Valley spineflower	FC/SCE G2T1/S1 1B.1	Coastal scrub (sandy), Valley and foothill grassland. 150 - 1220 m. annual herb. Blooms Apr-Jul
Chorizanthe parryi var. *parryi* Parry's spineflower	None/None G3T2/S2 1B.1	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland. sandy or rocky, openings. 275 - 1220 m. annual herb. Blooms Apr-Jun
Chorizanthe polygonoides var. *longispina* long-spined spineflower	None/None G5T3/S3 1B.2	Chaparral, Coastal scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools. often clay. 30 - 1530 m. annual herb. Blooms Apr-Jul
Chorizanthe spinosa Mojave spineflower	None/None G4/S4 4.2	Chenopod scrub, Joshua tree woodland, Mojavean desert scrub, Playas. Sometimes alkaline. 6 - 1300 m. annual herb. Blooms Mar-Jul
Chorizanthe xanti var. *leucotheca* white-bracted spineflower	None/None G4T3/S3 1B.2	Coastal scrub (alluvial fans), Mojavean desert scrub, Pinyon and juniper woodland. sandy or gravelly. 300 - 1200 m. annual herb. Blooms Apr-Jun
Chylismia arenaria sand evening-primrose	None/None G4?/S2S3 2B.2	Sonoran desert scrub (sandy or rocky). -70 - 915 m. annual/perennial herb. Blooms Nov-May
Cicuta maculata var. *bolanderi* Bolander's water-hemlock	None/None G5T4T5/S2? 2B.1	Marshes and swamps Coastal, fresh or brackish water. 0 - 200 m. perennial herb. Blooms Jul-Sep
Cirsium arizonicum var. *tenuisectum* desert mountain thistle	None/None G5T2/S2 1B.2	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. rocky, disturbed areas, often roadsides. 1500 - 2800 m. perennial herb. Blooms Jun-Nov
Cirsium occidentale var. *compactum* compact cobwebby thistle	None/None G3G4T2/S2 1B.2	Chaparral, Coastal dunes, Coastal prairie, Coastal scrub. 5 - 150 m. perennial herb. Blooms Apr-Jun
Cistanthe maritima seaside cistanthe	None/None G3G4/S3 4.2	Coastal bluff scrub, Coastal scrub, Valley and foothill grassland. sandy. 5 - 300 m. annual herb. Blooms (Feb) Mar-Jun (Aug)
Cladium californicum California sawgrass	None/None G4/S2 2B.2	Meadows and seeps, Marshes and swamps Alkaline or Freshwater. 60 - 1600 m. perennial rhizomatous herb. Blooms Jun-Sep
Clarkia delicata delicate clarkia	None/None G3/S3 1B.2	Chaparral, Cismontane woodland. often gabbroic. 235 - 1000 m. annual herb. Blooms Apr-Jun
Clarkia xantiana ssp. *parviflora* Kern Canyon clarkia	None/None G4T3?/S3? 4.2	Chaparral, Cismontane woodland, Great Basin scrub, Valley and foothill grassland. often sandy, sometimes rocky, slopes, sometimes roadsides. 700 - 3620 m. annual herb. Blooms May-Jun

Scientific Name Common Name	Status	Habitat Requirements
Claytonia lanceolata var. *peirsonii* Peirson's spring beauty - Synonym	None/None G5T1Q/S1 3.1	Subalpine coniferous forest, Upper montane coniferous forest. Scree. 1510 - 2745 m. perennial herb. Blooms (Mar) May-Jun
Claytonia peirsonii ssp. *bernardinus* San Bernardino spring beauty	None/None G3G4T1 G2G3T1/S1 1B.1	pinyon and juniper woodland, upper montane coniferous forest. rocky, talus, carbonate, usually openings. 2360 - 2465 m. perennial herb. Blooms Mar-Apr
Claytonia peirsonii ssp. *californacis* Furnace spring beauty	None/None G3G4T1 G2G3T1/S1 1B.1	pinyon and juniper woodland, upper montane coniferous forest. rocky, talus, carbonate, usually openings. 2300 - 2300 m. perennial herb. Blooms Mar-May
Claytonia peirsonii ssp. *peirsonii* Peirson’s spring beauty	None/None G5T2 G2G3T2/S2 1B.2	subalpine coniferous forest, upper montane coniferous forest. granitic, metamorphic, scree, talus. 1510 - 2745 m. perennial herb. Blooms (Mar) May-Jun
Cleomella brevipes short-pedicelled cleomella	None/None G4/S3 4.2	Meadows and seeps, Marshes and swamps, Playas. alkaline. 395 - 2195 m. annual herb. Blooms May-Oct
Clinopodium chandleri San Miguel savory	None/None G3/S2 1B.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland. Rocky, gabbroic or metavolcanic. 120 - 1075 m. perennial shrub. Blooms Mar-Jul
Clinopodium mimuloides monkey-flower savory	None/None G3/S3 4.2	Chaparral, North Coast coniferous forest. streambanks, mesic. 305 - 1800 m. perennial herb. Blooms Jun-Oct
Colubrina californica Las Animas colubrina	None/None G4/S2S3 2B.3	Mojavean desert scrub, Sonoran desert scrub. 10 - 1000 m. perennial deciduous shrub. Blooms Apr-Jun
Comarostaphylis diversifolia ssp. *diversifolia* summer holly	None/None G3T2/S2 1B.2	Chaparral, Cismontane woodland. 30 - 790 m. perennial evergreen shrub. Blooms Apr-Jun
Condalia globosa var. *pubescens* spiny abrojo	None/None G5T4/S3 4.2	Sonoran desert scrub. 85 - 1000 m. perennial deciduous shrub. Blooms Mar-May (Nov)
Constancea nevinii Nevin's woolly sunflower	None/None G3/S3 1B.3	Coastal bluff scrub, Coastal scrub. 5 - 410 m. perennial deciduous shrub. Blooms Apr-Aug
Convolvulus simulans small-flowered morning-glory	None/None G4/S4 4.2	Chaparral (openings), Coastal scrub, Valley and foothill grassland. clay, serpentinite seeps. 30 - 740 m. annual herb. Blooms Mar-Jul
Cordylanthus eremicus ssp. *eremicus* desert bird's-beak	None/None G3T3/S3 4.3	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. 1000 - 3000 m. annual herb (hemiparasitic). Blooms Jul-Oct
Cordylanthus parviflorus small-flowered bird's-beak	None/None G4/S2 2B.3	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. 700 - 2200 m. annual herb (hemiparasitic). Blooms Aug-Oct
Corethrogyne filaginifolia var. *incana* San Diego sand aster	None/None G4T1Q/S1 1B.1	Coastal bluff scrub, Chaparral, Coastal scrub. 3 - 115 m. perennial herb. Blooms Jun-Sep
Corethrogyne filaginifolia var. *linifolia* Del Mar Mesa sand aster	None/None G4T1Q/S1 1B.1	Coastal bluff scrub, Chaparral (maritime, openings), Coastal scrub. sandy. 15 - 150 m. perennial herb. Blooms May-Jul, Aug-Sep

Scientific Name Common Name	Status	Habitat Requirements
Coryphantha alversonii foxtail cactus	None/None G3/S3 4.3	Mojavean desert scrub, Sonoran desert scrub. sandy or rocky, usually granitic. 75 - 1525 m. perennial stem succulent. Blooms Apr-Jun
Coryphantha chlorantha desert pincushion	None/None G4/S3 2B.1	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. carbonate, gravelly, rocky. 45 - 1705 m. perennial stem succulent. Blooms Apr-Sep
Coryphantha vivipara var. *rosea* viviparous foxtail cactus	None/None G5T3/S1 2B.2	Mojavean desert scrub, Pinyon and juniper woodland. carbonate. 1250 - 2700 m. perennial stem succulent. Blooms May-Jun
Crocanthemum greenei island rush-rose	FT/None G3/S3 1B.2	Closed-cone coniferous forest, Chaparral, Cismontane woodland, Coastal scrub. Rocky, openings. 15 - 490 m. perennial evergreen shrub. Blooms (Jan) Mar-Jul (Aug)
Crossosoma californicum Catalina crossosoma	None/None G3/S3 1B.2	Chaparral, Coastal scrub. rocky. 0 - 500 m. perennial deciduous shrub. Blooms Feb-May
Cryptantha clokeyi Clokey's cryptantha	None/None G3/S3 1B.2	Mojavean desert scrub. 725 - 1365 m. annual herb. Blooms Apr
Cryptantha ganderi Gander's cryptantha	None/None G2G3/S1 1B.1	Desert dunes, Sonoran desert scrub (sandy). 160 - 400 m. annual herb. Blooms Feb-May
Cryptantha traskiae Trask's cryptantha	None/None G2/S2 1B.1	Coastal bluff scrub, Coastal dunes, Coastal scrub. 15 - 400 m. annual herb. Blooms Mar-Jun
Cryptantha tumulosa New York Mountains cryptantha	None/None G4/S4 4.3	Mojavean desert scrub, Pinyon and juniper woodland. gravelly or clay, granitic or carbonate. 915 - 2130 m. perennial herb. Blooms Apr-Jun
Cryptantha wigginsii Wiggins' cryptantha	None/None G2/S1 1B.2	Coastal scrub. often clay. 20 - 275 m. annual herb. Blooms Feb-Jun
Cuscuta californica var. *apiculata* pointed dodder	None/None G5T3/S3? 3	Mojavean desert scrub, Sonoran desert scrub. sandy. 0 - 500 m. annual vine (parasitic). Blooms Feb-Aug
Cuscuta obtusiflora var. *glandulosa* Peruvian dodder	None/None G5T4?/SH 2B.2	Marshes and swamps (freshwater). 15 - 280 m. annual vine (parasitic). Blooms Jul-Oct
Cylindropuntia californica var. *californica* snake cholla	None/None G3T2/S1 1B.1	Chaparral, Coastal scrub. 30 - 150 m. perennial stem succulent. Blooms Apr-May
Cylindropuntia fosbergii pink teddy-bear cholla	None/None G2/S2 1B.3	Sonoran desert scrub. 85 - 850 m. perennial stem succulent. Blooms Mar-May
Cylindropuntia munzii Munz's cholla	None/None G3/S1 1B.3	Sonoran desert scrub (sandy or gravelly). 150 - 600 m. perennial stem succulent. Blooms May
Cylindropuntia wolfii Wolf's cholla	None/None G4/S3 4.3	Sonoran desert scrub. 100 - 1200 m. perennial stem succulent. Blooms Mar-May
Cymopterus deserticola desert cymopterus	None/None G2/S2 1B.2	Joshua tree woodland, Mojavean desert scrub. sandy. 630 - 1500 m. perennial herb. Blooms Mar-May

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Cymopterus gilmanii Gilman's cymopterus	None/None G3/S2 2B.3	Mojavean desert scrub (often carbonate). 915 - 2000 m. perennial herb. Blooms Apr-May
Cymopterus multinervatus purple-nerve cymopterus	None/None G4G5/S2 2B.2	Mojavean desert scrub, Pinyon and juniper woodland. sandy or gravelly. 790 - 1800 m. perennial herb. Blooms Mar-Apr
Deinandra conjugens Otay tarplant	FT/SCE G1/S1 1B.1	Coastal scrub, Valley and foothill grassland. clay. 25 - 300 m. annual herb. Blooms (Apr) May-Jun
Deinandra floribunda Tecate tarplant	None/None G2/S2 1B.2	Chaparral, Coastal scrub. 70 - 1220 m. annual herb. Blooms Aug-Oct
Deinandra minthornii Santa Susana tarplant	None/SCR G2/S2 1B.2	Chaparral, Coastal scrub. rocky. 280 - 760 m. perennial deciduous shrub. Blooms Jul-Nov
Deinandra mohavensis Mojave tarplant	None/SCE G2/S2 1B.3	Chaparral, Coastal scrub, Riparian scrub. mesic. 640 - 1600 m. annual herb. Blooms (May) Jun-Oct (Jan)
Deinandra paniculata paniculate tarplant	None/None G4/S4 4.2	Coastal scrub, Valley and foothill grassland, Vernal pools. usually vernally mesic, sometimes sandy. 25 - 940 m. annual herb. Blooms (Mar) Apr-Nov (Dec)
Delphinium hesperium ssp. *cuyamacae* Cuyamaca larkspur	None/SCR G4T2/S2 1B.2	Lower montane coniferous forest, Meadows and seeps, Vernal pools. mesic. 1220 - 1631 m. perennial herb. Blooms May-Jul
Delphinium parishii ssp. *subglobosum* Colorado Desert larkspur	None/None G4T4/S4 4.3	Chaparral, Cismontane woodland, Pinyon and juniper woodland, Sonoran desert scrub. 600 - 1800 m. perennial herb. Blooms Mar-Jun
Delphinium parryi ssp. *blochmaniae* dune larkspur	None/None G4T2/S2 1B.2	Chaparral (maritime), Coastal dunes. 0 - 200 m. perennial herb. Blooms Apr-Jun
Delphinium scaposum bare-stem larkspur	None/None G5/S1 2B.3	Sonoran desert scrub. rocky, sometimes washes. 270 - 1055 m. perennial herb. Blooms Mar-Apr
Delphinium umbraculorum umbrella larkspur	None/None G3/S3 1B.3	Chaparral, Cismontane woodland. 400 - 1600 m. perennial herb. Blooms Apr-Jun
Delphinium variegatum ssp. *kinkiense* San Clemente Island larkspur	FE/SCE G4T2/S2 1B.1	Valley and foothill grassland (coastal). 75 - 500 m. perennial herb. Blooms Mar-Apr
Delphinium variegatum ssp. *thornei* Thorne's royal larkspur	None/None G4T1/S1 1B.1	Cismontane woodland, Valley and foothill grassland (coastal). 250 - 575 m. perennial herb. Blooms (Mar)Apr-May
Dendromecon harfordii var. *rhamnoides* south island bush-poppy	None/None G4T1Q/S1 3.1	Chaparral, Cismontane woodland, Coastal scrub. 150 - 520 m. perennial evergreen shrub. Blooms Apr-Jun
Dichondra occidentalis western dichondra	None/None G3G4/S3S4 4.2	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland. 50 - 500 m. perennial rhizomatous herb. Blooms (Jan) Mar-Jul
Dicranostegia orcuttiana Orcutt's bird's-beak	None/None G2G3/S1 2B.1	Coastal scrub. 10 - 350 m. annual herb (hemiparasitic). Blooms (Mar) Apr-Jul (Sep)

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Dieteria asteroides var. *lagunensis* Mt. Laguna aster	None/SCR G5T2T3/S1 2B.1	Cismontane woodland, Lower montane coniferous forest. 790 - 2400 m. perennial herb. Blooms (May) Jul-Aug (Sep-Oct)
Dieteria canescens var. *ziegleri* Ziegler's aster	None/None G5T1/S1 1B.2	Lower montane coniferous forest, Upper montane coniferous forest. 1372 - 2499 m. perennial herb. Blooms Jul-Oct
Digitaria californica var. *californica* Arizona cottontop	None/None G5T5/S2 2B.3	Mojavean desert scrub, Sonoran desert scrub. rocky. 290 - 1490 m. perennial herb. Blooms Jul-Nov
Diplacus aridus low bush monkeyflower	None/None G4/S3 4.3	Chaparral (rocky), Sonoran desert scrub. 750 - 1200 m. perennial evergreen shrub. Blooms Apr-Jul
Diplacus clevelandii Cleveland's bush monkeyflower	None/None G4/S4 4.2	Chaparral, Cismontane woodland, Lower montane coniferous forest. Gabbroic, often in disturbed areas, openings, rocky. 450 - 2000 m. perennial rhizomatous herb. Blooms Apr-Jul
Diplacus johnstonii Johnston's monkeyflower	None/None G4/S4 4.3	Lower montane coniferous forest (scree, disturbed areas, rocky or gravelly, roadside). 975 - 2920 m. annual herb. Blooms (Apr) May-Aug
Diplacus mohavensis Mojave monkeyflower	None/None G2/S2 1B.2	Joshua tree woodland, Mojavean desert scrub. sandy or gravelly, often in washes. 600 - 1200 m. annual herb. Blooms Apr-Jun
Diplacus traskiae Santa Catalina Island monkeyflower	None/None GX/SX 1A	Coastal scrub. - m. annual herb. Blooms Mar-Apr
Dissanthelium californicum California dissanthelium	None/None G2/S1 1B.2	Coastal scrub. 5 - 500 m. annual herb. Blooms Mar-May
Ditaxis claryana glandular ditaxis	None/None G3G4/S2 2B.2	Mojavean desert scrub, Sonoran desert scrub. sandy. 0 - 465 m. perennial herb. Blooms Oct, Dec, Jan, Feb, Mar
Ditaxis serrata var. *californica* California ditaxis	None/None G5T3T4/S2? 3.2	Sonoran desert scrub. 30 - 1000 m. perennial herb. Blooms Mar-Dec
Dithyrea maritima beach spectaclepod	None/SCT G1/S1 1B.1	Coastal dunes, Coastal scrub (sandy). 3 - 50 m. perennial rhizomatous herb. Blooms Mar-May
Dodecahema leptoceras slender-horned spineflower	FE/SCE G1/S1 1B.1	Chaparral, Cismontane woodland, Coastal scrub (alluvial fan). sandy. 200 - 760 m. annual herb. Blooms Apr-Jun
Downingia concolor var. *brevior* Cuyamaca Lake downingia	None/SCE G4T1/S1 1B.1	Meadows and seeps (vernally mesic), Vernal pools. 1030 - 1500 m. annual herb. Blooms May-Jul
Draba saxosa Southern California rock draba	None/None G2G3/S2S3 1B.3	Alpine boulder and rock field, Subalpine coniferous forest, Upper montane coniferous forest. rocky. 2440 - 3600 m. perennial herb. Blooms Jun-Sep
Drymocallis cuneifolia var. *cuneifolia* wedgeleaf woodbeauty	None/None G2T1/S1 1B.1	Riparian scrub, Upper montane coniferous forest. Sometimes carbonate. 1800 - 2415 m. perennial herb. Blooms Jun-Aug
Drymocallis cuneifolia var. *ewanii* Ewan's woodbeauty	None/None G2T2/S2 1B.3	Lower montane coniferous forest (near seeps and springs), Meadows and seeps. 1900 - 2400 m. perennial herb. Blooms Jun-Jul

Scientific Name Common Name	Status	Habitat Requirements
Dryopteris filix-mas male fern	None/None G5/S2 2B.3	Upper montane coniferous forest (granitic, rocky). 1850 - 3100 m. perennial rhizomatous herb. Blooms Jul-Sep
Dudleya abramsii ssp. *affinis* San Bernardino Mountains dudleya	None/None G4T2/S2 1B.2	Pebble (Pavement) plain, Pinyon and juniper woodland, Upper montane coniferous forest. granitic, quartzite, or carbonate. 1250 - 2600 m. perennial herb. Blooms Apr-Jul
Dudleya alainae Banner dudleya	None/None G2Q/S2 3.2	Chaparral, Lower montane coniferous forest, Sonoran desert scrub. rocky. 740 - 1200 m. perennial herb. Blooms Apr-Jul
Dudleya attenuata ssp. *attenuata* Orcutt's dudleya	None/None G4T1T2/S1 2B.1	Coastal bluff scrub, Chaparral, Coastal scrub. rocky or gravelly. 3 - 50 m. perennial herb. Blooms May-Jul
Dudleya blochmaniae ssp. *blochmaniae* Blochman's dudleya	None/None G3T2/S2 1B.1	Coastal bluff scrub, Chaparral, Coastal scrub, Valley and foothill grassland. rocky, often clay or serpentinite. 5 - 450 m. perennial herb. Blooms Apr-Jun
Dudleya blochmaniae ssp. *insularis* Santa Rosa Island dudleya	None/None G3T1/S1 1B.1	Coastal bluff scrub. 3 - 10 m. perennial herb. Blooms Mar-Apr
Dudleya brevifolia short-leaved dudleya	None/SCE G1/S1 1B.1	Chaparral (maritime, openings), Coastal scrub. Torrey sandstone. 30 - 250 m. perennial herb. Blooms Apr-May
Dudleya cymosa ssp. *agourensis* Agoura Hills dudleya	FT/None G5T1/S1 1B.2	Chaparral, Cismontane woodland. rocky, volcanic. 200 - 500 m. perennial herb. Blooms May-Jun
Dudleya cymosa ssp. *crebrifolia* San Gabriel River dudleya	None/None G5T2/S2 1B.2	Chaparral (granitic). 275 - 457 m. perennial herb. Blooms Apr-Jul
Dudleya cymosa ssp. *marcescens* marcescent dudleya	FT/SCR G5T2/S2 1B.2	Chaparral. volcanic, rocky. 150 - 520 m. perennial herb. Blooms Apr-Jul
Dudleya cymosa ssp. *ovatifolia* Santa Monica dudleya	FT/None G5T1/S1 1B.1	Chaparral, Coastal scrub. volcanic or sedimentary, rocky. 150 - 1675 m. perennial herb. Blooms Mar-Jun
Dudleya densiflora San Gabriel Mountains dudleya	None/None G2/S2 1B.1	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Riparian woodland. granitic, cliffs and canyon walls. 244 - 610 m. perennial herb. Blooms Mar-Jun
Dudleya multicaulis many-stemmed dudleya	None/None G2/S2 1B.2	Chaparral, Coastal scrub, Valley and foothill grassland. often clay. 15 - 790 m. perennial herb. Blooms Apr-Jul
Dudleya parva Conejo dudleya	FT/None G1/S1 1B.2	Coastal scrub, Valley and foothill grassland. rocky or gravelly, clay or volcanic. 60 - 450 m. perennial herb. Blooms May-Jun
Dudleya stolonifera Laguna Beach dudleya	FT/SCT G1/S1 1B.1	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland. rocky. 10 - 260 m. perennial stoloniferous herb. Blooms May-Jul
Dudleya variegata variegated dudleya	None/None G2/S2 1B.2	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland, Vernal pools. clay. 3 - 580 m. perennial herb. Blooms Apr-Jun
Dudleya verityi Verity's dudleya	FT/None G1/S1 1B.1	Chaparral, Cismontane woodland, Coastal scrub. volcanic, rocky. 60 - 120 m. perennial herb. Blooms May-Jun

Scientific Name Common Name	Status	Habitat Requirements
Dudleya virens ssp. *hassei* Catalina Island dudleya	None/None G3?T2/S2 1B.2	Coastal bluff scrub, Coastal scrub. Rocky. 0 - 400 m. perennial herb. Blooms Mar-Jun
Dudleya virens ssp. *insularis* island green dudleya	None/None G3?T3/S3 1B.2	Coastal bluff scrub, Coastal scrub. rocky. 5 - 300 m. perennial herb. Blooms Apr-Jun
Dudleya virens ssp. *virens* bright green dudleya	None/None G3?T2/S2 1B.2	Coastal bluff scrub, Chaparral, Coastal scrub. rocky. 5 - 400 m. perennial herb. Blooms Apr-Jul
Dudleya viscida sticky dudleya	None/None G2/S2 1B.2	Coastal bluff scrub, Chaparral, Cismontane woodland, Coastal scrub. rocky. 10 - 550 m. perennial herb. Blooms May-Jun
Echinocereus engelmannii var. *howei* Howe's hedgehog cactus	None/None G5T1/S1 1B.1	Mojavean desert scrub. 430 - 775 m. perennial stem succulent. Blooms Apr-May
Eleocharis parvula small spikerush	None/None G5/S3 4.3	Marshes and swamps. 1 - 3020 m. perennial herb. Blooms (Apr) Jun-Aug (Sep)
Elymus salina Salina Pass wild-rye	None/None G4G5/S2S3 2B.3	Pinyon and juniper woodland (rocky). 1350 - 2135 m. perennial rhizomatous herb. Blooms May-Jun
Enceliopsis nudicaulis var. *nudicaulis* naked-stemmed daisy	None/None G5T5/S3 4.3	Great Basin scrub, Mojavean desert scrub. volcanic or carbonate. 950 - 2000 m. perennial herb. Blooms Apr-May
Enneapogon desvauxii nine-awned pappus grass	None/None G5/S3 2B.2	Pinyon and juniper woodland (rocky, carbonate). 1275 - 1825 m. perennial herb. Blooms Aug-Sep
Eremalche parryi ssp. *kernensis* Kern mallow	FE/None G3G4T3/S3 1B.2	Chenopod scrub, Pinyon and juniper woodland, Valley and foothill grassland. On dry, open sandy to clay soils; often at edge of balds. 70 - 1290 m. annual herb. Blooms Jan, Mar, Apr, May (Feb)
Eremogone congesta var. *charlestonensis* Charleston sandwort	None/None G5T2?/S1 1B.3	Pinyon and juniper woodland (sandy). 2200 - 2225 m. perennial herb. Blooms Jun
Eremogone ursina Big Bear Valley sandwort	FT/None G1/S1 1B.2	Meadows and seeps, Pebble (Pavement) plain, Pinyon and juniper woodland. mesic, rocky. 1800 - 2900 m. perennial herb. Blooms May-Aug
Eremothera boothii ssp. *boothii* Booth's evening-primrose	None/None G5T4/S3 2B.3	Joshua tree woodland, Pinyon and juniper woodland. 815 - 2400 m. annual herb. Blooms Apr-Sep
Eremothera boothii ssp. *intermedia* Booth's hairy evening-primrose	None/None G5T3T4/S3 2B.3	Great Basin scrub (sandy), Pinyon and juniper woodland. 1500 - 2150 m. annual herb. Blooms (May) Jun
Eriastrum densifolium ssp. *sanctorum* Santa Ana River woollystar	FE/SCE G4T1/S1 1B.1	Chaparral, Coastal scrub (alluvial fan). sandy or gravelly. 91 - 610 m. perennial herb. Blooms Apr-Sep
Eriastrum harwoodii Harwood's eriastrum	None/None G2/S2 1B.2	Desert dunes. 125 - 915 m. annual herb. Blooms Mar-Jun
Eriastrum hooveri Hoover's eriastrum	None/None G3/S3 4.2	Chenopod scrub, Pinyon and juniper woodland, Valley and foothill grassland. Sometimes gravelly. 50 - 915 m. annual herb. Blooms (Feb) Mar-Jul

Scientific Name Common Name	Status	Habitat Requirements
Eriastrum rosamondense Rosamond eriastrum	None/None G1?/S1? 1B.1	Chenopod scrub (openings), Vernal pools (edges). Alkaline hummocks, often sandy. 700 - 715 m. annual herb. Blooms Apr-May (Jun-Jul)
Ericameria cuneata var. *macrocephala* Laguna Mountains goldenbush	None/None G5T2T3/S2S3 1B.3	Chaparral (granitic). 1195 - 1850 m. perennial shrub. Blooms Sep-Dec
Ericameria nana dwarf goldenbush	None/None G5/S4 4.3	Pinyon and juniper woodland (rocky, carbonate or granitic). 1465 - 2800 m. perennial shrub. Blooms Jul-Nov
Ericameria palmeri var. *palmeri* Palmer's goldenbush	None/None G4T2?/S2 1B.1	Chaparral, Coastal scrub. mesic. 30 - 600 m. perennial evergreen shrub. Blooms (Jul) Sep-Nov
Erigeron breweri var. *jacinteus* San Jacinto Mountains daisy	None/None G5T3/S3 4.3	Subalpine coniferous forest, Upper montane coniferous forest. rocky. 2700 - 2900 m. perennial rhizomatous herb. Blooms Jun-Sep
Erigeron oxyphyllus wand-like fleabane daisy	None/None G4/S2 2B.3	Sonoran desert scrub. dry, rocky slopes and washes. 645 - 790 m. perennial herb. Blooms Apr-May
Erigeron parishii Parish's daisy	FT/None G2/S2 1B.1	Mojavean desert scrub, Pinyon and juniper woodland. usually carbonate, sometimes granitic. 800 - 2000 m. perennial herb. Blooms May-Aug
Erigeron uncialis var. *uncialis* limestone daisy	None/None G3G4T2/S2 1B.2	Great Basin scrub, Pinyon and juniper woodland, Subalpine coniferous forest. carbonate. 1900 - 2900 m. perennial herb. Blooms May-Jul
Erigeron utahensis Utah daisy	None/None G4/S2 2B.3	Pinyon and juniper woodland (carbonate). 1500 - 2320 m. perennial herb. Blooms May-Jun
Eriodictyon angustifolium narrow-leaved yerba santa	None/None G5/S3 2B.3	Pinyon and juniper woodland. 1500 - 1900 m. perennial evergreen shrub. Blooms May-Aug
Eriodictyon sessilifolium sessile-leaved yerba stanta	None/None G4/S1 2B.1	Coastal scrub. volcanic. 170 - 170 m. perennial shrub. Blooms Jul
Eriogonum bifurcatum forked buckwheat	None/None G3/S3 1B.2	Chenopod scrub (sandy). 645 - 810 m. annual herb. Blooms Apr-Jun
Eriogonum contiguum Reveal's buckwheat	None/None G3/S2 2B.3	Mojavean desert scrub (sandy). 30 - 1320 m. annual herb. Blooms (Feb) Mar-May (Jun)
Eriogonum crocatum conejo buckwheat	None/SCR G1/S1 1B.2	Chaparral, Coastal scrub, Valley and foothill grassland. Conejo volcanic outcrops, rocky. 50 - 580 m. perennial herb. Blooms Apr-Jul
Eriogonum evanidum vanishing wild buckwheat	None/None G2/S1 1B.1	Chaparral, Cismontane woodland, Lower montane coniferous forest, Pinyon and juniper woodland. sandy or gravelly. 1100 - 2225 m. annual herb. Blooms Jul-Oct
Eriogonum giganteum var. *formosum* San Clemente Island buckwheat	None/None G3T3?/S3? 1B.2	Coastal bluff scrub (rocky). 10 - 455 m. perennial deciduous shrub. Blooms Mar-Oct
Eriogonum grande var. *timorum* San Nicolas Island buckwheat	None/SCE G4T1/S1 1B.1	Coastal bluff scrub. 10 - 215 m. perennial herb. Blooms Mar, May, Jun, Jul, Aug, Sep, Oct

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Eriogonum heermannii var. *floccosum* Clark Mountain buckwheat	None/None G5T4/S4 4.3	Pinyon and juniper woodland (carbonate). 900 - 2400 m. perennial deciduous shrub. Blooms Aug-Oct
Eriogonum kennedyi var. *alpigenum* southern alpine buckwheat	None/None G4T3/S3 1B.3	Alpine boulder and rock field, Subalpine coniferous forest. granitic, gravelly. 2600 - 3500 m. perennial herb. Blooms Jul-Sep
Eriogonum kennedyi var. *austromontanum* southern mountain buckwheat	FT/None G4T2/S2 1B.2	Lower montane coniferous forest (gravelly), Pebble (Pavement) plain. 1770 - 2890 m. perennial herb. Blooms Jun-Sep
Eriogonum microthecum var. *johnstonii* Johnston's buckwheat	None/None G5T2/S2 1B.3	Subalpine coniferous forest, Upper montane coniferous forest. rocky. 1829 - 2926 m. perennial deciduous shrub. Blooms Jul-Sep
Eriogonum microthecum var. *lacus-ursi* Bear Lake buckwheat	None/None G5T1/S1 1B.1	Great Basin scrub, Lower montane coniferous forest. clay outcrops. 2000 - 2100 m. perennial shrub. Blooms Jul-Aug
Eriogonum ovalifolium var. *vineum* Cushenbury buckwheat	FE/None G5T1/S1 1B.1	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. carbonate. 1400 - 2440 m. perennial herb. Blooms May-Aug
Eriogonum thornei Thorne's buckwheat	None/SCE G1/S1 1B.2	Pinyon and juniper woodland (gravelly). 1800 - 1830 m. perennial shrub. Blooms Jul-Aug
Eriogonum umbellatum var. *juniporinum* juniper sulphur-flowered buckwheat	None/None G5T4/S3 2B.3	Mojavean desert scrub, Pinyon and juniper woodland. 1300 - 2500 m. perennial herb. Blooms Jul-Oct
Eriogonum umbellatum var. *minus* alpine sulfur-flowered buckwheat	None/None G5T4/S4 4.3	Subalpine coniferous forest, Upper montane coniferous forest. gravelly. 1800 - 3068 m. perennial herb. Blooms Jun-Sep
Erioneuron pilosum hairy erioneuron	None/None G5/S2 2B.3	Pinyon and juniper woodland (rocky, sometimes carbonate). 1420 - 2010 m. perennial herb. Blooms (Apr) May-Jun
Eriophyllum lanatum var. *obovatum* southern Sierra woolly sunflower	None/None G5T4/S4 4.3	Lower montane coniferous forest, Upper montane coniferous forest. sandy loam. 1114 - 2500 m. perennial herb. Blooms Jun-Jul
Eriophyllum mohavense Barstow woolly sunflower	None/None G2/S2 1B.2	Chenopod scrub, Mojavean desert scrub, Playas. 500 - 960 m. annual herb. Blooms Mar-May
Eryngium aristulatum var. *hooveri* Hoover's button-celery	None/None G5T1/S1 1B.1	Vernal pools. 3 - 45 m. annual/perennial herb. Blooms (Jun) Jul (Aug)
Eryngium aristulatum var. *parishii* San Diego button-celery	FE/SCE G5T1/S1 1B.1	Coastal scrub, Valley and foothill grassland, Vernal pools. mesic. 20 - 620 m. annual/perennial herb. Blooms Apr-Jun
Eryngium pendletonense Pendleton button-celery	None/None G1/S1 1B.1	Coastal bluff scrub, Valley and foothill grassland, Vernal pools. clay, vernally mesic. 15 - 110 m. perennial herb. Blooms Apr-Jun (Jul)
Eryngium racemosum Delta button-celery	None/SCE G1/S1 1B.1	Riparian scrub (vernally mesic clay depressions). 3 - 30 m. annual/perennial herb. Blooms Jun-Oct

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Erysimum ammophilum sand-loving wallflower	None/None G2/S2 1B.2	Chaparral (maritime), Coastal dunes, Coastal scrub. sandy, openings. 0 - 60 m. perennial herb. Blooms Feb-Jun
Erysimum insulare island wallflower	None/None G3/S3 1B.3	Coastal bluff scrub, Coastal dunes. 0 - 300 m. perennial herb. Blooms Mar-Jul
Erysimum suffrutescens suffrutescent wallflower	None/None G3/S3 4.2	Coastal bluff scrub, Chaparral (maritime), Coastal dunes, Coastal scrub. 0 - 150 m. perennial herb. Blooms Jan-Jul (Aug)
Erythranthe diffusa Palomar monkeyflower	None/None G4/S3 4.3	Chaparral, Lower montane coniferous forest. sandy or gravelly. 1220 - 1830 m. annual herb. Blooms Apr-Jun
Erythranthe exigua San Bernardino Mountains monkeyflower	None/None G2/S2 1B.2	Meadows and seeps, Pebble (Pavement) plain, Upper montane coniferous forest. mesic, clay. 1800 - 2315 m. annual herb. Blooms May-Jul
Erythranthe purpurea little purple monkeyflower	None/None G2/S2 1B.2	Meadows and seeps, Pebble (Pavement) plain, Upper montane coniferous forest. 1900 - 2300 m. annual herb. Blooms May-Jun
Eschscholzia androuxii Joshua Tree poppy	None/None G3/S3 4.3	Joshua tree woodland, Mojavean desert scrub. Desert washes, flats, and slopes; sandy, gravelly, and/or rocky. 585 - 1685 m. annual herb. Blooms Feb-May (Jun)
Eschscholzia minutiflora ssp. *twisselmannii* Red Rock poppy	None/None G5T2/S2 1B.2	Mojavean desert scrub (volcanic tuff). 680 - 1230 m. annual herb. Blooms Mar-May
Eucnide rupestris annual rock-nettle	None/None G3/S1 2B.2	Sonoran desert scrub. 500 - 600 m. annual herb. Blooms Dec-Apr
Euphorbia abramsiana Abrams' spurge	None/None G4/S2 2B.2	Mojavean desert scrub, Sonoran desert scrub. sandy. -5 - 1310 m. annual herb. Blooms (Aug) Sep-Nov
Euphorbia arizonica Arizona spurge	None/None G5/S3 2B.3	Sonoran desert scrub (sandy). 50 - 300 m. perennial herb. Blooms Mar-Apr
Euphorbia exstipulata var. *exstipulata* Clark Mountain spurge	None/None G5T5?/S2 2B.1	Mojavean desert scrub (rocky). 1280 - 2000 m. annual herb. Blooms Sep
Euphorbia jaegeri Orocopia Mountains spurge	None/None G1/S1 1B.1	Mojavean desert scrub. Rocky hillsides and arroyos, gravelly or rocky crevices; granitic, carbonate, or metamorphic. 600 - 850 m. perennial shrub. Blooms Oct-May
Euphorbia misera cliff spurge	None/None G5/S2 2B.2	Coastal bluff scrub, Coastal scrub, Mojavean desert scrub. rocky. 10 - 500 m. perennial shrub. Blooms Dec-Aug (Oct)
Euphorbia parryi Parry's spurge	None/None G5/S1 2B.3	Desert dunes, Mojavean desert scrub (sandy). 395 - 730 m. annual herb. Blooms May-Nov
Euphorbia platysperma flat-seeded spurge	None/None G3/S1 1B.2	Desert dunes, Sonoran desert scrub (sandy). 65 - 100 m. annual herb. Blooms Feb-Sep
Euphorbia revoluta revolute spurge	None/None G5/S4 4.3	Mojavean desert scrub (rocky). 1095 - 3100 m. annual herb. Blooms Aug-Sep

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Euphorbia vallis-mortae Death Valley sandmat	None/None G3/S3 4.2	Mojavean desert scrub (sandy or gravelly). 230 - 1460 m. perennial herb. Blooms May-Oct
Extriplex joaquinana San Joaquin spearscale	None/None G2/S2 1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland. alkaline. 1 - 835 m. annual herb. Blooms Apr-Oct
Fendlerella utahensis yerba desierto	None/None G5/S4 4.3	Lower montane coniferous forest, Mojavean desert scrub, Pinyon and juniper woodland. carbonate. 1300 - 2800 m. perennial deciduous shrub. Blooms Jun-Aug
Ferocactus viridescens San Diego barrel cactus	None/None G3?/S2S3 2B.1	Chaparral, Coastal scrub, Valley and foothill grassland, Vernal pools. 3 - 450 m. perennial stem succulent. Blooms May-Jun
Fimbristylis thermalis hot springs fimbristylis	None/None G4/S1S2 2B.2	Meadows and seeps (alkaline, near hot springs). 110 - 1340 m. perennial rhizomatous herb. Blooms Jul-Sep
Frankenia palmeri Palmer's frankenia	None/None G3?/S1 2B.1	Coastal dunes, Marshes and swamps (coastal salt), Playas. 0 - 10 m. perennial herb. Blooms May-Jul
Frasera albomarginata var. *albomarginata* desert green-gentian	None/None G5T5/S3 2B.2	Pinyon and juniper woodland (rocky or gravelly). 1370 - 2315 m. perennial herb. Blooms Apr-Jun (Jul-Sep)
Frasera albomarginata var. *induta* Clark Mountain green-gentian	None/None G5T2/S1 1B.2	Pinyon and juniper woodland. Rocky or gravelly, usually carbonate. 1705 - 1770 m. perennial herb. Blooms May-Jun (Sep)
Frasera neglecta pine green-gentian	None/None G4/S4 4.3	Lower montane coniferous forest, Pinyon and juniper woodland, Upper montane coniferous forest. 1400 - 2500 m. perennial herb. Blooms May-Jul
Fraxinus parryi chaparral ash	None/None G3?/S1 2B.2	Chaparral. 213 - 620 m. perennial shrub. Blooms Mar-May
Fremontodendron mexicanum Mexican flannelbush	FE/SCR G2/S1 1B.1	Closed-cone coniferous forest, Chaparral, Cismontane woodland. gabbroic, metavolcanic, or serpentinite. 10 - 716 m. perennial evergreen shrub. Blooms Mar-Jun
Fritillaria ojaiensis Ojai fritillary	None/None G3/S3 1B.2	Broadleafed upland forest (mesic), Chaparral, Cismontane woodland, Lower montane coniferous forest. rocky. 225 - 998 m. perennial bulbiferous herb. Blooms Feb-May
Fritillaria pinetorum pine fritillary	None/None G4/S4 4.3	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland, Subalpine coniferous forest, Upper montane coniferous forest. granitic or metamorphic. 1735 - 3300 m. perennial bulbiferous herb. Blooms May-Jul (Sep)
Funastrum crispum wavyleaf twinevine	None/None G4/S1 2B.2	Chaparral, Pinyon and juniper woodland. 1165 - 1840 m. perennial herb. Blooms May-Aug
Funastrum utahense Utah vine milkweed	None/None G4/S4 4.2	Mojavean desert scrub, Sonoran desert scrub. sandy or gravelly. 100 - 1435 m. perennial herb. Blooms (Mar) Apr-Jun (Sep-Oct)
Galium andrewsii ssp. *gatense* phlox-leaf serpentine bedstraw	None/None G5T3/S3 4.2	Chaparral, Cismontane woodland, Lower montane coniferous forest. serpentinite, rocky. 150 - 1450 m. perennial herb. Blooms Apr-Jul
Galium angustifolium ssp. *borregoense* Borrego bedstraw	None/SCR G5T3?/S3? 1B.3	Sonoran desert scrub (rocky). 350 - 1250 m. perennial herb. Blooms Mar (May)

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Galium angustifolium ssp. *gabrielense* San Antonio Canyon bedstraw	None/None G5T3/S3 4.3	Chaparral, Lower montane coniferous forest. granitic, sandy or rocky. 1200 - 2650 m. perennial herb. Blooms Apr-Aug
Galium angustifolium ssp. *gracillimum* slender bedstraw	None/None G5T4/S4 4.2	Joshua tree woodland, Sonoran desert scrub. granitic, rocky. 130 - 1550 m. perennial herb. Blooms Apr-Jun (Jul)
Galium angustifolium ssp. *jacinticum* San Jacinto Mountains bedstraw	None/None G5T2?/S2? 1B.3	Lower montane coniferous forest. 1350 - 2100 m. perennial herb. Blooms Jun-Aug
Galium californicum ssp. *primum* Alvin Meadow bedstraw	None/None G5T2/S2 1B.2	Chaparral, Lower montane coniferous forest. granitic, sandy. 1350 - 1700 m. perennial herb. Blooms May-Jul
Galium catalinense ssp. *acrispum* San Clemente Island bedstraw	None/SCE G4T3/S3 1B.3	Valley and foothill grassland. 25 - 275 m. perennial deciduous shrub. Blooms Mar-May (Aug)
Galium catalinense ssp. *catalinense* Santa Catalina Island bedstraw	None/None G4T2/S2 1B.3	Chaparral, Coastal scrub. 5 - 440 m. perennial deciduous shrub. Blooms Feb-Jul
Galium cliftonsmithii Santa Barbara bedstraw	None/None G4/S4 4.3	Cismontane woodland. 200 - 1220 m. perennial herb. Blooms May-Jul
Galium grande San Gabriel bedstraw	None/None G1/S1 1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest. 425 - 1500 m. perennial deciduous shrub. Blooms Jan-Jul
Galium hilendiae ssp. *kingstonense* Kingston Mountains bedstraw	None/None G4T3/S2 1B.3	Lower montane coniferous forest, Pinyon and juniper woodland. rocky. 1200 - 2100 m. perennial herb. Blooms (May) Jun (Oct)
Galium jepsonii Jepson's bedstraw	None/None G3/S3 4.3	Lower montane coniferous forest, Upper montane coniferous forest. granitic, rocky or gravelly. 1540 - 2500 m. perennial rhizomatous herb. Blooms Jul-Aug
Galium johnstonii Johnston's bedstraw	None/None G4/S4 4.3	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland, Riparian woodland. 1220 - 2300 m. perennial herb. Blooms Jun-Jul
Galium munzii Munz's bedstraw	None/None G4G5/S4 4.3	Great Basin scrub, Lower montane coniferous forest, Pinyon and juniper woodland, Upper montane coniferous forest. 1100 - 3330 m. perennial herb. Blooms May-Jul
Galium proliferum desert bedstraw	None/None G5/S2 2B.2	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. rocky, carbonate (limestone). 1190 - 1630 m. annual herb. Blooms Mar-Jun
Galium wrightii Wright's bedstraw	None/None G5/S3 2B.3	Lower montane coniferous forest, Pinyon and juniper woodland. carbonate, rocky. 1600 - 2000 m. perennial herb. Blooms Jun-Oct
Gambelia speciosa showy island snapdragon	None/None G3/S3 1B.2	Coastal scrub. rocky. 0 - 900 m. perennial shrub. Blooms Feb-May
Gentiana fremontii Fremont's gentian	None/None G4/S2 2B.3	Meadows and seeps (mesic), Upper montane coniferous forest. 2400 - 2700 m. annual herb. Blooms Jun-Aug
Geothallus tuberosus Campbell's liverwort	None/None G1/S1 1B.1	Coastal scrub (mesic), Vernal pools. soil. 10 - 600 m. ephemeral liverwort. Blooms

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Geraea viscida sticky geraea	None/None G2G3/S2 2B.2	Chaparral (often in disturbed areas). 450 - 1700 m. perennial herb. Blooms (Apr) May-Jun
Gilia latiflora ssp. *cuyamensis* Cuyama gilia	None/None G5?T4/S4 4.3	Pinyon and juniper woodland (sandy). 595 - 2000 m. annual herb. Blooms Apr-Jun
Gilia leptantha ssp. *leptantha* San Bernardino gilia	None/None G4T2/S2 1B.3	Lower montane coniferous forest (sandy or gravelly). 1500 - 2560 m. annual herb. Blooms Jun-Aug
Gilia mexicana El Paso gilia	None/None G4/S1 2B.3	Pinyon and juniper woodland. 1475 - 1475 m. annual herb. Blooms May
Githopsis diffusa ssp. *filicaulis* Mission Canyon bluecup	None/None G5T1Q/S1 3.1	Chaparral (mesic, disturbed areas). 450 - 700 m. annual herb. Blooms Apr-Jun
Glossopetalon pungens pungent glossopetalon	None/None G2/S1 1B.2	Chaparral, Pinyon and juniper woodland. carbonate. 1675 - 2000 m. perennial deciduous shrub. Blooms May-Jun
Goodmania luteola golden goodmania	None/None G3/S3 4.2	Mojavean desert scrub, Meadows and seeps, Playas, Valley and foothill grassland. alkaline or clay. 20 - 2200 m. annual herb. Blooms Apr-Aug
Graphis saxorum Baja rock lichen	None/None G2?/S1 3	Coastal scrub (?). Volcanic rocks. 30 - 80 m. crustose lichen (saxicolous). Blooms
Grimmia vaginulata vaginulate grimmia	None/None G2G3/S1 1B.1	Chaparral (openings). Rocky, boulder and rock walls, carbonate. 685 - 685 m. moss. Blooms
Grindelia hallii San Diego gumplant	None/None G2/S2 1B.2	Chaparral, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland. 185 - 1745 m. perennial herb. Blooms May-Oct
Grusonia parishii Parish's club-cholla	None/None G3G4/S2 2B.2	Joshua tree woodland, Mojavean desert scrub, Sonoran desert scrub. sandy, rocky. 300 - 1524 m. perennial stem succulent. Blooms May-Jun (Jul)
Harpagonella palmeri Palmer's grapplinghook	None/None G4/S3 4.2	Chaparral, Coastal scrub, Valley and foothill grassland. Clay; open grassy areas within shrubland. 20 - 955 m. annual herb. Blooms Mar-May
Hazardia cana San Clemente Island hazardia	None/None G3/S3 1B.2	Coastal bluff scrub, Coastal scrub, Riparian forest. 60 - 500 m. perennial evergreen shrub. Blooms Jun-Sep
Hazardia orcuttii Orcutt's hazardia	None/SCT G1/S1 1B.1	Chaparral (maritime), Coastal scrub. often clay. 80 - 85 m. perennial evergreen shrub. Blooms Aug-Oct
Hecastocleis shockleyi prickle-leaf	None/None G4/S4 3	Chenopod scrub, Mojavean desert scrub. rocky slopes, washes; often carbonate or slate. 1200 - 2200 m. perennial evergreen shrub. Blooms May-Jul
Hedeoma drummondii Drummond's false pennyroyal	None/None G5/S1 2B.2	Great Basin scrub, Pinyon and juniper woodland. rocky or gravelly, usually carbonate. 1400 - 1700 m. perennial herb. Blooms May-Jul
Hedeoma nana ssp. *californica* California mock pennyroyal	None/None G5T4/S4 4.3	Joshua tree woodland, Pinyon and juniper woodland. rocky, often carbonate. 855 - 2100 m. perennial herb. Blooms Apr-Jun

Scientific Name Common Name	Status	Habitat Requirements
Helianthus inexpectatus Newhall sunflower	None/None G1/S1 1B.1	Marshes and swamps, Riparian woodland. freshwater, seeps. 305 - 305 m. perennial rhizomatous herb. Blooms Aug-Oct
Helianthus niveus ssp. *tephrodes* Algodones Dunes sunflower	None/SCE G4T2T3/S1 1B.2	Desert dunes. 50 - 100 m. perennial herb. Blooms Sep-May
Helianthus nuttallii ssp. *parishii* Los Angeles sunflower	None/None G5TH/SH 1A	Marshes and swamps (coastal salt and freshwater). 10 - 1525 m. perennial rhizomatous herb. Blooms Aug-Oct
Herissantia crispa curly herissantia	None/None G5/S1 2B.3	Sonoran desert scrub. 700 - 725 m. annual/perennial herb. Blooms (Apr) Aug-Sep
Hesperevax caulescens hogwallow starfish	None/None G3/S3 4.2	Valley and foothill grassland (mesic, clay), Vernal pools (shallow). sometimes alkaline. 0 - 505 m. annual herb. Blooms Mar-Jun
Hesperocyparis forbesii Tecate cypress	None/None G2/S2 1B.1	Closed-cone coniferous forest, Chaparral. clay, gabbroic or metavolcanic. 80 - 1500 m. perennial evergreen tree. Blooms
Hesperocyparis stephensonii Cuyamaca cypress	None/None G1/S1 1B.1	Closed-cone coniferous forest, Chaparral, Cismontane woodland, Riparian forest. gabbroic. 1035 - 1705 m. perennial evergreen tree. Blooms
Heterotheca sessiliflora ssp. *sessiliflora* beach goldenaster	None/None G4T2T3/S1 1B.1	Chaparral (coastal), Coastal dunes, Coastal scrub. 0 - 1225 m. perennial herb. Blooms Mar-Dec
Heuchera abramsii Abrams' alumroot	None/None G3/S3 4.3	Upper montane coniferous forest (rocky). 2800 - 3500 m. perennial rhizomatous herb. Blooms Jul-Aug
Heuchera brevistaminea Laguna Mountains alumroot	None/None G2/S2 1B.3	Broadleafed upland forest, Chaparral, Cismontane woodland, Riparian forest. rocky. 1370 - 2000 m. perennial rhizomatous herb. Blooms Apr-Jul (Sep)
Heuchera caespitosa urn-flowered alumroot	None/None G3/S3 4.3	Cismontane woodland, Lower montane coniferous forest, Riparian forest (montane), Upper montane coniferous forest. rocky. 1155 - 2650 m. perennial rhizomatous herb. Blooms May-Aug
Heuchera hirsutissima shaggy-haired alumroot	None/None G3/S3 1B.3	Subalpine coniferous forest, Upper montane coniferous forest. rocky, granitic. 1520 - 3500 m. perennial rhizomatous herb. Blooms (May) Jun-Jul
Heuchera maxima island alumroot	None/None G3/S3 1B.2	Coastal bluff scrub, Chaparral, Cismontane woodland, Coastal scrub. rocky. 10 - 500 m. perennial rhizomatous herb. Blooms Feb-May
Heuchera parishii Parish's alumroot	None/None G3/S3 1B.3	Alpine boulder and rock field, Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest. rocky, sometimes carbonate. 1500 - 3800 m. perennial rhizomatous herb. Blooms Jun-Aug
Heuchera rubescens var. *versicolor* San Diego County alumroot	None/None G5T4/S2 3.3	Chaparral, Lower montane coniferous forest. rocky. 1500 - 4000 m. perennial rhizomatous herb. Blooms May-Jun
Hibiscus lasiocarpos var. *occidentalis* woolly rose-mallow	None/None G5T3/S3 1B.2	Marshes and swamps (freshwater). Often in riprap on sides of levees. 0 - 120 m. perennial rhizomatous herb (emergent). Blooms Jun-Sep
Holocarpha virgata ssp. *elongata* graceful tarplant	None/None G5T3/S3 4.2	Chaparral, Cismontane woodland, Coastal scrub, Valley and foothill grassland. 60 - 1100 m. annual herb. Blooms May-Nov

Scientific Name Common Name	Status	Habitat Requirements
Hordeum intercedens vernal barley	None/None G3G4/S3S4 3.2	Coastal dunes, Coastal scrub, Valley and foothill grassland (saline flats and depressions), Vernal pools. 5 - 1000 m. annual herb. Blooms Mar-Jun
Horkelia cuneata var. *puberula* mesa horkelia	None/None G4T1/S1 1B.1	Chaparral (maritime), Cismontane woodland, Coastal scrub. sandy or gravelly. 70 - 810 m. perennial herb. Blooms Feb-Jul (Sep)
Horkelia truncata Ramona horkelia	None/None G3/S3 1B.3	Chaparral, Cismontane woodland. clay, gabbroic. 400 - 1300 m. perennial herb. Blooms May-Jun
Horkelia wilderae Barton Flats horkelia	None/None G1/S1 1B.1	Chaparral (edges), Lower montane coniferous forest, Upper montane coniferous forest. 1675 - 2925 m. perennial herb. Blooms May-Sep
Horsfordia alata pink velvet-mallow	None/None G5/S4 4.3	Sonoran desert scrub (rocky). 100 - 500 m. perennial shrub. Blooms Feb-Dec
Horsfordia newberryi Newberry's velvet-mallow	None/None G5/S4 4.3	Sonoran desert scrub (rocky). 3 - 800 m. perennial shrub. Blooms Feb,Apr,Nov,Dec
Hosackia crassifolia var. *otayensis* Otay Mountain lotus	None/None G5T1/S1 1B.1	Chaparral (metavolcanic, often in disturbed areas). 380 - 1005 m. perennial herb. Blooms May-Aug
Hulsea californica San Diego sunflower	None/None G3/S3 1B.3	Chaparral, Lower montane coniferous forest, Upper montane coniferous forest. openings and burned areas. 915 - 2915 m. perennial herb. Blooms Apr-Jun
Hulsea mexicana Mexican hulsea	None/None G3G4/S1 2B.3	Chaparral (volcanic, often on burns or disturbed areas). 1200 - 1200 m. annual/perennial herb. Blooms Apr-Jun
Hulsea vestita ssp. *callicarpha* beautiful hulsea	None/None G5T4/S4 4.2	Chaparral, Lower montane coniferous forest. rocky or gravelly, granitic. 915 - 3050 m. perennial herb. Blooms May-Oct
Hulsea vestita ssp. *gabrielensis* San Gabriel Mountains sunflower	None/None G5T3/S3 4.3	Lower montane coniferous forest, Upper montane coniferous forest. rocky. 1500 - 2500 m. perennial herb. Blooms May-Jul
Hulsea vestita ssp. *parryi* Parry's sunflower	None/None G5T4/S4 4.3	Lower montane coniferous forest, Pinyon and juniper woodland, Upper montane coniferous forest. granitic or carbonate, rocky, openings. 1370 - 2895 m. perennial herb. Blooms Apr-Aug
Hulsea vestita ssp. *pygmaea* pygmy hulsea	None/None G5T1/S1 1B.3	Alpine boulder and rock field, Subalpine coniferous forest. granitic, gravelly. 2835 - 3900 m. perennial herb. Blooms Jun-Oct
Hymenopappus filifolius var. *eriopodus* hairy-podded fine-leaf hymenopappus	None/None G5T3/S2S3 2B.3	Pinyon and juniper woodland. carbonate. 1600 - 1700 m. perennial herb. Blooms May-Jul
Hymenothrix wrightii Wright's hymenothrix	None/None G5/S3 4.3	Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland. 1400 - 1550 m. perennial herb. Blooms Jun-Oct
Hymenoxys odorata bitter hymenoxys	None/None G5/S2 2B.1	Riparian scrub, Sonoran desert scrub. sandy. 45 - 150 m. annual herb. Blooms Feb, Apr, May, Jun, Aug, Sep, Oct, Nov
Imperata brevifolia California satintail	None/None G4/S3 2B.1	Chaparral, Coastal scrub, Mojavean desert scrub, Meadows and seeps (often alkali), Riparian scrub. mesic. 0 - 1215 m. perennial rhizomatous herb. Blooms Sep-May

Scientific Name Common Name	Status	Habitat Requirements
Ipomopsis tenuifolia slender-leaved ipomopsis	None/None G4/S2 2B.3	Chaparral, Pinyon and juniper woodland, Sonoran desert scrub. gravelly or rocky. 100 - 1200 m. perennial herb. Blooms Mar-May
Isocoma menziesii var. *decumbens* decumbent goldenbush	None/None G3G5T2T3/S2 1B.2	Chaparral, Coastal scrub (sandy, often in disturbed areas). 10 - 135 m. perennial shrub. Blooms Apr-Nov
Iva hayesiana San Diego marsh-elder	None/None G3/S2 2B.2	Marshes and swamps, Playas. 10 - 500 m. perennial herb. Blooms Apr-Oct
Ivesia argyrocoma var. *argyrocoma* silver-haired ivesia	None/None G2T2/S2 1B.2	Meadows and seeps (alkaline), Pebble (Pavement) plain, Upper montane coniferous forest. 1463 - 2960 m. perennial herb. Blooms (May) Jun-Aug
Ivesia callida Tahquitz ivesia	None/SCR G1/S1 1B.3	Upper montane coniferous forest (granitic, rocky). 2410 - 2450 m. perennial herb. Blooms Jul-Sep
Ivesia jaegeri Jaeger's ivesia	None/None G2G3/S1 1B.3	Pinyon and juniper woodland, Upper montane coniferous forest. carbonate, rocky. 1830 - 3600 m. perennial herb. Blooms Jun-Jul
Ivesia patellifera Kingston Mountains ivesia	None/None G2/S2 1B.3	Pinyon and juniper woodland (granitic, rocky). 1400 - 2100 m. perennial herb. Blooms Jun-Oct
Jaffueliobryum raui Rau?s jaffueliobryum moss	None/None G4?/S2? 2B.3	Alpine dwarf scrub, Chaparral, Mojavean desert scrub, Sonoran desert scrub. Dry openings, rock crevices, carbonate. 490 - 2100 m. moss. Blooms
Jaffueliobryum wrightii Wright?s jaffueliobryum moss	None/None G4G5/S2? 2B.3	Alpine dwarf scrub, Mojavean desert scrub, Pinyon and juniper woodland. Dry openings, rock crevices, carbonate. 160 - 2500 m. moss. Blooms
Johnstonella costata ribbed cryptantha	None/None G4G5/S4 4.3	Desert dunes, Mojavean desert scrub, Sonoran desert scrub. sandy. -60 - 500 m. annual herb. Blooms Feb-May
Johnstonella holoptera winged cryptantha	None/None G4G5/S4 4.3	Mojavean desert scrub, Sonoran desert scrub. 100 - 1690 m. annual herb. Blooms Mar-Apr
Juglans californica Southern California black walnut	None/None G4/S4 4.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland. alluvial. 50 - 900 m. perennial deciduous tree. Blooms Mar-Aug
Juncus acutus ssp. *leopoldii* southwestern spiny rush	None/None G5T5/S4 4.2	Coastal dunes (mesic), Meadows and seeps (alkaline seeps), Marshes and swamps (coastal salt). 3 - 900 m. perennial rhizomatous herb. Blooms (Mar) May-Jun
Juncus cooperi Cooper's rush	None/None G4/S3 4.3	Meadows and seeps (mesic, alkaline or saline). -260 - 1770 m. perennial herb. Blooms Apr-May (Aug)
Juncus duranii Duran's rush	None/None G3/S3 4.3	Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest. mesic. 1768 - 2804 m. perennial rhizomatous herb. Blooms Jul-Aug
Juncus interior inland rush	None/None G4/S1 2B.2	Pinyon and juniper woodland. 1830 - 1845 m. perennial herb. Blooms Jun-Aug
Juncus luciensis Santa Lucia dwarf rush	None/None G3/S3 1B.2	Chaparral, Great Basin scrub, Lower montane coniferous forest, Meadows and seeps, Vernal pools. 300 - 2040 m. annual herb. Blooms Apr-Jul

Scientific Name Common Name	Status	Habitat Requirements
Juncus nodosus knotted rush	None/None G5/S3 2B.3	Meadows and seeps (mesic), Marshes and swamps (lake margins). 30 - 1980 m. perennial rhizomatous herb. Blooms Jul-Sep
Kallstroemia parviflora warty caltrop	None/None G5/S3 4.2	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. Sometimes disturbed areas. 855 - 1705 m. annual herb. Blooms Aug-Nov
Koeberlinia spinosa var. *tenuispina* slender-spined all thorn	None/None G4T4?/S2 2B.2	Riparian woodland, Sonoran desert scrub. 150 - 510 m. perennial deciduous shrub. Blooms May-Jul
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	None/None G4T2/S2 1B.1	Marshes and swamps (coastal salt), Playas, Vernal pools. 1 - 1220 m. annual herb. Blooms Feb-Jun
Lathyrus jepsonii var. *jepsonii* Delta tule pea	None/None G5T2/S2 1B.2	Marshes and swamps (freshwater and brackish). 0 - 5 m. perennial herb. Blooms May-Jul (Aug-Sep)
Lathyrus splendens pride-of-California	None/None G4/S4 4.3	Chaparral. 200 - 1525 m. perennial herb. Blooms Mar-Jun
Lavatera assurgentiflora ssp. *assurgentiflora* island mallow	None/None G1T1/S1 1B.1	Coastal bluff scrub, Coastal scrub. sandy or rocky. 15 - 245 m. perennial evergreen shrub. Blooms Mar-Nov
Lavatera assurgentiflora ssp. *glabra* southern island mallow	None/None G1T1/S1 1B.1	Coastal bluff scrub. 5 - 250 m. perennial evergreen shrub. Blooms May-Sep
Layia heterotricha pale-yellow layia	None/None G2/S2 1B.1	Cismontane woodland, Coastal scrub, Pinyon and juniper woodland, Valley and foothill grassland. alkaline or clay. 300 - 1705 m. annual herb. Blooms Mar-Jun
Layia munzii Munz's tidy-tips	None/None G2/S2 1B.2	Chenopod scrub, Valley and foothill grassland (alkaline clay). 150 - 700 m. annual herb. Blooms Mar-Apr
Lepechinia cardiophylla heart-leaved pitcher sage	None/None G3/S2S3 1B.2	Closed-cone coniferous forest, Chaparral, Cismontane woodland. 520 - 1370 m. perennial shrub. Blooms Apr-Jul
Lepechinia fragrans fragrant pitcher sage	None/None G3/S3 4.2	Chaparral. 20 - 1310 m. perennial shrub. Blooms Mar-Oct
Lepechinia ganderi Gander's pitcher sage	None/None G3/S3 1B.3	Closed-cone coniferous forest, Chaparral, Coastal scrub, Valley and foothill grassland. Gabbroic or metavolcanic. 305 - 1005 m. perennial shrub. Blooms Jun-Jul
Lepechinia rossii Ross' pitcher sage	None/None G1/S1 1B.2	Chaparral. 305 - 790 m. perennial shrub. Blooms May-Sep
Lepidium flavum var. *felipense* Blair Valley pepper-grass	None/None G5T1/S1 1B.2	Pinyon and juniper woodland, Sonoran desert scrub. sandy. 455 - 840 m. annual herb. Blooms Mar-May
Lepidium virginicum var. *robinsonii* Robinson's pepper-grass	None/None G5T3/S3 4.3	Chaparral, Coastal scrub. 1 - 885 m. annual herb. Blooms Jan-Jul
Leptosiphon floribundus ssp. *hallii* Santa Rosa Mountains leptosiphon	None/None G4T1T2/S1S2 1B.3	Pinyon and juniper woodland, Sonoran desert scrub. 1000 - 2000 m. perennial herb. Blooms May-Jul (Nov)

Scientific Name Common Name	Status	Habitat Requirements
Leptosiphon pygmaeus ssp. *pygmaeus* pygmy leptosiphon	None/None G4T1/S1 1B.2	Coastal scrub, Valley and foothill grassland. 455 - 595 m. annual herb. Blooms Apr
Leptosyne maritima sea dahlia	None/None G2/S1S2 2B.2	Coastal bluff scrub, Coastal scrub. 5 - 150 m. perennial herb. Blooms Mar-May
Lessingia glandulifera var. *tomentosa* Warner Springs lessingia	None/None G4?T2/S2 1B.1	Chaparral (sandy). 870 - 1220 m. annual herb. Blooms Aug, Oct
Lewisia brachycalyx short-sepaled lewisia	None/None G4/S2 2B.2	Lower montane coniferous forest, Meadows and seeps. mesic. 1370 - 2300 m. perennial herb. Blooms (Feb)Apr-Jun (Jul)
Lilaeopsis masonii Mason's lilaeopsis	None/SCR G2/S2 1B.1	Marshes and swamps (brackish or freshwater), Riparian scrub. 0 - 10 m. perennial rhizomatous herb. Blooms Apr-Nov
Lilium humboldtii ssp. *ocellatum* ocellated Humboldt lily	None/None G4T4?/S4? 4.2	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Riparian woodland. openings. 30 - 1800 m. perennial bulbiferous herb. Blooms Mar-Jul (Aug)
Lilium parryi lemon lily	None/None G3/S3 1B.2	Lower montane coniferous forest, Meadows and seeps, Riparian forest, Upper montane coniferous forest. mesic. 1220 - 2745 m. perennial bulbiferous herb. Blooms Jul-Aug
Limnanthes alba ssp. *parishii* Parish's meadowfoam	None/SCE G4T2/S2 1B.2	Lower montane coniferous forest, Meadows and seeps, Vernal pools. vernally mesic. 600 - 2000 m. annual herb. Blooms Apr-Jun
Limosella australis Delta mudwort	None/None G4G5/S2 2B.1	Marshes and swamps (freshwater or brackish), Riparian scrub. Usually mud banks. 0 - 3 m. perennial stoloniferous herb. Blooms May-Aug
Linanthus bellus desert beauty	None/None G2G3/S2 2B.1	Chaparral (sandy). 1000 - 1400 m. annual herb. Blooms Apr-May
Linanthus bernardinus Pioneertown linanthus	None/None G1/S1 1B.2	Joshua tree woodland, Pinyon and juniper woodland. 1190 - 1340 m. annual herb. Blooms Mar-May
Linanthus concinnus San Gabriel linanthus	None/None G2/S2 1B.2	Chaparral, Lower montane coniferous forest, Upper montane coniferous forest. rocky, openings. 1520 - 2800 m. annual herb. Blooms Apr-Jul
Linanthus jaegeri San Jacinto linanthus	None/None G2/S2 1B.2	Subalpine coniferous forest, Upper montane coniferous forest. granitic, rocky. 2195 - 3050 m. perennial herb. Blooms Jul-Sep
Linanthus killipii Baldwin Lake linanthus	None/None G1/S1 1B.2	Joshua tree woodland, Meadows and seeps (alkaline), Pebble (Pavement) plain, Pinyon and juniper woodland. 1700 - 2400 m. annual herb. Blooms May-Jul
Linanthus maculatus ssp. *emaculatus* Jacumba Mountains linanthus	None/None G2T1/S1 1B.1	Desert dunes (edges), Sonoran desert scrub. Sandy or course, opaque-white, decomposed granite soils of washes and on flats near wash margins. 395 - 585 m. annual herb. Blooms (Mar) Apr (May)
Linanthus maculatus ssp. *maculatus* Little San Bernardino Mtns. linanthus	None/None G2T2/S2 1B.2	Desert dunes, Joshua tree woodland, Mojavean desert scrub, Sonoran desert scrub. Sandy. 140 - 1220 m. annual herb. Blooms Mar-May
Linanthus orcuttii Orcutt's linanthus	None/None G3/S2 1B.3	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland. openings. 915 - 2145 m. annual herb. Blooms May-Jun

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Linum puberulum plains flax	None/None G5/S2 2B.3	Great Basin scrub, Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. 1000 - 2500 m. perennial herb. Blooms May-Jul(Oct)
Lithophragma maximum San Clemente Island woodland star	FE/SCE G1/S1 1B.1	Coastal bluff scrub, Coastal scrub. rocky. 120 - 400 m. perennial rhizomatous herb. Blooms Apr-Jun
Lithospermum incisum plains stoneseed	None/None G5/S1 2B.3	Pinyon and juniper woodland. 1650 - 1720 m. perennial herb. Blooms May
Loeflingia squarrosa var. *artemisiarum* sagebrush loeflingia	None/None G5T3/S2 2B.2	Desert dunes, Great Basin scrub, Sonoran desert scrub. sandy. 700 - 1615 m. annual herb. Blooms Apr-May
Loeseliastrum depressum depressed standing-cypress	None/None G5/S3S4 4.3	Great Basin scrub, Mojavean desert scrub, Pinyon and juniper woodland. sandy or gravelly. 1220 - 2100 m. annual herb. Blooms
Lomatium insulare San Nicolas Island lomatium	None/None G3/S2S3 1B.2	Coastal bluff scrub (sandy). 15 - 800 m. perennial herb. Blooms Jan-Apr (Jun)
Lonicera subspicata var. *subspicata* Santa Barbara honeysuckle	None/None G5T2?/S2? 1B.2	Chaparral, Cismontane woodland, Coastal scrub. 10 - 1000 m. perennial evergreen shrub. Blooms May-Aug (Dec-Feb)
Lupinus albifrons var. *johnstonii* interior bush lupine	None/None G4T4/S4 4.3	Chaparral, Lower montane coniferous forest. decomposed granitic. 1500 - 2500 m. perennial shrub. Blooms May-Jul
Lupinus albifrons var. *medius* Mountain Springs bush lupine	None/None G4T3/S2 1B.3	Pinyon and juniper woodland, Sonoran desert scrub. 425 - 1370 m. perennial shrub. Blooms Mar-May
Lupinus elatus silky lupine	None/None G4/S4 4.3	Lower montane coniferous forest, Upper montane coniferous forest. 1500 - 3000 m. perennial herb. Blooms (May) Jun-Aug
Lupinus guadalupensis Guadalupe Island lupine	None/None G3/S3 4.2	Coastal scrub. Sandy, gravelly, or rocky; sometimes in disturbed areas. 10 - 465 m. annual herb. Blooms Feb-Apr
Lupinus magnificus var. *glarecola* Coso Mountains lupine	None/None G3T4/S4 4.3	Great Basin scrub, Joshua tree woodland, Mojavean desert scrub. granitic, often talus and scree. 1110 - 2440 m. perennial herb. Blooms Apr-Jun
Lupinus paynei Payne's bush lupine	None/None G1Q/S1 1B.1	Coastal scrub, Riparian scrub, Valley and foothill grassland. Sandy. 220 - 420 m. perennial shrub. Blooms Mar-Apr (May-Jul)
Lupinus peirsonii Peirson's lupine	None/None G3/S3 1B.3	Joshua tree woodland, Lower montane coniferous forest, Pinyon and juniper woodland, Upper montane coniferous forest. gravelly or rocky. 1000 - 2500 m. perennial herb. Blooms Apr-Jun
Lycium brevipes var. *hassei* Santa Catalina Island desert-thorn	None/None G5T1Q/S1 3.1	Coastal bluff scrub, Coastal scrub. 65 - 300 m. perennial deciduous shrub. Blooms Jun (Aug)
Lycium californicum California box-thorn	None/None G4/S4 4.2	Coastal bluff scrub, Coastal scrub. 5 - 150 m. perennial shrub. Blooms (Dec)Mar, Jun, Jul, Aug
Lycium exsertum Arizona desert-thorn	None/None G4G5/S1 2B.1	Sonoran desert scrub. volcanic, gravelly. 265 - 265 m. perennial shrub. Blooms Jan-Mar

Scientific Name Common Name	Status	Habitat Requirements
Lycium parishii Parish's desert-thorn	None/None G3?/S1 2B.3	Coastal scrub, Sonoran desert scrub. 135 - 1000 m. perennial shrub. Blooms Mar-Apr
Lycium torreyi Torrey's box-thorn	None/None G4G5/S3 4.2	Mojavean desert scrub, Sonoran desert scrub. Sandy, rocky, washes, streambanks, desert valleys. -50 - 1220 m. perennial shrub. Blooms (Jan-Feb) Mar-Jun (Sep-Nov)
Lycium verrucosum San Nicolas Island desert-thorn	None/None GXQ/SX 1A	Coastal scrub. - m. perennial shrub. Blooms Apr
Lyonothamnus floribundus ssp. *aspleniifolius* Santa Cruz Island ironwood	None/None G3T3/S3 1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland. 20 - 580 m. perennial evergreen tree. Blooms May-Jul
Lyonothamnus floribundus ssp. *floribundus* Santa Catalina Island ironwood	None/None G3T2/S2 1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland. 75 - 500 m. perennial evergreen tree. Blooms May-Jun
Lyrocarpa coulteri Palmer's lyrepod	None/None G4G5/S4 4.3	Sonoran desert scrub (gravelly or rocky). 120 - 795 m. perennial herb. Blooms Dec-Apr
Malacothamnus clementinus San Clemente Island bush-mallow	FE/SCE G2G3/S2S3 1B.1	Valley and foothill grassland (rocky). 10 - 275 m. perennial deciduous shrub. Blooms Mar-Aug
Malacothamnus davidsonii Davidson's bush-mallow	None/None G2/S2 1B.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland. 185 - 1140 m. perennial deciduous shrub. Blooms Jun-Jan
Malacothamnus parishii Parish's bush-mallow	None/None GXQ/SX 1A	Chaparral, Coastal scrub. 305 - 455 m. perennial deciduous shrub. Blooms Jun-Jul
Malacothrix foliosa ssp. *crispifolia* wavy-leaved malacothrix	None/None G4T1/S1 1B.2	Coastal scrub (rocky). 3 - 65 m. annual herb. Blooms Mar, May (Jul)
Malacothrix incana dunedelion	None/None G3G4/S3S4 4.3	Coastal dunes, Coastal scrub. 2 - 35 m. perennial herb. Blooms (Jan) Apr-Oct
Malacothrix junakii Junak's malcothrix	None/None G1/S1 1B.1	Coastal scrub. 20 - 25 m. annual herb. Blooms Apr,Jun
Malacothrix saxatilis var. *saxatilis* cliff malacothrix	None/None G5T4/S4 4.2	Coastal bluff scrub, Coastal scrub. 3 - 200 m. perennial rhizomatous herb. Blooms Mar-Sep
Malacothrix similis Mexican malacothrix	None/None G2G3/SH 2A	Coastal dunes. 0 - 40 m. annual herb. Blooms Apr-May
Malacothrix squalida island malacothrix	FE/None G1/S1 1B.1	Coastal bluff scrub, Chaparral, Cismontane woodland. 15 - 200 m. annual herb. Blooms Apr-Jul
Malaxis monophyllos var. *brachypoda* white bog adder's-mouth	None/None G4?T4/S1 2B.1	Bogs and fens, Meadows and seeps, Upper montane coniferous forest. mesic. 2200 - 2743 m. perennial bulbiferous herb. Blooms Jun, Aug
Malperia tenuis brown turbans	None/None G4?/S2? 2B.3	Sonoran desert scrub (sandy, gravelly). 15 - 335 m. annual herb. Blooms (Feb) Mar-Apr

Scientific Name Common Name	Status	Habitat Requirements
Mammillaria grahamii var. *grahamii* Graham's fishhook cactus	None/None G4T4/S2 2B.2	Sonoran desert scrub gravelly or rocky. 300 - 900 m. perennial stem succulent. Blooms Apr-Sep
Marina orcuttii var. *orcuttii* California marina	None/None G2G3T1T2/S2? 1B.3	Chaparral, Pinyon and juniper woodland, Sonoran desert scrub. rocky. 1050 - 1160 m. perennial herb. Blooms May-Oct
Matelea parvifolia spearleaf	None/None G5/S3 2B.3	Mojavean desert scrub, Sonoran desert scrub. rocky. 440 - 1095 m. perennial herb. Blooms Mar-May (Jul)
Maurandella antirrhiniflora violet twining snapdragon	None/None G5/S2 2B.3	Joshua tree woodland, Mojavean desert scrub. carbonate. 760 - 1525 m. perennial herb. Blooms Apr-May
Meesia triquetra three-ranked hump moss	None/None G5/S4 4.2	Bogs and fens, Meadows and seeps, Subalpine coniferous forest, Upper montane coniferous forest (mesic). soil. 1300 - 2953 m. moss. Blooms Jul
Meesia uliginosa broad-nerved hump moss	None/None G5/S3 2B.2	Bogs and fens, Meadows and seeps, Subalpine coniferous forest, Upper montane coniferous forest. damp soil. 1210 - 2804 m. moss. Blooms Jul, Oct
Menodora scabra var. *scabra* rough menodora	None/None G5T4T5/S3 2B.3	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. 1200 - 1800 m. perennial herb. Blooms May-Jun
Menodora spinescens var. *mohavensis* Mojave menodora	None/None G4T2/S2 1B.2	Mojavean desert scrub. Andesite gravel, rocky hillsides, canyons. 690 - 2000 m. perennial deciduous shrub. Blooms Apr-May
Mentzelia eremophila solitary blazing star	None/None G4/S3S4 4.2	Mojavean desert scrub. 700 - 1220 m. annual herb. Blooms Mar-May
Mentzelia hirsutissima hairy stickleaf	None/None G4?/S3 2B.3	Sonoran desert scrub (rocky). 0 - 700 m. annual herb. Blooms Mar-May
Mentzelia polita polished blazing star	None/None G2G3/S2? 1B.2	Mojavean desert scrub. carbonate. 1200 - 1580 m. perennial herb. Blooms Apr-Aug
Mentzelia pterosperma wing-seed blazing star	None/None G4/S1S2 2B.2	Mojavean desert scrub. clay, gypseous. 1140 - 1140 m. annual/perennial herb. Blooms Apr-Jun
Mentzelia puberula Darlington's blazing star	None/None G5/S2 2B.2	Mojavean desert scrub, Sonoran desert scrub. sandy or rocky. 90 - 1280 m. perennial herb. Blooms Mar-May
Mentzelia tricuspis spiny-hair blazing star	None/None G4/S2 2B.1	Mojavean desert scrub. sandy, gravelly, slopes, and washes. 150 - 1280 m. annual herb. Blooms Mar-May
Mentzelia tridentata creamy blazing star	None/None G3/S3 1B.3	Mojavean desert scrub. rocky, gravelly, sandy. 700 - 1175 m. annual herb. Blooms Mar-May
Micromonolepis pusilla dwarf monolepis	None/None G5/S3? 2B.3	Great Basin scrub. alkaline, openings. 1500 - 2400 m. annual herb. Blooms May-Aug
Microseris douglasii ssp. *platycarpha* small-flowered microseris	None/None G4T4/S4 4.2	Cismontane woodland, Coastal scrub, Valley and foothill grassland, Vernal pools. clay. 15 - 1070 m. annual herb. Blooms Mar-May

Scientific Name Common Name	Status	Habitat Requirements
Microseris sylvatica sylvan microseris	None/None G4/S4 4.2	Chaparral, Cismontane woodland, Great Basin scrub, Pinyon and juniper woodland, Valley and foothill grassland (serpentinite). 45 - 1500 m. perennial herb. Blooms Mar-Jun
Mielichhoferia shevockii Shevock's copper moss	None/None G2/S2 1B.2	Cismontane woodland (metamorphic, rock, mesic). 750 - 1400 m. moss. Blooms
Mirabilis coccinea red four o'clock	None/None G5/S2 2B.3	Pinyon and juniper woodland. 1070 - 1800 m. perennial herb. Blooms May-Jul
Mirabilis tenuiloba slender-lobed four o'clock	None/None G5/S4 4.3	Sonoran desert scrub. 230 - 1095 m. perennial herb. Blooms (Feb) Mar-May
Mobergia calculiformis light gray lichen	None/None G3/S1 3	Coastal scrub. Abundant on cobbles in right habitat; only known from one site in Baja and one in San Diego area.
Monarda pectinata plains bee balm	None/None G5/SH 2B.3	Joshua tree woodland, Pinyon and juniper woodland. rocky. 1150 - 1525 m. annual herb. Blooms Jul-Sep
Monardella australis ssp. *cinerea* gray monardella	None/None G4T3/S3 4.3	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest. 1800 - 3050 m. perennial rhizomatous herb. Blooms Jul-Aug
Monardella australis ssp. *jokerstii* Jokerst?s monardella	None/None G4T1/S1 1B.1	Chaparral, Lower montane coniferous forest. Steep scree or talus slopes between breccia, secondary alluvial benches along drainages and washes. 1350 - 1750 m. perennial rhizomatous herb. Blooms Jul-Sep
Monardella boydii Boyd?s monardella	None/None G1?Q/S1? 1B.2	Mojavean desert scrub, Pinyon and juniper woodland, Riparian scrub (desert). Usually in alluvial soils and cracks of bedrock in washes on canyon bottoms and rocky slopes. 1400 - 1650 m. perennial shrub. Blooms Aug-Oct
Monardella eremicola Clark Mountain monardella	None/None G3Q/S3 1B.3	Pinyon and juniper woodland, Riparian scrub (desert). Granitic or carbonate. Usually in bedrock cracks and benches along canyon washes. 1500 - 2100 m. perennial shrub. Blooms Jun-Aug
Monardella hypoleuca ssp. *hypoleuca* white-veined monardella	None/None G4T3/S3 1B.3	Chaparral, Cismontane woodland. 50 - 1525 m. perennial herb. Blooms (Apr) May-Aug (Sep-Dec)
Monardella hypoleuca ssp. *intermedia* intermediate monardella	None/None G4T2?/S2? 1B.3	Chaparral, Cismontane woodland, Lower montane coniferous forest (sometimes). Usually understory. 400 - 1250 m. perennial rhizomatous herb. Blooms Apr-Sep
Monardella hypoleuca ssp. *lanata* felt-leaved monardella	None/None G4T3/S3 1B.2	Chaparral, Cismontane woodland. 300 - 1575 m. perennial rhizomatous herb. Blooms Jun-Aug
Monardella linoides ssp. *oblonga* Tehachapi monardella	None/None G5T2/S2 1B.3	Lower montane coniferous forest, Pinyon and juniper woodland, Upper montane coniferous forest. 900 - 2470 m. perennial rhizomatous herb. Blooms (May) Jun-Aug
Monardella macrantha ssp. *hallii* Hall's monardella	None/None G5T3/S3 1B.3	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland. 730 - 2195 m. perennial rhizomatous herb. Blooms Jun-Oct
Monardella nana ssp. *leptosiphon* San Felipe monardella	None/None G4G5T2Q/S2 1B.2	Chaparral, Lower montane coniferous forest. 1200 - 1855 m. perennial rhizomatous herb. Blooms Jun-Jul

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Monardella pringlei Pringle's monardella	None/None GX/SX 1A	Coastal scrub (sandy). 300 - 400 m. annual herb. Blooms May-Jun
Monardella robisonii Robison's monardella	None/None G3/S3 1B.3	Pinyon and juniper woodland. 610 - 1500 m. perennial rhizomatous herb. Blooms (Feb) Apr-Sep (Oct)
Monardella saxicola rock monardella	None/None G3/S3 4.2	Closed-cone coniferous forest, Chaparral, Lower montane coniferous forest. rocky, usually serpentinite. 500 - 1800 m. perennial rhizomatous herb. Blooms Jun-Sep
Monardella sinuata ssp. *gerryi* Gerry?s curly-leaved monardella	None/None G3T1/S1 1B.1	Coastal scrub. Sandy openings. 150 - 245 m. annual herb. Blooms Apr-Jun
Monardella stoneana Jennifer's monardella	None/None G2/S1 1B.2	Closed-cone coniferous forest, Chaparral, Coastal scrub, Riparian scrub. usually rocky intermittent streambeds. 10 - 790 m. perennial herb. Blooms Jun-Sep
Monardella viminea willowy monardella	FE/SCE G1/S1 1B.1	Chaparral, Coastal scrub, Riparian forest, Riparian scrub, Riparian woodland. alluvial ephemeral washes. 50 - 225 m. perennial herb. Blooms Jun-Aug
Mortonia utahensis Utah mortonia	None/None G4G5/S3? 4.3	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. carbonate. 760 - 2100 m. perennial evergreen shrub. Blooms Mar-May
Mucronea californica California spineflower	None/None G3/S3 4.2	Chaparral, Cismontane woodland, Coastal dunes, Coastal scrub, Valley and foothill grassland. sandy. 0 - 1400 m. annual herb. Blooms Mar-Jul (Aug)
Muhlenbergia alopecuroides wolftail	None/None G5/S1? 2B.2	Joshua tree woodland, Pinyon and juniper woodland. 500 - 500 m. perennial herb. Blooms Aug-Sep
Muhlenbergia appressa appressed muhly	None/None G4/S3 2B.2	Coastal scrub, Mojavean desert scrub, Valley and foothill grassland. rocky. 20 - 1600 m. annual herb. Blooms Apr-May
Muhlenbergia arsenei tough muhly	None/None G5/S2 2B.3	Pinyon and juniper woodland (rocky, carbonate). 1400 - 1860 m. perennial rhizomatous herb. Blooms Aug-Oct
Muhlenbergia californica California muhly	None/None G4/S4 4.3	Chaparral, Coastal scrub, Lower montane coniferous forest, Meadows and seeps. mesic, seeps and streambanks. 100 - 2000 m. perennial rhizomatous herb. Blooms Jun-Sep
Muhlenbergia fragilis delicate muhly	None/None G5/S2 2B.3	Pinyon and juniper woodland (carbonate, gravelly). 1600 - 1600 m. annual herb. Blooms Oct
Muhlenbergia pauciflora few-flowered muhly	None/None G5/S2 2B.3	Pinyon and juniper woodland (rocky). 1755 - 1860 m. perennial rhizomatous herb. Blooms Sep-Oct
Muhlenbergia utilis aparejo grass	None/None G4/S2S3 2B.2	meadows and seeps, marshes and swamps, chaparral, coastal scrub, cismontane woodland. sometimes alkaline, sometimes serpentinite. 25 - 2325 m. perennial rhizomatous herb. Blooms Mar-Oct
Muilla coronata crowned muilla	None/None G3/S3 4.2	Chenopod scrub, Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. 670 - 1960 m. perennial bulbiferous herb. Blooms Mar-Apr (May)
Munroa squarrosa false buffalo-grass	None/None G5/S2 2B.2	Pinyon and juniper woodland (gravelly or rocky). 1500 - 1800 m. annual herb. Blooms Oct

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Munzothamnus blairii Blair's munzothamnus	None/None G3/S3 1B.2	Coastal bluff scrub, Coastal scrub. rocky. 25 - 455 m. perennial shrub. Blooms Jul-Sep
Myosurus minimus ssp. *apus* little mousetail	None/None G5T2Q/S2 3.1	Valley and foothill grassland, Vernal pools (alkaline). 20 - 640 m. annual herb. Blooms Mar-Jun
Myriopteris wootonii Wooton's lace fern	None/None G5/S2 2B.3	Joshua tree woodland, Pinyon and juniper woodland. rocky. 1600 - 1900 m. perennial rhizomatous herb. Blooms May-Oct
Nama demissa var. *covillei* Coville's purple mat	None/None G5T3/S3 1B.3	Mojavean desert scrub. dry, sandy flats, slopes; often roadsides. -85 - 1800 m. annual herb. Blooms Feb-May
Nama dichotoma var. *dichotoma* forked purple mat	None/None G5T5?/S1 2B.3	Pinyon and juniper woodland (granitic or carbonate). 1900 - 2200 m. annual herb. Blooms Sep-Oct
Nama stenocarpa mud nama	None/None G4G5/S1S2 2B.2	Marshes and swamps (lake margins, riverbanks). 5 - 500 m. annual/perennial herb. Blooms Jan-Jul
Nasturtium gambelii Gambel's water cress	FE/SCT G1/S1 1B.1	Marshes and swamps (freshwater or brackish). 5 - 330 m. perennial rhizomatous herb. Blooms Apr-Oct
Navarretia fossalis spreading navarretia	FT/None G2/S2 1B.1	Chenopod scrub, Marshes and swamps (assorted shallow freshwater), Playas, Vernal pools. 30 - 655 m. annual herb. Blooms Apr-Jun
Navarretia ojaiensis Ojai navarretia	None/None G2/S2 1B.1	Chaparral (openings), Coastal scrub (openings), Valley and foothill grassland. 275 - 620 m. annual herb. Blooms May-Jul
Navarretia peninsularis Baja navarretia	None/None G3/S2 1B.2	Chaparral (openings), Lower montane coniferous forest, Meadows and seeps, Pinyon and juniper woodland. mesic. 1500 - 2300 m. annual herb. Blooms (May)Jun-Aug
Navarretia prostrata prostrate vernal pool navarretia	None/None G2/S2 1B.1	Coastal scrub, Meadows and seeps, Valley and foothill grassland (alkaline), Vernal pools. Mesic. 3 - 1210 m. annual herb. Blooms Apr-Jul
Navarretia setiloba Piute Mountains navarretia	None/None G2/S2 1B.1	Cismontane woodland, Pinyon and juniper woodland, Valley and foothill grassland. clay or gravelly loam. 285 - 2100 m. annual herb. Blooms Apr-Jul
Nemacaulis denudata var. *denudata* coast woolly-heads	None/None G3G4T2/S2 1B.2	Coastal dunes. 0 - 100 m. annual herb. Blooms Apr-Sep
Nemacaulis denudata var. *gracilis* slender cottonheads	None/None G3G4T3?/S2 2B.2	Coastal dunes, Desert dunes, Sonoran desert scrub. -50 - 400 m. annual herb. Blooms (Mar) Apr-May
Nemacladus gracilis slender nemacladus	None/None G4/S4 4.3	Cismontane woodland, Valley and foothill grassland. sandy or gravelly. 120 - 1900 m. annual herb. Blooms Mar-May
Nemacladus secundiflorus var. *robbinsii* Robbins' nemacladus	None/None G3T2/S2 1B.2	Chaparral, Valley and foothill grassland. openings. 350 - 1700 m. annual herb. Blooms Apr-Jun
Nemacladus twisselmannii Twisselmann's nemacladus	None/SCR G1/S1 1B.2	Upper montane coniferous forest (sandy or rocky, granitic). 2240 - 2450 m. annual herb. Blooms Jul

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Nolina cismontana chaparral nolina	None/None G3/S3 1B.2	Chaparral, Coastal scrub. sandstone or gabbro. 140 - 1275 m. perennial evergreen shrub. Blooms (Mar) May-Jul
Nolina interrata Dehesa nolina	None/SCE G2/S2 1B.1	Chaparral (gabbroic, metavolcanic, or serpentinite). 185 - 855 m. perennial herb. Blooms Jun-Jul
Oenothera cavernae cave evening-primrose	None/None G2G3/S1 2B.1	Great Basin scrub, Joshua tree woodland, Mojavean desert scrub. gravelly, often calcareous. 760 - 1280 m. annual herb. Blooms Mar-Nov
Oenothera cespitosa ssp. *crinita* caespitose evening-primrose	None/None G5T4/S4? 4.2	Pinyon and juniper woodland, Subalpine coniferous forest, Sonoran desert scrub. 1150 - 3370 m. perennial rhizomatous herb. Blooms (Apr) Jun-Sep
Oenothera deltoides ssp. *howellii* Antioch Dunes evening-primrose	FE/SCE G5T1/S1 1B.1	Inland dunes. 0 - 30 m. perennial herb. Blooms Mar-Sep
Oenothera longissima long-stem evening-primrose	None/None G4/S1 2B.2	Mojavean desert scrub, Pinyon and juniper woodland. seasonally mesic. 1000 - 1700 m. annual/perennial herb. Blooms Jul-Sep
Ophioglossum californicum California adder's-tongue	None/None G4/S4 4.2	Chaparral, Valley and foothill grassland, Vernal pools (margins). mesic. 60 - 525 m. perennial rhizomatous herb. Blooms (Dec) Jan-Jun
Opuntia basilaris var. *brachyclada* short-joint beavertail	None/None G5T3/S3 1B.2	Chaparral, Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. 425 - 1800 m. perennial stem succulent. Blooms Apr-Jun (Aug)
Opuntia basilaris var. *treleasei* Bakersfield cactus	FE/SCE G5T1/S1 1B.1	Chenopod scrub, Cismontane woodland, Valley and foothill grassland. sandy or gravelly. 100 - 1450 m. perennial stem succulent. Blooms Apr-May
Opuntia wigginsii Wiggins' cholla	None/None G3?Q/S1? 3.3	Sonoran desert scrub (sandy). 30 - 885 m. perennial stem succulent. Blooms Mar
Opuntia xcurvispina curved-spine beavertail	None/None G2G3/S1 2B.2	Chaparral, Mojavean desert scrub, Pinyon and juniper woodland. 1000 - 1400 m. perennial stem succulent. Blooms Apr-Jun
Orcuttia californica California Orcutt grass	FE/SCE G1/S1 1B.1	Vernal pools. 15 - 660 m. annual herb. Blooms Apr-Aug
Oreonana vestita woolly mountain-parsley	None/None G3/S3 1B.3	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest. gravel or talus. 1615 - 3500 m. perennial herb. Blooms Mar-Sep
Ornithostaphylos oppositifolia Baja California birdbush	None/SCE G3/S1 2B.1	Chaparral. 55 - 800 m. perennial evergreen shrub. Blooms Jan-Apr
Orobanche parishii ssp. *brachyloba* short-lobed broomrape	None/None G4?T4/S3 4.2	Coastal bluff scrub, Coastal dunes, Coastal scrub. sandy. 3 - 305 m. perennial herb (parasitic). Blooms Apr-Oct
Orobanche valida ssp. *valida* Rock Creek broomrape	None/None G4T2/S2 1B.2	Chaparral, Pinyon and juniper woodland. granitic. 1030 - 2000 m. perennial herb (parasitic). Blooms May-Sep
Oxytropis oreophila var. *oreophila* rock-loving oxytrope	None/None G5T4T5/S2 2B.3	Alpine boulder and rock field, Subalpine coniferous forest. gravelly or rocky. 3400 - 3800 m. perennial herb. Blooms Jun-Sep

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Packera bernardina San Bernardino ragwort	None/None G2/S2 1B.2	Meadows and seeps (mesic, sometimes alkaline), Pebble (Pavement) plain, Upper montane coniferous forest. 1800 - 2300 m. perennial herb. Blooms May-Jul
Packera ganderi Gander's ragwort	None/SCR G2/S2 1B.2	Chaparral (burns, gabbroic outcrops). 400 - 1200 m. perennial herb. Blooms Apr-Jun
Packera ionophylla Tehachapi ragwort	None/None G4/S4 4.3	Lower montane coniferous forest, Upper montane coniferous forest. granitic, rocky. 1500 - 2700 m. perennial herb. Blooms Jun-Jul
Panicum hirticaule ssp. *hirticaule* roughstalk witch grass	None/None G5T5/S2 2B.1	Desert dunes, Joshua tree woodland, Mojavean desert scrub, Sonoran desert scrub. sandy, silty, depressions. 45 - 1315 m. annual herb. Blooms Aug-Dec
Parkinsonia microphylla little-leaved palo verde	None/None G5/S3 4.3	Mojavean desert scrub (rocky or gravelly). 45 - 1070 m. perennial deciduous shrub. Blooms Apr-May
Parnassia cirrata var. *cirrata* San Bernardino grass-of-Parnassus	None/None G5T2/S2 1B.3	Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest. mesic, streamsides, sometimes calcareous. 1250 - 2440 m. perennial herb. Blooms Aug-Sep
Pediomelum castoreum Beaver Dam breadroot	None/None G3/S2 1B.2	Joshua tree woodland, Mojavean desert scrub. Sandy, washes and roadcuts. 610 - 1525 m. perennial herb. Blooms Apr-May
Pellaea truncata spiny cliff-brake	None/None G5/S3 2B.3	Pinyon and juniper woodland (volcanic or granitic, rocky). 1200 - 2150 m. perennial rhizomatous herb. Blooms Apr-Jun
Penstemon albomarginatus white-margined beardtongue	None/None G2/S1 1B.1	Desert dunes (stabilized), Mojavean desert scrub (sandy). 640 - 1065 m. perennial herb. Blooms Mar-May (Jun)
Penstemon bicolor ssp. *roseus* rosy two-toned beardtongue	None/None G3T3Q/S1 1B.1	Joshua tree woodland, Mojavean desert scrub. rocky or gravelly, sometimes disturbed areas. 700 - 1500 m. perennial herb. Blooms May
Penstemon calcareus limestone beardtongue	None/None G3?/S3? 1B.3	Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. carbonate, rocky. 1065 - 2040 m. perennial herb. Blooms Apr-May
Penstemon californicus California beardtongue	None/None G3/S2 1B.2	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland. sandy. 1170 - 2300 m. perennial herb. Blooms May-Jun (Aug)
Penstemon clevelandii var. *connatus* San Jacinto beardtongue	None/None G5T4/S3 4.3	Chaparral, Pinyon and juniper woodland, Sonoran desert scrub. rocky. 400 - 1500 m. perennial herb. Blooms Mar-May
Penstemon fruticiformis var. *amargosae* Amargosa beardtongue	None/None G4T3/S2 1B.3	Mojavean desert scrub. 850 - 1400 m. perennial herb. Blooms Apr-Jun
Penstemon pseudospectabilis ssp. *pseudospectabilis* desert beardtongue	None/None G4G5T4/S3 2B.2	Mojavean desert scrub, Sonoran desert scrub. often sandy washes, sometimes rocky. 80 - 1935 m. perennial herb. Blooms Jan-May
Penstemon stephensii Stephens' beardtongue	None/None G3?/S3? 1B.3	Mojavean desert scrub, Pinyon and juniper woodland. usually carbonate, rocky. 1160 - 1850 m. perennial herb. Blooms Apr-Jun
Penstemon thompsoniae Thompson's beardtongue	None/None G4/S1 2B.3	Pinyon and juniper woodland (gravelly, carbonate). 1500 - 2700 m. perennial herb. Blooms May-Jun

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Penstemon thurberi Thurber's beardtongue	None/None G5/S3 4.2	Chaparral, Joshua tree woodland, Pinyon and juniper woodland, Sonoran desert scrub. 500 - 1220 m. perennial herb. Blooms May-Jul
Penstemon utahensis Utah beardtongue	None/None G4/S2 2B.3	Chenopod scrub, Great Basin scrub, Mojavean desert scrub, Pinyon and juniper woodland. rocky. 1065 - 2500 m. perennial herb. Blooms Apr-May
Pentachaeta aurea ssp. *allenii* Allen's pentachaeta	None/None G4T1/S1 1B.1	Coastal scrub (openings), Valley and foothill grassland. 75 - 520 m. annual herb. Blooms Mar-Jun
Pentachaeta aurea ssp. *aurea* golden-rayed pentachaeta	None/None G4T3/S3 4.2	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Riparian woodland, Valley and foothill grassland. 80 - 1850 m. annual herb. Blooms Mar-Jul
Pentachaeta lyonii Lyon's pentachaeta	FE/SCE G1/S1 1B.1	Chaparral (openings), Coastal scrub, Valley and foothill grassland. rocky, clay. 30 - 690 m. annual herb. Blooms (Feb) Mar-Aug
Perideridia gairdneri ssp. *gairdneri* Gairdner's yampah	None/None G5T3T4/S3S4 4.2	Broadleafed upland forest, Chaparral, Coastal prairie, Valley and foothill grassland, Vernal pools. vernally mesic. 0 - 610 m. perennial herb. Blooms Jun-Oct
Perideridia parishii ssp. *parishii* Parish's yampah	None/None G4T3T4/S2 2B.2	Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest. 1465 - 3000 m. perennial herb. Blooms Jun-Aug
Perideridia pringlei adobe yampah	None/None G4/S4 4.3	Chaparral, Cismontane woodland, Coastal scrub, Pinyon and juniper woodland. Serpentinite, often clay. 300 - 1800 m. perennial herb. Blooms Apr-Jun (Jul)
Petalonyx linearis narrow-leaf sandpaper-plant	None/None G4/S3? 2B.3	Mojavean desert scrub, Sonoran desert scrub. Sandy or rocky canyons. -25 - 1115 m. perennial shrub. Blooms (Jan-Feb) Mar-May (Jun-Dec)
Petalonyx thurberi ssp. *gilmanii* Death Valley sandpaper-plant	None/None G5T2/S2 1B.3	Desert dunes, Mojavean desert scrub. 260 - 1445 m. perennial evergreen shrub. Blooms May-Sep
Petradoria pumila ssp. *pumila* rock goldenrod	None/None G5T4/S4? 4.3	Pinyon and juniper woodland (rocky, carbonate). 1070 - 3400 m. perennial herb. Blooms Jul-Oct
Phacelia anelsonii Aven Nelson's phacelia	None/None G3/S2 2B.3	Joshua tree woodland, Pinyon and juniper woodland. carbonate, sandy or gravelly. 1200 - 1980 m. annual herb. Blooms Apr-May
Phacelia barnebyana Barneby's phacelia	None/None G3?/S2 2B.3	Great Basin scrub, Pinyon and juniper woodland. usually carbonate, gravelly, rocky. 1600 - 2700 m. annual herb. Blooms (Apr)May-Jul
Phacelia coerulea sky-blue phacelia	None/None G5/S2 2B.3	Mojavean desert scrub, Pinyon and juniper woodland. 1400 - 2000 m. annual herb. Blooms Apr-May
Phacelia exilis Transverse Range phacelia	None/None G4Q/S4 4.3	Lower montane coniferous forest, Meadows and seeps, Pebble (Pavement) plain, Upper montane coniferous forest. sandy or gravelly. 1100 - 2700 m. annual herb. Blooms May-Aug
Phacelia floribunda many-flowered phacelia	None/None G2/S2 1B.2	Coastal scrub. 15 - 500 m. annual herb. Blooms Mar-May
Phacelia hubbyi Hubby's phacelia	None/None G4/S4 4.2	Chaparral, Coastal scrub, Valley and foothill grassland. gravelly, rocky, talus. 0 - 1000 m. annual herb. Blooms Apr-Jul

Scientific Name Common Name	Status	Habitat Requirements
Phacelia keckii Santiago Peak phacelia	None/None G1/S1 1B.3	Closed-cone coniferous forest, Chaparral. 545 - 1600 m. annual herb. Blooms May-July
Phacelia mohavensis Mojave phacelia	None/None G4Q/S4 4.3	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Pinyon and juniper woodland. sandy or gravelly. 1400 - 2500 m. annual herb. Blooms Apr-Aug
Phacelia mustelina Death Valley round-leaved phacelia	None/None G3/S2 1B.3	Mojavean desert scrub, Pinyon and juniper woodland. carbonate or volcanic, gravelly or rocky. 730 - 2620 m. annual herb. Blooms May-Jul
Phacelia parishii Parish's phacelia	None/None G2G3/S1 1B.1	Mojavean desert scrub, Playas. clay or alkaline. 540 - 1200 m. annual herb. Blooms Apr-May (Jun-Jul)
Phacelia perityloides var. *jaegeri* Jaeger's phacelia	None/None G4T2/S2 1B.3	Pinyon and juniper woodland (rocky, often carbonate). 1830 - 2345 m. perennial herb. Blooms May-Jul
Phacelia pulchella var. *gooddingii* Goodding's phacelia	None/None G5T3/S2 2B.2	Mojavean desert scrub (clay, often alkaline). 765 - 1000 m. annual herb. Blooms Apr-Jun
Phacelia ramosissima var. *austrolitoralis* south coast branching phacelia	None/None G5?T3Q/S3 3.2	Chaparral, Coastal dunes, Coastal scrub, Marshes and swamps (coastal salt). sandy, sometimes rocky. 5 - 300 m. perennial herb. Blooms Mar-Aug
Phacelia stellaris Brand's star phacelia	None/None G1/S1 1B.1	Coastal dunes, Coastal scrub. 1 - 400 m. annual herb. Blooms Mar-Jun
Phaseolus filiformis slender-stem bean	None/None G5/S1 2B.1	Sonoran desert scrub. 125 - 125 m. annual herb. Blooms Apr
Phlox dolichantha Big Bear Valley phlox	None/None G2/S2 1B.2	Pebble (Pavement) plain, Upper montane coniferous forest (openings). 1830 - 2970 m. perennial herb. Blooms May-Jul
Pholistoma auritum var. *arizonicum* Arizona pholistoma	None/None G5T4?/S3 2B.3	Mojavean desert scrub. 275 - 835 m. annual herb. Blooms Mar
Physalis lobata lobed ground-cherry	None/None G5/S1S2 2B.3	Mojavean desert scrub (decomposed granitic), Playas. 500 - 800 m. perennial herb. Blooms (May) Sep-Jan
Physaria chambersii Chambers' physaria	None/None G5/S2S3 2B.3	Pinyon and juniper woodland (carbonate, rocky). 1500 - 2590 m. perennial herb. Blooms Apr-May
Physaria kingii ssp. *bernardina* San Bernardino Mountains bladderpod	FE/None G5T1/S1 1B.1	Lower montane coniferous forest, Pinyon and juniper woodland, Subalpine coniferous forest. usually carbonate. 1850 - 2700 m. perennial herb. Blooms May-Jun
Pickeringia montana var. *tomentosa* woolly chaparral-pea	None/None G5T3T4/S3S4 4.3	Chaparral. Gabbroic, granitic, clay. 0 - 1700 m. evergreen shrub. Blooms May-Aug
Pilostyles thurberi Thurber's pilostyles	None/None G5/S4 4.3	Sonoran desert scrub. 0 - 365 m. perennial herb (parasitic). Blooms Dec-Apr
Pinus edulis two-needle pinyon pine	None/None G5/S3 3.3	Lower montane coniferous forest, Pinyon and juniper woodland. 1300 - 2700 m. perennial evergreen tree. Blooms

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Pinus torreyana ssp. *torreyana* Torrey pine	None/None G1T1/S1 1B.2	Closed-cone coniferous forest, Chaparral. Sandstone. 30 - 160 m. perennial evergreen tree. Blooms
Piperia cooperi chaparral rein orchid	None/None G3G4/S3S4 4.2	Chaparral, Cismontane woodland, Valley and foothill grassland. 15 - 1585 m. perennial herb. Blooms Mar-Jun
Piperia leptopetala narrow-petaled rein orchid	None/None G4/S4 4.3	Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest. 380 - 2225 m. perennial herb. Blooms May-Jul
Piperia michaelii Michael's rein orchid	None/None G3/S3 4.2	Coastal bluff scrub, Closed-cone coniferous forest, Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest. 3 - 915 m. perennial herb. Blooms Apr-Aug
Plagiobothrys parishii Parish's popcornflower	None/None G1/S1 1B.1	Great Basin scrub, Joshua tree woodland. alkaline, mesic. 750 - 1400 m. annual herb. Blooms Mar-Jun (Nov)
Plagiobryoides vinosula wine-colored tufa moss	None/None G3G4/S2 4.2	Cismontane woodland, Mojavean desert scrub, Meadows and seeps, Pinyon and juniper woodland, Riparian woodland. usually granitic rock or granitic soil along seeps and streams, sometimes clay. 30 - 1735 m. moss. Blooms
Poa atropurpurea San Bernardino blue grass	FE/None G2/S2 1B.2	Meadows and seeps (mesic). 1360 - 2455 m. perennial rhizomatous herb. Blooms (Apr) May-Jul (Aug)
Podistera nevadensis Sierra podistera	None/None G4/S4 4.3	Alpine boulder and rock field. 3000 - 4000 m. perennial herb. Blooms Jul-Sep
Pogogyne abramsii San Diego mesa mint	FE/SCE G1/S1 1B.1	Vernal pools. 90 - 200 m. annual herb. Blooms Mar-Jul
Pogogyne nudiuscula Otay Mesa mint	FE/SCE G1/S1 1B.1	Vernal pools. 90 - 250 m. annual herb. Blooms May-Jul
Poliomintha incana frosted mint	None/None G5/SH 2A	Lower montane coniferous forest (mesic). 1600 - 1700 m. perennial shrub. Blooms Jun-Jul
Polygala acanthoclada thorny milkwort	None/None G4/S2S3 2B.3	Chenopod scrub, Joshua tree woodland, Pinyon and juniper woodland. 760 - 2285 m. perennial shrub. Blooms May-Aug
Polygala cornuta var. *fishiae* Fish's milkwort	None/None G5T4/S4 4.3	Chaparral, Cismontane woodland, Riparian woodland. 100 - 1000 m. perennial deciduous shrub. Blooms May-Aug
Polygala intermontana intermountain milkwort	None/None G4/S2 2B.1	Pinyon and juniper woodland. 2010 - 3080 m. perennial shrub. Blooms Jun-Jul (Oct)
Polystichum kruckebergii Kruckeberg's sword fern	None/None G4/S4 4.3	Subalpine coniferous forest, Upper montane coniferous forest. rocky. 2100 - 3200 m. perennial rhizomatous herb. Blooms Jun-Aug
Populus angustifolia narrow-leaved cottonwood	None/None G5/S2 2B.2	Riparian forest. 1200 - 1800 m. perennial deciduous tree. Blooms Mar-Apr
Portulaca halimoides desert portulaca	None/None G5/S3 4.2	Joshua tree woodland (sandy). 1000 - 1200 m. annual herb. Blooms Sep

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Potamogeton zosteriformis eel-grass pondweed	None/None G5/S3 2B.2	Marshes and swamps (assorted freshwater). 0 - 1860 m. annual herb (aquatic). Blooms Jun-Jul
Potentilla multijuga Ballona cinquefoil	None/None GX/SX 1A	Meadows and seeps (brackish). 0 - 2 m. perennial herb. Blooms Jun-Aug
Potentilla rimicola cliff cinquefoil	None/None G2/S1 2B.3	Subalpine coniferous forest, Upper montane coniferous forest. granitic, rocky. 2400 - 2800 m. perennial herb. Blooms Jul-Sep
Proboscidea althaeifolia desert unicorn-plant	None/None G5/S4 4.3	Sonoran desert scrub. gently sloping sandy flats and washes, sometimes roadsides. 85 - 1000 m. perennial herb. Blooms May-Sep (Oct)
Prunus eremophila Mojave Desert plum	None/None G2/S2 1B.2	Mojavean desert scrub. granitic or rhyolitic, usually washes. 975 - 1175 m. perennial deciduous shrub. Blooms Mar-Apr
Pseudognaphalium leucocephalum white rabbit-tobacco	None/None G4/S2 2B.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland. sandy, gravelly. 0 - 2100 m. perennial herb. Blooms (Jul) Aug-Nov (Dec)
Pseudorontium cyathiferum Deep Canyon snapdragon	None/None G4G5/S1 2B.3	Sonoran desert scrub (rocky). 0 - 800 m. annual herb. Blooms Feb-Apr
Psilocarphus brevissimus var. *multiflorus* Delta woolly-marbles	None/None G4T3/S3 4.2	Vernal pools. 10 - 500 m. annual herb. Blooms May-Jun
Psorothamnus arborescens var. *arborescens* Mojave indigo-bush	None/None G5T4/S4 4.3	Mojavean desert scrub, Riparian scrub. 400 - 1185 m. perennial deciduous shrub. Blooms Apr-May
Psorothamnus fremontii var. *attenuatus* narrow-leaved psorothamnus	None/None G5T4?/S3 2B.3	Sonoran desert scrub (granitic or volcanic). 335 - 915 m. perennial shrub. Blooms Apr
Puccinellia parishii Parish's alkali grass	None/None G3/S1 1B.1	Meadows and seeps (alkaline springs and seeps). 700 - 1000 m. annual herb. Blooms Apr-May
Puccinellia simplex California alkali grass	None/None G3/S2 1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools. Alkaline, vernally mesic; sinks, flats, and lake margins. 2 - 930 m. annual herb. Blooms Mar-May
Pyrrocoma uniflora var. *gossypina* Bear Valley pyrrocoma	None/None G5T1/S1 1B.2	Meadows and seeps, Pebble (Pavement) plain. 1600 - 2300 m. perennial herb. Blooms Jul-Sep
Quercus cedrosensis Cedros Island oak	None/None G3/S1 2B.2	Closed-cone coniferous forest, Chaparral, Coastal scrub. 255 - 960 m. perennial evergreen tree. Blooms Apr-May
Quercus dumosa Nuttall's scrub oak	None/None G3/S3 1B.1	Closed-cone coniferous forest, Chaparral, Coastal scrub. sandy, clay loam. 15 - 400 m. perennial evergreen shrub. Blooms Feb-Apr (May-Aug)
Quercus durata var. *gabrielensis* San Gabriel oak	None/None G4T3/S3 4.2	Chaparral, Cismontane woodland. 450 - 1000 m. perennial evergreen shrub. Blooms Apr-May
Quercus engelmannii Engelmann oak	None/None G3/S3 4.2	Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland. 50 - 1300 m. perennial deciduous tree. Blooms Mar-Jun

Scientific Name Common Name	Status	Habitat Requirements
Quercus turbinella shrub live oak	None/None G5/S4 4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest, Pinyon and juniper woodland. 1200 - 2000 m. perennial evergreen shrub. Blooms Apr-Jun
Rhus aromatica var. *simplicifolia* single-leaved skunkbrush	None/None G5T5/S2 2B.3	Pinyon and juniper woodland. Usually granitic. 1220 - 1370 m. perennial deciduous shrub. Blooms Mar-Apr
Ribes canthariforme Moreno currant	None/None G2/S2 1B.3	Chaparral, Riparian scrub. 340 - 1200 m. perennial deciduous shrub. Blooms Feb-Apr
Ribes divaricatum var. parishii Parish's gooseberry	None/None G5TX/SX 1A	Riparian woodland. 65 - 300 m. perennial deciduous shrub. Blooms Feb-Apr
Ribes viburnifolium Santa Catalina Island currant	None/None G2?/S2? 1B.2	Chaparral, Cismontane woodland. 30 - 350 m. perennial evergreen shrub. Blooms Feb-Apr
Robinia neomexicana New Mexico locust	None/None G4/S1 2B.3	Pinyon and juniper woodland (sandy). 1500 - 1770 m. perennial deciduous shrub. Blooms May, Jul
Romneya coulteri Coulter's matilija poppy	None/None G4/S4 4.2	Chaparral, Coastal scrub. Often in burns. 20 - 1200 m. perennial rhizomatous herb. Blooms Mar-Jul (Aug)
Rosa minutifolia small-leaved rose	None/SCE G2G3/SXC 2B.1	Chaparral, Coastal scrub. 150 - 160 m. perennial deciduous shrub. Blooms Jan-Jun
Rosa woodsii var. *glabrata* Cushenbury rose	None/None G5T1/S1 1B.1	Mojavean desert scrub (springs). 910 - 1435 m. perennial shrub. Blooms (Apr) May-Aug
Rubus glaucifolius var. *ganderi* Cuyamaca raspberry	None/None G5T1Q/S1 3.1	Lower montane coniferous forest (gabbroic). 1200 - 1675 m. perennial evergreen shrub. Blooms May-Jun
Rupertia rigida Parish's rupertia	None/None G4/S4 4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Pebble (Pavement) plain, Valley and foothill grassland. 700 - 2500 m. perennial herb. Blooms Jun-Aug
Sagittaria sanfordii Sanford's arrowhead	None/None G3/S3 1B.2	Marshes and swamps (assorted shallow freshwater). 0 - 650 m. perennial rhizomatous herb (emergent). Blooms May-Oct (Nov)
Saltugilia caruifolia caraway-leaved woodland-gilia	None/None G4/S4 4.3	Chaparral, Lower montane coniferous forest. Sandy, openings. 840 - 2300 m. annual herb. Blooms May-Aug
Saltugilia latimeri Latimer's woodland-gilia	None/None G3/S3 1B.2	Chaparral, Mojavean desert scrub, Pinyon and juniper woodland. rocky or sandy, often granitic, sometimes washes. 400 - 1900 m. annual herb. Blooms Mar-Jun
Salvia eremostachya desert sage	None/None G4/S3 4.3	Sonoran desert scrub (rocky or gravelly). 700 - 1400 m. perennial evergreen shrub. Blooms Mar-May
Salvia greatae Orocopia sage	None/None G2G3/S2S3 1B.3	Mojavean desert scrub, Sonoran desert scrub. -40 - 825 m. perennial evergreen shrub. Blooms Mar-Apr
Salvia munzii Munz's sage	None/None G2/S2 2B.2	Chaparral, Coastal scrub. 115 - 1065 m. perennial evergreen shrub. Blooms Feb-Apr

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Sanvitalia abertii Abert's sanvitalia	None/None G5/S2S3 2B.2	Pinyon and juniper woodland (carbonate). 1570 - 1800 m. annual herb. Blooms Aug-Sep (Oct)
Schoenus nigricans black bog-rush	None/None G4/S2 2B.2	Marshes and swamps (often alkaline). 150 - 2000 m. perennial herb. Blooms Aug-Sep
Sclerocactus johnsonii Johnson's bee-hive cactus	None/None G3/S2 2B.2	Mojavean desert scrub (granitic). 500 - 1200 m. perennial stem succulent. Blooms Apr-May
Sclerocactus polyancistrus Mojave fish-hook cactus	None/None G3/S3 4.2	Great Basin scrub, Joshua tree woodland, Mojavean desert scrub. usually carbonate. 640 - 2320 m. perennial stem succulent. Blooms Apr-Jul
Scleropogon brevifolius burro grass	None/None G5/S1S2 2B.3	Joshua tree woodland, Mojavean desert scrub (decomposed granitic). 1360 - 1600 m. perennial stoloniferous herb. Blooms Oct
Scrophularia villosa Santa Catalina figwort	None/None G3/S3 1B.2	Chaparral, Coastal scrub. 45 - 510 m. perennial shrub. Blooms Apr-Aug
Scutellaria bolanderi ssp. *austromontana* southern mountains skullcap	None/None G4T3/S3 1B.2	Chaparral, Cismontane woodland, Lower montane coniferous forest. mesic. 425 - 2000 m. perennial rhizomatous herb. Blooms Jun-Aug
Scutellaria galericulata marsh skullcap	None/None G5/S2 2B.2	Lower montane coniferous forest, Meadows and seeps (mesic), Marshes and swamps. 0 - 2100 m. perennial rhizomatous herb. Blooms Jun-Sep
Scutellaria lateriflora side-flowering skullcap	None/None G5/S2 2B.2	Meadows and seeps (mesic), Marshes and swamps. 0 - 500 m. perennial rhizomatous herb. Blooms Jul-Sep
Sedum niveum Davidson's stonecrop	None/None G3/S3 4.2	Lower montane coniferous forest, Subalpine coniferous forest, Upper montane coniferous forest. rocky. 2075 - 3000 m. perennial rhizomatous herb. Blooms Jun-Aug
Selaginella asprella bluish spike-moss	None/None G4/S4 4.3	Cismontane woodland, Lower montane coniferous forest, Pinyon and juniper woodland, Subalpine coniferous forest, Upper montane coniferous forest. granitic, rocky. 1600 - 2700 m. perennial rhizomatous herb. Blooms Jul
Selaginella cinerascens ashy spike-moss	None/None G3G4/S3 4.1	Chaparral, Coastal scrub. 20 - 640 m. perennial rhizomatous herb. Blooms
Selaginella eremophila desert spike-moss	None/None G4/S2S3 2B.2	Chaparral, Sonoran desert scrub (gravelly or rocky). 200 - 1295 m. perennial rhizomatous herb. Blooms (May) Jun (Jul)
Selaginella leucobryoides Mojave spike-moss	None/None G4/S3S4 4.3	Great Basin scrub, Lower montane coniferous forest, Mojavean desert scrub, Pinyon and juniper woodland. rocky, usually carbonate. 600 - 3150 m. perennial rhizomatous herb. Blooms Jun
Senecio aphanactis chaparral ragwort	None/None G3/S2 2B.2	Chaparral, Cismontane woodland, Coastal scrub. sometimes alkaline. 15 - 800 m. annual herb. Blooms Jan-Apr (May)
Senecio astephanus San Gabriel ragwort	None/None G3/S3 4.3	Coastal bluff scrub, Chaparral. rocky slopes. 400 - 1500 m. perennial herb. Blooms May-Jul
Senna covesii Coves' cassia	None/None G5/S3 2B.2	Sonoran desert scrub. Dry, sandy desert washes and slopes. 225 - 1295 m. perennial herb. Blooms Mar-Jun (Aug)

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Sibara deserti desert winged-rockcress	None/None G4/S4 4.3	Mojavean desert scrub. 345 - 1300 m. annual herb. Blooms Mar-Apr
Sibara filifolia Santa Cruz Island winged-rockcress	FE/None G2/S2 1B.1	Coastal scrub (rocky, volcanic). often openings. 60 - 305 m. annual herb. Blooms (Feb) Mar-Apr
Sibaropsis hammittii Hammitt's clay-cress	None/None G2/S2 1B.2	Chaparral (openings), Valley and foothill grassland. clay. 720 - 1065 m. annual herb. Blooms Mar-Apr
Sidalcea hickmanii ssp. *parishii* Parish's checkerbloom	None/SCR G3T1/S1 1B.2	Chaparral, Cismontane woodland, Lower montane coniferous forest. 1000 - 2499 m. perennial herb. Blooms (May) Jun-Aug
Sidalcea malviflora ssp. *dolosa* Bear Valley checkerbloom	None/None G5T2/S2 1B.2	Lower montane coniferous forest (meadows and seeps), Meadows and seeps, Riparian woodland, Upper montane coniferous forest (meadows and seeps). 1495 - 2685 m. perennial herb. Blooms May-Aug
Sidalcea neomexicana salt spring checkerbloom	None/None G4/S2 2B.2	Chaparral, Coastal scrub, Lower montane coniferous forest, Mojavean desert scrub, Playas. alkaline, mesic. 15 - 1530 m. perennial herb. Blooms Mar-Jun
Sidalcea pedata bird-foot checkerbloom	FE/SCE G1/S1 1B.1	Meadows and seeps (mesic), Pebble (Pavement) plain. 1600 - 2500 m. perennial herb. Blooms May-Aug
Sidotheca caryophylloides chickweed oxytheca	None/None G4/S4 4.3	Lower montane coniferous forest (sandy). 1114 - 2600 m. annual herb. Blooms Jul-Sep (Oct)
Sidotheca emarginata white-margined oxytheca	None/None G3/S3 1B.3	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland. 1200 - 2500 m. annual herb. Blooms (Feb) Apr-Jul (Aug)
Silene krantzii Krantz's catchfly	None/None G1/S1 1B.2	Alpine dwarf scrub. Usually sandy or gravelly, sometimes rocky. 3235 - 3510 m. perennial herb. Blooms Apr-Sep
Sisyrinchium longipes timberland blue-eyed-grass	None/None G3G4/S1 2B.2	Meadows and seeps. mesic. 2060 - 2060 m. perennial herb. Blooms Jun-Aug
Solanum wallacei Wallace's nightshade	None/None G3Q/S2 1B.1	Chaparral, Cismontane woodland. rocky. 3 - 410 m. perennial herb. Blooms Mar-Aug
Spermolepis gigantea desert scaleseed	None/None G2G3/SH 2B.1	Sonoran desert scrub. 400 - 400 m. annual herb. Blooms Mar-Apr
Spermolepis infernensis Hellhole scaleseed	None/None G1/S1 1B.2	Sonoran desert scrub. Rocky or sandy. 230 - 670 m. annual herb. Blooms Mar-Apr
Spermolepis lateriflora western bristly scaleseed	None/None G5/SH 2A	Sonoran desert scrub. Rocky or sandy. 365 - 670 m. annual herb. Blooms Mar-Apr
Sphaeralcea rusbyi var. *eremicola* Rusby's desert-mallow	None/None G4T2/S2 1B.2	Joshua tree woodland, Mojavean desert scrub. 975 - 1645 m. perennial herb. Blooms Mar-Jun
Sphaerocarpos drewei bottle liverwort	None/None G1/S1 1B.1	Chaparral, Coastal scrub. openings, soil. 90 - 600 m. ephemeral liverwort. Blooms

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Sphenopholis obtusata prairie wedge grass	None/None G5/S2 2B.2	Cismontane woodland, Meadows and seeps. mesic. 300 - 2000 m. perennial herb. Blooms Apr-Jul
Stemodia durantifolia purple stemodia	None/None G5/S2 2B.1	Sonoran desert scrub (often mesic, sandy). 180 - 300 m. perennial herb. Blooms (Jan) Apr, Jun, Aug, Sep, Oct, Dec
Stipa arida Mormon needle grass	None/None G5/S3? 2B.3	Joshua tree woodland, Pinyon and juniper woodland. carbonate. 500 - 2570 m. perennial herb. Blooms May-Jul
Stipa diegoensis San Diego County needle grass	None/None G4/S4 4.2	Chaparral, Coastal scrub. rocky, often mesic. 10 - 800 m. perennial herb. Blooms Feb-Jun
Stipa divaricata small-flowered rice grass	None/None G5/S2 2B.3	Pinyon and juniper woodland (gravelly, carbonate). 700 - 2950 m. perennial herb. Blooms Jun-Sep
Streptanthus bernardinus Laguna Mountains jewelflower	None/None G3G4/S3S4 4.3	Chaparral, Lower montane coniferous forest. 670 - 2500 m. perennial herb. Blooms May-Aug
Streptanthus campestris southern jewelflower	None/None G3/S3 1B.3	Chaparral, Lower montane coniferous forest, Pinyon and juniper woodland. rocky. 900 - 2300 m. perennial herb. Blooms (Apr) May-Jul
Stylocline citroleum oil neststraw	None/None G3/S3 1B.1	Chenopod scrub, Coastal scrub, Valley and foothill grassland. clay. 50 - 400 m. annual herb. Blooms Mar-Apr
Stylocline masonii Mason's neststraw	None/None G1/S1 1B.1	Chenopod scrub, Pinyon and juniper woodland. sandy. 100 - 1200 m. annual herb. Blooms Mar-May
Stylocline sonorensis mesquite neststraw	None/None G3G5/SX 2A	Sonoran desert scrub (sandy). 425 - 425 m. annual herb. Blooms Apr
Suaeda esteroa estuary seablite	None/None G3/S2 1B.2	Marshes and swamps (coastal salt). 0 - 5 m. perennial herb. Blooms (May) Jul-Oct (Jan)
Suaeda taxifolia woolly seablite	None/None G4/S4 4.2	Coastal bluff scrub, Coastal dunes, Marshes and swamps (margins of coastal salt). 0 - 50 m. perennial evergreen shrub. Blooms Jan-Dec
Symphyotrichum defoliatum San Bernardino aster	None/None G2/S2 1B.2	Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Meadows and seeps, Marshes and swamps, Valley and foothill grassland (vernally mesic). near ditches, streams, springs. 2 - 2040 m. perennial rhizomatous herb. Blooms Jul-Nov (Dec)
Symphyotrichum greatae Greata's aster	None/None G2/S2 1B.3	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Riparian woodland. mesic. 300 - 2010 m. perennial rhizomatous herb. Blooms Jun-Oct
Symphyotrichum lentum Suisun Marsh aster	None/None G2/S2 1B.2	Marshes and swamps (brackish and freshwater). 0 - 3 m. perennial rhizomatous herb. Blooms (Apr) May-Nov
Syntrichopappus lemmonii Lemmon's syntrichopappus	None/None G4/S4 4.3	Chaparral, Joshua tree woodland, Pinyon and juniper woodland. sandy or gravelly. 500 - 1830 m. annual herb. Blooms Apr-May (Jun)
Taraxacum californicum California dandelion	FE/None G1G2/S1S2 1B.1	Meadows and seeps (mesic). 1620 - 2800 m. perennial herb. Blooms May-Aug

Scientific Name Common Name	Status	Habitat Requirements
Tetracoccus dioicus Parry's tetracoccus	None/None G2G3/S2 1B.2	Chaparral, Coastal scrub. 165 - 1000 m. perennial deciduous shrub. Blooms Apr-May
Tetracoccus hallii Hall's tetracoccus	None/None G4/S4 4.3	Mojavean desert scrub, Sonoran desert scrub. 30 - 1200 m. perennial deciduous shrub. Blooms Jan-May
Tetradymia argyraea striped horsebrush	None/None G4?/S4 4.3	Pinyon and juniper woodland (rocky). 1400 - 2230 m. perennial deciduous shrub. Blooms (May) Jun-Sep
Teucrium cubense ssp. *depressum* dwarf germander	None/None G4G5T3T4/S2 2B.2	Desert dunes, Playas margins, Sonoran desert scrub. 45 - 400 m. annual herb. Blooms Mar-May (Sep-Nov)
Teucrium glandulosum desert germander	None/None G4/S2 2B.3	Sonoran desert scrub (rocky). 400 - 790 m. perennial stoloniferous herb. Blooms Apr-May
Texosporium sancti-jacobi woven-spored lichen	None/None G3/S1 3	Chaparral (openings). On soil, small mammal pellets, dead twigs, and on Selaginella spp. 60 - 660 m. crustose lichen (terricolous). Blooms
Thelypodium stenopetalum slender-petaled thelypodium	FE/SCE G1/S1 1B.1	Meadows and seeps (mesic, alkaline). 1600 - 2500 m. perennial herb. Blooms May-Sep
Thelypteris puberula var. *sonorensis* Sonoran maiden fern	None/None G5T3/S2 2B.2	Meadows and seeps (seeps and streams). 50 - 610 m. perennial rhizomatous herb. Blooms Jan-Sep
Thermopsis californica var. *argentata* silvery false lupine	None/None G4T4/S4 4.3	Cismontane woodland, Lower montane coniferous forest, Pinyon and juniper woodland. 665 - 2335 m. perennial rhizomatous herb. Blooms Apr-Oct
Thermopsis californica var. *semota* velvety false lupine	None/None G4T2/S2 1B.2	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland. 1000 - 1870 m. perennial rhizomatous herb. Blooms Mar-Jun
Thysanocarpus rigidus rigid fringepod	None/None G1G2/S1 1B.2	Pinyon and juniper woodland. Dry rocky slopes. 600 - 2200 m. annual herb. Blooms Feb-May
Tidestromia eliassoniana Eliasson?s woolly tidestromia	None/None G5/S2 2B.2	Mojavean desert scrub. rocky to gravelly volcanic flats, clay. 655 - 2105 m. annual herb. Blooms Jul-Oct
Tiquilia canescens var. *pulchella* Chocolate Mountains tiquilia	None/None G5T3T4/S3 3.2	Sonoran desert scrub. sometimes slopes, ridges, or washes. 250 - 700 m. perennial shrub. Blooms Feb-May
Tortella alpicola alpine crisp-moss	None/None G5?/S1 2B.3	Cismontane woodland (volcanic, rock). 1400 - 1400 m. moss. Blooms
Tortula californica California screw-moss	None/None G2G3/S2S3 1B.2	Chenopod scrub, Valley and foothill grassland. sandy, soil. 10 - 1460 m. moss. Blooms
Tragia ramosa desert tragia	None/None G5/S4 4.3	Chenopod scrub, Pinyon and juniper woodland. rocky. 900 - 1860 m. perennial herb. Blooms Apr-May
Trichocoronis wrightii var. *wrightii* Wright's trichocoronis	None/None G4T3/S1 2B.1	Meadows and seeps, Marshes and swamps, Riparian forest, Vernal pools. alkaline. 5 - 435 m. annual herb. Blooms May-Sep

Scientific Name Common Name	Status	Habitat Requirements
Trichostema austromontanum ssp. *compactum* Hidden Lake bluecurls	FT/None G3G4T1/S1 1B.1	Upper montane coniferous forest (seasonally submerged lake margins). 2400 - 2680 m. annual herb. Blooms Jul-Sep
Trichostema micranthum small-flowered bluecurls	None/None G4/S3 4.3	Lower montane coniferous forest, Meadows and seeps. mesic. 1525 - 2300 m. annual herb. Blooms Jun-Sep
Tripterocalyx micranthus small-flowered sand-verbena	None/None G5/S1 2B.2	Desert dunes, Mojavean desert scrub (sandy). 550 - 855 m. perennial herb. Blooms Apr-May
Triquetrella californica coastal triquetrella	None/None G2/S2 1B.2	Coastal bluff scrub, Coastal scrub. soil. 10 - 100 m. moss. Blooms
Triteleia clementina San Clemente Island triteleia	None/None G2/S2 1B.2	Valley and foothill grassland (rocky). 100 - 445 m. perennial bulbiferous herb. Blooms Mar-Apr
Tropidocarpum capparideum caper-fruited tropidocarpum	None/None G1/S1 1B.1	Valley and foothill grassland (alkaline hills). 1 - 455 m. annual herb. Blooms Mar-Apr
Verbesina dissita big-leaved crownbeard	FT/SCT G1G2/S1 1B.1	Chaparral (maritime), Coastal scrub. 45 - 205 m. perennial herb. Blooms (Mar) Apr-Jul
Viguiera laciniata San Diego County viguiera	None/None G4/S4 4.3	Chaparral, Coastal scrub. 60 - 750 m. perennial shrub. Blooms Feb-Jun (Aug)
Viguiera purisimae La Purisima viguiera	None/None G4/S1 2B.3	Coastal bluff scrub, Chaparral. 365 - 425 m. shrub. Blooms Apr-Sep
Viola pinetorum ssp. *grisea* grey-leaved violet	None/None G4G5T3/S3 1B.2	Meadows and seeps, Subalpine coniferous forest, Upper montane coniferous forest. 1500 - 3400 m. perennial herb. Blooms Apr-Jul
Viola purpurea ssp. *aurea* golden violet	None/None G5T2/S2 2B.2	Great Basin scrub, Pinyon and juniper woodland. sandy. 1000 - 2500 m. perennial herb. Blooms Apr-Jun
Wislizenia refracta ssp. *palmeri* Palmer's jackass clover	None/None G5T3T5/S1 2B.2	Chenopod scrub, Desert dunes, Sonoran desert scrub, Sonoran thorn woodland. 0 - 300 m. perennial deciduous shrub. Blooms Jan-Dec
Wislizenia refracta ssp. *refracta* jackass-clover	None/None G5T5?/S1 2B.2	Desert dunes, Mojavean desert scrub, Playas, Sonoran desert scrub. 600 - 800 m. annual herb. Blooms Apr-Nov
Woodsia plummerae Plummer's woodsia	None/None G5/S2 2B.3	Pinyon and juniper woodland (granitic, rocky). 1600 - 2000 m. perennial rhizomatous herb. Blooms May-Sep
Xanthisma gracile annual bristleweed	None/None G5/S4 4.3	Joshua tree woodland, Mojavean desert scrub. 1220 - 1555 m. annual herb. Blooms Apr-Jul (Sep)
Xanthisma junceum rush-like bristleweed	None/None G5/S4 4.3	Chaparral, Coastal scrub. 240 - 1000 m. perennial herb. Blooms May-Jan
Xylorhiza cognata Mecca-aster	None/None G2/S2 1B.2	Sonoran desert scrub. 20 - 400 m. perennial herb. Blooms Jan-Jun

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Xylorhiza orcuttii Orcutt's woody-aster	None/None G3?/S2 1B.2	Sonoran desert scrub. Arid canyons; often in washes. 0-365 m. - m. Blooms
Invertebrates		
Aglaothorax longipennis Santa Monica shieldback katydid	None/None G1G2/S1S2	Occur nocturnally in chaparral and canyon stream bottom vegetation, in the Santa Monica Mtns of Southern California. Inhabit introduced iceplant and native chaparral plants.
Ammopelmatus kelsoensis Kelso jerusalem cricket	None/None G1G2/S1S2	Inhabits a limited area of the Kelso Dunes (type locality), San Bernardino County. Found at the north base of a sand declivity, 15-25 ft high; associated plants: sandpaper weed, croton, sand dune grass.
Anomala carlsoni Carlson's dune beetle	None/None G1/S1	Known primarily from creosote scrub in vicinity of Algodones Dunes, Imperial County. Also taken from Borrego, San Diego County. Host preferences unknown.
Assiminea infima Badwater snail	None/None G1/S1	Restricted to saline spring sources in the Death Valley region, Inyo County. Occurs either under a salt-crust roof fringing the water's edge or on moistened vegetation; often found fully submerged.
Atractelmis wawona Wawona riffle beetle	None/None G1G3/S1S2	Aquatic; found in riffles of rapid, small to medium clear mountain streams; 2000-5000 ft elev. Strong preference for inhabiting submerged aquatic mosses
Belostoma saratogae Saratoga Springs belostoman bug	None/None G1/S1	Known only from Saratoga Spring in Death Valley, San Bernardino County. Inhabits the hot spring pool and inlet/outlet channels; have been collected year-round.
Bombus caliginosus obscure bumble bee	None/None G4?/S1S2	Coastal areas from Santa Barabara county to north to Washington state. Food plant genera include Baccharis, Cirsium, Lupinus, Lotus, Grindelia and Phacelia.
Bombus crotchii Crotch bumble bee	None/SCE G3G4/S1S2	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.
Bombus morrisoni Morrison bumble bee	None/None G4G5/S1S2	From the Sierra-Cascade ranges eastward across the intermountain west. Food plant genera include Cirsium, Cleome, Helianthus, Lupinus, Chrysothamnus, and Melilotus.
Bombus occidentalis western bumble bee	None/SCE G2G3/S1	Once common & widespread, species has declined precipitously from central CA to southern B.C., perhaps from disease.
Branchinecta conservatio Conservancy fairy shrimp	FE/None G2/S2	Endemic to the grasslands of the northern two-thirds of the Central Valley; found in large, turbid pools. Inhabit astatic pools located in swales formed by old, braided alluvium; filled by winter/spring rains, last until June.
Branchinecta lynchi vernal pool fairy shrimp	FT/None G3/S3	Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.
Branchinecta sandiegonensis San Diego fairy shrimp	FE/None G2/S2	Endemic to San Diego and Orange County mesas. Vernal pools.
Brennania belkini Belkin's dune tabanid fly	None/None G1G2/S1S2	Inhabits coastal sand dunes of Southern California.
Calileptoneta oasa Andreas Canyon leptonetid spider	None/None G1/S1	Known only from the type locality, Andreas Canyon, Palm Springs, Riverside County.
Callophrys mossii hidakupa San Gabriel Mountains elfin butterfly	None/None G4T1T2/S1S2	San Gabriel and San Bernardino mountains at elevations of 3,000 to approximately 5,500 ft. Foodplant is Sedum spathulifolium. Type locality is southern mixed evergreen forest.

Scientific Name Common Name	Status	Habitat Requirements
Callophrys thornei Thorne's hairstreak	None/None G1/S1	Associated with the endemic tecate cypress (Cupressus forbesii). Only known from vicinity of Otay Mountain.
Carolella busckana Busck's gallmoth	None/None G1G3/SH	
Ceratochrysis bradleyi Bradley's cuckoo wasp	None/None G1/S1	
Ceratochrysis longimala Desert cuckoo wasp	None/None G1/S1	
Cicindela gabbii western tidal-flat tiger beetle	None/None G2G4/S1	Inhabits estuaries and mudflats along the coast of Southern California. Generally found on dark-colored mud in the lower zone; occasionally found on dry saline flats of estuaries.
Cicindela hirticollis gravida sandy beach tiger beetle	None/None G5T2/S2	Inhabits areas adjacent to non-brackish water along the coast of California from San Francisco Bay to northern Mexico. Clean, dry, light-colored sand in the upper zone. Subterranean larvae prefer moist sand not affected by wave action.
Cicindela latesignata latesignata western beach tiger beetle	None/None G2G4T1T2/S1	Mudflats and beaches in coastal Southern California.
Cicindela senilis frosti senile tiger beetle	None/None G2G3T1T3/S1	Inhabits marine shoreline, from Central California coast south to salt marshes of San Diego. Also found at Lake Elsinore. Inhabits dark-colored mud in the lower zone and dried salt pans in the upper zone.
Cicindela tranquebarica viridissima greenest tiger beetle	None/None G5T1/S1	Inhabits the woodlands adjacent to the Santa Ana River basin. Usually found in open spots between trees.
Coelus globosus globose dune beetle	None/None G1G2/S1S2	Inhabitant of coastal sand dune habitat; erratically distributed from Ten Mile Creek in Mendocino County south to Ensenada, Mexico. Inhabits foredunes and sand hummocks; it burrows beneath the sand surface and is most common beneath dune vegetation.
Coenonycha clementina San Clemente Island coenonycha beetle	None/None G1G2/S1S2	
Danaus plexippus pop. 1 monarch - California overwintering population	None/None G4T2T3/S2S3	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.
Deltaspis ivae marsh-elder long-horned beetle	None/None G1/S1	Found in a few scattered locations in San Diego and Riverside counties; larva breeds in Iva hayesiana root collars.
Dinacoma caseyi Casey's June beetle	FE/None G1/S1	Found only in two populations in a small area of southern Palm Springs. Found in sandy soils; the females live underground and only come to the ground surface to mate.
Diplectrona californica California diplectronan caddisfly	None/None G1G2/S1S2	
Eremarionta immaculata white desertsnail	None/None G1/S1	Known only from the east slope of Riverside Mountains, Riverside County. Found in and around rockslides.
Eremarionta morongoana Morongo (=Colorado) desertsnail	None/None G1G3/S1	Known only from a gulch on the north side of Morongo Pass (type locality), San Bernardino County, near Riverside County line. Found under rocks.
Eremarionta rowelli bakerensis Baker's desertsnail	None/None G3G4T1/S1	Inhabits north slope of a small range of limestone hills, 0.5 miles south of Baker, San Bernardino County. Found in rockslides.

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Eremarionta rowelli mccoiana California Mccoy snail	None/None G3G4T1/S1	Found in various sites in the McCoy Mountains and the Big Maria Mountains. Inhabits rockslides in gullies.
Eucerceris ruficeps redheaded sphecid wasp	None/None G1G3/S1S2	Central California interior dunes. Nest in hard-packed sand utilizing abandoned halictine bee burrows.
Euchloe hyantis andrewsi Andrew's marble butterfly	None/None G3G4T1/S1	Inhabits yellow pine forest near Lake Arrowhead and Big Bear Lake, San Bernardino Mtns, San Bernardino Co, 5000-6000 ft. Hostplants are Streptanthus bernardinus & Arabis holboellii var pinetorum; larval foodplant is Descurainia richardsonii.
Eucosma hennei Henne's eucosman moth	None/None G1/S1	Endemic to the El Segundo Dunes (type locality), Los Angeles County. Larval foodplant is Phacelia ramosissima var austrolitoralis; larvae can be found on woody stems and upper root parts.
Euparagia unidentata Algodones euparagia	None/None G1G2/S1S2	Endemic to the Algodones Dunes in Imperial County.
Euphilotes battoides allyni El Segundo blue butterfly	FE/None G5T1/S1	Restricted to remnant coastal dune habitat in Southern California. Host plant is Eriogonum parvifolium; larvae feed only on the flowers and seeds; used by adults as major nectar source.
Euphydryas editha quino quino checkerspot butterfly	FE/None G5T1T2/S1S2	Sunny openings within chaparral & coastal sage shrublands in parts of Riverside & San Diego counties. Hills and mesas near the coast. Need high densities of food plants Plantago erecta, P. insularis, and Orthocarpus purpurescens.
Euproserpinus euterpe Kern primrose sphinx moth	FT/None G1G2/S1	Found in the Walker Basin, Kern County, and several other scattered locations (Carrizo Plain, Pinnacles NM). Host plant is Camissonia contorta epilobioides (evening primrose).
Glaresis arenata Kelso Dunes scarab glaresis beetle	None/None G2/S2	Known only from the Kelso Dunes.
Glaucopsyche lygdamus palosverdesensis Palos Verdes blue butterfly	FE/None G5T1/S1	Restricted to the cool, fog-shrouded, seaward side of Palos Verdes Hills, Los Angeles County. Host plant is Astragalus trichopodus var. lonchus (locoweed).
Glyptostoma gabrielense San Gabriel chestnut	None/None G2/S2	Terrestrial.
Gonidea angulata western ridged mussel	None/None G3/S1S2	Primarily creeks & rivers & less often lakes. Originally in most of state, now extirpated from Central & Southern Calif.
Halictus harmonius haromonius halictid bee	None/None G1/S1	Known only from the foothills of the San Bernardino Mts., possibly also the San Jacinto Mts.
Haliotis cracherodii black abalone	FE/None G3/S1S2	Mid to low rocky intertidal areas.
Haplotrema catalinense Santa Catalina lancetooth	None/None G1/S1	Occurs only on Santa Catalina Island.
Hedychridium argenteum Riverside cuckoo wasp	None/None G1G2/S1S2	This species appears to be endemic to eastern Riverside County. External parasite of bee larva.
Helminthoglypta ayresiana sanctaecrucis Ayer's snail	None/None G1G2T1T2/S1S2	Restricted to Santa Cruz Island, occupying diverse habitats; sea level to 2000 ft elevation. Found in rock slides, beneath logs and leaves in wooded localities, in clumps of cacti and other dense vegetation.
Helminthoglypta coelata mesa shoulderband	None/None G1/S1	Known only from a few locations in western San Diego County. Found in rock slides, beneath bark and rotten logs, and among coastal vegetation.
Helminthoglypta milleri peak shoulderband	None/None G1/S1	Known only from the type locality at Cuyamaca Peak in San Diego County. Found in rock piles.

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Helminthoglypta mohaveana Victorville shoulderband	None/None G1/S1	Known only from along the Mojave River in San Bernardino County. Found among granite boulders and at the base of rocky cliffs.
Helminthoglypta taylori westfork shoulderband	None/None G1/S1	Vicinity of the Mojave River. Under logs and leaves.
Helminthoglypta traskii traskii Trask shoulderband	None/None G1G2T1/S1	Known from Ventura, Los Angeles, Orange, and San Diego counties. Also reported from northwestern Baja California.
Helminthoglypta vasquezi Vasquez shoulderband	None/None G1/S1	Terrestrial.
Hydroporus simplex simple hydroporus diving beetle	None/None G1?/S1?	Known from aquatic habitats in Tuolumne and San Bernardino counties.
Hygrotus curvipes curved-foot hygrotus diving beetle	None/None G1/S1	Aquatic; known only from Alameda & Contra Costa counties.
Juniperella mirabilis juniper metallic wood-boring beetle	None/None G1/S1	Larvae develop in juniper in Santa Rosa Mts. in Southern California.
Linderiella occidentalis California linderiella	None/None G2G3/S2S3	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions. Water in the pools has very low alkalinity, conductivity, and total dissolved solids.
Linderiella santarosae Santa Rosa Plateau fairy shrimp	None/None G1G2/S1	Found only in the vernal pools on Santa Rosa Plateau in Riverside County. Southern basalt flow vernal pools.
Lycaena hermes Hermes copper butterfly	FC/None G1/S1	Found in southern mixed chaparral and coastal sage scrub at western edge of Laguna Mountains. Host plant is Rhamnus crocea. Although R. crocea is widespread throughout the coast range, Lycaena hermes is not.
Macrobaenetes kelsoensis Kelso giant sand treader cricket	None/None G2/S2	Known only from the Kelso Dunes, San Bernardino County; 2500 ft elevation. Found on bare, hard-packed sand ridges, 0.5 mile inland from margin.
Macrobaenetes valgum Coachella giant sand treader cricket	None/None G1G2/S1S2	Known from the sand dune ridges in the vicinity of Coachella Valley. Population size regulated by amount of annual rainfall; some spots favor permanent habitation where springs dampen sand.
Melitta californica California mellitid bee	None/None G4?/S2?	Desert regions of SW Arizona, SE California, and Baja California, Mexico. Also collected from Torrey Pines, San Diego Co. Earlier records of M. wilmattae pertain to this species; species was synonymized with M. californica in 1981.
Micrarionta feralis San Nicolas islandsnail	None/None G1/S1	Known only from San Nicolas Island, Ventura County. Fossilized shells from San Clemente Island, but none living.
Micrarionta gabbi San Clemente islandsnail	None/None G1/S1	Known only from San Clemente Island, Los Angeles County.
Micrarionta opuntia pricklypear islandsnail	None/None G1/S1	Known only from NE San Nicolas Island, in areas of isolated Opuntia littoralis and in Lycium patches among annual grass. Occurs beneath the surface, either covered by soil or clinging to sides of depressions or small burrows.
Miloderes nelsoni Nelson's miloderes weevil	None/None G2/S2	Known from Mojave Desert in Inyo and San Bernardino counties.
Minymischa ventura Ventura cuckoo wasp	None/None GU/SU	

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Neolarra alba white cuckoo bee	None/None GH/SH	Known only from 6 historical localities in Southern California; has not been collected since 1946. Cleptoparasitic in the nests of perdita bees.
Oliarces clara cheeseweed owlfly (cheeseweed moth lacewing)	None/None G1G3/S2	Inhabits the lower Colorado River drainage. Found under rocks or in flight over streams. Larrea tridentata is the suspected larval host.
Onychobaris langei Lange's El Segundo Dune weevil	None/None G1/S1	Known from El Segundo Dunes.
Panoquina errans wandering (=saltmarsh) skipper	None/None G4G5/S2	Southern California coastal salt marshes. Requires moist saltgrass for larval development.
Paranomada californica California cuckoo bee	None/None G1/S1	
Parnopes borregoensis Borrego parnopes cuckoo wasp	None/None G1G2/S1S2	Known from San Diego, San Bernardino, and Inyo counties.
Pelocoris shoshone Amargosa naucorid bug	None/None G1G3/S1S2	Endemic to the Amargosa River drainage in Death Valley, Inyo County, and San Bernardino County.
Perdita scitula antiochensis Antioch andrenid bee	None/None G1T1/S1	Known only from Antioch Dunes and Oakley. Visits flowers of Eriogonum, Gutierrezia californica, Heterotheca grandiflora, Lessingia glandulifera.
Plebejus saepiolus aureolus San Gabriel Mountains blue butterfly	None/None G5T1/S1	Type locality is a wet meadow seep in yellow pine forest. Foodplant is Trifolium wormskioldii.
Plebulina emigdionis San Emigdio blue butterfly	None/None G1G2/S1S2	Found in desert canyons & along riverbeds in Inyo, Kern, Los Angeles, and San Bernardino counties. Host plant is Atriplex canescens; maybe Lotus purshianus also.
Polyphylla erratica Death Valley June beetle	None/None G1G2/S1S2	Halophytic species. Larva, pupae and adults found in moist, salt-encrusted soil in the Amargosa River system. Larvae taken at roots of Distichlis divaricata.
Pristiloma shepardae Shepard's snail	None/None G1/S1	Known only from Santa Catalina and Santa Cruz islands. Usually found in moist leaf litter.
Psychomastax deserticola desert monkey grasshopper	None/None G1G2/S1S2	Occurs in very arid environments in the vicinity of the San Bernardino Mtns. Known to occur on chamise (Adenostoma fasciculatum).
Pyrgus ruralis lagunae Laguna Mountains skipper	FE/None G5T1/S1	Only in a few open meadows in yellow pine forest between 5,000 & 6,000 ft. in the vicinity of Mt Laguna & Palomar Mtn. Eggs laid on leaves of Horkelia bolanderi clevelandi. Larvae feed on leaves and overwinter on the host plant.
Radiocentrum avalonense Catalina mountainsnail	None/None G1/S1	Known only from southeast end of Santa Catalina Island. Coastal sage scrub habitats dominated by Salvia and Opuntia.
Rhaphiomidas terminatus abdominalis Delhi Sands flower-loving fly	FE/None G1T1/S1	Found only in areas of the Delhi Sands formation in southwestern San Bernardino & northwestern Riverside counties. Requires fine, sandy soils, often with wholly or partly consolidated dunes & sparse vegetation. Oviposition req. shade.
Rhaphiomidas terminatus terminatus El Segundo flower-loving fly	None/None G1T1/S1	Presumed extinct but recently discovered on Malaga Dunes, Los Angeles County. Perched dunes.
Rhopalolemma robertsi Roberts' rhopalolemma bee	None/None G1/S1	Known only from the type locality 8 km south of Twentynine Palms.

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Rothelix warnerfontis Warner Springs shoulderband	None/None G1/S1	Known only from two localities near Warner Springs, San Diego County. Found in wood rat nests; as development eliminates rat nests, snail has become scarce.
Socalchemmis gertschi Gertsch's socalchemmis spider	None/None G1/S1	Known from only 2 localities in Los Angeles County: Brentwood (type locality) and Topanga Canyon.
Socalchemmis icenoglei Icenogle's socalchemmis spider	None/None G1/S1	Known only from the type locality in the vicinity of Winchester, Riverside County.
Stenopelmatus cahuilaensis Coachella Valley jerusalem cricket	None/None G1G2/S1S2	Inhabits a small segment of the sand and dune areas of the Coachella Valley, in the vicinity of Palm Springs. Found in the large, undulating dunes piled up at the north base of Mt San Jacinto.
Sterkia clementina San Clemente Island blunt-top snail	None/None G1/S1S2	Known only from San Clemente, San Nicolas, Santa Catalina, and Santa Barbara islands. Inhabits the undersides of rocks or the soil beneath iceplant.
Streptocephalus woottoni Riverside fairy shrimp	FE/None G1G2/S1S2	Endemic to Western Riverside, Orange, and San Diego counties in areas of tectonic swales/earth slump basins in grassland and coastal sage scrub. Inhabit seasonally astatic pools filled by winter/spring rains. Hatch in warm water later in the season.
Texella kokoweef Kokoweef Crystal Cave harvestman	None/None G1/S1	Known only from the type locality, Kokoweef Crystal Cave, San Bernardino County. Specimens were collected under decaying wood debris.
Trigonoscuta brunnotesselata brown tassel trigonoscuta weevil	None/None G1G2/S1S2	Known only from the Kelso Dunes, San Bernardino County.
Trigonoscuta dorothea dorothea Dorothy's El Segundo Dune weevil	None/None G1T1/S1	Coastal sand dunes in Los Angeles County.
Trimerotropis occidentiloides Santa Monica grasshopper	None/None G1G2/S1S2	Known only from the Santa Monica Mountains. Found on bare hillsides and along dirt trails in chaparral.
Tryonia imitator mimic tryonia (=California brackishwater snail)	None/None G2/S2	Inhabits coastal lagoons, estuaries and salt marshes, from Sonoma County south to San Diego County. Found only in permanently submerged areas in a variety of sediment types; able to withstand a wide range of salinities.
Xerarionta intercisa horseshoe snail	None/None G1/S1	San Clemente Island. Found around rocks and Opuntia cactus.
Xerarionta redimita wreathed cactussnail	None/None G1G2/S1	Known only from San Clemente Island.
Xerarionta tryoni Bicolor cactussnail	None/None G1/S1	
Fish		
Catostomus latipinnis flannelmouth sucker	None/None G3G4/S1	Colorado River bordering California. Spawns in riffles, usually over a substrate of coarse gravel.
Catostomus santaanae Santa Ana sucker	FT/None G1/S1	Endemic to Los Angeles Basin south coastal streams. Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water, and algae.
Cyprinodon macularius desert pupfish	FE/SE G1/S1	Desert ponds, springs, marshes and streams in Southern California. Can live in salinities from freshwater to 68 ppt; can withstand temps from 9 - 45 C and dissolved oxygen levels down to 0.1 ppm.
Cyprinodon nevadensis amargosae Amargosa pupfish	None/None G2T1T2/S1S2	Permanent water sections of the lower Amargosa River. Two types of habitat: broad marshes fed by hot springs, and a narrow, steep-sided canyon area with swift flows.

Scientific Name Common Name	Status	Habitat Requirements
Cyprinodon nevadensis nevadensis Saratoga Springs pupfish	None/None G2T1/S1	Only known from Saratoga Springs and its outflow in Death Valley. A series of marshes and shallow lakes. Water temps vary from 10 to 49 C.
Eucyclogobius newberryi tidewater goby	FE/None G3/S3	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.
Gasterosteus aculeatus williamsoni unarmored threespine stickleback	FE/SE G5T1/S1	Weedy pools, backwaters, and among emergent vegetation at the stream edge in small Southern California streams. Cool (<24 C), clear water with abundant vegetation.
Gila elegans bonytail	FE/SE G1/SH	Found in the Colorado River bordering California. Adapted for swimming in swift water, but both adults and young need backwaters and eddies. Needs gravel riffles for spawning.
Gila orcuttii arroyo chub	None/None G2/S2	Native to streams from Malibu Creek to San Luis Rey River basin. Introduced into streams in Santa Clara, Ventura, Santa Ynez, Mojave & San Diego river basins. Slow water stream sections with mud or sand bottoms. Feeds heavily on aquatic vegetation and associated invertebrates.
Hypomesus transpacificus Delta smelt	FT/SE G1/S1	Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait & San Pablo Bay. Seldom found at salinities > 10 ppt. Most often at salinities < 2ppt.
Oncorhynchus mykiss irideus pop. 10 steelhead - southern California DPS	FE/None G5T1Q/S1	Federal listing refers to populations from Santa Maria River south to southern extent of range (San Mateo Creek in San Diego County). Southern steelhead likely have greater physiological tolerances to warmer water and more variable conditions.
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	FT/None G5T2Q/S2	Populations in the Sacramento and San Joaquin rivers and their tributaries.
Ptychocheilus lucius Colorado pikeminnow	FE/SE G1/SX	Was native to the Colorado River bordering California. Adults found in deep pools in the main river channel, smaller fish are found in shallow and quiet waters.
Rhinichthys osculus ssp. *1* Amargosa Canyon speckled dace	None/None G5T1Q/S1	Found only in Amargosa Canyon and tributaries of the Amargosa River, esp. Willow Creek & Willow Creek Reservoir. Prefers pools with relatively deep water (0.5 - 0.75 m) and slow water velocity.
Rhinichthys osculus ssp. *3* Santa Ana speckled dace	None/None G5T1/S1	Headwaters of the Santa Ana and San Gabriel rivers. May be extirpated from the Los Angeles River system. Requires permanent flowing streams with summer water temps of 17-20 C. Usually inhabits shallow cobble and gravel riffles.
Siphateles bicolor mohavensis Mohave tui chub	FE/SE G4T1/S1	Endemic to the Mojave River basin, adapted to alkaline, mineralized waters. Needs deep pools, ponds, or slough-like areas. Needs vegetation for spawning.
Spirinchus thaleichthys longfin smelt	FC/ST G5/S1	Euryhaline, nektonic & anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 ppt but can be found in completely freshwater to almost pure seawater.
Xyrauchen texanus razorback sucker	FE/SE G1/S1S2	Found in the Colorado River bordering California. Adapted for swimming in swift currents but also need quiet waters. Spawn in areas of sand/gravel/rocks in shallow water.

Scientific Name Common Name	Status	Habitat Requirements
Amphibians		
Anaxyrus californicus arroyo toad	FE/None G2G3/S2S3	Semi-arid regions near washes or intermittent streams, including valley-foothill and desert riparian, desert wash, etc. Rivers with sandy banks, willows, cottonwoods, and sycamores; loose, gravelly areas of streams in drier parts of range.
Batrachoseps gabrieli San Gabriel slender salamander	None/None G2G3/S2S3	Known only from the San Gabriel Mtns. Found under rocks, wood, and fern fronds, and on soil at the base of talus slopes. Most active on the surface in winter and early spring.
Batrachoseps major aridus desert slender salamander	FE/SE G4T1/S1	Known only from Hidden Palm Canyon and Guadalupe Creek, Riverside County, in barren, palm oasis, desert wash, and desert scrub. Occurs under limestone sheets, rocks, and talus, usually at the base of damp, shaded, north and west-facing walls.
Batrachoseps pacificus Channel Islands slender salamander	None/None G4/S3S4	Found only on San Miguel, Santa Rosa, Santa Cruz, and Anacapa islands. Found in a variety of habitats from forest to chaparral to grassland.
Ensatina eschscholtzii croceater yellow-blotched salamander	None/None G5T3/S3	Forests and well-shaded canyons, as well as oak woodlands and old chaparral. Needs surface objects, such as logs, boards, and rocks. Also needs old rodent burrows or other underground retreats.
Ensatina eschscholtzii klauberi large-blotched salamander	None/None G5T2?/S3	Found in conifer and woodland associations. Found in leaf litter, decaying logs and shrubs in heavily forested areas.
Incilius alvarius Sonoran desert toad	None/None G5/SH	Breeds in temporary pools and irrigation ditches along the Colorado River and southern Imperial Valley.
Lithobates yavapaiensis lowland leopard frog	None/None G4/SX	Were found along the Colorado River and in streams near the Salton Sea.
Rana boylii foothill yellow-legged frog	None/SCT G3/S3	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.
Rana draytonii California red-legged frog	FT/None G2G3/S2S3	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.
Rana muscosa southern mountain yellow-legged frog	FE/SE G1/S1	Federal listing refers to populations in the San Gabriel, San Jacinto and San Bernardino mountains (southern DPS). Northern DPS was determined to warrant listing as endangered, Apr 2014, effective Jun 30, 2014. Always encountered within a few feet of water. Tadpoles may require 2 - 4 yrs to complete their aquatic development.
Scaphiopus couchii Couch's spadefoot	None/None G5/S2	Temporary desert rainpools that last at least 7 days, with water temps > 15 C, and with subterranean refuge sites close by. An insect food base, especially termites, must be available.
Spea hammondii western spadefoot	None/None G3/S3	Occurs primarily in grassland habitats but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.
Taricha torosa Coast Range newt	None/None G4/S4 CDFW_SSC-Species of Special Concern	Coastal drainages from Mendocino County to San Diego County. Lives in terrestrial habitats & will migrate over 1 km to breed in ponds, reservoirs & slow-moving streams.

Scientific Name Common Name	Status	Habitat Requirements
Reptiles		
Anniella pulchra northern California legless lizard	None/None G3/S3	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.
Anniella spp. California legless lizard	None/None G3G4/S3S4 CDFW_SSC-Species of Special Concern	Contra Costa County south to San Diego, within a variety of open habitats.This element represents California records of Anniella not yet assigned to new species within the Anniella pulchra complex. Variety of habitats; generally in moist, loose soil. They prefer soils with a high moisture content.
Anniella stebbinsi southern California legless lizard	None/None G3/S3	Generally south of the Transverse Range, extending to northwestern Baja California. Occurs in sandy or loose loamy soils under sparse vegetation. Disjunct populations in the Tehachapi and Piute Mountains in Kern County. Variety of habitats; generally in moist, loose soil. They prefer soils with a high moisture content.
Arizona elegans occidentalis California glossy snake	None/None G5T2/S2 CDFW_SSC-Species of Special Concern	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, and the Coast, Transverse, and Peninsular ranges, south to Baja California. Generalist reported from a range of scrub and grassland habitats, often with loose or sandy soils.
Aspidoscelis hyperythra orange-throated whiptail	None/None G5/S2S3	Inhabits low-elevation coastal scrub, chaparral, and valley-foothill hardwood habitats. Prefers washes and other sandy areas with patches of brush and rocks. Perennial plants necessary for its major food: termites.
Aspidoscelis tigris stejnegeri coastal whiptail	None/None G5T5/S3 CDFW_SSC-Species of Special Concern	Found in deserts and semi-arid areas with sparse vegetation and open areas. Also found in woodland & riparian areas. Ground may be firm soil, sandy, or rocky.
Charina umbratica southern rubber boa	None/ST G2G3/S2S3	Known from the San Bernardino and San Jacinto mtns; found in a variety of montane forest habitats. Snakes resembling C. umbratica reported from Mt. Pinos and Tehachapi mtns group with C. bottae based on mtDNA. Further research needed. Found in vicinity of streams or wet meadows; requires loose, moist soil for burrowing; seeks cover in rotting logs, rock outcrops, and under surface litter.
Chelonia mydas green turtle	FT/None G3/S1	Marine. Completely herbivorous; needs adquate supply of seagrasses and algae.
Coleonyx switaki barefoot gecko	None/ST G4/S1	Found only in areas of massive rock & rock outcrops at the heads of canyons. Occurs in rock cracks and crevices.
Coleonyx variegatus abbotti San Diego banded gecko	None/None G5T3T4/S1S2 CDFW_SSC-Species of Special Concern	Coastal & cismontane Southern California. Found in granite or rocky outcrops in coastal scrub and chaparral habitats.
Crotalus ruber red-diamond rattlesnake	None/None G4/S3	Chaparral, woodland, grassland, & desert areas from coastal San Diego County to the eastern slopes of the mountains. Occurs in rocky areas and dense vegetation. Needs rodent burrows, cracks in rocks or surface cover objects.
Diadophis punctatus modestus San Bernardino ringneck snake	None/None G5T2T3/S2?	Most common in open, relatively rocky areas. Often in somewhat moist microhabitats near intermittent streams. Avoids moving through open or barren areas by restricting movements to areas of surface litter or herbaceous veg.

Scientific Name Common Name	Status	Habitat Requirements
Diadophis punctatus regalis regal ringneck snake	None/None GNR/S2S3 CDFW_SSC-Species of Special Concern	Variety of habitats in higher elevation desert mountains. In California known from the Clark, Providence, and Grapevine mountain ranges. Often in somewhat moist microhabitats such as springs and intermittant streams.
Diadophis punctatus similis San Diego ringneck snake	None/None G5T2T3/S2?	Open, fairly rocky areas. Use boards, flat rocks, woodpiles, stable talus, rotting logs & small ground holes for cover. Prefer areas with surface litter or herbaceous vegetation. Often in somewhat moist areas near intermittent streams.
Emys marmorata western pond turtle	None/None G3G4/S3	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.
Gambelia copeii Cope's leopard lizard	None/None G5/S1S2	Restricted in California to Southeastern San Diego County. Occurs in desert scrub, coastal sage scrub, oak woodland, and chaparral. Open flat areas within vegetation.
Gambelia sila blunt-nosed leopard lizard	FE/SE G1/S1	Resident of sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief. Seeks cover in mammal burrows, under shrubs or structures such as fence posts; they do not excavate their own burrows.
Gopherus agassizii desert tortoise	FT/ST G3/S2S3	Most common in desert scrub, desert wash, and Joshua tree habitats; occurs in almost every desert habitat. Require friable soil for burrow and nest construction. Creosote bush habitat with large annual wildflower blooms preferred.
Heloderma suspectum cinctum banded Gila monster	None/None G4T4/S1	Inhabits the lower slopes of rocky canyons and arroyos but is also found on desert flats among scrub and succulents. Eggs are laid in soil in excavated nests; thus, soil must be sandy or friable. Found in areas moister than surroundings.
Kinosternon sonoriense Sonoran mud turtle	None/None G4/SH	The lower Colorado River system in southeastern California. Permanent slackwater habitats along intermittent or perennial streams with abundant submergent vegetation and benthic inverts.
Masticophis fuliginosus Baja California coachwhip	None/None G5/S1S2 CDFW_SSC-Species of Special Concern	In California restricted to southern San Diego County, where it is known from grassland and coastal sage scrub. Open areas in grassland and coastal sage scrub
Phrynosoma blainvillii coast horned lizard	None/None G3G4/S3S4	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.
Phrynosoma mcallii flat-tailed horned lizard	None/None G3/S2	Restricted to desert washes and desert flats in central Riverside, eastern San Diego, and Imperial counties. Critical habitat element is fine sand, into which lizards burrow to avoid temperature extremes; requires vegetative cover and ants.
Plestiodon skiltonianus interparietalis Coronado skink	None/None G5T5/S2S3	Grassland, chaparral, pinon-juniper and juniper sage woodland, pine-oak and pine forests in Coast Ranges of Southern California. Prefers early successional stages or open areas. Found in rocky areas close to streams and on dry hillsides.
Salvadora hexalepis virgultea coast patch-nosed snake	None/None G5T4/S2S3 CDFW_SSC-Species of Special Concern	Brushy or shrubby vegetation in coastal Southern California. Require small mammal burrows for refuge and overwintering sites.

Scientific Name Common Name	Status	Habitat Requirements
Thamnophis gigas giant gartersnake	FT/ST G2/S2	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic of the gartersnakes in California.
Thamnophis hammondii two-striped gartersnake	None/None G4/S3S4	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 7,000 ft elevation. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.
Thamnophis sirtalis pop. 1 south coast gartersnake	None/None G5T1T2/S1S2 CDFW_SSC-Species of Special Concern	Southern California coastal plain from Ventura County to San Diego County, and from sea level to about 850 m. Marsh and upland habitats near permanent water with good strips of riparian vegetation.
Uma inornata Coachella Valley fringe-toed lizard	FT/SE G1Q/S1	Limited to sandy areas in the Coachella Valley, Riverside County. Requires fine, loose, windblown sand (for burrowing), interspersed with hardpan and widely-spaced desert shrubs.
Uma notata Colorado Desert fringe-toed lizard	None/None G3/S2	Colorado Desert region; in sand dunes, dry lakebeds, sandy beaches or riverbanks, desert washes, or sparse desert scrub. Requires fine, loose, windblown sand (for burrowing); shrubs or annuals for arthropod production.
Uma scoparia Mojave fringe-toed lizard	None/None G3G4/S3S4	Fine, loose, wind-blown sand in sand dunes, dry lakebeds, riverbanks, desert washes, sparse alkali scrub and desert scrub. Shrubs or annual plants may be necessary for arthropods found in the diet.
Xantusia gracilis sandstone night lizard	None/None G1/S1	Known only from the Truckhaven Rocks in the eastern part of Anza-Borrego State Park. Found in fissures or under slabs of exfoliating sandstone and rodent burrows in compacted sandstone and mudstone.
Xantusia riversiana island night lizard	FD/None G3/S3	Found in a wide variety of habitats on three of the Channel Islands: Santa Barbara, San Clemente, and San Nicolas. Main habitat requirement is available cover, from prostrate plants (Opuntia and ice plant) to rocks, logs, and rubble.
Birds		
Accipiter cooperii Cooper's hawk	None/None G5/S4	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river floodplains; also, live oaks.
Agelaius tricolor tricolored blackbird	None/ST G2G3/S1S2	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.
Aimophila ruficeps canescens southern California rufous-crowned sparrow	None/None G5T3/S3 CDFW_WL-Watch List	Resident in Southern California coastal sage scrub and sparse mixed chaparral. Frequents relatively steep, often rocky hillsides with grass and forb patches.
Ammodramus savannarum grasshopper sparrow	None/None G5/S3	Dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting.
Aquila chrysaetos golden eagle	None/None G5/S3	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.
Ardea alba great egret	None/None G5/S4	Colonial nester in large trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.

Scientific Name Common Name	Status	Habitat Requirements
Ardea herodias great blue heron	None/None G5/S4	Colonial nester in tall trees, cliffsides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.
Artemisiospiza belli belli Bell's sage sparrow	None/None G5T2T3/S3	Nests in chaparral dominated by fairly dense stands of chamise. Found in coastal sage scrub in south of range. Nest located on the ground beneath a shrub or in a shrub 6-18 inches above ground. Territories about 50 yds apart.
Artemisiospiza belli clementeae San Clemente sage sparrow	FT/None G5T1Q/S1	Resident of dry brushlands of San Clemente Island. Inhabits scrubby brush on mesas, thorny brush growing in clumps and patches interspersed with cactus.
Asio flammeus short-eared owl	None/None G5/S3	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.
Asio otus long-eared owl	None/None G5/S3?	Riparian bottomlands grown to tall willows and cottonwoods; also, belts of live oak paralleling stream courses. Require adjacent open land, productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.
Athene cunicularia burrowing owl	None/None G4/S3	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.
Baeolophus inornatus oak titmouse	None/None G4/S4	Oak woodlands. Cavity nester
Buteo regalis ferruginous hawk	None/None G4/S3S4	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.
Buteo swainsoni Swainson's hawk	None/ST G5/S3	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.
Campylorhynchus brunneicapillus sandiegensis coastal cactus wren	None/None G5T3Q/S3	Southern California coastal sage scrub. Wrens require tall opuntia cactus for nesting and roosting.
Cardinalis cardinalis northern cardinal	None/None G5/S1	Extremely rare resident along the Colorado River. Dense, brushy river bottom thickets, well-vegetated dry washes and dense desert scrub.
Charadrius alexandrinus nivosus western snowy plover	FT/None G3T3/S2S3	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.
Charadrius montanus mountain plover	None/None G3/S2S3	Short grasslands, freshly plowed fields, newly sprouting grain fields, & sometimes sod farms. Short vegetation, bare ground, and flat topography. Prefers grazed areas and areas with burrowing rodents.
Circus hudsonius northern harrier	None/None G5/S3	Coastal salt & freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.
Coccyzus americanus occidentalis western yellow-billed cuckoo	FT/SE G5T2T3/S1	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.

Scientific Name Common Name	Status	Habitat Requirements
Colaptes chrysoides gilded flicker	None/SE G5/S1	Sonoran desert habitat and riparian woodlands along the Colorado River. Uses willows, cottonwood, tree yucca and, when available, saguaro cactus.
Coturnicops noveboracensis yellow rail	None/None G4/S1S2	Summer resident in eastern Sierra Nevada in Mono County. Freshwater marshlands.
Cypseloides niger black swift	None/None G4/S2	Coastal belt of Santa Cruz and Monterey counties; central & southern Sierra Nevada; San Bernardino & San Jacinto mountains. Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and sea-bluffs above the surf; forages widely.
Dendragapus fuliginosus howardi Mount Pinos sooty grouse	None/None G5T2T3/S2S3 CDFW_SSC-Species of Special Concern	Inhabitant of southern Sierra Nevada mountains, in small islands of populations. Mainly inhabits white fir covered slopes. Also found in other conifer types and open, brushy areas adjacent to forest.
Egretta thula snowy egret	None/None G5/S4	Colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.
Elanus leucurus white-tailed kite	None/None G5/S3S4	Rolling foothills and valley margins with scattered oaks & river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.
Empidonax traillii extimus southwestern willow flycatcher	FE/SE G5T2/S1	Riparian woodlands in Southern California.
Eremophila alpestris actia California horned lark	None/None G5T4Q/S4	Coastal regions, chiefly from Sonoma County to San Diego County. Also main part of San Joaquin Valley and east to foothills. Short-grass prairie, bald hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.
Falco columbarius merlin	None/None G5/S3S4	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches. Clumps of trees or windbreaks are required for roosting in open country.
Falco mexicanus prairie falcon	None/None G5/S4	Inhabits dry, open terrain, either level or hilly. Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.
Falco peregrinus anatum American peregrine falcon	FD/SD G4T4/S3S4	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.
Gelochelidon nilotica gull-billed tern	None/None G5/S1	Only known breeding colonies at San Diego Bay and the Salton Sea. Nests on low, sandy islets. Known to feed on fishes at mouth of Colorado River and on grasshoppers in alfalfa fields.
Gymnogyps californianus California condor	FE/SE G1/S1	Require vast expanses of open savannah, grasslands, and foothill chaparral in mountain ranges of moderate altitude. Deep canyons containing clefts in the rocky walls provide nesting sites. Forages up to 100 miles from roost/nest.
Haliaeetus leucocephalus bald eagle	FD/SE G5/S3	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.
Icteria virens yellow-breasted chat	None/None G5/S3	Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 ft of ground.

Scientific Name Common Name	Status	Habitat Requirements
Ixobrychus exilis least bittern	None/None G4G5/S2	Colonial nester in marshlands and borders of ponds and reservoirs which provide ample cover. Nests usually placed low in tules, over water.
Junco hyemalis caniceps gray-headed junco	None/None G5T5/S1 CDFW_WL-Watch List	Summer resident of Clark Mountain (eastern San Bernardino County) and Grapevine Mountains (Inyo County). Inhabits white fir association at 7300 ft (Clark Mountain); also, from dense pinyons above 6700 ft (Grapevine Mountains).
Lanius ludovicianus loggerhead shrike	None/None G4/S4	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub & washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.
Lanius ludovicianus mearnsi San Clemente loggerhead shrike	FE/None G4T1Q/S1	Resident of San Clemente Island. Inhabits washes, ravines, and mesas, in vicinity of scattered tall bushes (toyon, wild cherry) or low thorny scrub or cactus.
Laterallus jamaicensis coturniculus California black rail	None/ST G3G4T1/S1	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.
Melanerpes uropygialis Gila woodpecker	None/SE G5/S1	In California, inhabits cottonwoods and other desert riparian trees, shade trees, and date palms. Cavity nester in riparian trees or saguaro cactus.
Melospiza melodia song sparrow ("Modesto" population)	None/None G5/S3? CDFW_SSC-Species of Special Concern	Only in Sacramento Valley, Sacramento–San Joaquin River Delta, and northern San Joaquin Valley. Occurs in emergent freshwater marshes, riparian willow thickets, riparian forests of valley oak, and irrigation cannals and levees. Requires moderately dense vegetation to supply cover for nest sites.
Melospiza melodia graminea Channel Island song sparrow	None/None G5T1/S1	Only on San Miguel and Santa Rosa Islands. Need moderately dense scrubby vegetation for nesting, a water source & exposed ground for foraging.
Micrathene whitneyi elf owl	None/SE G5/S1	In California, nesting area limited to cottonwood-willow & mesquite riparian zone along the Colorado River. Nests in deserted woodpecker holes, often in larger trees which offer insulation from high daytime temperatures.
Myiarchus tyrannulus brown-crested flycatcher	None/None G5/S3	Inhabits desert riparian areas along the Colorado River, as well as other desert oases and riparian areas NW to Victorville. Requires riparian thickets, trees, snags, and shrubs for foraging perches, nesting cavities, and cover.
Nycticorax nycticorax black-crowned night heron	None/None G5/S4	Colonial nester, usually in trees, occasionally in tule patches. Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots.
Oceanodroma homochroa ashy storm-petrel	None/None G2/S2	Colonial nester on off-shore islands. Usually nests on driest part of islands. Forages over open ocean. Nest sites on islands are in crevices beneath loosely piled rocks or driftwood, or in caves.
Oreothlypis luciae Lucy's warbler	None/None G5/S2S3	Primarily along lower Colorado River Valley and the washes & arroyos emptying into it, with occasional occurrences throughout the Sonoran and Mojave deserts. Partial to thickets of mesquite, riparian scrub and even stands of tamarisk.
Oreothlypis virginiae Virginia's warbler	None/None G5/S2	East slope of Southern Sierra Nevada to San Bernardino Mountains. In arid, shrubby, mixed-conifer, pinyon-juniper, montane-chaparral. 7000-9000 ft. Nests on arid slopes with stands of tall shrubs/scattered trees; also, riparian thickets of willow/wild rose along streams.

Scientific Name Common Name	Status	Habitat Requirements
Pandion haliaetus osprey	None/None G5/S4	Ocean shore, bays, freshwater lakes, and larger streams. Large nests built in tree-tops within 15 miles of a good fish-producing body of water.
Passerculus sandwichensis beldingi Belding's savannah sparrow	None/SE G5T3/S3	Inhabits coastal salt marshes, from Santa Barbara south through San Diego County. Nests in Salicornia on and about margins of tidal flats.
Pelecanus occidentalis californicus California brown pelican	FD/SD G4T3T4/S3	Colonial nester on coastal islands just outside the surf line. Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators. Roosts communally.
Phalacrocorax auritus double-crested cormorant	None/None G5/S4	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.
Piranga flava hepatic tanager	None/None G5/S1	White fir-pinyon forest on desert peaks, 5300-8100 ft elevation. Understory of xerophytic shrubs.
Piranga rubra summer tanager	None/None G5/S1	Summer resident of desert riparian along lower Colorado River, and locally elsewhere in California deserts. Requires cottonwood-willow riparian for nesting and foraging; prefers older, dense stands along streams.
Plegadis chihi white-faced ibis	None/None G5/S3S4	Shallow freshwater marsh. Dense tule thickets for nesting, interspersed with areas of shallow water for foraging.
Polioptila californica californica coastal California gnatcatcher	FT/None G4G5T2Q/S2	Obligate, permanent resident of coastal sage scrub below 2500 ft in Southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.
Polioptila melanura black-tailed gnatcatcher	None/None G5/S3S4	Primarily inhabits wooded desert wash habitats; also occurs in desert scrub habitat, especially in winter. Nests in desert washes containing mesquite, palo verde, ironwood, acacia; absent from areas where salt cedar introduced.
Progne subis purple martin	None/None G5/S3	Inhabits woodlands, low elevation coniferous forest of Douglas-fir, ponderosa pine, and Monterey pine. Nests in old woodpecker cavities mostly; also in human-made structures. Nest often located in tall, isolated tree/snag.
Psiloscops flammeolus flammulated owl	None/None G4/S2S4	Need montane forests with some understory brush for breeding. In California the breeding range is closely associated with the presence of ponderosa pine and Jeffery pine.
Pyrocephalus rubinus vermilion flycatcher	None/None G5/S2S3	During nesting, inhabits desert riparian adjacent to irrigated fields, irrigation ditches, pastures, and other open, mesic areas. Nest in cottonwood, willow, mesquite, and other large desert riparian trees.
Rallus obsoletus levipes light-footed Ridgway's rail	FE/SE G5T1T2/S1	Found in salt marshes traversed by tidal sloughs, where cordgrass and pickleweed are the dominant vegetation. Requires dense growth of either pickleweed or cordgrass for nesting or escape cover; feeds on molluscs and crustaceans.
Rallus obsoletus yumanensis Yuma Ridgway's rail	FE/ST G5T3/S1S2	Nests in freshwater marshes along the Colorado River and along the south and east ends of the Salton Sea. Prefers stands of cattails and tules dissected by narrow channels of flowing water; principle food is crayfish.
Riparia riparia bank swallow	None/ST G5/S2	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.
Rynchops niger black skimmer	None/None G5/S2	Nests on gravel bars, low islets, and sandy beaches, in unvegetated sites. Nesting colonies usually less than 200 pairs.

Scientific Name Common Name	Status	Habitat Requirements
Setophaga petechia yellow warbler	None/None G5/S3S4	Riparian plant associations in close proximity to water. Also nests in montane shrubbery in open conifer forests in Cascades and Sierra Nevada. Frequently found nesting and foraging in willow shrubs and thickets, and in other riparian plants including cottonwoods, sycamores, ash, and alders.
Setophaga petechia sonorana Sonoran yellow warbler	None/None G5T2T3/S2	Summer resident of Colorado River Valley, in riparian deciduous habitat. Below 600 ft elevation. Inhabits cottonwoods and willows, particularly the crown foliage; nests in understory, usually 2-16 ft above ground.
Spinus lawrencei Lawrence's goldfinch	None/None G3G4/S3S4	Nests in open oak or other arid woodland and chaparral, near water. Nearby herbaceous habitats used for feeding. Closely associated with oaks.
Sternula antillarum browni California least tern	FE/SE G4T2T3Q/S2	Nests along the coast from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.
Synthliboramphus scrippsi Scripps's murrelet	FC/ST G3/S2	Open ocean except during breeding season. Breeds on offshore islands in Southern California. Nests in rock crevices, under bushes, in old burrows and among man-made debris.
Toxostoma bendirei Bendire's thrasher	None/None G4G5/S3	Migratory; local spring/summer resident in flat areas of desert succulent shrub/Joshua tree habitats in Mojave Desert. Nests in cholla, yucca, palo verde, thorny shrub, or small tree, usually 0.5 to 20 feet above ground.
Toxostoma crissale Crissal thrasher	None/None G5/S3	Resident of southeastern deserts in desert riparian and desert wash habitats. Nests in dense vegetation along streams/washes; mesquite, screwbean mesquite, ironwood, catclaw, acacia, arrowweed, willow.
Toxostoma lecontei Le Conte's thrasher	None/None G4/S3	Desert resident; primarily of open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats. Commonly nests in a dense, spiny shrub or densely branched cactus in desert wash habitat, usually 2-8 feet above ground.
Vireo bellii arizonae Arizona bell's vireo	None/SE G5T4/S1S2	Summer resident along Colorado River. Chiefly inhabits willow thickets with undergrowth of Baccharis glutinosa. Nests in willow, mesquite, or other small tree/shrub, within 8 ft (usually 2-3 ft) of ground.
Vireo bellii pusillus least Bell's vireo	FE/SE G5T2/S2	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.
Vireo vicinior gray vireo	None/None G4/S2	Dry chaparral; west of desert, in chamise-dominated habitat; mountains of Mojave Desert, associated with juniper & Artemisia. Forage, nest, and sing in areas formed by a continuous growth of twigs, 1-5 ft above ground.
Xanthocephalus xanthocephalus yellow-headed blackbird	None/None G5/S3	Nests in freshwater emergent wetlands with dense vegetation and deep water. Often along borders of lakes or ponds. Nests only where large insects such as Odonata are abundant, nesting timed with maximum emergence of aquatic insects.

Scientific Name Common Name	Status	Habitat Requirements
Mammals		
Ammospermophilus nelsoni Nelson's antelope squirrel	None/ST G2/S2S3	Western San Joaquin Valley from 200-1200 ft elev. On dry, sparsely vegetated loam soils. Dig burrows or use k-rat burrows. Need widely scattered shrubs, forbs and grasses in broken terrain with gullies and washes.
Antrozous pallidus pallid bat	None/None G5/S3	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.
Arctocephalus townsendi Guadalupe fur-seal	FT/ST G1/S1	Breeds on Isla de Guadalupe off of Mexico, occasionally found on San Miguel, San Nicolas, and San Clemente islands. Prefers shallow, nearshore island water, with cool and sheltered rocky areas for haul-outs.
Canis lupus gray wolf	FE/SE G4/S1	Habitat generalists, historically occupying diverse habitats including tundra, forests, grasslands, and deserts. Primary habitat requirements are the presence of adequate ungulate prey, water, and low human contact.
Chaetodipus californicus femoralis Dulzura pocket mouse	None/None G5T3/S3 CDFW_SSC-Species of Special Concern	Variety of habitats including coastal scrub, chaparral & grassland in San Diego County. Attracted to grass-chaparral edges.
Chaetodipus fallax fallax northwestern San Diego pocket mouse	None/None G5T3T4/S3S4 CDFW_SSC-Species of Special Concern	Coastal scrub, chaparral, grasslands, sagebrush, etc. in western San Diego County. Sandy, herbaceous areas, usually in association with rocks or coarse gravel.
Chaetodipus fallax pallidus pallid San Diego pocket mouse	None/None G5T34/S3S4 CDFW_SSC-Species of Special Concern	Desert border areas in eastern San Diego County in desert wash, desert scrub, desert succulent scrub, pinyon-juniper, etc. Sandy, herbaceous areas, usually in association with rocks or coarse gravel.
Choeronycteris mexicana Mexican long-tongued bat	None/None G4/S1	Occasionally found in San Diego County, which is on the periphery of their range. Feeds on nectar and pollen of night-blooming succulents. Roosts in relatively well-lit caves, and in and around buildings.
Corynorhinus townsendii Townsend's big-eared bat	None/None G3G4/S2	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.
Dipodomys merriami collinus Earthquake Merriam's kangaroo rat	None/None G5T2?/S1S2	Known only from San Diego & Riverside Co. Associated with riversidean sage scrub, chaparral, & non-native grassland. Need sandy loam substrates for digging of burrows.
Dipodomys merriami parvus San Bernardino kangaroo rat	FE/SCE G5T1/S1 CDFW_SSC-Species of Special Concern	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains. Needs early to intermediate seral stages.
Dipodomys stephensi Stephens' kangaroo rat	FE/ST G2/S2	Primarily annual & perennial grasslands, but also occurs in coastal scrub & sagebrush with sparse canopy cover. Prefers buckwheat, chamise, brome grass and filaree. Will burrow into firm soil.
Enhydra lutris nereis southern sea otter	FT/None G4T2/S2	Nearshore marine environments from about Ano Nuevo, San Mateo Co. to Point Sal, Santa Barbara Co. Needs canopies of giant kelp & bull kelp for rafting & feeding. Prefers rocky substrates with abundant invertebrates.

Scientific Name Common Name	Status	Habitat Requirements
Erethizon dorsatum North American porcupine	None/None G5/S3	Forested habitats in the Sierra Nevada, Cascade, and Coast ranges, with scattered observations from forested areas in the Transverse Ranges. Wide variety of coniferous and mixed woodland habitat.
Euderma maculatum spotted bat	None/None G4/S3	Occupies a wide variety of habitats from arid deserts and grasslands through mixed conifer forests. Feeds over water and along washes. Feeds almost entirely on moths. Needs rock crevices in cliffs or caves for roosting.
Eumops perotis californicus western mastiff bat	None/None G5T4/S3S4	Many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.
Glaucomys oregonensis californicus San Bernardino flying squirrel	None/None G5T1T2/S1S2	Known from black oak or white fir dominated woodlands between 5200 - 8500 ft in the San Bernardino and San Jacinto ranges. May be extirpated from San Jacinto range. Needs cavities in trees/snags for nests and cover. Needs nearby water.
Lasionycteris noctivagans silver-haired bat	None/None G5/S3S4	Primarily a coastal and montane forest dweller, feeding over streams, ponds & open brushy areas. Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes, and rarely under rocks. Needs drinking water.
Lasiurus blossevillii western red bat	None/None G5/S3	Roosts primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.
Lasiurus cinereus hoary bat	None/None G5/S4	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.
Lasiurus xanthinus western yellow bat	None/None G5/S3	Found in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Roosts in trees, particularly palms. Forages over water and among trees.
Leptonycteris yerbabuenae lesser long-nosed bat	FD/None G4/S1	Arid regions such as desert grasslands and shrub land. Suitable day roosts (caves & mines) and suitable concentrations of food plants (columnar cacti & agaves) are critical resources. No maternity roosts known from California; may only be vagrant. Caves and mines are used as day roosts. Caves, mines, rock crevices, trees and shrubs, and abandoned buildings are used as night roosts for digesting meals. Nectar, pollen, and fruit eating bat; primarily feeding on agaves, saguaro, and organ pipe cactus.
Lepus californicus bennettii San Diego black-tailed jackrabbit	None/None G5T3T4/S3S4 CDFW_SSC-Species of Special Concern	Intermediate canopy stages of shrub habitats & open shrub/herbaceous & tree/herbaceous edges. Coastal sage scrub habitats in Southern California.
Lontra canadensis sonora southwestern river otter	None/None G5T1/S1 CDFW_SSC-Species of Special Concern	Aquatic habitats along the Colorado River. Needs abundant food sources and sufficient water for shelter and foraging.
Macrotus californicus California leaf-nosed bat	None/None G4/S3	Desert riparian, desert wash, desert scrub, desert succulent scrub, alkali scrub and palm oasis habitats. Needs rocky, rugged terrain with mines or caves for roosting.

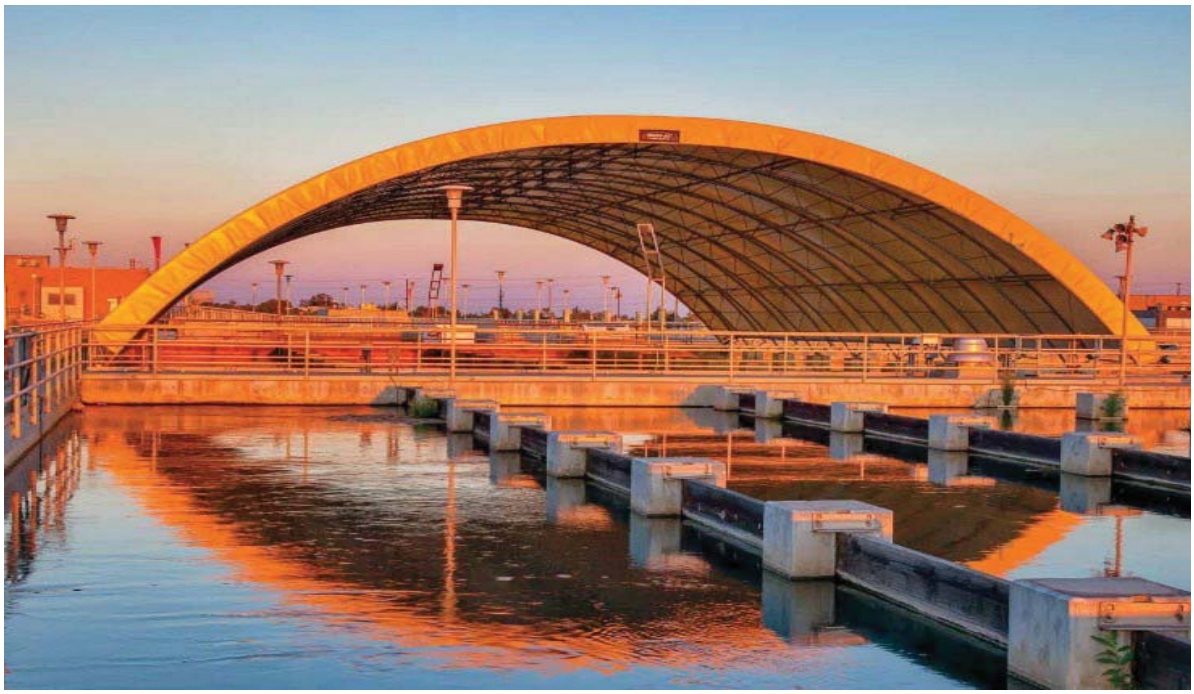
Scientific Name Common Name	Status	Habitat Requirements
Microtus californicus mohavensis Mohave river vole	None/None G5T1/S1 CDFW_SSC-Species of Special Concern	Occurs only in weedy herbaceous growth in wet areas along the Mojave River. May be found in some irrigated pastures. Burrows into soft soil. Feeds on leafy parts of grasses, sedges and herbs. Clips grasses to form runways from burrow.
Microtus californicus stephensi south coast marsh vole	None/None G5T1T2/S1S2 CDFW_SSC-Species of Special Concern	Tidal marshes in Los Angeles, Orange and southern Ventura counties.
Myotis ciliolabrum western small-footed myotis	None/None G5/S3	Wide range of habitats mostly arid wooded & brushy uplands near water. Seeks cover in caves, buildings, mines, and crevices. Prefers open stands in forests and woodlands. Requires drinking water. Feeds on a wide variety of small flying insects.
Myotis evotis long-eared myotis	None/None G5/S3	Found in all brush, woodland and forest habitats from sea level to about 9000 ft. Prefers coniferous woodlands and forests. Nursery colonies in buildings, crevices, spaces under bark, and snags. Caves used primarily as night roosts.
Myotis occultus Arizona Myotis	None/None G4/S1	Lowlands of the Colorado River and adjacent desert mountain ranges. Needs roosting areas in tree hollows, rock crevices, under bridges, etc.
Myotis thysanodes fringed myotis	None/None G4/S3	In a wide variety of habitats, optimal habitats are pinyon-juniper, valley foothill hardwood & hardwood-conifer. Uses caves, mines, buildings or crevices for maternity colonies and roosts.
Myotis velifer cave myotis	None/None G5/S1	Lowlands of the Colorado River and adjacent mountain ranges. Require caves or mines for roosting.
Myotis volans long-legged myotis	None/None G5/S3	Most common in woodland and forest habitats above 4000 ft. Trees are important day roosts; caves and mines are night roosts. Nursery colonies usually under bark or in hollow trees, but occasionally in crevices or buildings.
Myotis yumanensis Yuma myotis	None/None G5/S4	Optimal habitats are open forests and woodlands with sources of water over which to feed. Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.
Neotamias panamintinus acrus Kingston Mountain chipmunk	None/None G4T1T2/S1S2	Arid pinyon-juniper woodlands in the Kingston Mountains of northeastern San Bernardino County. Occupies nests among rocks in fissured cliffs and ledges.
Neotamias speciosus callipeplus Mount Pinos chipmunk	None/None G4T1T2/S2	Open forests with a mix of shrubs and trees on the upper slopes and summit of Mt. Abel and Mt. Frazier. Arboreal habits - rarely ventures far from tree cover.
Neotamias speciosus speciosus lodgepole chipmunk	None/None G4T2T3/S2S3	Summits of isolated Piute, San Bernardino, & San Jacinto mountains. Usually found in open-canopy forests. Habitat is usually lodgepole pine forests in the San Bernardino Mts & chinquapin slopes in the San Jacinto Mts.
Neotoma albigula venusta Colorado Valley woodrat	None/None G5T3T4/S1S2	Low-lying desert areas in southeastern California. Closely associated with beaver-tail cactus & mesquite. Intolerant of cold temps. Eats mainly succulent plants. Distribution influenced by abundance of nest building material
Neotoma lepida intermedia San Diego desert woodrat	None/None G5T3T4/S3S4 CDFW_SSC-Species of Special Concern	Coastal scrub of Southern California from San Diego County to San Luis Obispo County. Moderate to dense canopies preferred. They are particularly abundant in rock outcrops, rocky cliffs, and slopes.

Scientific Name Common Name	Status	Habitat Requirements
Nyctinomops femorosaccus pocketed free-tailed bat	None/None G4/S3	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Rocky areas with high cliffs.
Nyctinomops macrotis big free-tailed bat	None/None G5/S3	Low-lying arid areas in Southern California. Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.
Onychomys torridus ramona southern grasshopper mouse	None/None G5T3/S3 CDFW_SSC-Species of Special Concern	Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover. Feeds almost exclusively on arthropods, especially scorpions and orthopteran insects.
Ovis canadensis nelsoni desert bighorn sheep	None/None G4T4/S3	Widely distributed from the White Mtns in Mono Co. to the Chocolate Mts in Imperial Co. Open, rocky, steep areas with available water and herbaceous forage.
Ovis canadensis nelsoni pop. 2 Peninsular bighorn sheep DPS	FE/ST G4T3Q/S1	Eastern slopes of the Peninsular Ranges below 4,600 ft elevation. This DPS of the subspecies inhabits the Peninsular Ranges in southern California from the San Jacinto Mountains south to the US-Mexico International Border. Optimal habitat includes steep walled canyons and ridges bisected by rocky or sandy washes, with available water.
Perognathus alticola alticola white-eared pocket mouse	None/None G1G2TH/SH	Ponderosa and Jeffrey pine habitats; also in mixed chaparral and sagebrush habitats in the San Bernardino Mountains. Burrows are constructed in loose soil.
Perognathus alticola inexpectatus Tehachapi pocket mouse	None/None G1G2T1T2/S1S2	Arid annual grassland and desert shrub communities, but also taken in fallow grain fields and in Russian thistle. Burrows for cover and nesting. Aestivates and hibernates during extreme weather. Forages on open ground and under shrubs.
Perognathus inornatus San Joaquin Pocket Mouse	None/None G2G3/S2S3	Grassland, oak savanna and arid scrubland in the southern Sacramento Valley, Salinas Valley, San Joaquin Valley and adjacent foothills, south to the Mojave Desert. Associated with fine-textured, sandy, friable soils.
Perognathus longimembris bangsi Palm Springs pocket mouse	None/None G5T2/S2	Desert riparian, desert scrub, desert wash and sagebrush habitats. Most common in creosote-dominated desert scrub. Rarely found on rocky sites. Occurs in all canopy coverage classes.
Perognathus longimembris brevinasus Los Angeles pocket mouse	None/None G5T1T2/S1S2 CDFW_SSC-Species of Special Concern	Lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin. Open ground with fine, sandy soils. May not dig extensive burrows, hiding under weeds and dead leaves instead.
Perognathus longimembris internationalis Jacumba pocket mouse	None/None G5T2T3/S2 CDFW_SSC-Species of Special Concern	Desert riparian, desert scrub, desert wash, coastal scrub and sagebrush. Rarely found on rocky sites; uses all canopy coverages.
Perognathus longimembris pacificus Pacific pocket mouse	FE/None G5T1/S1 CDFW_SSC-Species of Special Concern	Inhabits the narrow coastal plains from the Mexican border north to El Segundo, Los Angeles County. Seems to prefer soils of fine alluvial sands near the ocean, but much remains to be learned.
Peromyscus maniculatus anacapae Anacapa Island deer mouse	None/None G5T1T2/S1S2 CDFW_SSC-Species of Special Concern	Restricted to East, Middle & West Anacapa islands. Live in all terrestrial habitats & also forage in the intertidal zone.

Scientific Name Common Name	Status	Habitat Requirements
Sigmodon arizonae plenus Colorado River cotton rat	None/None G5T2T3/S1S2 CDFW_SSC-Species of Special Concern	Colorado River floodplain from the Nevada border to about Bard. Distribution is spotty. Isolated sections of alluvial bottom along the Colorado River in areas supporting sedges, rushes, and other marsh plants.
Sorex ornatus salicornicus southern California saltmarsh shrew	None/None G5T1?/S1 CDFW_SSC-Species of Special Concern	Coastal marshes in Los Angeles, Orange and Ventura counties. Requires dense vegetation and woody debris for cover.
Sorex ornatus willetti Santa Catalina shrew	None/None G5T1/S1 CDFW_SSC-Species of Special Concern	Santa Catalina Island. Larger stream-bearing canyons of valley foothill riparian. Prefers moist areas. Uses stumps, logs, and litter for cover.
Taxidea taxus American badger	None/None G5/S3	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.
Urocyon littoralis catalinae Santa Catalina Island fox	FT/ST G1T1/S1	Found only on Santa Catalina Island. Mixed chaparral, coastal scrub and shrubby woodland. Prefers more complex, layered vegetation with a high density of woody, perennial fruiting shrubs, and rocky places for cover.
Urocyon littoralis clementae San Clemente Island fox	None/ST G1T1/S1	Found only on San Clemente Island. Mixed chaparral, coastal scrub & shrubby woodland. Prefers more complex, layered vegetation with a high density of woody, perennial fruiting shrubs, & rocky places for cover.
Urocyon littoralis dickeyi San Nicolas Island fox	None/ST G1T1/S1	Found only on San Nicolas Island. Mixed chaparral, coastal scrub & shrubby woodland. Prefers more complex, layered vegetation with a high density of woody, perennial fruiting shrubs, & rocky places for cover.
Xerospermophilus mohavensis Mohave ground squirrel	None/ST G2G3/S2S3	Open desert scrub, alkali scrub & Joshua tree woodland. Also feeds in annual grasslands. Restricted to Mojave Desert. Prefers sandy to gravelly soils, avoids rocky areas. Uses burrows at base of shrubs for cover. Nests are in burrows.
Xerospermophilus tereticaudus chlorus Palm Springs round-tailed ground squirrel	None/None G5T2Q/S2	Restricted to the Coachella Valley. Prefers desert succulent scrub, desert wash, desert scrub, alkali scrub, and levees. Prefers open, flat, grassy areas in fine-textured, sandy soil. Density correlated with winter rainfall.

Appendix D

Cultural Resources Background



Climate Action Plan

Cultural Resources Background

prepared by

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1 Cultural Resources Background

1.1 Pre-Contact History

Colorado Desert/Southern Mojave Desert

The first recognizable human use of the Colorado Desert was by highly mobile hunter-gatherers at the end of the Pleistocene Epoch, between 12,000 and 10,000 years ago. The settlement patterns of the Late Pleistocene and Early Holocene inhabitants suggest that they preferred to live along the shores of prehistoric lakes and on mesas near perennial washes (Schaefer and Laylander 2007). The San Dieguito complex during the Paleoindian Period (10,000 – 5000 BCE) is characterized entirely by sites with flaked stone tools such as choppers, scrapers, blades, projectile points and distinctive crescent-shaped items interpreted as amulets found around now-dry inland lakes, old desert terraces, and notably Ventana Cave in southern Arizona (Rogers 1939, 1966; Warren 1967). If the Lake Mojave and San Dieguito complexes are contemporaneous, then this highly mobile, hunting-focused use of the land ended early in the Holocene as ancient pluvial lakes contracted and large mammals became scarce.

Although evidence of occupation of the Colorado Desert during the Archaic Period (5000 BCE – 500 CE) is scarce, developments during this time can be inferred from the development trajectories of adjacent areas. Regional culture complexes of this time are defined by distinct projectile point types. The Colorado Desert falls into the Pinto Complex during the early Archaic ca. 5000 – 1500 BCE. (Crabtree 1980; Rogers 1939), then the Amargosa complex during the later Archaic ca. 1500 BCE – 500 CE (Rogers 1939; Rogers 1966). Few open-air sites date to the Archaic. Rockshelter deposits at Indian Hill Rockshelter in Anza-Borrego Desert State Park and at Tahquitz Canyon near Palm Springs contain dart-sized projectile points, ground stone implements, rock-lined cache pits, and non-cremated inhumations (McDonald 1992; Wilke et al. 1986; Schaefer 1994b). The materials at the rockshelter sites and others outside of the Colorado Desert suggest that the Archaic period inhabitants of southern California were a mobile and diversified group of hunters and gatherers who exploited seasonally variable resources and focused increasingly on processing and storing seed and nut foods (Schaefer 1994b).

The Late Prehistoric/Protohistoric Period consists of the Patayan complex and dates from approximately 500 CE until the American expansion into the area at the turn of the nineteenth century. The Patayan complex is characterized by marked changes in the artifact assemblage, economic system, and settlement patterns of the region. This included the introduction of paddle-and-anvil pottery, either from Mexico or from the Ancestral Pueblo groups of the United States Southwest (Rogers 1945; Schaefer 2003; Schroeder 1975, 1979); floodplain horticulture, featuring maize, beans, squash, and other crops; bow-and-arrow technology, possibly from desert hunter-gatherer groups moving in from the west and north; smaller, arrow-sized projectile point types of the Cottonwood Triangular and Desert Side-notched series are common; new burial cremations and partial cremations; artistic expression on rock (petroglyphs) and land (intaglios); expanding trade and trail networks; and increasingly elaborate kinship systems tying together extensive territories (McGuire and Schiffer 1982). It is likely warfare also increased at this time and was well documented in the Protohistoric and Historical periods. By all accounts, most of the archaeological materials in the Colorado Desert date to the Late Prehistoric and Protohistoric

periods (e.g., Rogers 1945; Schaefer 1994b, 2003). Most sites in the area consist of ceramic sherds and a limited variety of stone tools and tool-making debris.

Coastal and Inland Southern California

The prehistoric chronological sequence for southern California presented here is a composite based on Wallace (1955) and Warren (1968) as well as later studies, including Koerper and Drover (1983). This sequence is broken into three horizons. Early Man Horizon (10,000 – 6000 BCE) sites are generally associated with a greater emphasis on hunting than later horizons. Recent data indicate that the Early Man economy was a diverse mixture of hunting and gathering, including a significant focus on aquatic resources in coastal areas (e.g., Jones et al. 2002) and on inland Pleistocene lakeshores (Moratto 1984). Numerous pre-8000 BCE sites have been identified along the mainland coast and Channel Islands of southern California (c.f., Erlandson 1991; Johnson et al. 2002; Jones and Klar 2007; Moratto 1984; Rick et al. 2001:609). One of them, the Arlington Springs site on Santa Rosa Island, produced human femurs dating to approximately 13,000 years ago (Arnold et al. 2004; Johnson et al. 2002). On nearby San Miguel Island, human occupation at Daisy Cave (SMI-261) has been dated to nearly 12,000 years ago (Arnold et al. 2004). A warm and dry 3,000-year period called the Altithermal began around 6000 BCE. The conditions of the Altithermal are likely responsible for the change in human subsistence patterns during Early Man Horizon, including a greater emphasis on plant foods and small game.

The Milling Stone Horizon (6000 – 3000 BCE) showed an increase in use of milling stone and other processing tools (Wallace 1955). The dominance of such artifact types indicates subsistence relied heavily on collecting plant foods and hunting small terrestrial and littoral animals (Kowta 1969). Lithic artifacts associated with Milling Stone Horizon sites are dominated by locally available tool stone and ground stone tools, such as manos and metates, chopping, scraping, and cutting tools are very common. The mortar and pestle, associated with acorns or other foods processed through pounding, were first used during the Milling Stone Horizon and increased dramatically in later periods (Wallace 1955, 1978; Warren 1968). Wallace (1955) notes a decrease in well-made projectile points and an increase of burials with rock cairns also occurred during this horizon.

The Intermediate Horizon (3000 BCE – 500 CE) is characterized by a shift toward a hunting and maritime subsistence strategy, as well as greater use of plant foods and adaptation to local resources. Tool kits for hunting, fishing, and processing food and materials reflect this increased diversity, with flake scrapers, drills, various projectile points, and shell fishhooks being manufactured. Mortars and pestles became more common during this transitional period, gradually replacing manos and metates as the dominant milling equipment. Many archaeologists believe this change in milling stones signals a change from the processing and consuming of hard seed resources to the increasing reliance on acorn (e.g., Glassow et al. 1988). Mortuary practices during the Intermediate typically included fully flexed burials oriented toward the north or west (Warren 1968).

The Late Prehistoric Horizon (500 CE – Historic Contact) had an increase in the diversity of plant food resources and land and sea mammal hunting. More classes of artifacts were observed during this period and high quality exotic lithic materials were used for small, finely worked projectile points associated with the bow and arrow. Steatite containers were made for cooking and storage and an increased use of asphalt for waterproofing is noted. More artistic artifacts were recovered from Late Prehistoric sites, and cremation became a common mortuary custom. Larger, more permanent villages supported an increased population size and social structure (Wallace 1955).

Southern Central Coast

Chronological sequence for the southern central coast is separated into three distinct time periods: the Early Holocene, the Middle Holocene, and the Late Holocene. Evidence of Paleo-Indian occupation of southern California remains very limited during the Early Holocene (9600 – 5600 BCE). Approximately 75 sites on the southern and central California coast are known that date to 7500 BCE (Erlandson and Colten 1991). The earliest accepted dates for human occupation of the California coast are from the Northern Channel Islands, off the Santa Barbara coast. Daisy Cave, located on San Miguel Island, dates to as early as 9600 BCE (Erlandson et al. 1996). At the Arlington Springs site on Santa Rosa Island human remains yielded a date of approximately 10,000 BCE (Johnson et al. 2002). San Diego and Orange counties and the Southern Channel Islands have not produced dates as early as these. However, radiocarbon evidence has dated early occupation of the coastal region between ca. 8000 and 7000 BCE (Byrd and Raab 2007). Leaf-shaped points and knives, crescents, and scrapers characterize the artifact assemblages throughout the region (Byrd and Raab 2007).

The Middle Holocene (5600 – 1650 BCE) is generally viewed as a time of cultural transition. During this time, the cultural adaptations of the Early Holocene gradually altered. Use of milling stone tools began to appear across most of central and southern California around 6000 – 5000 BCE, indicating a focus on the collection and processing of hard-shelled seeds. Environmental changes in the Southern Bight are thought to have been the key factor in these changing adaptations (Byrd and Raab 2007). Occupation patterns indicated semi-sedentary populations focused on bays and estuaries, with shellfish and plant resources as the most important dietary components (Warren 1968). Sometime around 2000 BCE, extensive estuarine silting began to cause a decline in shellfish and thus a depopulation of the coastal zone. Settlement shifted to river valleys, and resource exploitation focused on hunting small game and gathering plant resources (Warren 1968; Byrd and Raab 2007).

The Late Holocene (1650 BCE – 1769 CE) witnessed numerous cultural adaptations. The bow and arrow were adopted sometime after 500 CE, and ceramics appeared in the area circa 1000 CE. Populations were sustained by food surpluses, especially acorns (Byrd and Raab 2007; Kroeber 1925). Other exploited food resources include shellfish, fish, small terrestrial mammals, and small-seeded plants. Settlement patterns of the Late Holocene are characterized by large residential camps linked to smaller specialized camps for resource procurement (Byrd and Raab 2007).

Sacramento-San Joaquin River Delta

California prehistory in the Sacramento-San Joaquin River Delta (Central Valley) is generally divided into three broad time periods: Paleoindian period (ca. 11,550 – 8550 BCE), Archaic Period (8550 BCE – 1100 CE) and Emergent Occupation (1000 CE – European Contact) (Fredrickson 1973, 1994; Moratto 1984; Rosenthal et al. 2007).

Little is known about the Paleoindian period (11,550 – 8550 BCE) in the Central Valley. Geoarchaeological studies have demonstrated that erosion and deposition have likely buried or destroyed early archaeological deposits. The only known Paleoindian site in the Sacramento Valley is a single possible fluted point from near Thomes Creek (Rosenthal et al. 2007).

The Archaic period (8550 BCE – 1100 CE) breaks into three subsections: lower, middle, and upper. The Lower Archaic (8550 – 5550 BCE), like the Paleoindian Period, is represented only by limited isolated finds. No other Lower Archaic sites have been identified within the Sacramento Valley.

The Middle Archaic (5550 – 550 BCE) began with substantial climate change to much warmer, drier conditions. The late Middle Archaic is relatively well-represented in the Sacramento Valley and Delta. Late Middle Archaic sites typically include extended burials oriented to the west and more sophisticated technology, including: fishing technologies, such as bone gorges, hooks, and spears; the mortar and pestle, which become more widespread suggesting a shift toward intensive subsistence practices; baked-clay impressions of twined basketry, simple pottery, and other baked clay; and personal adornment items (Rosenthal et al. 2007). Trade with outside groups is evidenced by the presence of obsidian, shell beads, and ornaments (Rosenthal et al. 2007; Moratto 1984).

The Upper Archaic (550 BCE – 1100 CE) began with the onset of the Late Holocene, marked by a cooler, wetter climate. Cultural diversity was more pronounced and is marked by contrasting material cultures throughout the valley (Rosenthal et al. 2007). Numerous specialized technologies were developed such as bone tools and implements, manufactured goods such as *Olivella* and *Haliotis* beads and ornaments, well-made ceremonial blades, and ground-stone plummets. Beginning after circa 2,700 years ago, lower Sacramento Valley settlements shifted to a pattern of large, mounded villages, now identified as the Berkeley Pattern, which typically contain large amounts of habitation debris and features suggestive of long-term occupation (Rosenthal et al. 2007).

The stable climatic conditions of the Upper Archaic continued into the Emergent Period (1100 CE – Historic). After 1000 CE, many of the technologies identified during the Archaic disappeared to be replaced by cultural traditions recorded at European contact. The bow and arrow replaced the atlatl as the preferred hunting method sometime between 1000 and 1300 CE. Increased social complexity is evidenced by increased variation in burial types and offerings such as shell beads, ornaments, and ritually "killed" mortars and pestles. Pottery was produced at several sites in the lower Sacramento Valley, known as Cosumnes brownware, including baked clay human and animal effigies. New fishing technology like harpoons, fishhooks, gorges, and netting suggest an increased reliance on fishing for subsistence and economy. After circa 1000 CE, the mortar and pestle become the dominant tool type and small seeds increase in archaeological deposits over time (Rosenthal et al. 2007).

1.2 Post-Contact Historic Overview

The Post-European contact history of California is generally divided into three periods: the Spanish Period (1769 – 1822), the Mexican Period (1822 – 1848), and the American Period (1848 – present). Each of these periods is briefly described below.

Spanish Period (1769 – 1822)

Spanish exploration of what was then known as Alta (upper) California began when Juan Rodríguez Cabrillo led the first European expedition into the region in 1542. For more than 200 years after his initial expedition, Spanish, Portuguese, British, and Russian explorers sailed the Alta California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968: 16-21; Rolle 2003).

In 1769, Gaspar de Portolá and Franciscan Father Junípero Serra established the first Spanish settlement at Mission San Diego de Alcalá. This was the first of 21 missions erected by the Spanish between 1769 and 1823. Elsewhere in the Plan Area, missions were established at San Gabriel (1771), San Juan Capistrano (1776), San Buenaventura (1782), San Fernando (1797), and San Luis Rey (1798). The establishment of the missions marks the first sustained occupation of Alta California by the Spanish. In addition to the missions, four presidios and three pueblos

(towns) were established throughout the state (State Lands Commission 1982). Within the Plan Area, these included a presidio at San Diego (1769) and the pueblo of Los Angeles (1781).

During this period, Spain also deeded ranchos to prominent citizens and soldiers, though very few in comparison to the subsequent Mexican Period. To manage and expand their herds of cattle on these large ranchos, colonists enlisted the labor of the surrounding Native American population (Engelhardt 1927a). The missions were responsible for administrating to the local Indians as well as converting the population to Christianity (Engelhardt 1927b). The influx of European settlers brought the local Native American population in contact with European diseases which they had no immunity against, resulting in catastrophic reduction in native populations throughout the state (McCawley 1996).

Mexican Period (1822 – 1848)

The Mexican Period commenced when news of the success of the Mexican War of Independence (1810 – 1821) against the Spanish crown reached California in 1822. This period saw the privatization of mission lands in California with the passage of the Secularization Act of 1833. This act federalized mission lands and enabled Mexican governors in California to distribute former mission lands to individuals in the form of land grants. Successive Mexican governors made approximately 700 land grants between 1833 and 1846, putting most of California lands into private ownership for the first time (Shumway 2007). During this era, a class of wealthy landowners known as rancheros worked large ranches based on cattle hide and tallow production.

The beginnings of a profitable trade in cattle hide and tallow exports opened the way for larger, commercially driven farms. Land grants owned by the Spanish crown and clergy were distributed to mostly Mexican settlers born in California, or the "Californios." While this shift marked the beginning of the rancho system that would "dominate California life for nearly half a century" (Poole 2002), the rural character of emerging cities in and around Los Angeles remained intact. Ranchos were largely self-sufficient enterprises (partly out of necessity, given California's geographic isolation), producing goods to maintain their households and operations.

In the early 1840s, American settlers began migrating overland to Alta California. The Bidwell-Bartelson party was the first to arrive, entering the Central Valley in 1841. American settlement disrupted the established social and economic order in Mexican-era California, as many recent arrivals quickly became prominent in Alta California commerce (Kyle 2003).

In 1846, the Mexican-American War was initiated following the annexation of Texas by the United States and a dispute over the boundary of the state between the United States and Mexico. Governor Pío de Jesús Pico, the last governor of Alta California, began selling off 12 million acres of public land to financially support the war (Los Angeles Almanac 2018a). Mexican forces fought and lost to combined United States Army and Navy forces in the Battle of the San Gabriel River on January 8 and in the Battle of La Mesa on January 9. On January 10, leaders of the pueblo of Los Angeles surrendered peacefully after Mexican General José María Flores withdrew his forces (Nevin 1978). On June 14, Lieutenant Colonel John C. Frémont captured Sonoma and raised the California Republic's Bear Flag over the town's plaza (Kyle 2003). Shortly thereafter, newly appointed Mexican Military Commander of California Andrés Pico surrendered all of Alta California to Frémont in the Treaty of Cahuenga (Nevin 1978).

American Period (1848–Present)

The Mexican Period officially ended in early January 1848 with the signing of the Treaty of Guadalupe Hidalgo, formally concluding the Mexican-American War. Per the treaty, the United States agreed to pay Mexico 15 million U.S. dollars for conquered territory, including California, Nevada, Utah, and parts of Colorado, Arizona, New Mexico, and Wyoming. California gained

statehood in 1850, and this political shift set in motion a variety of factors that began to erode the rancho system. Given the size of their holdings, the initiation of property taxes proved onerous for many southern California ranchers. In addition, the creation of the United States Land Commission in 1851 required that property owners prove the validity of their property titles, many of which had been granted relatively informally and without the benefit of formal survey. Ranchers often paid for legal debts with portions—or all—of their ranchos. During this period, 40 percent of rancho-held lands in the County of Los Angeles passed to the United States government. The large-scale rancho system also suffered greatly from the 1860s droughts, which decimated the cattle industry upon which southern Californian ranchers depended.

In 1848, the discovery of gold in northern California led to the California Gold Rush, though the first gold was found in 1842 in San Francisquito, about 35 miles northwest of Los Angeles (Workman 1935:107; Guinn 1976). The Gold Rush significantly transformed northern California and also contributed to an exponential increase in California's population overall. During this time, San Francisco became California's first true city, growing from a population of 812 to 25,000 in only a few years (Rolle 1987). By 1853, the population of California exceeded 300,000. Thousands of settlers and immigrants continued to immigrate to the state, particularly after the completion of the First Transcontinental Railroad in 1869.

In the 1880s, a dramatic boom arrived in southern California, fueled by various factors including increasingly accessible rail travel, agricultural development, and favorable advertisement (Dumke 1994). In 1883, the California Immigration Commission designed an advertisement declaring the state as "the Cornucopia of the World" (Poole 2002:36). Characterized as a "second Gold Rush," the emergence of the citrus industry in Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties emerged as one of the leading drivers of Southern California's agricultural boom (Lee 2010). New southern Californian towns were promoted as havens for good health and economic opportunity. Between 1880 and 1890, the population of Los Angeles expanded fivefold, from approximately 11,000 to 50,000 (Los Angeles Almanac 2018b). Following the collapse of the real estate market in 1888, economic stagnancy lasted through the mid-1890s in the region. Despite the economic downturn however, the industrial and commercial transformation of the region was well entrenched, setting the stage for the region's rapid rise in the twentieth century.

Additional details regarding the historical development of specific portions of the Plan Area and Metropolitan facilities are provided below.

Los Angeles County

With the 1849 advent of the Gold Rush and the growing influx of European-Americans to southern California, the population of Los Angeles County expanded rapidly in the early American Period. Much of this growth was concentrated in the city of Los Angeles, where between 1850 and 1860, the city's population grew from approximately 1,600 to 4,300 (Hill 1929). In the mid-to-late nineteenth century, population growth and the rapid decline of the ranchos opened the door to greater economic diversification throughout Los Angeles County. The earliest non-ranching industries to emerge in the region included packing houses adjacent to rail lines, wineries, flour mills, and grain processing plants, among many others (City of Los Angeles 2018a).

In the final quarter of the nineteenth century, the greater Los Angeles region began to shed its predominantly rural character and grew into a major urban industrial center. Central to this transformation was the 1876 completion of the Southern Pacific Railroad, which connected Los Angeles with the East Coast and eventually with harbor facilities in San Pedro Bay. Rail access accelerated population growth in, and tourism to, Southern California. A speculative real estate

market and improved rail travel prompted a major real estate boom in the 1880s (Deverell 1994). During that decade the population of Los Angeles County nearly tripled, growing from 33,000 to 101,000. In addition to boosting population growth and tourism throughout Southern California, the advent of the transcontinental railroad was "the most important catalyst for industrial growth" (City of Los Angeles 2018a). This included a wide range of sectors, from agricultural packing and shipping houses to oil extraction and refining. With access to rail and shipping links, the petroleum industry quickly became a regional economic driver, and by 1910, produced upwards of 77 million barrels of oil a year (City of Los Angeles 2018a).

After a lull in the 1890s, rapid, sustained expansion in the region characterized the first three decades of the twentieth century. Over this period the population of Los Angeles County grew from 170,000 to over 2.2 million residents. Additionally, two major events had a lasting influence on growth throughout the Los Angeles region: the selection of San Pedro Harbor as the international Port of Los Angeles and the inauguration of William Mulholland's Los Angeles Aqueduct. Together, these events laid the groundwork for the expansion of the county's residential and industrial areas. Development at the Port of Los Angeles and the neighboring Port of Long Beach helped to spread the establishment of industrial suburbs, in Los Angeles Basin communities such as Vernon and Commerce. The local oil, automotive, and aviation industries all achieved a significant foothold in the county before 1930. This growth was aided further by the network of the Pacific Electric Railway trolley line, also known as the "Big Red Cars," which linked the region's emerging "streetcar suburbs" to increasingly distant workplaces (Caltrans 1982; Nicolaides 1999; City of Los Angeles 2018a). By the 1920s, the growing popularity of the automobile allowed developers to build new suburban subdivisions even farther from downtown Los Angeles and other employment centers (Hise and Gish 2007). In spite of the region's rapid urbanization, however, many areas, such as the San Fernando Valley, remained predominantly rural and agricultural through World War II.

Although the county's growth slowed during the Great Depression, the relative success of the oil, automobile, motion picture, and aviation/aeronautics industries offered some protection from the ill effects of the economic downturn. The onset of World War II ended the depression unequivocally and provided a boost to the region's well-established industrial base. To aid the war effort, aircraft and shipbuilding concerns throughout the region expanded rapidly, producing new types of aircraft and other war materiel. At its high point, nearly 90,000 workers were employed simultaneously at the various shipbuilding yards at the Port of Los Angeles. New factories were established along rail corridors, with an important concentration constructed in the San Fernando Valley. Defense-related industrial expansion during World War II and the emergence of an expansive aeronautics and aerospace industry in Southern California contributed to another population boom during and immediately after the war (City of Los Angeles 2018a). Between 1940 and 1950, Los Angeles County added more than 1.4 million new residents.

By the postwar period, the transformation of Los Angeles County from its place in the nineteenth century as "'Queen of the Cow Counties' to the epicenter of the Aerospace Industry" was complete (City of Los Angeles 2018a). The postwar period brought a sustained boom in all industrial sectors. Aircraft manufacturing in particular, became a significant magnet for new residents and workers, leading to the construction of extensive suburban tracts. Postwar highway projects played an important role in the county's suburban expansion by making it possible to live ever-further from the workplace. One such project included the construction of the Hollywood Freeway, which linked the rapidly urbanizing San Fernando Valley to downtown Los Angeles by means of a modern, multi-lane highway. After decades of success, Los Angeles County's manufacturing sector entered a gradual decline in the late 1960s and 1970s (City of Los Angeles 2018a). Despite this decline, the aerospace, technology, entertainment, and tourism

industries experienced continued growth. As of 2010, the county boasted a population of 9.8 million, with 3.8 million living in Los Angeles proper.

Orange County

At the time of California's annexation, what is now Orange County (which originally made up the southern one-third of Los Angeles County) was almost entirely occupied by ranchos dating from the Spanish and Mexican eras. As was the case throughout the region, the local cattle ranching industry boomed with the arrival of new settlers. Starting in the 1850s, settlers founded Orange County's first towns, which were concentrated in the northern portion of the county. The first was Anaheim, established in 1859 by a group of San Francisco-based German immigrants. The failure and eventual subdivision of most of the old ranchos in the 1860s paved the way for the establishment of several more towns, including Santa Ana, Tustin, Orange, Westminster, and Garden Grove. While a handful of large ranches persisted at the southern end of the county—albeit under new ownership—farming emerged as the main sector of the area's economy. Prior to the rise of the county's dominant citrus industry, wine and raisin grapes, wheat, barley, and corn were among the chief crops (Brigandi 2007).

In the latter three decades of the nineteenth century, the area began to boom and matured politically and economically. In 1870, commercial shipping first served Newport Bay, which soon developed as an important local port. Southern Pacific built the area's first railroad in 1875 and held a monopoly until the Santa Fe Railroad arrived in 1885. Rail service was a boon to local agriculturalists, including the area's emerging cohort of citrus growers (Lee 2010). The area's newfound economic vitality contributed to a renewed drive for independence from Los Angeles County, and Orange County was established in 1889 with Santa Ana as the county seat (Brigandi 2007). Following the construction of a new county courthouse downtown, Santa Ana cemented its place as the administrative and political center of the county (Goddard and Goddard 1988). In the following decade, a local oil boom helped to diversify an economy that had been dependent historically on farming. New oil fields were discovered periodically through the second decade of the twentieth century, with important strikes at La Habra, Brea Canyon, Olinda, Placentia, and Huntington Beach (Brigandi 2007).

In the early twentieth century, the establishment of new transportation networks opened more of Orange County to urban development. By 1910, the Pacific Electric Railway had built three new streetcar lines to serve Orange County. The birth and early development of communities such as Seal Beach, Corona del Mar, Stanton, and Cypress was partially dependent on the convenient transit the Pacific Electric's "big red cars" provided. The growing popularity of the automobile in the 1910s and 1920s led to new roadway connections between once-distant Orange County communities. In these years, a state highway was constructed to connect La Habra and San Juan Capistrano, the Coast Highway was completed, and Manchester Boulevard and Beach Boulevard emerged as major thoroughfares. Paired with major investments in roads, the automotive revolution led to new residential and commercial development in communities located near new arterial roadways (Brigandi 2007).

The World War II and the postwar eras brought significant changes to Orange County. The establishment of El Toro Marine Corps Air Station, the Los Alamitos Naval Weapons Station, and the Santa Ana Army Air Base brought an influx of military personnel, many of whom remained in Southern California after the war. The county's once-dominant citrus industry faded as expansive orange groves were rapidly redeveloped as residential tracts and shopping centers. As agriculture's local importance declined, new industries filled the vacuum. The opening of Disneyland in 1955 marked Orange County's embrace of tourism as an important economic sector. In the late 1950s, aerospace, industrial, and service jobs also made up a growing proportion of economic opportunities. In the 1950s and 1960s, the population boom led to a wave

of urban annexations and the incorporation of several North County communities, including La Habra, Buena Park, and Los Alamitos. Orange County's population reached one million in 1963. During the 1960s, large swaths of the South County were developed as master-planned communities, including Irvine, Mission Viejo, Laguna Niguel, Aliso Viejo, Rancho Santa Margarita, and Ladera Ranch (Brigandi 2007). Currently, Orange County is home to more than 3 million residents.

Riverside County

Present-day Riverside County consists of parts of the original territory of San Diego and San Bernardino Counties. Like much of the Plan Area, Riverside County's early American-era history was characterized by cattle ranching on large ranchos, such as Rancho Jurupa and Rancho El Rincón. However, the decline of cattle ranching in the region in the 1860s paved the way for the subdivision and sale of the large landholdings and, in turn, the ascent of intensive agriculture.

Development of southern California's citrus industry started in the late nineteenth century in the eventual county seat, Riverside. Under the leadership of John W. North, the community was founded in 1870, when investors from the Southern California Colony Association laid out a mile-square town site, originally named Jurupa. Early farming featured a diversity of crops, including raisin grapes, alfalfa, hay, and stone fruits, but after Eliza Tibbets introduced the navel orange to the county in 1873, the area's farmers turned overwhelmingly to citrus cultivation (City of Riverside 2009). The area's first successful orange orchards were planted in the 1870s, and their success lured a stream of agriculturalists, investors, and immigrants into the area. The California Fruit Growers Exchange, later renamed Sunkist, was founded in the late nineteenth century, and the University of California Citrus Experimentation Station followed in 1907, helping to solidify Riverside's place as a key center of citrus production and marketing (Kyle 2002: 298). The citrus industry dominated local agriculture well into the twentieth century (City of Riverside 2009). In the late nineteenth century, an influx of homesteaders began the transformation of barren desert areas, such as the Coachella and Palo Verde valleys, into productive agricultural regions. Initially watered by artesian wells, Coachella Valley farming centered on citrus and date cultivation, the latter enterprise supported by the United States Department of Agriculture Date Experiment Stations (established 1904) near Mecca. The construction of the All-American Canal in the 1930s provided a new source of irrigation and eventually allowed farms to expand throughout the valley when it became fully operation in the early 1940s (Brown 1985; Conrad 2018).

During World War II, Riverside County's trajectory was shaped by the presence of several permanent and temporary military installations. Most important among these was March Air Force Base, which was founded in 1918 and served as an important training, aircraft repair, and staging facility. Another important development related to military themes, was the establishment of the Desert Training Center in the Mojave Desert in 1942. As was the case across Southern California, Riverside County's military and defense-industry presence remained strong after the war with the presence of companies such as Kaiser Steel and served as a magnet for new settlement. Communities on Riverside County's east side were augmented with vast residential tracts and new commercial strips. In 1953, the city of Riverside recorded the nation's fourteenth fastest growth rate. The postwar popularity of the automobile left an important mark—especially on the more heavily populated area west of the San Jacinto Mountains—as southern California's regional freeway network was expanded to connect the county's far-flung communities (City of Riverside 2009). The freeway system served as the backbone for continued urbanization, and Riverside County grew steadily through the latter quarter of the twentieth century. Moreno Valley, the county's second-largest city, was incorporated in 1984.

San Bernardino County

The Gold Rush of 1849 brought thousands of Americans into what is now San Bernardino County. Departing from near present-day Yuma, miners and other settlers crossed the Colorado River and followed the Mojave River Trail into what is now the western part of the county. After settlers established homesteads in the Mojave River Valley, the United States Army fortified the area to keep trails open. About a decade later, gold was discovered in the Holcomb and Bear valleys and along Lytle Creek. In 1851, amid the influx of settlers to the county, a group of 500 colonists affiliated with the Church of Latter-Day Saints purchased Rancho San Bernardino and established the town of San Bernardino. Two years later, the County of San Bernardino was created from parts of Los Angeles and San Diego Counties. San Bernardino was selected as the county seat and, the following year, incorporated. In 1857, the colonists affiliated with the Church of Latter-Day Saints were recalled to Utah, leaving the city with a population of just 300 (County of San Bernardino 2020).

Between 1860 and 1890, the county's population grew more than six-fold to approximately 25,000. Much of this growth is attributed to the development of agriculture in the western section of the county and the expansion of mining operations in the east, both of which were assisted by the arrival of the Southern Pacific and Santa Fe railroads in the 1870s (County of San Bernardino 2020; CA Genealogy 2020). Grape and, especially, citrus production shaped the development of such West County communities as San Bernardino and Redlands well into the twentieth century. In the late nineteenth and early twentieth centuries, mining emerged as a major economic pursuit in the desert regions of the county. Borax mining began in the 1860s near Searles Lake and in the Calico Mountains. The Calico silver mining district was also first exploited in the 1880s (County of San Bernardino 2020; Legends of America 2020).

San Bernardino County's major population centers remained relatively small agricultural communities well into the twentieth century (Archaeological Associates 2018). Southern California's postwar suburban boom helped to urbanize many towns and cities in the southwest corner of the county, such as San Bernardino, Ontario, Redlands, Rancho Cucamonga, and Fontana. This trend was exemplified by Fontana, where the steady construction of suburban tracts helped to grow the city's population from about 15,000 in 1960 to 87,000 in 1990. Growth on the county's west side contributed to the growth of the wider Inland Empire metropolitan region, which comprises the major urban areas of Riverside and San Bernardino Counties. By 2010, San Bernardino County's population was over 2 million.

San Diego County

The American period in San Diego County began unofficially in 1846 when the United States military occupied the Pueblo of San Diego. With the signing of the Treaty of Guadalupe Hidalgo, the Americans inherited a pueblo whose population had been destabilized by more than a decade of hostilities with local Native American groups (City of San Diego 2007). Outside the pueblo, cattle ranches dominated the local economy, as they would throughout much of southern California until the 1860s (Guinn 1977).

San Diego County was formally organized in February 1850 as one of the original counties of California and grew slowly during the next decade. The mid-nineteenth century saw the gradual urbanization of San Diego, thanks to the development and promotion of the area by Alonzo Horton, who offered free lots to anyone who would build a house worth $500. The Santa Fe Railroad began construction in San Diego in 1880, with the first trains arriving in 1882. Later that decade, branch lines were built to connect such agricultural communities as Escondido, Chula Vista, National City, and Otay (Save Our Heritage Association 2007; City of Chula Vista 2020; Whetstone 1963). After several population booms, the city of San Diego reached a population of

35,000 by 1888. The population fell again to 17,000 in 1890, after a devastating real estate market crash (City of San Diego 2007). The mountain and desert areas of the eastern side of the county remained sparsely populated in comparison. Farming was an economic mainstay in areas such as the inland valley surrounding El Cajon, while mining—first gold and later gemstones—drew settlers and industry to communities in the eastern section of the county (City of El Cajon 2020; San Diego Natural History Museum 2020).

The twentieth century brought further development to the San Diego area and neighboring coastal communities. Intent on modernizing the city, businessman John D. Spreckels oversaw a downtown building campaign that produced a number of multiple-story commercial buildings. Meanwhile, improvements in public transportation connected downtown to outlying areas where residential, commercial, and institutional development flourished. Elsewhere, summer cottage retreats began to develop in the beach communities of Ocean Beach and La Jolla. In 1915, the Panama-California Exposition was held in San Diego in celebration of the opening of the Panama Canal. The exposition was, among other things, a showcase for Spanish Colonial Revival-style architecture, as envisioned by the event's chief architect Bertram Goodhue (City of San Diego 2007). In the wake of the exposition, many local architects adopted the style, reshaping Southern California's residential, commercial, and institutional architecture.

During the 1920s, San Diego County's population grew from 112,248 to 209,659 residents. Much of this growth took place in the city of San Diego, where the population rose by more than 70,000 during the same period. Much of the population and economic growth of the interwar years owed to a rapidly expanding military presence in San Diego. By the eve of World War II, San Diego had been transformed into a "Gibraltar of the Pacific," thanks to the establishment of ten bases and training installations established in the city (City of San Diego 2007: 22-23).

Like much of the rest of California, San Diego County experienced a massive population boom after World War II. As defense workers and decommissioned GIs settled in the county, suburban growth transformed the growing San Diego metropolitan area. New residential and commercial development rapidly filled many of the former farmlands that had separated San Diego from outlying towns and cities (City of San Diego 2007). About three decades after the war's conclusion, the county's 485 miles of interstate freeways had incorporated many former agricultural communities into the San Diego metropolitan area (Smith 2017). Long-established localities of the county's North Inland region, such as Santee and El Cajon, grew into bedroom communities serving San Diego proper (City of Santee 2014; City of El Cajon 2020). Carlsbad, Oceanside and other North Coastal-region communities experienced a similar expansion in the latter half of the twentieth century. Anchored by a large military presence, thriving tourism industry, and proximity to the United States-Mexico border, the county's population multiplied by a factor of six between 1950 and 2010, topping a population of 3 million.

Ventura County

When California's original 18 counties were established in February 1850, present-day Ventura County made up the southernmost potion of Santa Barbara County. The area remained a sparsely populated cattle-ranching region into the 1860s. However, in the aftermath of the drought of the 1860s, most of the ranchos were subdivided and sold to eastern investors who, in turn, sold the land to farmers. Around the time Ventura County was established in 1873, a courthouse and wharf were constructed at the town of Ventura, which had begun to grow around the old Spanish mission. Within a year of the county's formation, towns began to spring up in the coastal and valley areas west of the present Conejo Grade. These included Port Hueneme and Ojai in 1874, and Santa Paula in 1875 (Ventura Weekly 2005).

In 1887, the construction of the Saugus to Santa Barbara Branch (or Santa Paula Branch) of the Southern Pacific Railroad connected Ventura County to the national rail network. The coming of the railroad encouraged settlement of the rural, agricultural Santa Clara River Valley, and provided access to a distribution network for the valley's citrus and other products (Sperry 2006). The establishment of the towns of Piru, Fillmore, and Montalvo accompanied the Southern Pacific's arrival (Ventura Weekly 2005). Service to Ventura was inaugurated in late April 1887. Logistical and financial obstacles slowed the line's construction north of Santa Barbara, but Southern Pacific completed the route to San Francisco in 1900 (Sperry 2006).

Rail service laid the groundwork for the county's two related booms in the early twentieth century. The first of these shaped the oil industry. Although the county's petroleum deposits had long been used by the Chumash and were noted by Americans in the 1850s, the local petroleum industry did not get off the ground until around the end of the nineteenth century. During this period, much of the exploitation of Ventura County's petroleum deposits took place along the Ventura and Santa Clara rivers (Sperry 1906; Ventura Weekly 2005). In 1890, the Union Oil company of California was founded in Santa Paula, and the city was soon regarded as the "center of the [state's] oil industry" (Belknap 1968). In the 1910s, major oil firms, such as Shell and General Petroleum, established a presence in the county. In turn, the growth of the petroleum industry helped to lure an influx of new settlers in the 1920s (Sperry 1906; Ventura Weekly 2005). That decade, the county's population nearly doubled to 55,000 residents. The population boom was particularly beneficial to Ventura, where the population rose by 179 percent in ten years, reaching 11,600 in 1930.

During the 1930s, improvements to the county's commercial shipping facilities laid the groundwork for the establishment of major military installations. The Oxnard Harbor District was established and initiated the construction of a commercial harbor to replace the Hueneme wharf, which was lost to a storm in 1938. After the start of World War II, the United States took control of the entire port, deepened the harbor, and, in 1945, renamed the facility as the Naval Construction Battalion Center. During the war, the Construction Battalion built the first air strip at Point Mugu. The naval installation eventually grew into Naval Base Ventura County, which has been a major economic force in Ventura County for the past eight decades (Scheid 1995).

Ventura County's dramatic growth in the decades following World War II was closely related to the development of the state's freeway network. In the East County region, the upgrading of U.S. Highway 101 to a freeway allowed for the development of 10,000 acres in the Conejo Valley, including master-planned communities in and around Thousand Oaks. Although the northward progress of freeway construction was temporarily stalled outside Camarillo, improvements to U.S. Highway 101 were completed to Ventura in 1962. As industry settled in the region, Ventura County took in unprecedented numbers of new residents and, in 1964, was the fastest growing county in the United States (Triem 1985). Once-sleepy Oxnard was perhaps the biggest beneficiary of the county's population surge. A town of 8,500 in 1940, by 1970, it had grown to a city of about 70,000, becoming the county's largest population center.

Delta Islands

The Plan Area includes four islands and reclamation districts located in the lower Sacramento-San Joaquin River Delta region: Bacon and Bouldin islands and Webb and Holland tracts. In the late nineteenth and early twentieth centuries, these areas were subject to land reclamation projects that converted the often-marshy islands and riverbanks of the Delta region to a productive farming district.

Agricultural development in the Delta region began in earnest in the 1850s, after the federal Swampland Act of 1850 authorized state government to sell wetlands areas owned by the

national government to prospective farmers. Land sales under the law began, and the most successful early reclamation efforts were typically in the upper Delta region, where solid soils and the presence of natural levees made flood control comparatively easy (Lund et al. 2007).

Many low-lying islands and riverbanks in the central and lower Delta areas were particularly susceptible to flooding and initially proved resistant to permanent reclamation. In the late 1860s and 1870s, the business of Delta-region reclamation changed dramatically. Improved engineering techniques and the introduction of heavy earth-moving machinery allowed for the dredging of streambeds and building of large earthen levees. Coupled with lifting of the 640-acre limit on swampland land sales, these advances opened the door to large-scale reclamation in the lower Delta. Because the mechanized methods required large capital investments, reclamation by individual operators nearly ceased and most new tracts were established by well-capitalized land companies, who leased the improved land as small farms (Lund et al. 2007).

The early history of Bacon Island illustrates the difficulties even well-financed reclamation efforts faced in the marshy central and lower Delta areas. San Francisco businessman Henry D. Bacon acquired the island by the 1870s and encircled it with the first of many levee systems. The peat soil on which he erected the levels proved vulnerable to land subsidence, however, and in 1873, the barriers required rebuilding with soils excavated from the island's outer rim. These levees, too, eventually failed, and in 1915 the California Delta Farms Company undertook a more robust reclamation program, rebuilding the levees using more sophisticated dredging equipment than Bacon had used. With the completion of this project, flood-prone portions of the island were protected from inundations and made suitable for farming (Anonymous 2009; San Joaquin County Office of Emergency Services 2020; Thompson 1957). California Delta Farms was also responsible for the reclamation of Holland Tract and several additional islands and tracts in the early twentieth century (Thompson 1957).

Even with periodic levee improvements, the Delta region remained vulnerable to seasonal flooding. In the early twentieth century, state and federal programs sought to implement a series of new flood control and navigation improvement measures. These included the dredging of the Sacramento River and other channels, implementation of mandated levee heights and construction of the Yolo Bypass, which allowed for the diversion of flood waters to certain farmlands (Lund et al. 2007). These flood control programs coincided roughly with state investments in bridge and roadway construction in the first three decades of the twentieth century. In the postwar years, economic life in the Delta remained centered mainly on agriculture, but recreational uses on the region's many waterways were of growing importance to the regional economy. To this day, agriculture and recreation are the predominant uses of the northern Delta region (ICF 2016).

Metropolitan Water District

The California Legislature formed Metropolitan in the 1920s to oversee matters related to water supply for southern California's growing population. Introduced in 1925 by state Senators A.B. Johnson and Ralph Swing, Senate Bill 178 would have allowed for the establishment of metropolitan water districts. Although the bill passed the Senate, the Assembly did not adopt it. Two years later, a new bill (S. 132) authorizing the formation of Metropolitan passed the Legislature and was signed into law by Governor Clement C. Young as the Metropolitan Water District Act. Metropolitan was incorporated on December 6, 1928. The Metropolitan's first board of directors represented the cities of Anaheim, Beverly Hills, Burbank, Colton, Glendale, Los Angeles, Pasadena, San Bernardino, San Marino, Santa Ana, and Santa Monica (AECOM 2015).

F.E. Weymouth assumed the dual role of general manager and chief engineer of Metropolitan in July 1929. By the end of the year, Metropolitan's service area covered 600 square miles. In April

1930, under Weymouth's leadership, Metropolitan and the United States Department of the Interior entered a contract for the delivery of water to Metropolitan. The next year, Metropolitan assumed management of the engineering of the Colorado River Aqueduct (AECOM 2015).

The mid-twentieth century was a time of marked expansion for Metropolitan. By the 1940s, Metropolitan had too much water and too few customers, conditions which threatened Metropolitan's financial security. To remedy this, Metropolitan sought new customers, and by the early 1960s forged agreements with the San Diego County Water Authority, Pomona Water District, and several local authorities to manage their water supplies. By 1965, 26 public agencies had joined Metropolitan, and its service area covered more than 4,500 miles (AECOM 2015). Presently Metropolitan operates the Colorado River Aqueduct, sixteen hydroelectric facilities, nine reservoirs, and five water treatment plants. Metropolitan delivers water from the Colorado River and northern California to 19 million customers in southern California (Metropolitan 2020).

1.3 Ethnographic Setting

The Plan Area encompasses the traditional territory of numerous Native American ethnographic groups, including: Cahuilla, Chemehuevi, Chumash, Cupeño, Gabrieleño, Halchidoma, Juaneño, Kumeyaay, Luiseño, Miwok, Mojave, Serrano, Tataviam, Yokuts, and Yuman/Quechan. A brief ethnographic description of each tribe is presented below.

Cahuilla

Traditional Cahuilla ethnographic territory extended west to east from the present-day city of Riverside to the central portion of the Salton Sea in the Colorado Desert, and south to north from the San Jacinto Valley to the San Bernardino Mountains (Heizer 1978; Bean and Smith 1978; Kroeber 1925). The term Cahuilla likely derived from the native word *káwiya,* meaning "master" or "boss" (Bean and Smith 1978:575). The Cahuilla are speakers of a Cupan language, part of the Takic linguistic subfamily of the Uto-Aztecan language family. It is thought that the Cahuilla migrated to southern California approximately 2,000 to 3,000 years ago, most likely from the southern Sierra Nevada mountain ranges of east-central California with other Takic speaking social groups (Moratto 1984:559). Cahuilla social organization was hierarchical and contained three primary levels: cultural nationality, patrimoieties: Wildcats (*tuktum*) and Coyotes (*'istam*), and sibs or patrilineal clan (Bean and Smith 1978:580). Cahuilla villages were usually located in canyons or on alluvial fans near a source of accessible water. Each lineage group maintained their own houses (*kish*) and granaries, and constructed ramadas for work and cooking. Other structures included sweat houses and song houses, and ceremonial houses or *kíš ?ámnawet.* Villages were often spaced out and different resource areas would be controlled by a specific lineage (Bean 1990:2). Cahuilla subsistence included hunting, sometimes communal, various game such as mountain sheep, cottontail, and jackrabbit and birds such as quail, duck, and dove using tools such as bow and arrow, traps, nets, slings and binds. Foodstuffs were processed using stone grinding implements like mortars/pestles and manos/metates then stored in finely woven baskets, large granaries, or pottery vessels. Bean (1978:578) has noted the use of some agricultural techniques and the Romero Expedition (1823-24) noted the Cahuilla growing corn, pumpkins, and beans in small, localized gardens.

Chemehuevi

The Chemehuevi are the southernmost of 16 groups of Southern Paiute peoples (Kelly and Fowler 1986), and the only non-Yuman speakers living along the lower Colorado River at the time of European contact. The traditional territory of the Chemehuevi was an extensive area

southwest of Las Vegas, including portions of the eastern Mojave Desert of California. The vast Chemehuevi territory contains some of the driest deserts in the west, and the traditional Chemehuevi subsistence system was the most attuned to desert resources. The desert living Chemehuevi practiced a relatively nomadic hunting/gathering way of life, with larger settlements near reliable water sources, but no permanent villages. Groups moved with the seasons, arriving to harvest plant foods as they matured and hunting primarily small game. Housing was typically of brush erected to protect inhabitants from the harsh sun and wind (Kroeber 1925:597–598; Laird 1976:5). Several foods, including dried meats, dried melon and squash, agave hearts, and various seeds, were stored in specially prepared baskets, earth pits, and caves. In the protohistoric and historical periods, the Chemehuevi traveled extensively through the deserts and as far west as the Pacific coast to exchange goods and obtain marine shell ornaments and raw materials (Kelly and Fowler 1986:377). Traditional Chemehuevi subsistence was based on hunting and gathering, although the groups living along the lower Colorado River adopted floodplain horticulture like that practiced by the Mohave and Quechan (Kroeber 1925; Roth 1976). The Colorado River Chemehuevi, though, retained a greater reliance on hunting and gathering than their Yuman neighbors.

Chumash

The Ventureño Chumash are so called after their historic period association with Mission San Buenaventura (Grant 1978). The Chumash spoke six closely related languages, which have been divided into three branches—Northern Chumash (consisting only of Obispeño), Central Chumash (consisting of Purisimeño, Ineseño, Barbareño, and Ventureño), and Island Chumash (Jones and Klar 2007:80). Early Spanish accounts describe the Santa Barbara Channel region as heavily populated at the time of contact. Coastal Chumash lived in hemispherical dwellings made of tule reed mats, or animal skins in rainy weather. These houses could usually lodge as many as 60 people (Brown 2001). The acorn was an especially important resource. Acorn procurement and processing involved the manufacture of baskets for gathering, winnowing, and cooking and the production of mortars and milling stones for grinding. Bow and arrow, spears, traps and other various methods were used for hunting (Hudson and Blackburn 1979). The tomol, or wooden plank canoe, was an important tool for the procurement of marine resources and for maintaining trade networks between Coastal and Island Chumash. Sea mammals were hunted with harpoons, while deep-sea fish were caught using nets and hooks and lines. Shellfish were gathered from beach sands using digging sticks, and mussels and abalone were pried from rocks using wood or bone wedges. The Chumash also manufactured various other utilitarian and nonutilitarian items. Eating utensils, ornaments, fishhooks, harpoons, and other items were made using bone and shell. Olivella shell beads were especially important for trade (Hudson and Blackburn 1979).

Cupeño

The Cupeño occupied the area surrounding the headwaters of the San Luis Rey River. The name Cupeño likely came from the word *kupa-ngakitom*, meaning Kupa people (Kroeber 1925). Cupeño social organization fell into two moieties (groups), Istam (Coyotes) and Tuktun (Wildcats). These moieties were further separated into seven different patrilinear clans, three Wildcat clans and four Coyote clans (Gifford 1918; Kroeber 1925). Each clan had a hereditary chief of paternal descent and a hereditary assistant who carried messages, supervised food preparation, and received guests for the chief. Further, each of the seven clans were part of one of three “parties” (Gifford 1918). Cupeño religion revolved around the creation myth of two original deities, Tumayowi and Mukat. The Cupeño participate in several religious ceremonies, including: the Toloache initiation, the *morahash* whirling dance, and the girls’ adolescence rite. Mourning ceremonies and eagle killing ceremonies were conducted by the moieties (Kroeber 1925). Subsistence for Cupeño included hunting and gathering of plants and animals respectively.

Processing of food could be with a rectangular metates in a back and forth grinding motion or use of a special club, as for pounding agave or yucca leaves. Meat might be pulverized for the toothless (Schroth 1996).

Gabrieleño/Tongva

The Tongva, also called Gabrieleño by early Spanish explorers due to a connection to the San Gabriel Mission (Kroeber 1925; Bean and Smith 1978:538), occupied the greater Los Angeles Basin and three Channel Islands; San Clemente, San Nicolas, and Santa Catalina. The Tongva language belongs to the Takic branch of the Uto-Aztecan language family, which can be traced to the Great Basin region (Mithun 2004). The Tongva established large, permanent villages in the fertile lowlands along rivers and streams, and in sheltered areas along the coast, stretching from the foothills of the San Gabriel Mountains to the Pacific Ocean. Houses constructed by the Tongva were large, circular, domed structures made of willow poles thatched with tule that could hold up to 50 people (Bean and Smith 1978). Other structures served as sweathouses, menstrual huts, ceremonial enclosures, and probably communal granaries. Cleared fields for races and games, such as lacrosse and pole throwing, were created adjacent to Tongva villages (McCawley 1996: 27). The Tongva subsistence economy was centered on gathering, hunting, and fishing. The tribe utilized mountains, foothills, valleys, deserts, riparian, estuarine, and open and rocky coastal eco-niches. Acorns were the staple food, which were supplemented by the roots, leaves, seeds, and fruits of a wide variety of flora (e.g., islay, cactus, yucca, sages, and agave). These would be processed using hammerstones and anvils, mortars and pestles, manos and metates, and a variety of other tools. Birds, reptiles, insects, and large and small mammals were hunted with bow and arrow, traps, digging sticks and other tools. Fresh water and saltwater fish as well as shellfish were also consumed. The use of oceangoing plank canoes (*ti'at*) allowed for far reaching fishing, travel and trade (Kroeber 1925:631–632; Blackburn 1963; Bean and Smith 1978:546; McCawley 1996: 119–123, 128–131).

Halchidoma

The Halchidhoma (also known as the Panya) are a Yuman-speaking people who, until about 1825, lived along the Colorado River between the present-day cities of Blythe and Needles. The Halchidhoma were known to travel and trade over great distances. The Coco-Maricopa Trail, leading west from a portage point across the Colorado River adjacent to the city of Blythe, linked the Halchidhoma with the Pacific coast (Dobyns et al. 1963). Ceramic seriation and radiocarbon dates from marine shell artifacts indicate that an extensive trade network between the Pacific coast and the lower Colorado River region was established by at least 1100 B.P. (Sample 1950). The Halchidhoma traded with the Cahuilla, Hualapai, Papago, and Pima of Arizona, and were closely allied with the Maricopa (Bean and Vane 1978). The Halchidhoma were frequently in conflict with their Colorado River neighbors, the Quechan and Mohave (e.g., Bean and Vane 1978; Kroeber 1925). The Halchidhoma established strong alliances with the Yuman-speaking Maricopa and Cocopa peoples who lived to the east, along the Gila River. Ultimately, the Halchidhoma went to live with and intermarried with their allies the Maricopa, and are, therefore, poorly documented in the ethnographic literature.

Juaneño

The name Juaneño refers to the people associated with the Mission San Juan Capistrano during Spanish Colonial times (Kroeber 1925; Bean and Shipek 1978; Stever 2017). Acjachemen refers to contemporary Juaneño and coastal Luiseño who identify as descendants of the indigenous people living in the local area. The language of the Juaneño, shares a dialect with the Luiseño, and like the Gabrieleño, was derived from the Takic family; it is part of the larger Uto-Aztecan

language stock. Groups of Juaneño resided in permanent, autonomous villages and associated seasonal camps. Villages were composed of a dominant clan who maintained access to hunting and resource collecting areas (Bean and Shipek 1978). The politically independent villages ranged from 35 to 300 in size and were led by a hereditary chief in conjunction with an advisory council that conducted economic, ceremonial and warfare authorities together. Juaneño villages were situated near viable water and food sources. Acorns were a dietary staple and were prepared in various ways. Other important food sources included grass and other seed types, manzanita, chia, pine nuts, and yucca, and wild game such as deer, rabbit, ground squirrel, quail, and other fowl (Stever 2017). The mythological figure Chinigchinich was the center of the Juaneño religion. The religious beliefs of the Juaneño describe the sagas of heroes who originated from the stars. Lake Elsinore is part of the creation myth and religion of the Juaneño and Luiseño. The Elsinore Hot Springs is significant to the Juaneño and Luiseño and is where the religious leader Wiyot became ill and died (Grenda 1997: 22).

Kumeyaay

Kumeyaay occupied the Pacific Coast from central San Diego County southward into Baja California and eastward into Imperial County, a region with tremendous environmental variation and resource zones. The Kumeyaay were referred to by Europeans as the Diegueño (Gifford 1931; Carrico 1987; Shipek 1987). Linguistic studies support the division of the Kumeyaay people into northern (Ipai) and southern (Tipai) dialect groups (Gifford 1931; Luomala 1978). Prior to European contact, the boundary between the Kumeyaay groups was not rigid and the distinction between them likely existed as a gradient rather than a clear division of cultural and political units (Carrico 1987). Kumeyaay territory was divided among bands, and within each band's territory there would be a primary village and several secondary homesteads located along tributary creeks (Shipek 1982:297). Each band was composed of five to 15 kinship groups called *sib* or *shiimul* and had a designated band leader, or *Kwaaypaay*, who directed ceremonies, acted as disciplinary head, and advised on marriage and family matters. The band leader would also have an assistant who acted as a messenger (Kroeber 1925:719; Luomala 1978; Shipek 1982, 1987). Religious mythologies shared by Kumeyaay groups include abstract spiritual concepts and a higher creator-god. Several sacred landmarks were designated for good, healing, and peace, the most important of which was Kuuchama, or Tecate Peak (Shipek 1985). Ceremonies included puberty initiation rites, marriage, naming, cremation, and mourning (keruk). While clothing was minimal, special costumes and adornments were worn during ceremonies (Luomala 1978:599). A main winter village would consist of semi-subterranean and roughly circular structures with wooden pole framework and brush thatch roofs. Other structures included family-owned granaries, a village-owned brush ceremonial enclosure, sweat lodges, and a semi-circular enclosure for the *keruk* mourning ceremony. Summer camps contained ramadas and windbreaks which were built into trees or rock shelters (Luomala 1978). Subsistence activities depended on the season and location. These included fishing, hunting, gathering, and plant cultivation. Acorns and other seeds were gathered, processed, and stored in woven baskets or pottery (Jordan and Shennan 2002). Fishing could be done with hooks or nets and bows from tule boats, while shellfish would be gathered from sandy beaches or rocky shores (Luomala 1978:601). Both birds (doves, quail, and geese) and small game (rabbits and woodrats) were hunted using throwing sticks, bow and arrow, and nets (Luomala 1978:601).

Luiseño

The Luiseño occupied territory in what is currently north San Diego County, southwestern Riverside County, and southern Orange County. Luiseño territory extended along the coast between Aliso Creek and Agua Hedionda Creek and extended inland to Santiago Peak in the north and the east side of Palomar Mountain in the south, including Lake Elsinore and the Valley

of San Jose (Bean and Shipek 1978). The term Luiseño was applied to the Native Americans who were administered by the Spanish from Mission San Luis Rey and later used for the Payomkawichum nation that lived in the area where the mission was founded (Mithun 2001:539-540). The Luiseño language belongs to the Cupan group of the Takic subfamily of languages (previously known as Southern California Shoshonean), and the Uto-Aztecan language family from the Great Basin (Driver 1969; Bean and Shipek 1978). The center of the Luiseño religion was Chinigchinich, which centered around sagas of heroes who were originally from the stars. Religious rituals took place in a brush enclosure that housed a representation of Chinigchinich. Ritual ceremonies included puberty initiation rites, burial and cremation ceremonies, hunting rituals, and peace rituals (Bean and Shipek 1978). The Luiseño lived in permanent, politically autonomous villages and associated seasonal camps. Each village controlled a larger resource territory and maintained ties to other villages through trade and social networks. Trespassing within another village's resource area was cause for war (Bean and Shipek 1978). Villages consisted of dome-shaped dwellings (*kish*), sweat lodges, and a ceremonial enclosure (*vamkech*). Leadership within the villages focused on the chief, or Nota, and a council of elders (puuplem). The chief controlled religious, economic, and war-related activities (Bean 1978:109-111; Bean and Shipek 1978). Luiseño subsistence was focused on the acorn and supplemented by the gathering of other plant resources and shellfish, fishing, and hunting. Acorns were leached and served in various ways. Seeds were ground. Prey included deer, antelope, rabbit, quail, ducks and other birds. Fish, sea mammals, and shellfish were taken from the shore or caught in rivers and creeks using dugout canoes (Bean and Shipek 1978).

Miwok

The Plains Miwok are members of the larger Miwokan subgroup of the Utian language family inhabiting an area along the lower reaches of the Mokelumne and Cosumnes rivers and both banks of the Sacramento River roughly from the city of Rio Vista north to Freeport (Levy 1977). Political organization centered on small tribelets and several distinct settlements. Each tribelet was headed by a chief, and each settlement had a representative of the chief overseeing local affairs. Winter settlements included thatched, conical houses and semi subterranean earth-covered dwellings with central hearth and an earth oven for cooking purposes. In summer, a circular brush hut was constructed for use in mourning ceremonies. Other structures included sweathouses for purification, conical menstrual huts, and grinding houses (Levy 1977). Miwok social organization was based on affiliation with one of two spiritual and social categories: land and water. These categories are known as moieties. These groups were not associated specifically with resource procurement. Moieties were typically exogamous and played an important role in many ceremonies (Levy 1977). Plains Miwok subsistence practices centered on the use of acorns and of seeds as primary plant food sources and on hunting of mule deer, tule elk, pronghorn antelope, and various species of waterfowl. Hunting was typically done with a sinew-backed bow and arrow and fishing with various types of nets. Seines were used in large rivers and sloughs where the pace of water flow was slow. Hook and line was typically used to take sturgeon, while harpoons were the most common implement for salmon fishing (Levy 1977). The Plains Miwok made both twined and coiled basketry, usually from willow and redbud. They also manufactured tule mats used as floor covering. Woven blankets were often made of rabbit skin strips or feathers attached to cordage woven from plant fibers. Tule balsa rafts were crafted and used to navigate rivers and sloughs (Levy 1977).

Mojave

Most of the Mojave population lived along both sides of the lower Colorado River from south of Davis Dam to Topock, and also extended their territory south into the Chemehuevi and Colorado valleys, and intermittently controlled areas as far south as the Palo Verde Valley (cf. Kroeber

1959). The Mojave language belonged to the Yuman language family, part of the larger Hokan language phylum (Laylander 2010). According to Kroeber (1925) the Mojave tribes consisted of patrilinear familial clans. During much of the year, the Mojave lived in villages on terraces above the Colorado River, only moving down onto the floodplain in the spring to plant crops after the seasonal floods. Like other lower Colorado River peoples, the Mojave relied on floodplain agriculture, fishing, and gathering for subsistence. The Mojave were hunters of deer, rabbit and other small game, which also were often taken in traps, snares, and communal drives. When the high waters of the Colorado River receded, the Mojave caught a variety of Colorado River fish species by driving them into shallow sloughs or trapping them in seines (Kroeber 1925:737; Stewart 1957). They travelled long-distances, like other Colorado River tribes and they participated in a trade network extending east to the Pueblos of Arizona and west to the Pacific coast (Bean and Vane 1978). Mojave songs seem to act as a means of storing and transferring important landscape knowledge; they are, among other things, a collection of meaningfully constituted mental maps of the Mojave territory and beyond (Stoffle et al. 1997:235).

Serrano

The Serrano occupied an area in and around the San Bernardino Mountains. Their territory extended west of the Cajon Pass, east past Twentynine Palms, north of Victorville, and south to Yucaipa Valley. The Serrano language is part of the Serran division of a branch of the Takic family of the Uto-Aztecan linguistic stock (Mithun 2001:539, 543). The two Serran languages, Kitanemuk and Serrano, are closely related. (Kroeber 1925:611). Most Serrano lived in small villages located near water sources (Bean and Smith 1978a:571). A village was usually composed of at least two lineages. The Serrano were loosely organized along patrilineal lines and associated themselves with one of two exogamous moieties or "clans"—the Wahiyam (coyote) or the Tukum (wildcat) moiety. Houses were circular and domed, constructed of willow branches and tule thatching. Many of the villages had a ceremonial house, used both as a religious center and the residence of the lineage leaders. Additional structures in a village might include granaries and a large circular subterranean sweathouse typically built along streams or pools. The subsistence economy relied on collecting plant goods, especially seeds like acorn nuts, black oak, and piñon nuts, but also roots, shoots, and blooms. Additionally, Serrano would hunt large and small mammals, including mountain sheep, deer, antelope, rabbits, small rodents, and various birds, particularly quail, and occasionally fish (Bean and Smith 1978a:571). The Serrano used fire as a management tool to increase yields of specific plants, particularly chía. Trade and exchange were an important aspect of the Serrano economy. Those living in the lower-elevation, desert floor villages traded foodstuffs with people living in the foothill villages who had access to a different variety of edible resources.

Tataviam

Tataviam territory included the upper Santa Clara River from Piru Creek eastward, extending over the Sawmill Mountains to the southwest edge of the Antelope Valley, making much of their territory situated on sloped areas surrounded by desert (King and Blackburn 1978; Stickel and Weinman-Roberts 1980). Their territory was bounded on the west and north by various Chumash groups; on the south by the Tongva (Gabrieliño and Fernandeño, though some Tataviam were also identified as Fernandeño because of their association with Mission San Fernando); and to the east by the Kitanemuk and Serrano. The Tataviam were not well documented by early ethnographers. However, researchers today generally agree the Tataviam spoke an Uto-Aztecan language, most likely a Takic language (Hudson 1982). Archaeological evidence from Bower's Cave – located between Newhall and Piru – combined with ethnographic evidence suggest their ritual organization was similar to both the Chumash and Tongva, whose lifestyles were distinct from one another (King and Blackburn 1978). Dwellings would include cool, domed thatch

shelters under shady overhanging rocks (Eargle 2008). Rock art around these areas included representational and abstract pictographs, incised pictographs, petroglyphs, and cupules (Knight 2010), with small settlements often ancillary to large villages. The Tataviam were a hunting and gathering society who relied on yucca, which they would roast over a fire or in an earth oven (Garza 2012), and acorns, which they would harvest and grind (Eargle 2008; Garza 2012). Additional food resources included sage seeds, berries, small mammals, deer, and possibly antelope.

Yokuts

The San Joaquin Valley was historically occupied by the Penutian-speaking Yokuts (Kroeber 1925; Wallace 1978; Latta 1999). The Yokut territory can be broken into the Northern Valley, Southern Valley, and Foothill Yokuts (Wallace 1978). The distinction between the three Yokuts groups is primarily based on language dialect (Mithun 2001). The Yokuts established permanent villages. Residential structures were most often of two types: single-family dwellings and larger communal residences that housed ten families or more. Villages frequently included mat-covered granaries and a sweathouse (Mithun 2001). The basic economic unit among the Yokuts was the nuclear family. Totemic lineages were based on patrilineal descent. Totem symbols were passed from father to offspring and families sharing the same totem formed an exogamous lineage. Totems were associated with one of two moieties, a division which played a role during ceremonies and other social events (Wallace 1978). Yokuts were split into self-governing local groups, most often including several villages. Each group had a chief who directed ceremonies, mediated disputes, handled punishment of those doing wrong, hosted visitors, and provided aid to the impoverished (Wallace 1978). Shamans were also an important part of Yokuts village life. The Yokuts' shamans gained power through a dream or vision, providing them the ability to heal the sick and serve as the primary role in religious life (Wallace 1978). Yokuts technology relied primarily on tule, which was used to make baskets cradles, boats, housing, and many other items. Yokuts subsistence also relied on tule. The roots and seeds were gathered, dried, and pounded into a flour. Tule rafts allowed for fishing with nets spears, basket traps, and bow and arrow. Yokuts also gathered mussels and hunted turtles (Wallace 1978). Yokuts also engaged in trade with their neighbors. Since acorns were not readily available in the Yokuts ethnographic territory, some Yokuts tribes journeyed to neighboring groups to trade for them. Marine shells secured through trade with coastal peoples were used in the manufacture of shell money and personal adornment items (Wallace 1978).

Yuman/Quechan

Quechan is a variation on the names Kwichyan or Kuchiana, but this group is also commonly known as the Yuma; today they refer to themselves as Kw'tsan. Quechan language is considered a river dialect of the Yuman Language Family, part of the larger Hokan language phylum (Laylander 2010). The ethnographic territory traditionally associated with the Quechan, now divided between the states of California and Arizona, is centered around the confluence of the Colorado and the Gila rivers, extending several miles north and south along the Colorado and east along the Gila. Settlements consisted of extended hierarchical family groups that were widely dispersed along the riverbanks. These settlements shifted throughout the year. Smaller groups would disperse into lower areas during farming seasons and reconvene into larger groups on higher ground during flood seasons (Bee 1983:86-88). Subsistence patterns included riverine agriculture cultivated in the richly silted river bottomlands following the recession of the spring floods which provided a relatively high yield of corn, beans, and squash (Bee 1983:86– 87; Esquinca 2019:106). The Quechan also relied on the gathering of wild foods, the most important of which were mesquite and screw-bean pods, although a variety of other wild plants also were collected (Bee 1983:87). Fishing would also be done in the river or in the delta (Esquinca 2019).

The Quechan considered warfare to be ceremonial and it was common for small party raids to be conducted against their neighbors. Every few years, there might also be warfare conducted by larger war parties. Tribes were advised by both a war chief and a peace chief (James and Graziani 1975).

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Appendix E

Roadway Construction Noise Model (RCNM)

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/02/2020
Case Description: MWD Sample Phase No. 1

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
25 Feet	Residential	65.0	55.0	45.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Excavator	No	40	80.7	25.0		0.0
Dozer	No	40	81.7	25.0		0.0
Jackhammer	Yes	20	88.9	25.0		0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	86.7	82.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	87.7	83.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer	94.9	87.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	94.9	90.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
50 Feet	Residential	65.0	55.0	45.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)

Excavator	No	40	80.7	50.0	0.0	
Dozer	No	40	81.7	50.0	0.0	
Jackhammer	Yes	20	88.9	50.0	0.0	

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer	88.9	81.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	88.9	84.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
100 Feet	Residential	65.0	55.0	45.0

Equipment

		Impact	Spec Usage	Actual Lmax	Receptor Lmax	Estimated Distance	Shielding
Description	Device		(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator		No	40	80.7	100.0		0.0
Dozer		No	40	81.7	100.0		0.0
Jackhammer		Yes	20	88.9	100.0		0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	75.6	71.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer	82.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	82.9	78.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/02/2020
Case Description: MWD Sample Phase No. 2

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
25 Feet	Residential	65.0	55.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	25.0	0.0
Front End Loader	No	40		79.1	25.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	87.7	83.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	85.1	81.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	87.7	85.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
50 Feet	Residential	65.0	55.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Noise Limits (dBA) Day Leq	Noise Limits (dBA) Evening Lmax	Noise Limits (dBA) Evening Leq	Noise Limits (dBA) Night Lmax	Noise Limits (dBA) Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Noise Limit Exceedance (dBA) Day Leq	Noise Limit Exceedance (dBA) Evening Lmax	Noise Limit Exceedance (dBA) Evening Leq	Noise Limit Exceedance (dBA) Night Lmax	Noise Limit Exceedance (dBA) Night Leq
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	81.7	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
100 Feet	Residential	65.0	55.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	100.0	0.0
Front End Loader	No	40		79.1	100.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Noise Limits (dBA) Day Leq	Noise Limits (dBA) Evening Lmax	Noise Limits (dBA) Evening Leq	Noise Limits (dBA) Night Lmax	Noise Limits (dBA) Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Noise Limit Exceedance (dBA) Day Leq	Noise Limit Exceedance (dBA) Evening Lmax	Noise Limit Exceedance (dBA) Evening Leq	Noise Limit Exceedance (dBA) Night Lmax	Noise Limit Exceedance (dBA) Night Leq
Dozer	75.6	71.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/02/2020
Case Description: MWD Sample Phase No. 3

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
25 Feet	Residential	65.0	55.0	45.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Excavator	No	40		80.7	25.0	0.0
Grader	No	40	85.0		25.0	0.0
Dozer	No	40		81.7	25.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	86.7	82.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	91.0	87.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	87.7	83.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	91.0	89.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
50 Feet	Residential	65.0	55.0	45.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)

Excavator	No	40	80.7	50.0	0.0	
Grader	No	40	85.0	50.0	0.0	
Dozer	No	40	81.7	50.0	0.0	

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	83.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
100 Feet	Residential	65.0	55.0	45.0

Equipment

			Spec	Actual	Receptor	Estimated
	Impact	Usage	Lmax	Lmax	Distance	Shielding
Description	Device	(%)	(dBA)	(dBA)	(feet)	(dBA)
Excavator	No	40		80.7	100.0	0.0
Grader	No	40	85.0		100.0	0.0
Dozer	No	40		81.7	100.0	0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	74.7	70.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	79.0	75.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	75.6	71.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.0	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/02/2020
Case Description: MWD Sample Phase No. 4

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
25 Feet	Residential	65.0	55.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	25.0	0.0
Generator	No	50		80.6	25.0	0.0
Front End Loader	No	40		79.1	25.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Noise Limits (dBA) Day Leq	Noise Limits (dBA) Evening Lmax	Noise Limits (dBA) Evening Leq	Noise Limits (dBA) Night Lmax	Noise Limits (dBA) Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Noise Limit Exceedance (dBA) Day Leq	Noise Limit Exceedance (dBA) Evening Lmax	Noise Limit Exceedance (dBA) Evening Leq	Noise Limit Exceedance (dBA) Night Lmax	Noise Limit Exceedance (dBA) Night Leq
Crane	86.6	78.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	86.7	83.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	85.1	81.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	86.7	86.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
50 Feet	Residential	65.0	55.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Crane	No	16	80.6	50.0	0.0								
Generator	No	50	80.6	50.0	0.0								
Front End Loader	No	40	79.1	50.0	0.0								

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	80.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.6	80.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
100 Feet	Residential	65.0	55.0	45.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Crane	No	16	80.6	100.0	0.0	
Generator	No	50	80.6	100.0	0.0	
Front End Loader	No	40	79.1	100.0	0.0	

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	74.5	66.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	74.6	71.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.6	74.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/02/2020
Case Description: MWD Sample Phase No. 5

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
25 Feet	Residential	65.0	55.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	25.0	0.0
Paver	No	50		77.2	25.0	0.0
Roller	No	20		80.0	25.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	83.2	80.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	83.2	80.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	86.0	79.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	86.0	84.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
50 Feet	Residential	65.0	55.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Paver	No	50	77.2	50.0	0.0
Paver	No	50	77.2	50.0	0.0
Roller	No	20	80.0	50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	80.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.0	78.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
100 Feet	Residential	65.0	55.0	45.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50	77.2	100.0	0.0	
Paver	No	50	77.2	100.0	0.0	
Roller	No	20	80.0	100.0	0.0	

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Paver	71.2	68.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	71.2	68.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	74.0	67.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.0	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Groundborne Noise and Vibration Modeling

Notes
The reference distance is measured from the nearest anticipated point of construction equipment to the nearest structure.

	Reference Level Inputs			
Equipment	PPV_{ref} (in/sec)	Lv_{ref} (VdB)	RMS_{ref} (in/sec)	Reference Distance
Vibratory Roller	0.21	94	0.050	25
Impact Pile Driver (upper range)	1.518	112	0.398	25
Impact Pile Driver (typical)	0.644	104	0.158	25
Large bulldozer	0.089	87	0.022	25
Caisson drilling	0.089	87	0.022	25
Loaded trucks	0.076	83	0.014	25
Jack hammer	0.035	79	0.009	25
Small bulldozer	0.003	58	0.001	25

	Vibration Contours		
	Distance to (feet)		
Equipment	0.100 PPV	0.200 PPV	94.0 VdB
Vibratory Roller	49	26	25
Impact Pile Driver (upper range)	296	158	164
Impact Pile Driver (typical)	136	72	71
Large bulldozer	22	12	12
Caisson drilling	22	12	12
Loaded trucks	19	10	8
Jack hammer	10	5	5
Small bulldozer	1	1	1

Sources
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Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment. FTA Report No. 0123. Washington, D.C. September 2018. https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/noise-and-vibration.
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THE METROPOLITAN WATER DISTRICT
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THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Metropolitan **Climate Action Plan**

Final Program Environmental Impact Report

Volumes 1 & 2

May 2022

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Metropolitan
Climate Action Plan

Final Program Environmental Impact Report

Volume 1

May
2022

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FINAL EXECUTIVE SUMMARY

ES.1 Introduction

This Final Program Environmental Impact Report (Final PEIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.), as amended. The Metropolitan Water District of Southern California (Metropolitan) is the lead agency for the environmental review of the proposed Climate Action Plan (CAP or proposed program) evaluated herein and has the responsibility for approving the proposed program.

As described in the *State CEQA Guidelines* (14 California Code of Regulations [CCR] 15000 et seq.), public agencies are charged with the duty to avoid or substantially lessen significant environmental effects, with consideration of other conditions, including economic, social, technological, legal, and other benefits. As required by CEQA, this Final PEIR assesses the potentially significant direct and indirect environmental effects of the proposed program, as well as the potentially significant cumulative impacts that could occur from implementation of the proposed program. This Final PEIR is an informational document only, the purpose of which is to identify the significant effects of the proposed program on the environment and to indicate the manner in which those significant effects can be avoided or significantly lessened (including feasible mitigation measures); to identify any significant and unavoidable adverse impacts that cannot be mitigated to below a significant level; and to identify reasonable and feasible alternatives to the proposed program that would avoid or substantially lessen any significant adverse environmental effects associated with the proposed program and achieve the fundamental objectives of the proposed program.

ES.2 Contents and Organization of Final Program EIR

This Final PEIR is prepared pursuant to Sections 15088, 15089, and 15132 of the *State CEQA Guidelines*. The Final PEIR, in compliance with Section 15132 of the *State CEQA Guidelines*, contains the following:

- Final PEIR, Volume 1
    - **Final Executive Summary.** The Final Executive Summary provides the contents and organization of the Final PEIR, a summary of procedural compliance with CEQA, and a brief description of the proposed program.
    - **Chapter 1: Responses to Comments Received.** This chapter includes a list of persons, organizations, and public agencies that provided written comments on the Draft PEIR and Draft CAP during the public review period. This chapter also includes a copy of the comments received during the public review process for the Draft PEIR and Draft CAP, as well as Metropolitan's responses to these written comments. Each comment is assigned a comment number, which corresponds to a response number and response.
    - **Chapter 2: Changes to the Draft PEIR and Draft CAP.** This chapter contains a summary of changes made to the documents since publication of the Draft PEIR and Draft CAP as a result of comments received. Revisions were made to clarify information presented in the Draft PEIR and only minor technical changes or additions have been made to the Draft CAP. These changes and additions to the PEIR and CAP do not raise important new issues related

to significant effects on the environment. Such changes are "insignificant," as the term is used in Section 15088.5(b) of the *State CEQA Guidelines*. This chapter describes changes that were made and presents textual changes made since public review as signified by strikethrough (~~strikethrough~~) where text is removed, and by underlined text (underline) where text is added for clarification.

- Final PEIR, Volume 2
  - **Chapter 1: Introduction to Final PEIR – Volume 2.**
  - **Chapter 2: Findings of Fact in Support of the Proposed Program and Statement of Overriding Considerations.** This chapter of the Final PEIR provides a summary of the impacts associated with the proposed program and the findings regarding alternatives to the proposed program. This chapter also includes a summary of the general findings, legal effects of the findings, and a summary of the independent review and analysis. Lastly, this chapter includes a Statement of Overriding Considerations, pursuant to *State CEQA Guidelines* Sections 15043 and 15093, which provides the program's economic, social, or other benefits for choosing to allow the occurrence of significant environmental effects that have not been avoided.
  - **Chapter 3: Mitigation Monitoring and Reporting Program.** This chapter of the Final PEIR provides the mitigation monitoring and reporting program (MMRP) for the proposed program. The MMRP is presented in table format and identifies mitigation measures for the proposed program, the party responsible for implementing the mitigation measures, the timing of implementing the mitigation measures, and the entity responsible for monitoring and reporting compliance with each mitigation measure.

ES.3 Contents and Organization of Final Program EIR

Metropolitan has complied with CEQA and the *State CEQA Guidelines* during preparation of the PEIR for the proposed program. Pursuant to Section 15082 of the *State CEQA Guidelines*, a Notice of Preparation (NOP) and Scoping Meeting was prepared and published by Metropolitan on June 23, 2020 and circulated to local, state, and federal agencies and to members of the public and other interested agencies, organizations, and individuals. The NOP was also sent to the State Clearinghouse at the California Governor's Office of Planning and Research to solicit participation from state agencies in determining the scope of the Draft PEIR. The State Clearinghouse assigned a state identification number (SCH No. 2020060450) to the Draft PEIR. A virtual scoping meeting was held on July 15, 2020 at 10:00 a.m. to present the proposed program, describe the environmental review process, and provide an opportunity for agency representatives and the public to assist Metropolitan in determining the scope and content of the environmental analysis for the PEIR. Pursuant to Section 15082 of the *State CEQA Guidelines*, recipients of the NOP for the proposed program were requested to provide responses within 30 days of their receipt of the NOP. As such, the review period for the NOP ended on July 22, 2020.

Metropolitan received a total of ten written comment letters from the following parties:

- South Coast Air Quality Management District (SCAQMD)
- Mohave Desert Air Quality Management District (MDAQMD)
- San Joaquin Valley Unified Air Pollution Control District (SJVAPCD)
- Ventura County Air Pollution Control District (VCAPCD)

- Stanislaus County Environmental Review Committee
- Stanislaus County Public Works
- Ventura County Watershed Protection District
- California Highway Patrol (CHP)
- Native American Heritage Commission (NAHC)
- California Department of Fish and Wildlife (CDFW)

All comments received during the NOP public notice period were considered during the preparation of the Draft PEIR. Appendix A of the Draft PEIR includes the NOP and copies of the comment letters received on the NOP.

Pursuant to CEQA and its implementing guidelines, the Draft PEIR and Draft CAP were circulated for a 45-day public review and comment period which began on November 18, 2021 and concluded on January 7, 2022. The Draft PEIR and Draft CAP were distributed to the State Clearinghouse and a Notice of Availability of the Draft PEIR and Draft CAP was distributed to interested parties and agencies. Copies of the Draft PEIR and Draft CAP were made available to the general public for review during normal operating hours at the following location:

The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, California 90012

The Draft PEIR and Draft CAP were also available for review on Metropolitan's website, and at nine public libraries within the Plan Area for the proposed program.

Volume 1 of this Final PEIR contains the Executive Summary and Chapters 1 and 2, which provide responses to comments received during the public comment period for the Draft PEIR and any changes made to the Draft PEIR. Volume 2, Chapters 2 and 3, of this Final PEIR make detailed findings with respect to the potential effects of the proposed program and refer, where appropriate, to the mitigation measures set forth in this Final PEIR.

The Final PEIR and the administrative record concerning the proposed program provide additional information in support of the Findings of Fact (Volume 2, Chapter 2) herein. The Findings of Fact are hereby incorporated in the Final PEIR in its entirety. Furthermore, the mitigation measures set forth in the Final PEIR and the MMRP are incorporated by reference in the Findings. The MMRP was developed in compliance with California Public Resources Code Section 21081.6 and is contained in Volume 2, Chapter 3, of this Final PEIR.

ES.4 Proposed Project Description

ES.4.1 Overview and Scope of the Project

Metropolitan is proposing a CAP to identify strategies to reduce greenhouse gas (GHG) emissions and achieve the proposed GHG reduction targets. The CAP includes a baseline GHG emissions inventory of Metropolitan's operations from 1990 through 2020, an emissions forecast through 2045, emissions reduction targets consistent with Senate Bill (SB) 32 and Executive Order B-55-18, actions and policies that Metropolitan could implement to achieve GHG reductions, and an implementation roadmap. The CAP would apply to Metropolitan's operations within the proposed Plan Area, described in the following section.

ES.4.2 Overview of the Region

The Plan Area consists of the following six counties in Southern California: Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura. Portions of northeastern Imperial County within the Palo Verde Valley, as well as four islands in the Sacramento-San Joaquin River Delta area, are also included in the Plan Area. The Plan Area includes all of Metropolitan's service area and its member agencies' jurisdictions, as well as all areas where Metropolitan owns land or facilities.

The Plan Area spans approximately 38,213 square miles across six ecoregions, including Southern California Mountains and Valley, Southern California Coast, Sonoran Desert, Mojave Desert, Colorado Desert, and California Central Valley (Great Valley) (United States Department of Agriculture 2007). The Plan Area contains a population of approximately 22,176,450 across 202 incorporated cities and unincorporated county regions (California Department of Finance [DOF] 2020; United States Census Bureau 2020). It also includes over 220 miles of Pacific Ocean coastline, ranges in elevation from 234 feet below mean sea level to approximately 11,503 feet above mean sea level, and contains a national park, one national recreation area, all or portions of four national forests, and three United States Census Bureau-designated Metropolitan Statistical Areas.

ES.4.3 Project Objectives

The proposed program is designed to reduce GHG emissions associated with Metropolitan's operations. Specifically, the objectives of the proposed program include the following:

- Identify and quantify emissions associated with Metropolitan operations to prepare a baseline GHG emissions inventory in order to track emissions reduction progress over time
- Adopt an emissions reduction target that is consistent with existing state emissions reduction targets while preparing Metropolitan to meet future state targets
- Identify and quantify specific reduction actions and policies that Metropolitan may implement to achieve the goal of reducing GHG emissions from its construction and operational activities
- Provide a roadmap for future activities to achieve consistency with the CAP and use CEQA streamlining tools for analysis of GHG emissions pursuant to the requirements of *State CEQA Guidelines* Section 15183.5

ES.4.4 Project Description

The proposed program contains the following primary components.

Emissions Inventory

The proposed CAP contains an inventory of Metropolitan's GHG emissions from 1990 to 2020. Due to the geographically disparate nature of Metropolitan's operations, emissions reported in the inventory are based on activities over which Metropolitan has direct operational control. The inventory delineates emissions by Scope, as defined in the Local Governments for Sustainability reporting frameworks and detailed below. The emissions inventory reports Metropolitan's GHG emissions in metric tons of carbon dioxide equivalent (CO_2e).

- **Scope 1 Emissions**. Scope 1 emissions are those associated with direct emissions from sources owned or controlled by Metropolitan. This includes emissions from direct fuel combustion, including natural gas, propane, welding gasses, and gasoline and diesel used to power Metropolitan's vehicle fleet.

- **Scope 2 Emissions**. Scope 2 emissions are those indirect emissions associated with the consumption of Metropolitan's purchased electricity use. Specifically, emissions generated at power plants that supply electricity for Metropolitan operations. Metropolitan purchases electricity from power generated from within California and from outside of California in the southwestern United States, which includes electricity generated from hydropower at the Hoover Dam. Scope 2 emissions also include transmission and distribution losses that occur as electricity is delivered to Metropolitan facilities.
- **Scope 3 Emissions**. Scope 3 emissions are other indirect emissions that occur as a result of Metropolitan's operations, including emissions associated with waste generation, water consumption and wastewater generation from Metropolitan-owned buildings, employee commutes, and construction activities.

The proposed CAP also includes an emission forecast through 2045 to account for potential changes in hydrology, climate, climate and air quality regulations, population growth, operations, and future construction projects that may affect Metropolitan's emissions in the future. Furthermore, the emissions forecast allows for comparison between forecasted GHG emissions and reduction targets to understand the reductions necessary to achieve Metropolitan's GHG reduction goals.

Reduction Target

The proposed CAP establishes a GHG reduction target aligned with applicable state GHG reduction policies. The CAP considers various reduction levels, target methodologies, and tracking mechanisms to quantify GHG emissions reductions and measure progress towards meeting the established GHG reduction target. Ultimately, the CAP includes a linear per capita target or "Linear Reduction to Carbon Neutral by 2045 – Per Capita Target" with a Carbon Budget tracking mechanism.

GHG Reduction Measures

In order to achieve the proposed CAP's emissions reduction target, GHG emissions reduction measures would need to be implemented. The CAP includes 39 proposed GHG emissions reduction measures that, if implemented, could help Metropolitan reduce its Scope 1, Scope 2, and Scope 3 emissions. Reduction measures for each Scope are grouped into nine strategies that could be employed at Metropolitan's various facility types during facility maintenance activities and future expansion and construction activities, as well as policies and projects to explore new technologies and practices to conserve resources. The reduction measures do not include actions taken by Metropolitan to date that have resulted in GHG emissions reductions, such as Metropolitan's early adoption of solar facilities at several of its treatment plants and Leadership in Energy Efficiency and Design (LEED) certification for several of its facilities. However, the measures may build or expand upon these past actions. Most measures within the nine categories are either administrative (e.g., studies, investigations) in nature or involve replacement of existing infrastructure with newer, more efficient infrastructure at the same location and, therefore, would not have physical impacts to the environment.

ES.4.4 Areas of Controversy

Section 15123(b)(2) of the *State CEQA Guidelines* requires that an EIR identify areas of controversy which are known to the lead agency, including issues raised by other agencies and the public. Areas of controversy associated with the proposed program are made known through comments received during the NOP process, as well as input solicited during public scoping meetings and an understanding of the community issues in the study area.

The comments on the NOP for the draft PEIR for the proposed CAP generally expressed concern over the following issues: alternatives analysis and impacts to biological species and jurisdictional habitats (CDFW), air quality impacts from construction or operation of projects implemented under the proposed program (SJVAPCD, MDAQMD, SCAQMD, and VCAPCD), impacts to tribal cultural resources (NAHC), and watershed management (Ventura County Public Works). Appendix A of the Draft PEIR contains a copy of the NOP and the comment letters received during the NOP scoping period.

ES.4.4 Summary of Environmental Impacts and Mitigation Measures

Table ES-1 includes a brief description of the identified environmental impacts associated with each threshold analyzed in detail in the Draft PEIR, proposed mitigation measures, and the level of significance after mitigation.

Table ES-1 Summary of Environmental Impacts, Mitigation Measures and Impacts After Mitigation

Impact	Mitigation Measure(s)	Significance After Mitigation
Air Quality		
Impact AQ-A. Implementation of the individual projects proposed under the CAP would potentially conflict with or obstruct implementation of the applicable air quality plan due to construction emissions. This impact would be potentially significant.	**MM AQ-1 Construction Air Quality Assessment** For individual projects to be implemented under the CAP that involve construction activities with an intensity (i.e., size, schedule, equipment, demolition, import/export of soil, architectural coating) greater than the sample project activity, an air quality assessment shall be prepared to evaluate construction emissions in light of the applicable air district thresholds. **MM AQ-2 Implement Emission Reduction Measures** If construction emissions would exceed any of the applicable thresholds, emission reduction measures shall be implemented to reduce emissions below the thresholds. Measures may include, but would not be limited to: • All construction equipment shall be equipped with Tier 4 certified engines or CARB-certified Level 3 diesel particulate filters. All diesel particulate filters shall be kept in working order and maintained in operable condition according to manufacturer's specifications, as applicable. • Construction equipment with lower horsepower ratings shall be utilized, as applicable and practicable. • Ultra-low-sulfur diesel fuel shall be used for stationary construction equipment, as applicable. • Low-emission on-site stationary equipment shall be used, as applicable. • Alternatively-fueled construction equipment (e.g., renewable diesel, natural gas, electric) shall be utilized instead of diesel-fueled construction equipment, as applicable. • The schedule for soil import and/or export shall be extended to reduce the number of daily haul truck trips, as applicable. • The schedule for the coating/painting phase shall be extended to reduce the square footage coated/painted each day, as applicable. • Architectural coatings with a VOC content of less than 250 grams per liter shall be utilized.	Significant and unavoidable.
Impact AQ-B. Construction impacts related to criteria air pollutant emissions resulting from implementation of individual projects proposed under the CAP would be potentially significant.	**MM AQ-1** and **MM AQ-2**.	Significant and unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
Impact AQ-C. Neither construction nor operation of individual projects proposed under the CAP would expose sensitive receptors to substantial pollutant concentrations. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Impact AQ-D. Neither construction nor operation of individual projects implemented under the proposed CAP would result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Biological Resources		
Impact BIO-A. Implementation of individual projects under the proposed CAP would potentially have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or other special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. This impact would be potentially significant.	**MM BIO-1 Special Status Plant Species Surveys** If completion of the project-specific biological resources assessment determines that special status plant species have potential to occur on site, surveys for special status plants shall be completed prior to any vegetation removal, grubbing, or other construction activity of each project activity (including staging and mobilization). The surveys shall be floristic in nature and shall be seasonally timed to coincide with the target species identified in the project activity-specific biological resources assessment. All plant surveys shall be conducted by a qualified biologist no more than one year prior to project implementation (annual grassland habitats may require yearly surveys). Surveys shall be conducted in accordance with current protocols established by the CDFW, USFWS and the local jurisdictions if said protocols exist. If special status plant species are identified, Mitigation Measure BIO-2 shall apply. **MM BIO-2 Special Status Plant Species Avoidance, Minimization, and Mitigation** If state- or federally-listed special status and/or CRPR 1 and 2 plant species are identified during the project-specific biological assessment, the activity shall be re-designed to avoid impacting these plant species to the maximum extent feasible. If CRPR 3 and 4 species are found, the biologist shall evaluate if they meet criteria to be considered special status, and if so, the same process as identified for CRPR 1 and 2 species shall apply. If special status plant species cannot be avoided and would be impacted by a project activity implemented under the proposed CAP, all impacts shall be mitigated at an appropriate ratio (minimum ratio of 1:1) to fully offset project activity impacts, as determined by a qualified biologist for each species. A restoration plan shall be prepared and implemented, as applicable. **MM BIO-3 Endangered/Threatened Animal Species Habitat Assessment and Protocol Surveys** If the results of the project-specific biological resources assessment determine suitable habitat may be present for any federally and/or state endangered or threatened animal	Less than significant with mitigation incorporated.

Impact	Mitigation Measure(s)	Significance After Mitigation
	species, habitat assessments and/or protocol surveys shall be completed in accordance with CDFW and/or USFWS/NMFS protocols prior to construction. Alternatively, in lieu of conducting protocol surveys, Metropolitan may choose to assume presence within the activity footprint and proceed with implementing appropriate avoidance measures, consultation, and permitting, as applicable. If the target species are detected during protocol surveys, or protocol surveys are not conducted and presence is assumed based on suitable habitat, Mitigation Measure BIO-4 shall apply. **MM BIO-4 Endangered/Threatened Animal Species Avoidance and Mitigation** If habitat is occupied or presumed occupied by federal and/or state-listed species and would be impacted by project activities, the project activity shall be redesigned in coordination with a qualified biologist to avoid impacting occupied/presumed occupied habitat to the maximum extent feasible. If occupied or presumed occupied habitat cannot be avoided, Metropolitan shall consult with USFWS, NMFS, and/or CDFW in order to determine the appropriate course of action, which may include a Biological Opinion (BO) or HCP/ITP issued by the USFWS/NMFS (relevant to federally listed species) and/or the ITP issued by the CDFW (relevant to state listed species). If occupied or presumed occupied habitat cannot be avoided, compensatory mitigation shall be provided (minimum ratio of 1:1) to fully offset impacts to habitat prior to the construction. Compensatory mitigation may be provided through purchase of mitigation bank credits, in-lieu fee, or permittee-responsible habitat restoration/establishment/enhancement/preservation. Compensatory mitigation may be combined/nested with special status plant species and sensitive natural community restoration, where applicable. Temporary impact areas shall be restored to similar pre-project conditions. If on and/or off-site habitat restoration/conservation is identified, a Habitat Mitigation and Monitoring Plan (HMMP) shall be prepared to ensure the success of compensatory mitigation sites. The HMMP shall identify long-term site management needs, routine monitoring techniques, and performance standards for determining that the conservation site has met the necessary criteria to function as a suitable mitigation site. **MM BIO-5 Endangered/Threatened Species Avoidance and Minimization During Construction** The following measures shall be applied to aquatic and terrestrial species, where appropriate. Metropolitan shall select from these measures as appropriate depending on site conditions, the species with potential for occurrence, and the results of the project-specific biological resources assessment ~~(Mitigation Measure BIO-1)~~. Pre-construction surveys for federal and/or state listed species with potential to occur shall be conducted where suitable habitat is present by a qualified biologist not more than 72 hours prior to the start of construction activities. The survey area shall include the proposed disturbance area and all proposed ingress/egress routes, plus a species-specific buffer. If any life stage of federal and/or state listed species is found within the survey area, the	

Impact	Mitigation Measure(s)	Significance After Mitigation
	appropriate measures in the BO or HCP/ITP issued by the USFWS/NMFS (relevant to federally listed species) and/or the ITP issued by the CDFW (relevant to state listed species) shall be implemented; or if such guidance is not in place for the activity, the qualified biologist shall recommend an appropriate course of action, which may include consultation with USFWS, NMFS, and/or CDFW. • The activity limits of disturbance shall be flagged. Areas of special biological concern within or adjacent to the limits of disturbance shall have Environmental Sensitive Area fencing installed between said area and the limits of disturbance. • All activities occurring within or adjacent to sensitive habitats that may support federally and/or state endangered/threatened species shall have a qualified biologist present during all initial ground disturbing/vegetation clearing activities. Once initial ground disturbing/vegetation clearing activities have been completed, the biologist shall conduct pre-activity clearance surveys, as needed to ensure protection of endangered/threatened species. • If pumps are used for dewatering activities, all intakes shall be completely screened with wire mesh not larger than five millimeters to prevent animals from entering the pump system. • If at any time during construction of the project activity an endangered/threatened species enters the construction site or otherwise may be impacted by the project activity, all project activities shall cease. At that point, a qualified biologist shall recommend an appropriate course of action, which may include consultation with USFWS, NMFS, and/or CDFW. Alternatively, the appropriate measures shall be implemented in accordance with the BO or HCP/ITP issued by the USFWS (relevant to federal listed species) and/or the ITP issued by the CDFW (relevant to state listed species) and work can then continue as guided by those documents and the agencies, as appropriate. • All trenches, pipes, culverts or similar structures shall be inspected for animals prior to burying, capping, moving, or filling. • Upon completion of the project activity, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the activity, including the pre-construction survey results. **MM BIO-6 Non-Listed Special Status Animal Species Avoidance and Minimization** Depending on the species identified in the project-specific biological resource assessment , the following applicable measures shall be implemented to reduce the potential for impacts to non-listed special status animal species: • Pre-construction clearance surveys shall be conducted by a qualified biologist within 14 days prior to the start of construction (including staging and mobilization). The surveys shall cover the entire disturbance footprint plus a minimum 100-foot buffer and shall identify all special status animal species that may occur on-site. The qualified	

Impact	Mitigation Measure(s)	Significance After Mitigation
	biologist shall make recommendations for avoidance of non-listed special status species, such as through the use of exclusion fencing, buffer zones, etc. • A qualified biologist shall be present during all initial ground disturbing activities, including vegetation removal, to recover special status animal species encountered during construction activities. • Upon completion of the project activity, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the project activity, including the pre-construction survey results. • If special status bat species may be present and impacted by the project activity, within 30 days of the start of construction a qualified biologist shall conduct presence/absence surveys for special status bats where suitable roosting habitat is present. Surveys shall be conducted using acoustic detectors and by searching tree cavities, crevices and other areas where bats may roost. If active bat roosts or colonies are present, the biologist shall evaluate the type of roost to determine the next step. ◦ If a maternity colony is present, all construction activities shall be postponed within a 250-foot buffer around the maternity colony until it is determined by a qualified biologist that the young have dispersed. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately. ◦ If a roost is determined by a qualified biologist to be used by a large number of bats (large hibernaculum), alternative roosts, such as bat boxes if appropriate for the species, shall be designed and installed near the project activity site. The number and size of alternative roosts installed will depend on the size of the hibernaculum and shall be determined by a qualified biologist. ◦ If other active roosts are located, exclusion devices shall be installed such as valves, sheeting or flap-style one-way devices that allow bats to exit but not re-enter roosts to discourage bats from occupying the site.	
Impact BIO-B. Individual projects implemented under the proposed CAP could result in significant impacts to riparian habitats wetlands and/or sensitive natural communities. This impact would be potentially significant. **Impact BIO-C.** Individual projects implemented under the proposed CAP may result in significant impacts to state or federally protected wetlands. This impact would be potentially significant.	**MM BIO-7 Jurisdictional Delineation and Impact Avoidance** If the results of the project-specific biological resource assessment ~~Mitigation Measure BIO-1~~ indicate project activities implemented under the proposed CAP would impact wetlands, drainages, riparian habitats, or other areas that may fall under the jurisdiction of the CDFW, USACE, and/or RWQCB, a qualified biologist shall complete a jurisdictional delineation. The jurisdictional delineation shall determine the extent of the jurisdiction for each of these agencies within the project activity site and shall be conducted in accordance with the requirement set forth by each agency. The results shall be provided in a jurisdictional delineation report submitted to Metropolitan, USACE, RWQCB, and CDFW, as appropriate, for review and approval. The project activity shall be designed to avoid or minimize impacts to jurisdictional areas to the maximum extent feasible. **MM BIO-8 Wetlands, Drainages and Riparian Habitat Restoration** If impacts to jurisdictional drainages, wetlands, riparian habitat, and sensitive vegetation communities cannot be avoided, impacts shall be mitigated at an appropriate ratio to fully	Less than significant with mitigation incorporated.

Impact	Mitigation Measure(s)	Significance After Mitigation
	offset project-specific impacts (minimum ratio of 1:1). Where feasible, temporarily impacted areas shall be restored to pre-project conditions. An HMMP shall be developed by a qualified biologist and submitted to the agency overseeing the project activity for approval. Alternatively, mitigation shall be accomplished through purchase of credits from an approved mitigation bank or in-lieu fee project. **MM BIO-9 Sensitive Natural Community Avoidance and Mitigation** If the results of the project-specific biological resource assessment ~~Mitigation Measure BIO-1~~ indicate project activities implemented under the proposed CAP would impact sensitive natural communities, impacts shall be avoided through final project activity design modifications. If Metropolitan determines sensitive communities cannot be avoided, impacts shall be mitigated on-site or off-site at an appropriate ratio to fully offset project activity impacts (minimum ratio of 1:1). Temporarily impacted areas shall be restored to pre-project conditions. An HMMP shall be developed by a qualified biologist and submitted to the agency overseeing the project activity for approval.	
Impact BIO-D. Neither construction nor operation of individual projects implemented under the proposed CAP would interfere with movement of native resident or migratory fish or wildlife species or established wildlife corridors. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Impact BIO-E. Neither construction nor operation of individual projects implemented under the proposed CAP would impact protected trees and, as such, would not conflict with local policies or ordinances protecting biological resources. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Impact BIO-F. Individual projects implemented under the proposed CAP would not conflict with a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan area. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.

Impact	Mitigation Measure(s)	Significance After Mitigation
Cultural Resources		
Impact CUL-A. Individual projects implemented under the proposed CAP would have the potential to cause a substantial adverse change in the significant of a historical resource. This impact would be potentially significant.	**MM CUL-1(a) Built Environment Investigation** A historic resources evaluation shall be prepared for any future proposed project facilitated by the CAP involving a property which includes buildings, structures, objects, landscape/site plans, or other features that are 45 years of age or older. The evaluation shall be prepared by a qualified architectural historian or historian who meets the Secretary of the Interior's (SOI) Professional Qualifications Standards (PQS) in architectural history or history. The qualified architectural historian or historian shall conduct an evaluation in accordance with the guidelines and best practices promulgated by the State Office of Historic Preservation to identify any potential historical resources within the proposed project area. The evaluation of the potential resource within its historic context shall be documented. All evaluated properties shall be documented on Department of Parks and Recreation Series 523 Forms. If a property is identified as an eligible historical resource under CEQA, Mitigation Measure CUL-1(b) shall be implemented. **MM CUL-1(b) Built Environment Documentation Program** If eligible built environment historical resources are identified for a future proposed project implemented under the CAP, efforts shall be made to the extent feasible to ensure that impacts are avoided. If avoidance is not possible, a Built Environment Documentation Program shall be implemented. Measures may include but are not limited to, compliance with the Secretary of the Interior's Standards for Treatment of Historic Properties and documentation of the historical resource in the form of a Historic American Building Survey (HABS)- report or HABS-Like report. The HABS or HABS-Like report shall comply with the Secretary of the Interior's Standards for Architectural and Engineering Documentation and shall generally follow the HABS Level III requirements, including digital photographic recordation, detailed historic narrative report, and compilation of historic research. Application of mitigation shall generally be overseen by a qualified architectural historian or historic architect meeting the PQS, unless unnecessary in the circumstances (e.g., preservation in place). **MM CUL-3 Previously Unidentified Resources Encountered During Construction** In the event that any potentially significant cultural resources are unexpectedly encountered during construction, work will be immediately halted and the discovery shall be protected in place. A 50-foot buffer around the exposed resource shall be established until a qualified cultural resources specialist evaluates the discovery. If the qualified cultural resources specialist determines that the discovery represents a potentially significant cultural resource, including a potential historical resource, additional investigations may be required to mitigate adverse impacts from project implementation. This additional work may include avoidance, testing, and evaluation or data recovery excavation. Work shall be prohibited in the restricted area until Metropolitan provides written authorization.	Significant and unavoidable

Impact	Mitigation Measure(s)	Significance After Mitigation
Impact CUL-B. Individual projects implemented under the proposed CAP may cause a substantial adverse change in the significance of an archaeological resource. This impact would be potentially significant.	**MM CUL-2(a) Phase 1 Archaeological Resource Investigation** If archaeological resources are identified during project-specific analysis that may be adversely affected by any future proposed project implemented under the CAP, Metropolitan shall retain a qualified archaeologist meeting the Secretary of the Interior standards in archaeology to complete a Phase 1 cultural resources assessment of the site. A Phase 1 cultural resources assessment will include an archaeological pedestrian survey of the site, if feasible, and sufficient background archival research to determine whether subsurface prehistoric or historic remains may be present. Archival research should include a current records search from the appropriate California Historical Resources Information System information center and a Sacred Lands File search conducted with the Native American Heritage Commission. A Phase 1 report or results documentation shall be submitted to Metropolitan prior to any ground disturbing activities. Recommendations contained therein shall be implemented throughout all ground disturbance activities. **MM CUL-2(b) Extended Phase 1 Investigation** For any projects proposed within 100 feet of a known archaeological site and/or in areas identified as sensitive by the Phase 1 study, an Extended Phase 1 (XPI) study shall be conducted to determine the presence/absence and extent of archaeological resources on the project site. XPI testing should comprise a series of shovel test pits and/or hand augured units and/or mechanical trenching intended to establish the horizontal and vertical boundaries of archaeological site(s) on the project site. No archaeological resources would be collected during the XPI Investigation. If an archaeological site is identified, Mitigation Measure CUL-2I or CUL-2(d) shall be implemented. **MM CUL-2(c) Avoidance of Archaeological Resources** Identified prehistoric or historic archaeological resources shall be avoided and preserved in place, where feasible. Where avoidance and preservation in place is not feasible, additional measures shall be applied as identified in Mitigation Measure CUL-2(d) through CUL-2(g). **MM CUL-2(d) Phase 2 Archaeological Resources Investigation and Evaluation** Where preservation is not feasible, each resource shall be evaluated for significance and eligibility for listing in the CRHR through a Phase 2 archaeological resource evaluation. A Phase 2 evaluation shall include any necessary archival research to identify significant historical associations as well as mapping of surface artifacts, collection of functionally or temporally diagnostic tools and debris, and excavation of a sample of the cultural deposit to characterize the nature of the sites, define the artifact and feature contents, determine horizontal boundaries and depth below surface, and retrieve representative samples of artifacts and other remains. A final Phase 2 Testing and Evaluation report shall be submitted to Metropolitan prior to any ground disturbing activities. Recommendations contained therein shall be implemented throughout all ground disturbance activities. **MM CUL-2(e) Phase 3 Archaeological Data Recovery Program** If an archaeological resource meets the CRHR eligibility and cannot be avoided, Metropolitan shall implement a Phase 3 Archaeological Data Recovery Program, conducted to exhaust the data potential of significant archaeological sites. The Phase 3 Archaeological	Significant and unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
	Data Recovery Program shall follow a research design prepared by a qualified archaeologist meeting the SOI PQS standards for archaeology and approved by Metropolitan in advance of Phase 3 fieldwork and excavations. The Phase 3 Data Recovery research design will use appropriate archaeological field and laboratory methods consistent with the California Office of Historic Preservation Planning Bulletin 5 (1991), Guidelines for Archaeological Research Design, or the latest edition thereof. The final Phase 3 Data Recovery report shall be submitted to Metropolitan prior to and any ground disturbing activities. Recommendations contained therein shall be incorporated into project design and implemented throughout all ground disturbance activities. **MM CUL-2(f) Processing and Curation of Archaeological Materials** Archaeological materials collected from the sites during the implementation of Mitigation Measures CUL-2(d) through CUL-2(e) shall be processed and analyzed in the laboratory according to standard archaeological procedures. The age of the materials shall be determined using radiocarbon dating and/or other appropriate procedures; lithic artifacts, faunal remains, and other cultural materials shall be identified and analyzed according to current professional standards. The significance of the sites shall be evaluated according to the criteria of the CRHR. The results of the investigations shall be presented in a technical report following the standards of the California Office of Historic Preservation publication "Archaeological Resource Management Reports: Recommended Content and Format (1990 or latest edition)". Upon completion of the work, all artifacts, other cultural remains, records, photographs, and other documentation shall be curated an appropriate established curation facility based on the location of the fieldwork and/or repatriated to local Native Americans as appropriate. All fieldwork, analysis, report production, and curation shall be fully funded by Metropolitan. **MM CUL-2(g) Cultural Resources Monitoring** If recommended by Phase 1 (Mitigation Measure CUL-2(a)), XPI (Mitigation Measure CUL-2(b)), Phase 2 (Mitigation Measure CUL-2(d)), or Phase 3 (Mitigation Measure CUL-2(e)) studies, Metropolitan shall retain a qualified archaeologist to monitor project-related, ground-disturbing activities. **MM CUL-3 Previously Unidentified Resources Encountered During Construction** MM CUL-3 is described above under Impact CUL-A.	
Impact CUL-C. Individual projects implemented under the proposed CAP would be required to comply with all applicable regulations pertaining to the discovery of human remains. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.

Impact	Mitigation Measure(s)	Significance After Mitigation
Noise		
Impact NOI-A. Individual projects implemented under the proposed CAP may result in generation of a substantial temporary or permanent increase in ambient noise levels. This impact would be potentially significant.	**MM NOI-1 Locate Excavation Sites Away from Noise-Sensitive Receivers, Where Feasible** Construction staging and activities shall be located in areas as far as practicable from sensitive receivers or in areas where receivers can be shielded from construction noise. **MM NOI-2(a) Conduct Project-Level Noise Studies for Construction Activities Where Noise-Sensitive Receivers are Present** Project-level construction noise studies shall be conducted for project activities that would exceed the screening criteria for a less-than-significant impact, as summarized in Table 30 and Table 32 of the draft PEIR. Such noise studies shall identify the existing ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during construction of individual projects, compare estimated noise levels to the local jurisdiction's noise limits or to the construction noise criteria in the FTA (2018) *Transit Noise and Vibration Impact Assessment Manual* for those that do not have quantitative construction noise level limits, outline any measures that may be used to reduce noise levels, and determine the amount of noise reduction that would occur with implementation of these measures. If the project-level noise study concludes that noise reduction measures are required, Mitigation Measure NOI-2(b) shall be implemented. **MM-NOI-2(b) Implement Noise Reduction Measures** If the results of the noise study determine noise reduction measures are required, noise reduction measures shall be implemented. Construction noise reduction measures may include, but would not be limited to, the use of mufflers, sound blankets/barriers, and/or enclosures and scheduling construction activities to minimize simultaneous operation of noise-producing equipment. Construction noise measures shall be implemented to reduce noise levels to FTA (2018) construction noise criteria, as feasible. If the individual projects would be constructed concurrently with development projects located within a 0.5-mile radius of the individual project location, the noise study shall also consider the cumulative impact of construction noise on sensitive receivers. If applicable, construction noise reduction measures shall be implemented to reduce cumulative noise levels to local jurisdiction or FTA (2018) construction noise criteria, as feasible. **MM NOI-2(c) Conduct Project-Level Noise Studies for Post-Construction Activities Where Noise Sensitive Receivers are Present** Prior to the commencement of construction activities for individual projects that may be implemented under the CAP where sensitive receivers are located within 1,000 feet of the individual project sites, project-level post-construction noise studies shall be conducted. Such noise studies shall identify the ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during operation of individual projects during the post-construction period, compare estimated noise levels to the noise level standards of the applicable jurisdiction, outline any measures that may be used to reduce noise levels, and determine the amount of noise reduction that would occur with implementation of these measures. Noise reduction measures may include, but would not be	Significant and unavoidable

Impact	Mitigation Measure(s)	Significance After Mitigation
	limited to, alternative site design, alternative orientation of noise sources, and construction of berms and/or barriers. Noise reduction measures shall be implemented to reduce noise levels to the noise level standards of the applicable jurisdiction, as feasible.	
Impact NOI-B. Construction activities associated with implementation of individual projects under the proposed CAP may result in generation of excessive groundborne vibration or groundborne noise levels, depending on the nature and location of such projects. This impact would be potentially significant.	**NOI-3 (a) Locate Excavation Sites Away from Vibration-Sensitive Receivers, Where Feasible** Whenever practicable, vibration-generating equipment including bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers shall operate outside the minimum distances specified in Table 33 of the draft PEIR for historic sites, other structures, and vibration-sensitive receivers during project construction activities. Furthermore, whenever practicable, vibration-generating equipment including bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers shall not be operated concurrently with vibration-generating equipment associated with cumulative development projects located within 600 feet of project construction sites. **NOI-3(b) Conduct Project-Level Vibration Analysis for Construction Activities Where Vibration-Sensitive Receivers are Present** If operation of construction equipment outside the specified buffer distances is not practicable, a detailed study of vibration impacts shall be conducted prior to the commencement of construction for that project. Such vibration studies shall characterize the nearest historic sites, structures, and/or sensitive receivers; estimate the vibration levels receivers will experience during construction of individual projects; compare estimated vibration levels to applicable Caltrans (2020) standards for vibration impacts related to structural damage and human annoyance; outline any measures that may be used to reduce vibration levels; and determine the amount of vibration reduction that would occur with implementation of these measures. Vibration reduction measures may include, but would not be limited to, the use of non-vibratory equipment, vibration monitoring, and repair of structural damage. Construction vibration reduction measures shall be implemented to reduce vibration levels to Caltrans (2020) construction vibration thresholds as feasible. If the individual project would be constructed concurrently with cumulative development projects located within a 600-foot radius of the activity location, the vibration study shall also consider the cumulative impact of combined vibration levels at the nearest sensitive receivers by estimating the combined vibration levels receivers will experience during construction of individual projects and cumulative development; compare estimated vibration levels to applicable standards for vibration impacts related to structural damage and human annoyance described in the Caltrans (2020) *Transportation and Construction Vibration Guidance Manual* (CT-HWANP-RT-20-365.01.01); identify whether the individual project's contribution to any identified cumulative impact would be cumulatively considerable; outline any measures that may be used to reduce the project's contribution to combined vibration levels; and determine the amount of vibration reduction that would occur with implementation of these measures. Such measures may include, but are not limited to, the installation of wave barriers, maximization of the distance between vibratory equipment and receivers, restriction of vibration-generating activities to daytime hours, or	Significant and unavoidable

Impact	Mitigation Measure(s)	Significance After Mitigation
	temporary relocation of affected residents Construction vibration reduction measures shall be implemented to reduce cumulative vibration levels to Caltrans construction vibration thresholds as feasible.	
Impact NOI-C. One individual project to be implemented under the proposed CAP is located within the vicinity of a private airstrip or within an airport land use plan. However, projects implemented under the proposed CAP would not expose people residing or working in the area to excessive noise levels. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Tribal Cultural Resources		
Impact TCR-A. Implementation of projects under the proposed CAP would not cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 5020.1(k), as Native American consultation completed pursuant to Assembly Bill (AB) 52 identified no resources that may be impacted by the proposed project. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Impact TCR-B. Implementation of projects under the proposed CAP would not cause a substantial adverse change in the significance of a tribal cultural resource determined to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. Native American consultation completed pursuant to AB 52 identified no resources that may be impacted by the proposed project. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.

CARB = California Air Resources Board; VOC = volatile organic compounds; CDFW = California Department of Fish and Wildlife; USFWS = United States Fish and Wildlife Service; CRPR = California Rare Plant Rank; NMFS = National Marine Fisheries Service; BO = Biological Opinion; HCP = Habitat Conservation Plans; ITP = Incidental Take Permit; USACE = United States Army Corps of Engineers; RWQCB = Regional Water Quality Control Board; FTA = Federal Transit Administration; SOI = Secretary of the Interior; PQS = Professional Qualifications Standards; HABS = Historic American Building Survey; CRHR = California Register of Historical Resources; HMMP = Habitat Mitigation and Monitoring Plan

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CHAPTER 1
RESPONSES TO COMMENTS RECEIVED

Responses to Comments

This section includes comments received during public circulation of the Draft PEIR prepared for the CAP and the draft CAP. This chapter of the Final PEIR includes copies of all comment letters submitted during the 45-day public review period for the Draft PEIR, along with Metropolitan's responses to comments in accordance with the *State CEQA Guidelines*, Section 15088. Under Section 15088 of the *State CEQA Guidelines*, Metropolitan is required to evaluate and provide written responses to comments received on the Draft PEIR. Metropolitan has also included written responses to comments received on the Draft CAP during the Draft PEIR public review period.

All written comments received have been coded to facilitate identification and tracking. Each comment letter received during the public review period was assigned an identification number, provided in Table 1-1. Each numbered comment letter is the submittal of a single individual, agency, or organization. These comment letters were reviewed and divided into individual comments, with each comment containing a single theme, issue, or concern. Individual comments were bracketed and numbered, and the responses were assigned corresponding numbers (Response 1-1, for example, indicates that the response is for the first issue raised in Comment Letter 1). To aid the readers and commenters, comments have been reproduced in this chapter together with the corresponding responses. Table 1-1 identifies a list of interested parties who submitted comments during the 45-day public review period for the Draft PEIR and Draft CAP, which began on November 18, 2021 and ended on January 7, 2022. It also includes two letters dated January 11 and January 12, 2022, which were submitted to Metropolitan following the closure of the public comment period.

Table 1-1 Comments Received on the Draft PEIR

To finalize the Draft PEIR for the proposed program, the following responses have been prepared for comments that were received during the public review period. In accordance with the requirements of the *State CEQA Guidelines* Section 15088(b), Metropolitan will provide a written response for comments submitted to each commenter at least 10 days prior to certifying the Final PEIR.

As a general introduction, the PEIR's conclusions on the character and significance level of the program's potential to cause environmental impacts are supported by substantial evidence, which is presented in the Draft PEIR, Draft CAP, and Appendices, and further clarified in this document. Some commenters may disagree with the analyses and conclusions in the Draft PEIR. Consistent with the intent of CEQA, and the *State CEQA Guidelines* for its implementation, this Final PEIR also includes the differing opinions and statements presented by the commenters.

Topical Response

A substantial number of comments received during the public review period for the Draft PEIR pertain directly to the contents of the Draft CAP itself, and do not address the contents or adequacy of the Draft PEIR or the CEQA process. Such comments do not specifically relate to environmental issues analyzed in the Draft PEIR and generally do not warrant changes to the contents or findings of the Draft PEIR. However, because review and adoption of the CAP is occurring as a public process pursuant to *State CEQA Guidelines* Section 15183.5(b)(1)(F), comments received regarding the contents of the CAP are disclosed in this document. This section presents a topical response to comments related to the contents of the CAP where such comments are similarly related and do not otherwise relate to environmental issues analyzed in the Draft PEIR. Responses to specific comment letters may refer the commenter to the Topical Response presented herein.

Topical Response A – State Water Project Emissions

Many of the comments received focused on the total embedded energy of water delivered to Southern California, thus a description of the Department of Water Resources' (DWR's) State Water Project (SWP) deliveries emissions is provided here and a discussion of the embedded energy of Metropolitan's water has been included in Appendix B of the Final CAP. Metropolitan acknowledges that water received from the SWP has GHG emissions associated with the delivery of that water to Southern California. Thus, when more water is received from the SWP, there is a corresponding increase in overall GHG emissions. Metropolitan's CAP is intended to be a comprehensive plan to reduce GHG emissions from Metropolitan's operations. As a result, emission reductions measures are targeted to reduce emissions within Metropolitan's operational control. As described in the CAP, Metropolitan imports water from two sources: the Colorado River Aqueduct (CRA) and through the DWR's SWP. Metropolitan has operational control over water pumped from the Colorado River through the CRA; however, as explained in the CAP, Metropolitan's operational control of imported water from the SWP begins when the water enters Metropolitan's system.

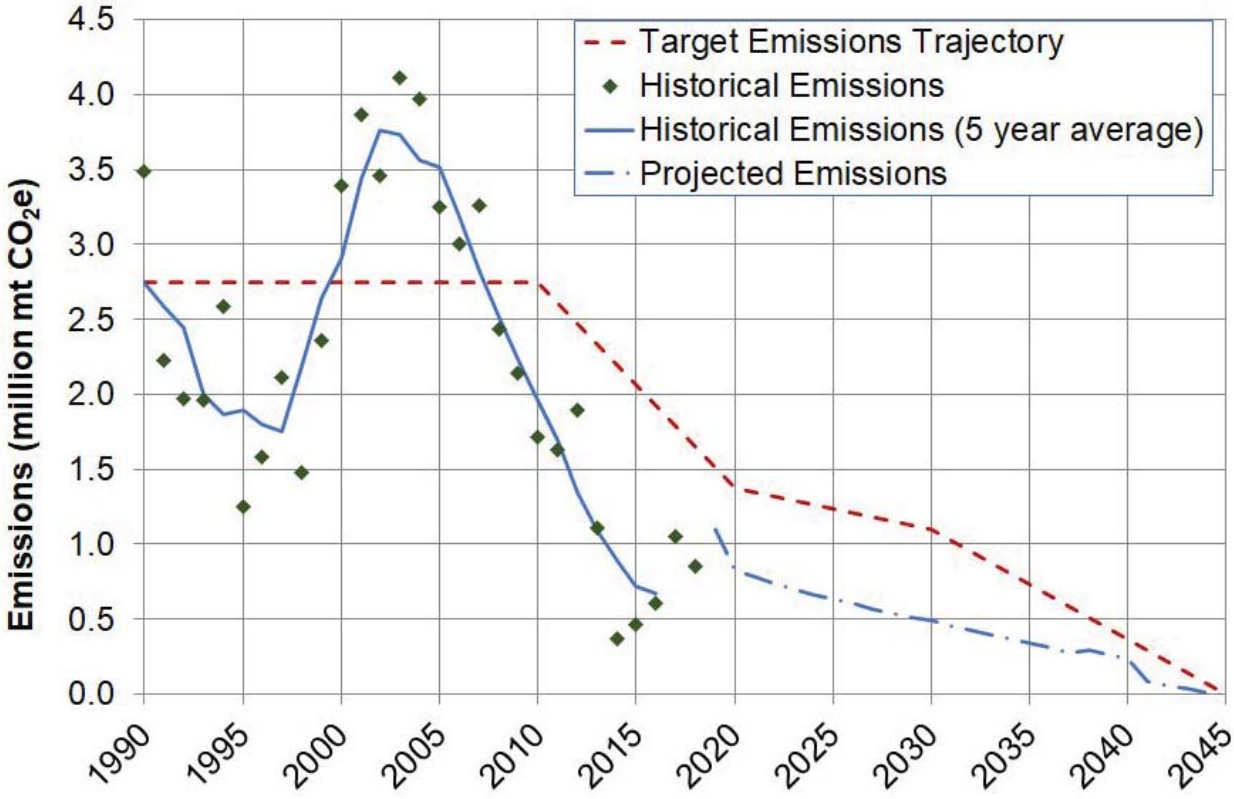
Metropolitan is one of 29 public water agencies that contracts with the DWR for delivery of water from the SWP. The SWP, which provides water supply, recreation, and flood control benefits to California residents, is a multi-purpose water storage and delivery system that extends more than 705 miles, two-thirds the length of California. A collection of canals, pipelines, reservoirs, and hydroelectric power facilities delivers clean water to 27 million Californians, 750,000 acres of farmland, and businesses throughout the state. Getting water to these users requires a large amount of electricity.[1] In fact, the SWP is one of the largest single consumers of electricity in the state, using around 8,000 gigawatt-hours per year. The SWP also generates a large amount of electricity each year at its reservoirs and in-conduit generating stations, about half of all the energy it uses annually. Even

[1] https://water.ca.gov/Programs/State-Water-Project

with all of the electricity the SWP uses, it only accounts for approximately 3 percent of statewide electricity use.[2]

To accomplish the GHG goals set forth by the state, in 2012, DWR developed the Greenhouse Gas Emissions Reduction Plan (2012 Plan) as the first phase of its CAP to guide decision-making related to energy use and GHG emissions. DWR's CAP is divided into three phases to address mitigation, adaptation, and consistency in its analysis of climate change: Phase 1: Greenhouse Gas Reduction Plan; Phase II: Climate Change Analysis Guide; and Phase III: Climate Change Vulnerability Assessment. In its 2012 Plan, DWR committed to regular updates to its plan. In 2020, DWR prepared a Greenhouse Gas Emissions Reduction Plan Update (Update 2020) to review its GHG reductions since the 2012 Plan and to update strategies for further reduction consistent with legislative changes, including the GHG emissions reduction targets established in Senate Bill (SB) 32 (2016), SB 100 (2018), Executive Order B-18-12 (2012), Executive Order B-30-15 (2015), and Executive Order B-55-18 (2018). In addition, since the 2012 Plan was adopted, California's wholesale electricity market has also seen a significant increase in renewable resources. To reflect this change and to align with industry practice in emission reporting, Update 2020 incorporates updated emission factors to determine emissions from unspecified market resources. DWR has made significant progress in meeting GHG reduction goals through its CAP. The figure below illustrates the decline in emissions from operation of the SWP over time.

Figure 1-1 SWP's Historic and Projected Annual Emissions



[2] https://water.ca.gov/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan

As DWR manages its GHG emissions over the next 20 years and as the wholesale electricity market continues to increase its renewable resources portfolio to meet the goals of SB 100 (2018), the SWP will become a negligible portion of emissions by 2045 and will not be an emission contributor to Metropolitan's water supply portfolio. Commenters who wish to track SWP GHG emissions to DWR's CAP can visit the following site for more detailed information:

- https://water.ca.gov/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan

Upon adoption of the CAP, work will begin on a customized, award-winning, publicly accessible, web-based CAPDash tool that will track projects implemented and GHG emissions realized from measures detailed in the CAP, provide annual progress reports, and provide the status of the carbon budget. In addition, Metropolitan will work with DWR to include a complete picture of emissions associated with the delivery of imported water to Southern California. Metropolitan's CAPDash tool is expected to be launched early in 2023.

Letter 1

From: John Brooks
To: EPT
Subject: CAP
Date: Friday, December 17, 2021 11:02:25 AM

I have reviewed the CAP and did not see a section on Adaptation and Resilience and I did not hear it addressed in the meeting this morning. Is there a separate document that includes this type of information?

I am looking for something that addresses the following types of issues:

- SWP dependent areas – projects to ensure reliable water when the state issues a zero percent allocation.
- Major fires negatively impacting critical watersheds or storage.
- Land subsidence in the central valley effects on the conveyance system
- Impacts of zero snowpack in the Sierras by 2050 on the system.
- Extreme heat and evapotranspiration effects on operations and water availability.

1-1

I thought that the CAP's content was good and that separating the SWP GHG impacts is reasonable. However, for project evaluations and understanding the overall benefits, it would be helpful to have the aggregated GHG number as a comparison.

1-2

Thanks, John

John Brooks
Senior Sustainability Analyst
Public Works Department
805.449.2472 | toaks.org/publicworks

Response to Comment Letter 1

COMMENTER: John Brooks, Senior Sustainability Analyst, City of Thousand Oaks Public Works Department

DATE: December 17, 2021

Response 1-1

The commenter notes the CAP does not contain a section on adaptation and resilience and asked if a separate document addresses these concerns. Specifically, the commenter notes that they are looking for a section or document addressing the following:

- SWP dependent areas;
- Major fires negatively impacting critical watersheds or storage;
- Land subsidence in the Central Valley and effects on the conveyance system;
- Impacts of zero snowpack in the Sierras by 2050; and
- Extreme heat and evapotranspiration effects on operations and water availability.

Metropolitan understands the importance of adapting to changing climatic conditions to ensure a reliable supply of water to its service area. Metropolitan's Integrated Resources Plan (IRP) and Urban Water Management Plan (UWMP) focus on water supply reliability and actions that Metropolitan employs to ensure a reliable supply of water during periods of drought, a decrease in snowpack, heat events, and the effects on operational conditions. The CAP complements these two plans by creating a GHG reduction plan. The IRP is currently being updated and will be released in the coming months. Links to both current documents and information about the planning process are provided below.

- https://www.mwdh2o.com/planning-for-tomorrow/how-we-plan/integrated-resource-plan/
- https://www.mwdh2o.com/planning-for-tomorrow/how-we-plan/

Response 1-2

The commenter adds that separating SWP GHG impacts is reasonable, however for project evaluations and understanding the overall benefits, it would be helpful to have the aggregated GHG number as a comparison.

This comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process; no revisions have been made to the Draft PEIR.

Metropolitan's CAP is a GHG reduction plan aimed at identifying GHG emissions from within its operational control; therefore, emissions were calculated for its own operations including conveyance, treatment and distribution of SWP water from where it enters Metropolitan's system. DWR has its own CAP, which identifies emissions reductions for its operations. While an aggregated number will not be used in the Metropolitan's CAP, Metropolitan understands that having an aggregated emissions factor for the imported water to Southern California is beneficial to better understand the overall emissions related to imported water, therefore a discussion of DWR's emissions is provided in Topical Response A and a detailed discussion of the overall embedded energy of water imported to Southern California has been added to Appendix B of the Final CAP.

Letter 2

From: Kim, Theresa
To: EPT
Subject: CAP PEIR
Date: Tuesday, December 28, 2021 12:17:53 PM

To whom this may concern,

The Los Angeles Department of Water and Power's Water Resources Division recently reviewed the draft MWD Climate Action Plan. The CAP helps to show how Metropolitan will reduce GHG emissions in their operations; however, I have a couple questions. LADWP tracks their carbon emissions related to our operations and purchases and would like to know if MWD will provide their System Average GHG metric to Member Agencies so we can account for Scope 3 emissions related to purchase of water from your company. The other question that we have is regarding Strategy 8. We would like to know more about how the water conservation and local supply program will reduce Scope 3 emissions. 2-1 2-2

Feel free to contact me at (213) 367-1491 to discuss the questions.

Thanks so much,

Theresa Kim
Water Resources Division
Los Angeles Department of Water and Power
111 N. Hope Street, Room 308
Los Angeles, CA 90012
(213) 367-1491

Response to Comment Letter 2

COMMENTER: Theresa Kim, Los Angeles Department of Water and Power (LADWP) Water Resources Division

DATE: December 28, 2021

Response 2-1

The commenter asks if Metropolitan will provide its System Average GHG metric to Member Agencies, such as LADWP, to account for Scope 3 emissions related to purchase of water.

Metropolitan's CAP is a GHG reduction plan aimed at identifying GHG emissions from within its operational control; therefore, emissions were calculated for its own operations including conveyance, treatment and distribution of SWP water from where it enters Metropolitan's system. DWR has its own CAP, which identifies emissions reductions for its operations. While an aggregated number will not be used in the Metropolitan's CAP, Metropolitan understands that having an aggregated emissions factor for the imported water to Southern California is beneficial to better understand the overall emissions related to imported water, therefore a discussion of DWR's emissions is provided in Topical Response A and a detailed discussion of the overall embedded energy of water imported to Southern California has been added to Appendix B of the Final CAP.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR are warranted in response to this comment.

Response 2-2

The commenter also requests additional information regarding Strategy 8 of the CAP, specifically how the water conservation and local supply program will reduce Scope 3 emissions.

Strategy 8 is a largely supportive measure that includes the implementation of new and continued funding of existing water conservation programs aimed at reducing local water use and thereby indirectly reducing GHG emissions associated with transport and delivery of water. While Strategy 8 measures clearly reduce emissions associated with conveyance and treatment of water, the measures were included under Scope 3 because though Metropolitan can invest in and encourage water conservation efforts, the decision to participate in the programs, such as purchase of low flush toilets, lies outside of Metropolitan's control.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Letter 3

COUNTY of VENTURA
RESOURCE MANAGEMENT AGENCY
DAVE WARD, AICP
Planning Director

DATE: November 29, 2021

TO: Metropolitan Water District of Southern California

FROM: Abigail Convery, Senior Planner and Biologist

SUBJECT: Climate Action Plan and Draft Environmental Impact Report (RMA 20-005-1)

Thank you for the opportunity to comment on the Metropolitan Water District of Southern California's Climate Action Plan and Draft Environmental Impact Report (EIR) (RMA 20-005-1). The Water District should be commended for developing a Climate Action Plan to achieve carbon neutrality by 2045. Section 2.5 of the Draft EIR lists nine projects that would reduce energy use and/or sequester carbon, but none of these projects are proposed within Ventura County. This comment letter is simply regarding one factual correction to the document, as described below.

Within the Biological Resource section of Draft Environmental Impact Report, Section 4.2.3.3-Local Policies and Adopted/Approved Plans, should acknowledge Locally Important Species which are animal and plant communities designated as significant biological resources to be protected from incompatible land uses and development according to the Ventura County General Plan COS-1 Goal and Policy COS-1.1. The Locally Important Species list available on our website https://vcrma.org/ventura-county-locally-important-species-list. 3-1

Thank you for the opportunity to comment on the Climate Action Plan and Draft Environmental Impact Report (EIR). Please evaluate Locally Important Species for any discretionary projects that will occur within unincorporated Ventura County. If you have questions regarding the information set forth in this memo, please contact Abigail Convery, at (805) 654-2489 or via email at Abigail.Convery@ventura.org.

HALL OF ADMINISTRATION #1740
805-654-2481 • FAX 805-654-2509 • 800 South Victoria Avenue, Ventura, CA 93009 • vcrma.org

Response to Comment Letter 3

COMMENTER: Abigail Convery, Senior Planner and Biologist, County of Ventura

DATE: November 29, 2021

Response 3-1

The commenter acknowledges that none of the proposed projects in the Draft PEIR are within Ventura County. Additionally, the commenter suggests that Section 4.2.3.3, *Local Policies and Adopted/Approved Plans*, of the Biological Resources section of the Draft PEIR should acknowledge Locally Important Species, which are animal and plant communities designated as significant biological resources to be protected from incompatible land uses and development according to the Ventura County General Plan COS-1 Goal and Policy COS-1.1.

Section 4.2.3.3, *Local Policies and Adopted/Approved Plan*s, of the Draft PEIR, states that local general plans contain elements which address protection of biological resources, including special status species. As described on page 114 of the Draft PEIR, Metropolitan would comply with any applicable local policies or ordinances protecting biological resources. While the exact location of all projects that may be implemented under the proposed program are not known at this time, the commenter's statement that there are currently no proposed project sites in Ventura County is correct.

Letter 4

Ventura County
Air Pollution
Control District

4567 Telephone Rd
Ventura, California 93003

tel 805/303-4005
fax 805/456-7797
www.vcapcd.org

Dr. Laki Tisopulos, P.E.
Air Pollution Control Officer

VENTURA COUNTY
AIR POLLUTION CONTROL DISTRICT
Memorandum

TO: Malinda Stalvey, Senior Environmental Specialist DATE: January 4, 2022

FROM: Nicole Collazo, Air Quality Specialist, Planning Division

SUBJECT: Public Comment for the Metropolitan Water District of Southern California Climate Action Plan (CAP) and Draft Environmental Impact Report (DEIR) (RMA 20-005-1)

Air Pollution Control District (APCD) staff have reviewed the subject CAP and DEIR for the project referenced above (project). The Lead Agency for the project is the Metropolitan Water District of Southern California (Metropolitan), which has jurisdiction over portions of Los Angeles, Riverside, Orange, San Bernardino, San Diego, and Ventura counties.. APCD as a Commenting Agency has the following comments about the draft CAP and EIR as it pertains to air quality and/or greenhouse gas environmental impact sections.

GENERAL COMMENTS

4-1

Draft Climate Action Plan

Item 1, Page 5.27-5.28. DC-1 and DC-2 have conflicting deadlines. DC-1 intends to establish a schedule to replace all natural gas equipment in Metropolitans' buildings to electric by 2025, yet DC-2 states natural gas from the same sources (Metropolitans' buildings, etc.) will be reduced by 50% by 2030. DC-2 then goes on to say some natural gas-fired equipment will be replaced as it ends its lifetime, and that may be after the intended replacement deadline of 2025, and even 2030.

Item 2, Page 5.34 As part of Measure FL-4 Phase 1's ZEV/EV Feasibility Study, it is encouraged to factor in costs and commitment to apply to applicable air district's incentive grants program(s), which include funding the cost of EV infrastructure installations. For more information regarding the VCAPCD's Incentive Programs, please visit http://www.vcapcd.org/grant_programs.htm .

4-2

Item 3, Page 5.37. The implementation year for Measure AF-2 is 2021, which has already passed. If not implemented yet, it is recommended the year be changed to reflect the measure's current status, and concurrently AF-3 as it depends on the 2021 Pilot Study referenced in Measure AF-2.

4-3

Item 4, Page 5.4. Scope 1 Strategy 1 states "natural gas-powered equipment can be electrified over time as the equipment reaches the end of its useful life". This strategy is not proactive and in line with the goal of a climate action plan, as the end life of some equipment may exceed 2025, 2030,

4-4

and perhaps 2045 in some cases, depending on when the equipment was purchased. Consider rewording this strategy or stating all natural gas equipment will be replaced by a concrete date. 4-4

Item 5, Table 6-1. The implementation year for several strategies are past due (2021 for DC-2, E-5, EC-2, EC-5, WC-3). Consider updating these implementation years unless already begun in 2021. 4-5

Draft Environmental Impact Report

Item 1, Page 101. We recommend adding the statement "and make assessment available to the applicable air district for review" in the last sentence of Mitigation Measure AQ-1. 4-6

Item 2, Page 101. We recommend adding the statement "unless a lower VOC is required from applicable air district prior to mitigation." in the last sentence of Mitigation Measure AQ-2. For example, the current VOC limit for VCAPCD is 50 g/L for general coatings. 4-7

Thank you for the opportunity to comment on the project's draft CAP and EIR. You may reach me at nicole@vcapcd.,org should you have any questions.

Response to Comment Letter 4

COMMENTER: Nicole Collazo, Air Quality Specialist, Ventura County Air Pollution Control District

DATE: January 4, 2022

Response 4-1

The commenter states the Air Pollution Control District has reviewed the CAP and the Draft PEIR and notes that on pages 5.27 and 5.28 of the CAP, measures DC-1 and DC-2 have conflicting deadlines.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Metropolitan is committed to reducing its natural gas consumption. Measure DC-1 ensures that an analysis of natural gas consuming equipment is completed no later than 2025. The analysis will include cost-effective replacement options, a budget, and an established replacement schedule. Measure DC-1 is a complementary, supportive measure that is critical to the success of the quantifiable Measure DC-2 which includes a commitment to reduce Metropolitan's natural gas emissions by 50 percent by 2030.

Response 4-2

The commenter references page 5.34 of the CAP, specifically measure FL-4 Phase 1's ZEV/EV Feasibility Study and encourages Metropolitan to factor in costs and commitment to apply to applicable air district's incentive grants program(s). Additionally, the commenter provided information on their EV infrastructure incentive programs on their website.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Metropolitan initiated a comprehensive ZEV/EV Feasibility Study in January 2022 and anticipates a completion date by January 2023. The Scope of Work includes a study of available vehicle options, preliminary infrastructure design plans, and identification of government grant and local agency incentive programs to ensure a cost-effective transition to ZEV/EV technology(s).

Response 4-3

The commenter notes the implementation year for measure AF-2 is listed in the CAP as 2021. If not implemented yet, the commenter recommends the year be changed to reflect the measure's current status. The commenter recommends measure AF-3 be updated accordingly, as it is dependent on the study referenced in AF-2.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. A renewable diesel use pilot project for on-road and off-road vehicles was implemented in late 2021. Results from this pilot project will be used to determine the feasibility of implementing the interim measure of transitioning 100 percent of Metropolitan's diesel fuel use to renewable diesel. This strategy will be employed to reduce diesel emissions until such time that Metropolitan transitions its fleet to ZEV/EV as described in Strategy 2 – Zero-Emission Fleet.

Response 4-4

The commenter recommends rewording Scope 1, Strategy 1 in the CAP, or stating that all natural gas equipment will be replaced by an established date.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. While electrification is an important step in decarbonization of natural gas equipment, not all natural gas consuming equipment can be electrified at this time. Metropolitan has committed to replacing 100 percent of its natural gas consuming equipment by 2045. For further discussion on the replacement of natural gas equipment, please see Response 4-1.

Response 4-5

The commenter recommends updating the implementation years that are past due unless already begun in 2021 for CAP measures DC-2, E-5, EC-2, EC-5, and WC-3.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. All the measures identified are already being implemented. Therefore, the implementation schedule is correct.

Response 4-6

The commenter recommends adding the statement, "and make assessment available to the applicable air district for review," in the last sentence of Mitigation Measure AQ-1 on page 101 of the Draft PEIR.

Mitigation Measure AQ-1, as described on page 101 of the Draft PEIR, requires preparation of a project-specific construction air quality assessment for individual projects to be implemented under the CAP that involve construction activities with an intensity (i.e., size, schedule, equipment, demolition, import/export of soil, architectural coating) greater than the sample program activity described in Section 4.1, *Air Quality*, of the Draft PEIR. Future projects implemented under the CAP would be required to undergo the appropriate level of project-specific environmental review, during such time any applicable project-specific air quality analyses would be available as part of the public record during project approval. At such time, applicable air districts with jurisdiction over individual project sites would have the opportunity to review and/or comment on any project-specific construction air quality assessments. Because this would occur through the CEQA-required process, no changes to the mitigation measure are warranted.

Response 4-7

The commenter suggests adding the statement, "unless a lower [volatile organic compound] VOC is required from applicable air district prior to mitigation," in the last sentence of Mitigation Measure AQ-2, since the current VOC limit for VCAPCD is 50 grams per liter (g/L) for general coatings.

Section 4.1, *Air Quality*, of the Draft PEIR acknowledges that air districts promulgate their own rules with respect to VOC content limits for architectural coatings, which may be lower than 250 g/L. The list of emissions reduction measures described in Mitigation Measure AQ-2 is intended to be representative of the type of measures that may be included to reduce emissions from individual projects and is not an exhaustive list. Furthermore, as noted in footnote 20 on page 90 of the Draft PEIR, all contractors would be required to comply with applicable air district rules regarding VOC content limits for architectural coatings, which may be more stringent than 250 g/L depending on the air district and type of coating. Because compliance with the applicable air district's required VOC content limit constitutes regulatory compliance, no changes to the mitigation measure are warranted.

Letter 5

INNOVATING FOR A BETTER TOMORROW

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS
900 Wilshire Blvd., Ste. 1700
Los Angeles, CA 90017
T: (213) 236-1800
www.scag.ca.gov

January 6, 2022

Ms. Malinda Stalvey, Senior Environmental Specialist
The Metropolitan Water District of Southern California, Environmental Planning Section
P.O. Box 54153
Los Angeles, California 90054-0153
Phone: (213) 217-5545
E-mail: EP@mwdh2o.com

RE: SCAG Comments on the Draft Program Environmental Impact Report for the Metropolitan Water District of Southern California Climate Action Plan (CAP) [SCAG NO. IGR10524]

Dear Ms. Stalvey,

Thank you for submitting the Notice of Availability of the Draft Program Environmental Impact Report for the Metropolitan Water District of Southern California Climate Action Plan (CAP) ("proposed project") to the Southern California Association of Governments (SCAG) for review and comment. The proposed project is a Climate Adaption Plan that establishes an inventory of historical and current greenhouse gas (GHG) emissions and outlines a strategy for reducing GHG emissions associated with future construction, operation, and maintenance activities by 40 percent below 1990 levels by year 2030.

Based on SCAG staff's review, the proposed project does not reference the most recently adopted 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS or Connect SoCal). SCAG staff comments are detailed in the attachment to this letter.

5-1

When available, please send the Final Program Environmental Impact Report to IGR@scag.ca.gov. If you have any questions regarding the attached comments, please contact the Intergovernmental Review (IGR) Program, attn.: Anita Au, Senior Regional Planner, at (213) 236-1874 or IGR@scag.ca.gov. Thank you.

Sincerely,

Frank Wen, Ph.D.
Manager, Planning Strategy Department

COMMENTS ON THE NOTICE OF AVAILABILITY OF A DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT FOR METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA CLIMATE ACTION PLAN (CAP) [SCAG NO. IGR10524]

SUMMARY

Pursuant to Senate Bill (SB) 375, SCAG is the designated Regional Transportation Planning Agency under state law and is responsible for preparation of the Regional Transportation Plan (RTP) including the Sustainable Communities Strategy (SCS). SCAG's feedback is intended to assist local jurisdictions and project proponents to implement projects that have the potential to contribute to attainment of Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) goals and align with RTP/SCS policies.

Based on SCAG staff review, the proposed project generally supports the applicable goals of the 2020 Connect SoCal, and the analysis in the Draft Program Environmental Impact Report is based on the growth forecasts adopted as part of the 2020 Connect SoCal.

5-1

CONNECT SOCAL GOALS

The SCAG Regional Council fully adopted Connect SoCal in September 2020. Connect SoCal, also known as the 2020 – 2045 RTP/SCS, builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. The long-range visioning plan balances future mobility and housing needs with goals for the environment, the regional economy, social equity and environmental justice, and public health. The goals included in Connect SoCal may be pertinent to the proposed project. These goals are meant to provide guidance for considering the proposed project. Among the relevant goals of Connect SoCal are the following:

SCAG CONNECT SOCAL GOALS	
Goal #1:	*Encourage regional economic prosperity and global competitiveness*
Goal #2:	*Improve mobility, accessibility, reliability and travel safety for people and goods*
Goal #3:	*Enhance the preservation, security, and resilience of the regional transportation system*
Goal #4:	*Increase person and goods movement and travel choices within the transportation system*
Goal #5:	*Reduce greenhouse gas emissions and improve air quality*
Goal #6:	*Support healthy and equitable communities*
Goal #7:	*Adapt to a changing climate and support an integrated regional development pattern and transportation network*
Goal #8:	*Leverage new transportation technologies and data-driven solutions that result in more efficient travel*
Goal #9:	*Encourage development of diverse housing types in areas that are supported by multiple transportation options*
Goal #10:	*Promote conservation of natural and agricultural lands and restoration of habitats*

5-2

Connect SoCal Strategies

To achieve the goals of Connect SoCal, a wide range of land use and transportation strategies are included in the accompanying twenty (20) technical reports. To view Connect SoCal and the accompanying technical reports, please visit the Connect SoCal webpage. Connect SoCal builds upon the progress from previous RTP/SCS cycles and continues to focus on integrated, coordinated, and balanced planning for land use and transportation that helps the SCAG region strive towards a more sustainable region, while meeting statutory requirements pertinent to RTP/SCSs. These strategies within the regional context are provided as guidance for lead agencies such as local jurisdictions when the proposed project is under consideration.

SCAG Staff Comments

SCAG staff recommends that you review 2020 Connect SoCal and consider its adopted goals and policies when finalizing the proposed project.

SCAG staff would like to call your attention to resources available from SCAG's Regional Climate Adaptation Framework including the Southern California Climate Adaptation Planning Guide, Communication and Outreach Toolkit, Library of Model Policies, and SB 379 Compliance Curriculum for Local Jurisdictions.

5-2

DEMOGRAPHICS AND GROWTH FORECASTS

A key, formative step in projecting future population, households, and employment through 2045 for Connect SoCal was the generation of a forecast of regional and county level growth in collaboration with expert demographers and economists on Southern California. From there, jurisdictional level forecasts were ground-truthed by subregions and local agencies, which helped SCAG identify opportunities and barriers to future development. This forecast helps the region understand, in a very general sense, where we are expected to grow, and allows SCAG to focus attention on areas that are experiencing change and may have increased transportation needs. After a year-long engagement effort with all 197 jurisdictions one-on-one, 82 percent of SCAG's 197 jurisdictions provided feedback on the forecast of future growth for Connect SoCal. SCAG also sought feedback on potential sustainable growth strategies from a broad range of stakeholder groups – including local jurisdictions, county transportation commissions, other partner agencies, industry groups, community-based organizations, and the general public. Connect SoCal utilizes a bottom-up approach in that total projected growth for each jurisdiction reflects feedback received from jurisdiction staff, including city managers, community development/planning directors, and local staff. Growth at the neighborhood level (i.e., transportation analysis zone (TAZ) reflects entitled projects and adheres to current general and specific plan maximum densities as conveyed by jurisdictions (except in cases where entitled projects and development agreements exceed these capacities as calculated by SCAG). Neighborhood level growth projections also feature strategies that help to reduce greenhouse gas emissions (GHG) from automobiles and light trucks to achieve Southern California's GHG reduction target, approved by the California Air Resources Board (CARB) in accordance with state planning law. Connect SoCal's Forecasted Development Pattern is utilized for long range modeling purposes and does not supersede actions taken by elected bodies on future development, including entitlements and development agreements. SCAG does not have the authority to implement the plan -- neither through decisions about what type of development is built where, nor what transportation projects are ultimately built, as Connect SoCal is adopted at the jurisdictional level. Achieving a sustained regional outcome depends upon informed and intentional local action. To access jurisdictional level growth estimates and forecasts for years 2016 and 2045, please refer to the Connect SoCal Demographics and Growth Forecast Technical Report. The growth forecasts for the region and applicable jurisdictions are below.

5-3

	Adopted SCAG Region Wide Forecasts			
	Year 2020	**Year 2030**	**Year 2035**	**Year 2045**
Population	19,517,731	20,821,171	21,443,006	22,503,899
Households	6,333,458	6,902,821	7,170,110	7,633,451
Employment	8,695,427	9,303,627	9,566,384	10,048,822

5-3

SCAG Staff Comments

SCAG staff recommends including a reference to the population, housing, and employment trends and forecasts of the most recently adopted SCAG 2020 Connect SoCal Regional Growth Forecasts.

MITIGATION

SCAG Staff Comments

SCAG staff recommends that you review the Final Program Environmental Impact Report (Final PEIR) for Connect SoCal for guidance, as appropriate. SCAG's Regional Council certified the PEIR and adopted the associated Findings of Fact and a Statement of Overriding Considerations (FOF/SOC) and Mitigation Monitoring and Reporting Program (MMRP) on May 7, 2020 and also adopted a PEIR Addendum and amended the MMRP on September 3, 2020 (please see the PEIR webpage and scroll to the bottom of the page for the PEIR Addendum). The PEIR includes a list of project-level performance standards-based mitigation measures that may be considered for adoption and implementation by lead, responsible, or trustee agencies in the region, as applicable and feasible. Project-level mitigation measures are within responsibility, authority, and/or jurisdiction of project-implementing agency or other public agency serving as lead agency under CEQA in subsequent project- and site- specific design, CEQA review, and decision-making processes, to meet the performance standards for each of the CEQA resource categories.

5-4

Response to Comment Letter 5

COMMENTER: Frank Wen, Ph.D., Manager, Planning Strategy Department, Southern California Association of Governments (SCAG)

DATE: January 6, 2022

Response 5-1

The commenter states the proposed CAP does not reference the most recently adopted 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS or 2020 Connect SoCal). However, the commenter adds the proposed program does generally support the applicable goals of 2020 Connect SoCal, and the analysis in the Draft PEIR is based on the growth forecasts adopted as part of 2020 Connect SoCal.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. As acknowledged by the commenter, the analysis in the Draft PEIR is based on growth forecasts adopted as part of 2020 Connect SoCal. For more information on the growth forecasts employed in the Draft PEIR analysis, refer to Chapter 3, *Environmental Setting*, of the Draft PEIR. No changes to the Draft PEIR are warranted in response to this comment.

Response 5-2

The commenter provides information regarding SCAG's 2020 Connect SoCal adopted in September 2020. The commenter describes 2020 Connect SoCal's goals and recommends that 2020 Connect SoCal be reviewed, and its goals and policies be considered when finalizing the proposed program.

This comment is acknowledged and does not raise concerns pertaining to the adequacy of the Draft PEIR or the CEQA process. As described in the draft CAP, the CAP complements Metropolitan's other long-range planning efforts. As appropriate, other plans and programs intended to reduce GHG emissions at a regional scale have been reviewed in support of the CAP. No further response is required.

Response 5-3

The commenter provides information regarding SCAG's demographics and growth forecasts. The comment recommends including a reference to the population, housing, and employment trends and forecasts of the most recently adopted SCAG 2020 Connect SoCal Regional Growth Forecasts.

As acknowledged by the commenter, the analysis contained in the Draft PEIR is based on growth forecasts adopted as part of 2020 Connect SoCal. These growth forecasts are presented in Table 6 on page 60 of the Draft PEIR. No changes to the Draft PEIR are warranted in response to this comment.

Response 5-4

The commenter recommends the Final PEIR for 2020 Connect SoCal be reviewed for guidance related to mitigation measures.

Metropolitan appreciates this recommendation. Various program-level environmental documents, including the Final PEIR for 2020 Connect SoCal, were reviewed to inform the approach to analysis and mitigation for the Draft PEIR. No changes to the Draft PEIR are warranted in response to this comment.

Letter 6

From: Demkowicz, Erica
To: EPT
Cc: Reekstin, Scott; Huitron, Irma
Subject: RE; CAP PEIR Scoping - MWD - CITY OF TUSTIN RESPONSE
Date: Thursday, January 6, 2022 9:35:27 AM

Good Morning,

The City of Tustin has reviewed the Notice of Availability and PEIR for MWD's Climate Action Plan (CAP) and does not have any comments. 6-1

Regards,

Erica H. Demkowicz, AICP
Senior Planner
City of Tustin
Community Development Department
300 Centennial Way
Tustin, CA 92780
(714) 573-3127
edemkowicz@tustinca.org

Response to Comment Letter 6

COMMENTER: Erica H. Demkowicz, AICP, Senior Planner, Community Development Department, City of Tustin

DATE: January 6, 2022

Response 6-1

The comment states the Notice of Availability and Draft PEIR for the CAP were reviewed by the City of Tustin and the City does not have any comments.

This comment is acknowledged and does not raise concerns pertaining to the adequacy of the Draft PEIR, draft CAP, or the CEQA process. Therefore, no further response is required.

Letter 7

Heal the Bay

1444 9th Street ph. 310-451-1500 info@healthebay.org
Santa Monica, CA 90401 fax 310-496-1902 www.healthebay.org

January 6, 2022

Ms. Malinda Stalvey, Senior Environmental Specialist
The Metropolitan Water District of Southern California
Environmental Planning Section
P.O. Box 54153
Los Angeles, CA 90054-0153

Sent via email to: EP@mwdh2o.com

RE: NOTICE OF AVAILABILITY – DRAFT CLIMATE ACTION PLAN, AND CLIMATE ACTION PLAN DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT REPORT

To Ms. Stalvey:

Heal the Bay is a non-profit environmental organization with over 35 years of experience and 15,000 members dedicated to making the coastal waters and watersheds of Greater Los Angeles safe, healthy, and clean. We would first like to recognize that we are on Indigenous land. The main office of Heal the Bay in Santa Monica is located on Tongva, Chumash, and Kizh land.[1] We acknowledge and respect Tongva, Chumash, and Kizh elders past, present, and emerging. Heal the Bay respectfully submits the following comments in response to the Metropolitan Water District (MWD) Draft Climate Action Plan (CAP) and CAP Draft Programmatic Environmental Impact Report (PEIR).

We would first like to acknowledge and commend MWD for creating this CAP and including interim goals to ensure achievement of carbon neutrality by 2045, as required by the State of California. We would also like to recognize the significant decrease in greenhouse gasses (GHGs) already achieved by MWD through actions such as conservation programs, groundwater recovery programs, and divesting in coal. However, the dimate crisis is a huge challenge that we can – and must – overcome. Bearing that in mind, we must all recognize that we can no longer pursue unsustainable practices. With limited time and resources to achieve global climate reduction requirements, and with the health of our communities and ecosystem on the line, we must focus efforts on the latest science and the best practices available, offering the most benefit. We offer the following comments to bolster the MWD CAP, and to ensure successful implementation moving forward.

- The MWD CAP must address the larger context of the climate crisis and its myriad impacts to properly assess the most effective path forward.
- GHG reduction targets and land management practices should be based on the latest science and best management practices available.
- MWD should focus strategy efforts on the most sustainable approaches and invest in multi-benefit projects that utilize vegetated nature-based solutions.
- MWD must strive for transparency throughout the process of assessing implementation, reporting on progress, and updating the CAP every 5 years or earlier if necessary.
- MWD should pursue project level EIRs for individual projects proposed in the CAP to better understand the impacts of the project, to fully investigate alternatives, and to ensure public participation in project development and review through the CEQA process.

These comments are discussed in further detail below.

7-1

[1] Native Land Digital. 2021. Our home on native land. Available at: https://native-land.ca/

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The MWD CAP must address the larger context of the climate crisis and its myriad impacts to properly assess the most effective path forward.

Explain additional climate planning that has been completed by MWD.

The climate crisis is about much more than GHG emissions. We appreciate that wildfires are addressed in this CAP, but other impacts such as sea level rise (which will affect not only our coastline but also inland areas with the myriad impacts of seawater intrusion), are not. Please include in Section 2.0 "Scientific Context and Climate Change Impacts" a full discussion of the myriad impacts of the climate crisis, and include references to other MWD planning documents, when applicable, where additional associated climate planning has been completed. 7-2

Provide an overview of the State Water Project and associated GHG emissions.

We request that MWD include in their CAP an overview of the State Water project and its associated GHG emission, as outlined in the California Department of Water Resources Climate Action Plan. We understand not wanting to double count these emissions, but it would be helpful to understand the bigger picture if there was information on what percentage of MWD emissions are from the State Water Project, and how that might change if MWD could reduce its need to import water by sourcing more water locally. 7-3

We also request that MWD include a new section in the CAP to recognize the importance of a healthy Bay Delta to climate resilience on a larger scale, considering how heavily MWD currently relies on the import of water from the Delta, and the impacts that water transportation can have on this important ecological area.

Make additional small edits for clarification.

We also offer a minor edit to Page 1.19 of the MWD CAP to recognize that the local environmental responses to climate fluctuations have been variable throughout California's history, on a geologic time scale, but that the 2011-2014 drought is the hottest and driest period in recorded history. 7-4

"This period includes the hottest and driest period in ~~California~~ recorded history for California..."

GHG reduction targets and land management practices should be based on the latest science and best management practices available.

Adjust the current interim goal (to exceed 40% below 1990 emissions by 2030) to align with the Intergovernmental Panel on Climate Change recommendation to achieve 49% below 2017 emissions by 2030.

The Paris Agreement recognizes that we must remain under a 1.5°C rise in average global temperature in order to avoid an ecological tipping point that makes it more difficult to sustain healthy natural systems. The latest report from the Intergovernmental Panel on Climate Change (IPCC) states that it is still possible to remain under this 1.5°C tipping point, but that it will require immediate action to reduce emissions by 49% below 2017 levels by 2030 and to achieve carbon neutrality by 2050 through a combination of reducing emissions and sequestering carbon. 7-5

The MWD CAP recognizes the California State requirements to achieve 40% below 1990 emissions by 2030. We appreciate that MWD has set their own goal to exceed this 40% reduction requirement by 2030 in order to ensure that carbon neutrality can be achieved by 2045, pursuant to Executive Order B-55-18. We encourage MWD to make this goal more specific, and in line with the best available science, by maintaining the final goal to achieve carbon neutrality by 2045, and including an interim goal to achieve a 49% reduction below 2017 levels by 2030.

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Update the definitions of low, average, and high emissions scenarios based on increases in local water supplies such as stormwater capture.

We urge MWD to update the definition of low, average, and high emissions scenarios (based on projections around the average rainfall year and therefore how much imported water is necessary) to reflect projected improvements in local stormwater capture as an additional source of local water supply. Between investments from water agencies (such as MWD), local funding through the Safe, Clean Water Program (SCWP), as well as available state and federal funding, the potential is enormous for stormwater capture to fulfill a high percentage of Southern California's water needs, thus reducing the need for imported water and providing additional opportunities to reduce GHG emissions. We encourage MWD to work with other local agencies and municipalities, such as the Los Angeles County Department of Public Works, to identify potential for collaboration and for increasing local water supply. 7-6

Land management practices should pursue multiple benefits and be conducted in consultation with local and Indigenous expertise.

The language used focuses on the threat wildfire poses to the workers on site and the MWD owned buildings. MWD should instead make it clear that these wildfire prevention measures are needed to preserve human life on and off MWD property, protect public health and quality of life from impacts to air quality and water quality, and to protect lands surrounding MWD property. We also recommend that MWD work with local and Indigenous experts to properly manage MWD owned land. MWD should also make sure that traffic control plans for wildfire emergencies are heavily scrutinized, as wildfires continue to increase in intensity. In addition to identifying wildfire hazard zones, MWD should also take into account sensitive ecosystems and habitat areas that could be impacted by wildfire. If operations will increase the wildfire risk to a significant natural area, MWD should take extra precautions. MWD also states that some jurisdictions have more stringent wildfire restrictions than others. We urge MWD to follow the most stringent regulations at all developments, regardless of jurisdiction, except where necessary to protect local ecological health (e.g. not removing more vegetation than is necessary, etc.). This approach will be most protective of human life, local ecosystems, and MWD facilities. 7-7

We also recommend that MWD utilize vegetated nature-based solutions to the extent feasible on all projects moving forward, again conducted in consultation with local and Indigenous experts. Examples of GHG reduction efforts in the CAP include conservation of natural lands, which is important; however, MWD cannot use existing natural space to offset future emissions in order to achieve carbon neutrality by 2045. New natural space must be created or restored in order to generate the sequestration necessary to offset any continued emissions, and there are opportunities for creating new natural spaces within the scope of MWD planned projects. For example, road construction will be necessary to lay piping for the Regional Recycled Water Project, and that construction can include replacing existing roads with Living Streets.[2] MWD could even pursue local funding through Measures W and M to cover any additional costs, and the myriad benefits would far surpass the limited co-benefits currently identified in the MWD CAP. An added benefit to this approach of using vegetated nature-based solutions is that healthy soils with healthy vegetation and microbial ecosystems can actually hold more water, increasing our capacity for natural water storage, as well. 7-8

[2] Climate Resolve, GreenLA Coalition, and Heal the Bay. "Living Streets Economic Feasibility Study Final Report." Available at: https://healthebay.org/sites/default/files/pdf/fact-sheets/Final%20Living%20Streets%20Working%20Economic%20Feasibility%20%20Final%20Print%20Version%20022616.pdf

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MWD should focus strategy efforts on the most sustainable approaches and invest in multi-benefit projects that utilize vegetated nature-based solutions.

We generally support the goals for GHG emissions reduction and the plans to achieve reduction outlined in Strategies 1-6 of the MWD CAP. We appreciate ways in which MWD has taken responsibility for emissions that fall within their operational control down to very fine details and even including planned contracted construction work. However, one major oversight is consideration of GHG emission associated with the manufacturing of supplies used by MWD or its contractors such as the production of asphalt for repaving. 7-9

MWD should remove all reference to "Low Carbon Electricity" from Strategy 4, and instead focus entirely on renewable carbon-free sources of electricity.

We do have some concerns regarding Strategy 4: Utilize Low-Carbon and Carbon-Free Electricity. There is a definition in the CAP for carbon-free electricity ("electricity produced by a resource that generates no carbon emissions") with a few examples given as renewable energy (such as photovoltaic, nuclear, and large hydroelectric sources). MWD should include clarifying language to explain their definition of Carbon-Free Electricity that "generates no carbon emissions" refers to the power generation itself, and not to include emissions from, for example, construction of associated power generating or storage facilities. We further urge MWD to modify this definition to include only renewable energy and to prioritize renewable energy sources with fewer negative environmental impacts. For instance, nuclear and large hydroelectric sources for energy should be deprioritized given the known environmental issues with nuclear waste disposal and impacts to riparian ecology and anadromous fish from dams. In particular, we do not support the creation of new dams for energy (or water) needs. Additionally, MWD should remove any reference to "Low-Carbon" from Strategy 4 and focus on renewable carbon-free energy sources. At a minimum, MWD must clearly define "Low-Carbon Electricity" within the context of this CAP. 7-10

MWD must support movement towards a circular economy as part of Strategy 7.

We support the Phase 1 measure of zero landfilled waste, as these GHG emissions from waste are not insignificant, as well as the prioritization of these measures into the short-term Phase 1 strategies. However, zero landfilled waste is not attainable with continued widespread use of non-recyclable or non-compostable products, most notably many types of single-use plastic such as polystyrene. Therefore, to achieve this goal, MWD must also support strategies that phase these products out of the consumer market chain and support movement towards a circular economy.

As a fossil fuel product, emissions from plastics are a serious contribution to overall GHG emissions throughout the entire lifecycle of the material and is on trend to "account for 20% of total oil consumption and 15% of the global annual carbon budget by 2050 (this is the budget that must be adhered to in order to achieve the internationally accepted goal to remain below a 2°C increase in global warming)."[3] We suggest that MWD support municipalities such as the Los Angeles City Council in developing and passing policies, many of which are already in motion, that reduce not only the disposal of GHG emitting plastics into landfill, but truly phase out non-recyclable and non-compostable options and support reuse and refill to truly reduce waste from the source and achieve zero net waste. 7-11

[3] World Economic Forum. 2016. "The New Plastic Economy: Rethinking the Future of Plastic." Available at: https://www3.weforum.org/docs/WEF_The_New_Plastics_Economy.pdf

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We are supportive of Strategy 8, though we encourage MWD to invest further in stormwater capture, and incorporate vegetated nature-based solutions into all projects moving forward.

We support expanding MWD education programs, as well as the continuation of water efficiency programs. We encourage MWD to also expand all successful water efficiency programs to the extent possible to ensure accessibility.

We also support the turf removal program. However, we do request that MWD include a clear definition for "water efficient landscapes" to not include impermeable surfaces and to prioritize landscapes utilizing climatically appropriate native plant species. We also encourage MWD to expand any incentives associated with this program and to pursue the option for a funding program to provide access for low-income households or historically under-resourced communities.

7-12

We most certainly support funding for stormwater projects, but this can no longer be considered a pilot project. The water supply benefits of stormwater capture are well known and documented, as reported by LA for a New Economy in 2018[4] and the Pacific Institute in 2020.[5] The successful passage of Measure W and creation of the Safe, Clean Water program in 2018 provides further evidence, and also provides the potential for additional project funding which could be leveraged with existing MWD resources to create multi-benefit stormwater capture projects. Examples of the types of projects that MWD is pursuing provided in the CAP are spreading basins, dry wells, and infiltration galleries. However, the ecosystem health co-benefit claimed for these types of projects are limited, at best. As discussed above, multi-benefit projects using vegetated nature-based solutions are the best way to achieve ecosystem health benefits and can offer immense return on investment costs through other co-benefits, as well. This can also make these kinds of projects more competitive for securing additional funding.

7-13

Similarly, we also support the Regional Recycled Water Project. Increased use of recycled wastewater is another smart water practice that Heal the Bay supports. However, there are opportunities to utilize vegetated nature-based solutions (e.g. implementing Living Streets during necessary road construction for setting new pipelines) that MWD is not yet pursuing. In fact, the pumping stations required for this project will significantly increase energy demand, and carbon sequestration will be necessary to offset that demand. Living Streets is one way to increase local carbon sequestration.

7-14

MWD should prioritize natural carbon sequestration, and not rely too heavily on engineered solutions for carbon capture and storage.

MWD should focus efforts on continuing restoration and protection of natural spaces and on creation of new natural space through the implementation of vegetated nature-based solutions within projects moving forward. Engineered solutions for carbon capture and storage do not provide the myriad co-benefits that vegetated nature-based solutions offer. Therefore, MWD should not rely too heavily on future technological advances in these kinds of engineered solutions.

Additionally, we do support regenerative agriculture practices, and encourage MWD to conduct this work in coordination with local and tribal land management experts. Particularly for strategy

7-15

[4] Los Angeles for a New Economy. 2018. "Liquid Assets: How stormwater infrastructure builds Resilience, Health, Jobs, and Equity." Available at: http://laane.org/wp-content/uploads/2018/03/LAANE_Liquid-Assets_Stormwater-Report.pdf

[5] The Pacific Institute. 2020. "Economic Evaluation of Stormwater Capture and Its Multiple Benefits in California." Available at: https://pacinst.org/publication/economic-evaluation-of-stormwater/

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CS-3 for soil carbon sequestration, MWD should collaborate with groups such as the Marin Carbon Project to maximize soil carbon sequestration on all MWD owned land.[6]

MWD must strive for transparency throughout the process of monitoring implementation, reporting on progress, and updating the CAP every 5 years or earlier if necessary.

We appreciate that MWD has opted to define specific reduction targets in this CAP, and support the carbon budget approach to measure progress towards meeting its GHG reduction goals. We understand that the Climate Working Group will provide updates on CAP implementation progress and status of the carbon budget to the Board of Directors on an annual basis, and that this process will also include updates on Metropolitan's CAPDash and monitoring software, which will be used to provide transparent and regular updates for stakeholders. To ensure full transparency, please include in the CAP a detailed list of information that will be shared through the CAPDash website to ensure that the public will have access to all the necessary information to assess progress. 7-16

One piece of information that should be disclosed through the CAPDash website is a clear statement of whether or not MWD is on track to achieving both the interim 2030 reduction goal and the final 2045 carbon neutrality goal, with supporting evidence to back the statement up. This will not only provide transparency to the public for the implementation process, but also allow for public engagement if it does become necessary to update the CAP prior to the designated 5-year interval. Please also include in the first annual report a determination of whether or not WMD met the 2020 projected target necessary to achieving carbon neutrality by 2045, as outlined in Figure 4-1 of the MWD CAP. 7-17

In addition to transparency through the CAPDash website, MWD should begin immediate outreach and engagement on the next 5-year update to engage local communities, as well as the environmental community at large, early and often in the update process. 7-18

MWD should pursue project level EIRs for individual projects proposed in the CAP to better understand the impacts of the project, to fully investigate alternatives, and to ensure public participation in project development and review through the CEQA process.

It is unclear why a PEIR is necessary at this time rather than approving the MWD CAP now, moving forward with implementation, and conducting project level EIRs as necessary. The PEIR recognizes one of the main issues still to be addressed: how to address impacts from individual projects under the proposed CAP. The PEIR states that it serves as a first-tier CEQA document that will support second-tier CEQA documents for individual projects to be implemented under the proposed CAP. It also states that the projected significant and unavoidable impacts in the resource categories of air quality, cultural resources, and noise may change once individual project details are known and project-level analysis occurs. Therefore, it is still unclear what level of environmental investigation will be required for any given project proposed in the CAP, particularly since projects outlined in the CAP have yet to be approved by the MWD Board. For example, how will the impacts of larger scale infrastructure projects (like those on the scale of the Regional Recycled Water Project) be addressed? Some specific examples would be helpful. 7-19

MWD must also revisit the alternatives section of the draft PEIR. This is another area where the PEIR will be insufficient and a project level EIR would be more appropriate. The only alternatives explored are an alternate location (rejected due to restrictions around MWD owned properties), alternative methods (rejected without much detail because other methods would also result in similar construction related impacts), and no project (which would result in having to face the broader implications of the climate crisis). However, this alternatives section does not explore the full breadth of approaches that MWD could pursue, including the recommendations provided in this letter.

[6] Marin Carbon Project. 2018. https://www.marincarbonproject.org/

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Thank you for the opportunity to comment on the Draft Climate Action Plan and associated Draft Programmatic Environmental Impact Report. We believe that the Climate Action Plan, with the recommendations provided above, has the potential to contribute significantly to global GHG reduction goals, and serve as an example of good climate practice. MWD states in the CAP that it can be used by the 26 member agencies when considering local policies and programs. We encourage MWD to work collaboratively with these 26 member agencies now, and consider providing requirements or incentives where feasible to include member agencies in these plans and in achieving similar goals. In this way, the MWD CAP can have broader implications even beyond those that fall under operational control.

7-20

We look forward to continuing our collaborative work with the Metropolitan Water District in order to ensure a sustainable, affordable, and accessible water future for Southern California. If you have any questions concerning this comment letter, please contact Annelisa Moe via e-mail at amoe@healthebay.org, or by telephone at (310) 451-1500 X115.

Sincerely,

Annelisa Ehret Moe
Water Quality Scientist
Heal the Bay

Dr. Katherine Pease
Science and Policy Director
Heal the Bay

Response to Comment Letter 7

COMMENTER: Annelisa Ehret Moe, Water Quality Scientist, Heal the Bay
Dr. Katherine Pease, Science and Policy Director, Heal the Bay

DATE: January 6, 2022

Response 7-1

The commenter provides background on Heal the Bay and commends Metropolitan for creating the CAP. The commenter then offers a bulleted list of comments that are addressed in greater detail in the remainder of the letter.

This comment is acknowledged and does not raise concerns pertaining to the adequacy of the Draft PEIR or the CEQA process. Responses to more detailed comments included in this comment letter are provided below.

Response 7-2

The commenter recommends adding information on additional climate planning that has been completed by Metropolitan as well as a full discussion of all impacts associated with the climate crisis in Section 2.0, *Scientific Context and Climate Change Impacts*, of the CAP.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Section 2.2 of the proposed CAP provides a detailed discussion of climate impacts that affect Metropolitan's operations including sea-level rise, reduced snowpack in the Sierra Nevada and the Rocky Mountains, increased threat from wildfires, and extreme heat events. Metropolitan's CAP is a greenhouse gas reduction plan and does not address resource adequacy or adaptation efforts. Impacts associated with the climate crisis are also addressed in Metropolitan's UWMP and IRP, which are incorporated by reference in the CAP. No changes to the Draft PEIR or Draft CAP are warranted as a result of this comment.

Response 7-3

The commenter recommends providing an overview of the SWP and associated GHG emissions as outlined in the DWR CAP. The comment also requests that Metropolitan include a new section in the CAP to recognize the importance of a healthy Bay Delta to climate resilience on a larger scale.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. While Metropolitan recognizes that a healthy Bay Delta ecosystem is important for climate resilience, it is beyond the scope of the Draft CAP. Metropolitan's CAP is a GHG reduction plan aimed at identifying GHG emissions from within its operational control, therefore emissions were calculated for its own operations including conveyance, treatment and distribution of SWP water from where it enters Metropolitan's system. DWR has its own CAP, which identifies emissions reductions for its operations. While an aggregated number will not be used in the Metropolitan's CAP, Metropolitan understands that having an aggregated emissions factor for the imported water to Southern California is beneficial to better understand the overall emissions related to imported water, therefore a discussion of DWR's emissions is provided in Topical Response A and a detailed discussion of the overall embedded energy of water imported to Southern California has been added to Appendix B of the Final CAP. No changes to the Draft PEIR are warranted as a result of this comment.

Response 7-4

The commenter recommends the following edits to Page 1.19 of the CAP to recognize that the local environmental responses to climate fluctuations have been variable throughout California's history: "This period includes the hottest and driest period in ~~California~~ recorded history for California…."

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Metropolitan agrees with the recommended edits. The CAP has been updated accordingly.

Response 7-5

The commenter recommends adjusting the current interim goal stated in the CAP (to exceed 40 percent below 1990 emissions by 2030) to align with the Intergovernmental Panel on Climate Change (IPCC) recommendation to achieve 19 percent below 2017 emissions by 2030.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Metropolitan was unable to locate any reference for 19 percent below 2017 emissions. However, the IPCC states that, "Global net human-caused emissions of carbon dioxide (CO2) would need to fall by about 45 percent from 2010 levels by 2030, reaching 'net zero' around 2050. This means that any remaining emissions would need to be balanced by removing CO2 from the air."[3] However, this number is not specific to California where GHG emissions have already fallen to below 1990 levels while global emissions have increased during this time. According to the International Energy Agency (IEA), global emissions increased from 20.5 GT to 31.5 GT globally (65 percent) between 1990 and 2017. Metropolitan emissions decreased by nearly 70 percent during this same time period.[4] Metropolitan is already in line with and exceeding the IPCC targets by charting a linear course to carbon neutrality by 2045. By meeting the goals set forth in the CAP, consistent with the California legislation, Metropolitan will meet or exceed the IPCC recommendations. No changes to the Draft PEIR or Draft CAP are warranted as a result of this comment.

Response 7-6

The commenter recommends updating the definitions of low, average, and high emissions scenarios in the CAP based on increases in local water supplies such as stormwater capture.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Metropolitan agrees that stormwater capture is a key action to increase local water and decrease emissions. However, the projections are based on Metropolitan's current demand forecasts and the UWMP. Potential reductions due to stormwater management are covered under Strategy 8 of the GHG reduction measures. No changes to the Draft PEIR or Draft CAP are warranted as a result of this comment.

Response 7-7

The commenter recommends land management practices pursue multiple benefits and be conducted in consultation with local and indigenous expertise. Specifically, the commenter suggests Metropolitan should clarify wildfire prevention measures are needed to preserve human life on and off-Metropolitan property, protect public health and quality of life from impacts to air quality and water quality, and protect lands surrounding Metropolitan property. The commenter adds traffic control plans for wildfire emergencies should be heavily scrutinized and Metropolitan should follow

[3] https://www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/
[4] https://www.iea.org/reports/global-energy-review-2021/co2-emissions

the most stringent wildfire restrictions regardless of the jurisdiction in which activities under the proposed program would occur.

Wildfire impacts associated with implementation of the CAP are discussed in Section 5.15, *Wildfire*, of the Draft PEIR. Impacts are assessed pursuant to Appendix G of the *State CEQA Guidelines*, which state a significant wildfire impact would occur if implementation of the proposed program would, within or near a State Responsibility Area (SRA) or Very High Fire Hazard Severity Zone (FHSZ):

- Substantially impair an adopted emergency response plan or emergency evacuation plan; or
- Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire; or
- Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or
- Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

The Draft PEIR describes the various fire prevention regulations with which Metropolitan must comply for all potential projects implemented under the CAP, including, but not limited to, California Public Resources Code Section 4442 (mandated use of spark arrestors), Sections 4427 and 4431 (standards for construction activities on days with high fire danger), and Section 4428 (required fire suppression equipment for contractors during high fire danger periods). Furthermore, the Draft PEIR describes applicable provisions of the California Fire Code with which Metropolitan would comply and acknowledges some jurisdictions have amended the California Fire Code to adopt more stringent fire-reduction measures. As such, Metropolitan would be required to comply with all applicable regulatory fire prevention measures.

Furthermore, as described on page 180 of the Draft PEIR, individual projects implemented under the CAP would generally occur within existing Metropolitan facilities and, therefore, are unlikely to interfere with an adopted emergency response plan. If temporary lane or roadway closures are required, contractors would be required to prepare a traffic control plan pursuant to the local and/or state traffic authority's requirements. To confirm adherence to these requirements, such plans would undergo review by the applicable local and/or state traffic authority to confirm adequate emergency access in the event of a wildfire emergency.

Given the discussion above, no changes to the Draft PEIR are warranted in response to this comment.

Response 7-8

The commenter recommends Metropolitan utilize vegetated nature-based solutions to the extent feasible on all projects moving forward, conducted in consultation with local and indigenous experts. The commenter specifically adds Metropolitan cannot use existing natural space to offset future emissions to achieve carbon neutrality, and new natural space must be created or restored.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Metropolitan has prioritized actions with multiple co-benefits and will coordinate with applicable stakeholders to implement these measures. Metropolitan understands that existing carbon sequestration benefits cannot mitigate new emissions, but enhancements in existing carbon sequestration can. Therefore, measure CS-3 calls for Metropolitan to establish baseline sequestration levels so that enhancements to this baseline can be

accurately quantified. No changes to the Draft PEIR or Draft CAP are warranted as a result of this comment.

Response 7-9

The commenter recommends Metropolitan focus strategy efforts on the most sustainable approaches and invest in multi-benefit projects that utilize vegetated nature-based solutions. The commenter recommends consideration of GHG emissions associated with the manufacturing of supplies used by Metropolitan or its contractors such as the production of asphalt for repaving.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process.

As discussed in Response 7-8, Metropolitan will continue to prioritize actions with multiple co-benefits such as nature-based solutions. Metropolitan will consider including life cycle emissions in future iterations of the CAP. This CAP is intended to align with the state of California's GHG reduction targets and the state does not currently incorporate consumptive based emissions. Therefore, Metropolitan will continue to use the state recommended protocols for its CAP and inventories. No changes to the Draft PEIR or Draft CAP are warranted as a result of this comment.

Response 7-10

The commenter recommends Metropolitan remove all reference to "Low Carbon Electricity" from Strategy 4 in the CAP, and instead focus entirely on renewable carbon-free sources.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. The use of the term "low carbon electricity" refers to the incremental decarbonization of electricity for Metropolitan facilities. For example, Metropolitan is not currently able to purchase 100 percent carbon free electricity for all of its facilities, but options may exist to shift the load towards a higher renewable/carbon free percentage. To become entirely carbon-free will require a multi-pronged approach that will include battery energy storage, development of additional green energy resources and the implementation of efficiency measures such as those outlined in Strategy 5.0, for instance. These measures will ensure Metropolitan will continue to meet its GHG reduction goals. No changes to the Draft PEIR or Draft CAP are warranted as a result of this comment.

Response 7-11

The commenter recommends Metropolitan support movement towards a circular economy as part of Strategy 7 in the CAP. Specifically, the commenter supports the Phase 1 measure of zero landfilled waste, but states it is not attainable with continued widespread use of non-recyclable or non-compostable products.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Metropolitan will identify opportunities to achieve zero waste through the implementation of Strategy 7, which not only reduces landfill waste but includes a measure to implement a sustainable procurement policy to reduce or eliminate the use of non-recyclable or non-compostable products. No changes to the Draft PEIR or Draft CAP are warranted as a result of this comment.

Response 7-12

The commenter supports Strategy 8 and encourages Metropolitan to invest further in stormwater capture and incorporate vegetated nature-based solutions into all projects moving forward.

Specifically, the commenter recommends addition of a clear definition for “water efficient landscapes” to not include impermeable surfaces and prioritizing landscapes using climatically appropriate native plant species.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Metropolitan agrees that stormwater capture is a key component of Metropolitan's water supply and can reduce emissions. Metropolitan currently invests in stormwater recharge and direct use projects through the stormwater pilot program, a study that evaluates the water supply benefit of stormwater capture projects. Based on the results of the study, Metropolitan will include specific stormwater capture projects in future updates to the CAP. No changes to the Draft PEIR or Draft CAP are warranted as a result of this comment.

Response 7-13

The commenter supports funding for stormwater projects but adds these can no longer be considered pilot projects. The commenter adds projects considered in the CAP, such as spreading basins, dry wells, and infiltration galleries, have limited ecosystem health co-benefits and nature-based multi-benefit projects should be prioritized.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Metropolitan agrees that stormwater capture is a key component of Metropolitan's water supply and can reduce emissions. Metropolitan currently invests in stormwater recharge and direct use projects through a stormwater pilot program. This pilot study evaluates the water supply benefit of stormwater capture projects. Although Metropolitan's primary focus in local resource development is water supply, Metropolitan acknowledges that there may be opportunities to partner with other entities to achieve mutually beneficial goals. No changes to the Draft PEIR or Draft CAP are warranted as a result of this comment.

Response 7-14

The commenter supports the Regional Recycled Water Project (RRWP) but notes there are opportunities to use vegetated nature-based solutions that Metropolitan is not currently pursuing.

This comment is acknowledged and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. One of the purposes of the RRWP is to reduce discharges to the ocean from the Los Angeles County Sanitation Districts' Joint Water Pollution Control Plant by maximizing reuse to meet demands for groundwater replenishment, non-potable industrial needs, and raw water augmentation. However, opportunities to utilize vegetated nature-based solutions will be reviewed on a project-by-project basis and will be considered for future projects at Metropolitan. No changes to the Draft PEIR or Draft CAP are warranted as a result of this comment.

Response 7-15

The commenter recommends Metropolitan prioritize natural carbon sequestration, and not rely too heavily on engineered solutions for carbon capture and storage. The commenter also supports regenerative agriculture practices, such as CAP measure CS-3, and encourages Metropolitan to conduct this work in coordination with local and tribal land management experts.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Metropolitan appreciates the support of natural carbon sequestration and regenerative agriculture practices. Though a carbon capture and storage measure was included in the CAP, Metropolitan is prioritizing natural carbon sequestration due to its multiple co-benefits and is the only carbon sequestration approach being considered at this time. No changes to the Draft PEIR or Draft CAP are warranted as a result of this comment.

Response 7-16

The commenter recommends Metropolitan strive for transparency throughout the process of monitoring implementation, reporting on progress, and updating the CAP every five years or earlier if necessary. Specifically, the commenter requests that the CAP include a detailed list of information that will be shared through the CAPDash website and to ensure the public will have access to all the necessary information to assess progress.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Metropolitan agrees that transparency throughout the implementation and reporting phase is critical to the success of the CAP. Upon adoption of the CAP, work will begin on a customized, award-winning, web-based CAPDash tool that will track projects implemented, GHG emissions realized from measures detailed in the CAP, provide annual progress reports, and provide the status of the carbon budget. Should the CAPDash tool not have all the information necessary to assess Metropolitan's progress towards meeting its stated goals, Metropolitan will work with interested parties to ensure the appropriate level of data will be included to facilitate assessment of Metropolitan's progress. Outreach for the 5-year CAP update will begin when the CAP update begins. No changes to the Draft PEIR or Draft CAP are warranted as a result of this comment.

Response 7-17

The commenter requests a clear statement of whether Metropolitan is on track to achieving both the interim 2030 goal and the final 2045 carbon neutrality goal be included on the CAPDash website. The commenter adds a determination of whether Metropolitan met the 2020 projected target (as outlined in Figure 4-1 of the CAP) should be added to the first annual report.

This comment is acknowledged. Progress towards Metropolitan's goals will be included in annual progress reports. As shown in Figure 4-6 of the CAP, Metropolitan used 53 percent of their allocated carbon budget for the years 2005 to 2020. This means that Metropolitan exceeded their 2020 target (which exceeds the state target) by 47 percent. As detailed in the CAP and in Response 7-16, Metropolitan's progress will be through CAPDash, a publicly-accessible web-based tracking tool. The comment does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 7-18

The commenter recommends Metropolitan begin immediate outreach and engagement on the next five-year update to engage local communities, as well as the environmental community at large.

This comment is acknowledged and the suggestion will be considered by Metropolitan. The comment does not raise concerns regarding the adequacy of the Draft PEIR, the adequacy of the CAP, or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 7-19

This comment recommends Metropolitan pursue project-level EIRs for individual projects proposed in the CAP to better understand the impacts of the project, to fully investigate alternatives, and to ensure public participation in project development and review through the CEQA process.

The Draft PEIR provides a program-level analysis of potential environmental impacts associated with implementation of the CAP. As described in Chapter 4, *Environmental Impact Analysis*, the lack of project-specific details, such as the location of construction sites and proposed construction methods, limits the ability of this PEIR to determine the severity of impacts of specific project-level activities

covered by the CAP. As such, supplemental environmental analysis for individual projects to be implemented under the CAP would be required when project-specific details are known and projects are further defined. Individual projects would undergo the appropriate level of project-specific environmental review, including the appropriate level of analysis and public review pursuant to CEQA, prior to approval.

Response 7-20

This comment concludes the comment letter and thanks Metropolitan for the opportunity to comment on the Draft CAP and associated Draft PEIR. The commenter encourages Metropolitan to work collaboratively with its 26 member agencies now and consider providing requirements or incentives where feasible to include member agencies in these plans and in achieving similar goals.

The comment is acknowledged. Metropolitan has already begun collaboration with its member agencies on the CAP and supports their development of similar goals. The comment does not raise concerns regarding the adequacy of the Draft PEIR, the Draft CAP, or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Letter 8

POSEIDON WATER

January 6, 2022

Ms. Malinda Stalvey, Senior Environmental Specialist
The Metropolitan Water District of Southern California
Environmental Planning Section
P.O. Box 54153
Los Angeles, CA 90054-0153
Office: (213) 217-5545
Email: EP@mwdh2o.com

RE: COMMENT LETTER RELATED TO THE NOTICE OF AVAILABILITY OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA DRAFT CLIMATE ACTION PLAN

Dear Chairwoman Gray and Members of the Metropolitan Board of Directors:

Poseidon Water LLC (Poseidon) would like to commend Metropolitan staff for its excellent work and effort on the draft Climate Action Plan. Poseidon believes this document offers a robust, well-defined pathway for Metropolitan to achieve lower GHG emissions and eventual carbon neutrality.

Poseidon is the developer of both the Carlsbad Desalination Plant (began operating in 2015) and the Huntington Beach Desalination Project (expected to begin construction by 2023). Both seawater desalination facilities are located in Metropolitan's service territory in Southern California and are designed to produce approximately 50 million gallons of potable water per day on average. 8-1

Poseidon has made zero carbon emission guarantees associated with both projects, including the proposed Huntington Beach Desalination Project, which will be 100% carbon neutral through the purchase of renewable electricity and carbon offsets. While the process of seawater desalination requires a certain minimum amount of electricity (comparable on a volumetric basis to the amount of electricity required to import water from Northern California to Southern California through the State Water Project), the proposed reverse osmosis technology coupled with state-of-the-art energy recovery devices results in a highly efficient treatment process. The reverse osmosis seawater desalination process itself does not have any direct GHG emissions (Scope 1 emissions).

New projects such as the Huntington Beach Desalination Project help increase local supplies and reduce Southern California's reliance on imported water to meet expected future demands.[1] The Huntington Beach Desalination Project should be included as a part of Metropolitan's Climate Action Plan (CAP) because of its extraordinary commitment to 100% carbon neutrality. The Project offers a near-term opportunity to directly replace imported water supplies from the State Water Project and/or Colorado River Aqueduct with carbon neutral local water supplies. This is consistent with Metropolitan's CAP Strategy 4 (Utilize Low-Carbon and Carbon-Free Electricity), Strategy 5 (Improve Energy Efficiency), and Strategy 8 (Increase Water Conservation and Local Water Supplies). 8-2

Metropolitan's Phase 1 Emission Reduction Measure (E-3) states: *"In markets where available, Metropolitan will switch its retail accounts to green tariff options offered by power providers by 2025 to reduce the Scope 2 GHG emissions associated with retail electricity use."* Not all market areas offer viable green tariff options or community choice aggregation programs, therefore new water supply projects implemented between now and 2045 should be prioritized in geographic areas where they do have access to 100% renewable power options. In addition to green tariff options in Orange County offered by Southern

[1] See Metropolitan letters dates October 2, 2017, and June 13, 2019, to the Santa Ana Regional Water Quality Control Board

POSEIDON WATER

California Edison, the Orange County Power Authority is one such community choice aggregation program that could offer a 100% renewable power option for the Huntington Beach Desalination Project.

Poseidon appreciates the opportunity to comment on Metropolitan's draft Climate Action Plan and encourages the District to consider including the proposed Huntington Beach Desalination Facility in its Climate Action Plan as a Phase 1 Emission Reduction Measure. Poseidon would be happy to provide additional information about the Project to Metropolitan staff as necessary to support this inclusion. 8-2

Sincerely,

Scott Maloni
Vice President, Project Development
Poseidon Water

cc: Orange County Water District General Manager Michael R. Markus
Brian Probolsky, Chief Executive Office, Orange County Power Authority

Response to Comment Letter 8

COMMENTER: Scott Maloni, Vice President, Project Development, Poseidon Water

DATE: January 6, 2022

Response 8-1

This comment provides information about how Poseidon Water LLC is the developer of both the Carlsbad Desalination Plant and the Huntington Beach Desalination Project. The comment adds these facilities are located in Metropolitan's service territory and the reverse osmosis seawater desalination process Poseidon uses does not have any direct GHG emissions (Scope 1 emissions).

The comment is acknowledged and does not raise concerns regarding the adequacy of the Draft PEIR, Draft CAP, or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 8-2

This comment encourages Metropolitan to consider including the proposed Huntington Beach Desalination Facility in its CAP as a Phase 1 Emission Reduction Measure, as it offers a near-term opportunity to directly replace imported water supplies from the SWP/Colorado River Aqueduct with carbon neutral local water supplies.

The development of low carbon/carbon free local water resources is in line with Metropolitan's CAP and the impacts of new water supplies will be reflected in future Metropolitan GHG emission inventories. The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Letter 9

CENTER for BIOLOGICAL DIVERSITY Because life is good.

January 7, 2022

Sent via email

Ms. Malinda Stalvey
Senior Environmental Specialist
The Metropolitan Water District of Southern California
Environmental Planning Section
P.O. Box 54153
Los Angeles, California 90054-0153
EP@mwdh2o.com

Re: Comments on Public Review Draft of Metropolitan Water District of Southern California's Climate Action Plan and Draft Environmental Impact Report

Dear Metropolitan Water District of Southern California:

The Center for Biological Diversity ("Center") submits the following comments on the Metropolitan Water District ("MWD") of Southern California's Climate Action Plan ("Draft CAP") and Draft Environmental Impact Report ("DEIR"). While the Draft CAP includes some laudable goals, it suffers from a lack of specificity on tracking and implementation measures that would ensure significant reductions in regional greenhouse gas ("GHG") emissions. In addition, the DEIR does not accurately assess and mitigate impacts to hydrology, sensitive species and wildlife connectivity. We strongly urge MWD to incorporate more specific tracking methods and numeric targets for all measures listed in the plan as well as better account for impacts to native ecosystems in the EIR. 9-1

The Center is a non-profit, public interest environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 1.7 million members and online activists throughout California and the United States. The Center has worked for many years to protect imperiled plants and wildlife, open space, air and water quality, and overall quality of life for people in Southern California.

I. Climate Change Is an Urgent and Existential Concern.

Recent science has made clear that human-caused climate change is causing widespread harms to human society and natural systems, and climate change threats are becoming increasingly dangerous. In its 2018 *Special Report on Global Warming of 1.5°C*, the Intergovernmental Panel on Climate Change ("IPCC")—the leading international scientific body for the assessment of climate change—describes the devastating harms that would occur at 2°C 9-2

warming. The report highlights the necessity of limiting warming to 1.5°C to avoid catastrophic impacts to people and life on Earth (IPCC 2018). The report also provides overwhelming evidence that climate hazards are more urgent and more severe than previously thought, and that aggressive reductions in emissions within the next decade are essential to avoid the most devastating climate change harms.

The impacts of climate change are already being felt by humans and wildlife. Thousands of studies conducted by researchers around the world have documented changes in surface, atmospheric, and oceanic temperatures; melting glaciers; diminishing snow cover; shrinking sea ice; rising sea levels; ocean acidification; and increasing atmospheric water vapor (USGCRP 2017). In California, climate change will transform our climate, resulting in impacts including, but not limited to, increased temperatures and wildfires and a reduction in snowpack and precipitation levels and water availability. 9-2

II. MWD Has a Responsibility to Reduce GHG Emissions.

California gives local authorities like MWD significant responsibility over land use and planning decisions within their jurisdictions. But with that responsibility comes a corresponding obligation to account for the negative environmental impacts of those decisions—especially when it comes to controlling GHG emissions. As the California Air Resources Board ("CARB") explains:

> [L]ocal governments and agencies are critical leaders in reducing emissions through actions that reduce demand for electricity, transportation fuels, and natural gas, and improved natural and working lands management. . . . Over the last 60 years, development patterns have led to sprawling suburban neighborhoods, a vast highway system, growth in automobile ownership, and under-prioritization of infrastructure for public transit and active transportation. Local decisions about these policies today can establish a more sustainable built environment for the future. 9-3

(CARB 2017.) Thus, MWD must take seriously its obligation to do its utmost to ensure that it is reducing GHG emissions and contributing to the state's achievement of its emissions reduction targets.

III. The Draft CAP's GHG Emissions Inventory Is Incomplete and the Forecasts Don't Account for Climate Change.

The Draft CAP emissions inventory is improperly narrow in scope. This leads to a gross mischaracterization within the emissions forecast analysis, as evident by the stated assumption that the State Water Project ("SWP") has significantly less associated emissions as compared to water sourced from the Colorado River because it "does not require substantial, additional pumping due to the use of gravity to transport the water once it enters Metropolitan's operational control" (Draft CAP 3.15). This statistic is given a footnote that explains that water from the SWP does have associated emissions not captured by Metropolitan that are detailed in the Department of Water Resources CAP" (Draft CAP 3.15). 9-4

This very type of exclusion led to a judge invalidating Sonoma County's CAP in 2019, after the judge determined that it failed to account for all of the County's emissions by excluding transboundary emissions.[1] 9-4

Additionally, the Draft CAP uses data from previous years to determine the low, average and high GHG emissions forecasts (Draft CAP 3.16). However, scientific models predict that climate change has increased drought risk in California (Diffenbaugh et al., 2015). Thus, using historical data from non-drought years to influence the low and average GHG emissions scenarios directly contradicts the best available scientific knowledge on future climate scenarios. Instead, it should be assumed that drought conditions will continue and therefore the low, average and high **GHG emission forecasts should be recalculated using our most recent drought data as the assumed baseline.** 9-5

IV. The Draft CAP's Tracking Methods are Flawed

Using a carbon budget instead of clear linear targets will prevent early detection of delayed progress. The Draft CAP itself admits that in the high emission scenario, "Metropolitan will deplete its carbon budget by 2033" (Draft CAP 4.13). This would mean that in 2030, MWD could claim that it was still within budget, knowing full well that in 3 years it will exceed the total carbon budget set for 2005-2045. This tracking method, by its own admission, does not ensure that MWD meets its stated goal of carbon neutrality by 2045. Instead, **MWD should rely on the per capita GHG emissions analysis** as well as the overall GHG emissions reported to determine progress towards goals. This will ensure that interventions can be made in a timelier manner if the trajectory of reductions is lagging. 9-6

V. The Draft CAP's Reduction Strategies and Measures Are Non-Binding And Unenforceable.

The Draft CAP states that "Metropolitan Water District of Southern California (Metropolitan) has developed a Climate Action Plan (CAP) or greenhouse gas (GHG) reduction plan that meets the requirements of Section 15183.5 of the California Environmental Quality Act (CEQA) Guidelines, which provides the *opportunity for tiering and streamlining CEQA review* and mitigation of project-level GHG emissions" (Draft CAP 1). The legal requirements of a climate action plan must specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level. Therefore, the Final CAP, and any such plan prepared pursuant to CEQA Guidelines 15183.5, must meet the requirements for all first-tier environmental review documents and thus must impose enforceable requirements and measures with defined performance standards.[2] 9-7

Unfortunately, many of the Draft CAP's reduction measures are largely non-binding and generally lack performance standards. Notably, the words "promote," "study" or "whenever

[1] The court also held that the CAP's GHG reduction measures were not clearly defined or enforceable, which is also an issue with the Draft CAP here.
[2] Specifically, CEQA Guidelines section 15183.5(b)(1)(D) states that measures should have "performance standards" which demonstrate they will achieve the planned reductions on a project by project basis.

feasible" occur many times in the sections describing the Draft CAP's implementation measures. These measures are legally inadequate and cannot be considered mitigation under CEQA and applicable case law. (*Lincoln Place Tenants Assn. v. City of Los Angeles* (2007) 155 Cal.App.4th 425, 445 ["A 'mitigation measure' is a suggestion or change that would reduce or minimize significant adverse impacts on the environment caused by the project as proposed"]); *Preserve Wild Santee v. City of Santee* (2012) 210 CA 4th 260, 281 [mitigation measures that are so undefined that their effectiveness is impossible to determine are legally inadequate].) The California Attorney General has also expressly disapproved such an approach for measures upon which an agency relies:

> **Can a lead agency rely on policies and measures that simply "encourage" GHG efficiency and emissions reductions?**
>
> No. Mitigation measures must be "fully enforceable." ***Adequate mitigation does not, for example, merely "encourage" or "support" carpools and transit options, green building practices, and development in urban centers***. While a menu of hortatory GHG policies is positive, it does not count as adequate mitigation because there is no certainty that the policies will be implemented.

(CA Attorney General 2009.) The California Attorney General further states that programmatic plans to reduce GHG emissions pursuant to CEQA Guidelines section 15183.5 must "[i]dentify a set of specific, enforceable measures that, collectively, will achieve the emissions targets…." (CA Attorney General 2019.)

9-7

In *Sierra Club v. County of San Diego* (2014) 231 Cal.App.4th 1152, the Fourth District Court of Appeal criticized the County of San Diego for including measures in its CAP that were not backed up by a firm commitment by the County that they would be implemented. The Court noted that many of the measures in the CAP "are not currently funded," such that the County of San Diego could not rely upon such unfunded programs to meet GHG reductions. (*Id.* At 1168-1169.) The *Sierra Club* opinion also questioned whether people would actually participate in various programs outlined in the CAP, given that the record contained no evidence of such participation. (*Id*. At 1170.) Here, the Draft CAP suffers from similar defects – there is no evidence of funding for many of the various programs set forth in the Final CAP, nor evidence in the record that people or industry will actually participate in the voluntary programs described in the Draft CAP.

9-8

Accordingly, although the Draft CAP's reduction measures may generally be worthwhile objectives for MWD to pursue, the Draft CAP fails as a CEQA compliance tool because it relies upon non-binding measures that lack performance standards.

VI. Increasing Wastewater Recycling Programs to Reduce Reliance on Imported Water Should Be a Central Goal in the Draft CAP (MEASURE WC 6 PHASE 2).

The Center is happy to see water conservation and recycling as a stated measure in the Draft CAP, however we are concerned that it currently does not have any specific goals associated with the listed metric of "acre-feet of water generated" (Draft CAP 5.71). The Draft CAP claims to currently be studying the potential of localized water, but a UCLA study already

9-9

concluded that there is the potential for Los Angeles County to be 100% reliant on local water.[3] While some of the specifics on implementation may still need to be assessed, setting long-term goals that state the intent to transition to a large majority of local water across MWD's service area would help ensure that the energy associated with transport of imported water was greatly reduced. This would also align the Draft CAP with regional goals outlined in the OurCounty Sustainability Plan that aims to get LA County to 80% of local water by 2045.[4]

9-9

VII. Strategy 9 Should Only Include Natural Carbon Sequestration Solutions, not Industrial Carbon Capture and Storage.

While the Center commends MWD for incorporating "carbon sequestration on natural and working lands (e.g., rangeland, forests, woodlands, wetlands and coastal areas, grasslands, shrubland, farmland, riparian areas, and urban green space)," the Center is concerned that these natural methods are bundled with industrial carbon capture and storage methods (Draft CAP 5.6). Investing in the preservation, ecological health and restoration of our natural areas as a form of carbon sequestration can and should be a component of all climate action plans. However, the ecological and economic impact cannot be adequately assessed without knowing what methods will be used. The strategy's only metric is to "conduct a carbon capture reconnaissance and general assessment that evaluates technological, scientific, economic, and regulatory dimensions relevant to potential carbon capture and storage on Metropolitan properties" (Draft CAP 5.73).

9-10

The science is clear. Protecting, enhancing, and restoring forests and natural habitat is an internationally recognized strategy that has the potential to help solve the climate crisis. Natural habitats, including in particular forests, absorb billions of tons of carbon dioxide (CO2) annually and preservation efforts have the potential to alter the trajectory of climate change (Dybala et al., 2019).

MWD must commit to land preservation and native habitat restoration as a central component of this CAP instead of merely studying the potential of both natural and industrial carbon storage strategies.

VIII. The Draft CAP Fails to Identify Funding Sources for Implementation Measures.

As noted above, in *Sierra Club v. County of San Diego* (2014) 231 Cal.App.4th 1152, the Court of Appeal determined that measures in a CAP were insufficient when they were not adequately funded. (*Id.* At 1168-1169.) Here, the various "actions" in the Draft CAP acknowledge that funding will be required, but often fail to include a specific estimate of how much a measure may cost, or identify an available source of funding. Specifically, in the Implementation and Monitoring Section, the Draft CAP states "the Climate Working Group will identify policies and projects for implementation, work with relevant departments to draft and review required projects or policies, present the items to Metropolitan management to *identify funding* and obtain approval, and track implementation metrics" (Draft CAP 6.4). This omission

9-11

[3] Mika, K., Gallo, E., Read, L., Edgley, R., Truong, K., Hogue, T., ... & Gold, M. (2017). LA sustainable water project: Los Angeles river watershed. https://escholarship.org/uc/item/42m433ps

[4] LA County Sustainability Office. "OurCounty Sustainability Plan." August 2020. https://ourcountyla.lacounty.gov/wp-content/uploads/2019/07/OurCounty-Final-Plan.pdf

calls into question whether many of the programs outlined in the Draft CAP will ever be implemented. Thus, all measures need an estimated cost and the funding source must be clearly identified. 9-11

IX. The DEIR needs to better assess and mitigate the impacts to hydrology, sensitive species and wildlife movement.

A. The DEIR's conclusion of "less than significant impacts" to wildlife movement does not reflect the best available science.

Climate change is increasing stress on species and ecosystems, causing changes in distribution, phenology, physiology, vital rates, genetics, ecosystem structure and processes, and increasing species extinction risk (Warren et al., 2011). A 2016 analysis found that climate-related local extinctions are already widespread and have occurred in hundreds of species, including almost half of the 976 species surveyed (Wiens, 2016). A separate study estimated that nearly half of terrestrial non-flying threatened mammals and nearly one-quarter of threatened birds may have already been negatively impacted by climate change in at least part of their distribution (Pacifici et al., 2017). A 2016 meta-analysis reported that climate change is already impacting 82 percent of key ecological processes that form the foundation of healthy ecosystems and on which humans depend for basic needs (Scheffers et al., 2016). Genes are changing, species' physiology and physical features such as body size are changing, species are moving to try to keep pace with suitable climate space, species are shifting their timing of breeding and migration, and entire ecosystems are under stress (Cahill et al., 2012; Chen et al., 2011; Maclean & Wilson, 2011; Parmesan, 2006; Parmesan & Yohe, 2003; Root et al., 2003; Warren et al., 2011). 9-12

The DEIR must analyze Draft CAP's potential impacts to riparian corridors. Riparian ecosystems have long been recognized as biodiversity hotspots performing important ecological functions in a transition zone between freshwater systems and upland habitats. Many species that rely on these aquatic habitats also rely on the adjacent upland habitats (*e.g.*, riparian areas along streams, and grassland habitat adjacent to wetlands). In fact, 60% of amphibian species, 16% of reptiles, 34% of birds and 12% of mammals in the Pacific Coast ecoregion depend on riparian-stream systems for survival (Kelsey and West 1998). Many other species, including mountain lions and bobcats, often use riparian areas and natural ridgelines as migration corridors or foraging habitat (Dickson et al, 2005; Hilty & Merenlender, 2004; Jennings & Lewison, 2013; Jennings & Zeller, 2017). Additionally, fish rely on healthy upland areas to influence suitable spawning habitat (Lohse et al. 2008), and agricultural encroachment on these habitats and over-aggressive removal of riparian areas have been identified as a major driver of declines in freshwater and anadromous fish (e.g., Stillwater Sciences 2002; Lohse et al. 2008; Moyle et al. 2011). Therefore, buffers that allow for connectivity between the aquatic resource and upland habitat is vital for many species to persist.

It is estimated that 90-95% of historic riparian habitat in the state has been lost (Bowler, 1989; Riparian Habitat Joint Venture, 2009). Using 2002 land cover data from CalFire, the Riparian Habitat Joint Venture estimated that riparian vegetation makes up less than 0.5% of California's total land area at about 360,000 acres (Riparian Habitat Joint Venture, 2004). This is

alarming because riparian habitats perform a number of biological and physical functions that benefit wildlife, plants, and humans, and loss of what little is left will have severe, harmful impacts on special-status species, overall biodiversity, and ecosystem function. California cannot afford to lose more riparian corridors.

A literature review found that recommended buffers for wildlife often far exceeded 100 meters (~325 feet), well beyond the largest buffers implemented in practice (Robins, 2002). For example, Kilgo et al. (1998) recommend more than 1,600 feet of riparian buffer to sustain bird diversity. In addition, amphibians, which are considered environmental health indicators, have been found to migrate over 1,000 feet between aquatic and terrestrial habitats through multiple life stages (Cushman, 2006; Fellers & Kleeman, 2007; Semlitsch & Bodie, 2003; Trenham & Shaffer, 2005). Accommodating the more long-range dispersers is vital for continued survival of species populations and/or recolonization following a local extinction (Cushman, 2006; Semlitsch & Bodie, 2003). In addition, more extensive buffers provide resiliency in the face of climate change-driven alterations to these habitats, which will cause shifts in species ranges and distributions (Cushman et al., 2013; Heller & Zavaleta, 2009; Warren et al., 2011). This emphasizes the need for sizeable riparian and upland buffers around streams and wetlands in and adjacent to any project included in the RTP/SCS, as well as connectivity corridors between heterogeneous habitats. Again, the EIR must adequately assess and mitigate impacts to local, regional, and global wildlife movement and habitat connectivity. 9-12

It is widely recognized that the continuing fragmentation of habitat by humans threatens biodiversity and diminishes our (humans, plants, and animals) ability to adapt to climate change. In a report for the International Union for Conservation of Nature (IUCN), world-renowned scientists from around the world stated that "[s]cience overwhelmingly shows that interconnected protected areas and other areas for biological diversity conservation are much more effective than disconnected areas in human-dominated systems, especially in the face of climate change" and "[i]t is imperative that the world moves toward a coherent global approach for ecological connectivity conservation, and begins to measure and monitor the effectiveness of efforts to protect connectivity and thereby achieve functional ecological networks" (J. Hilty et al., 2020).

Given the potential for projects associated with the Draft CAP to fragment and destroy important habitat, including riparian areas, the Center urges MWD to avoid further fragmentation and degradation of existing, intact, heterogeneous habitats and incorporate clear and enforceable wildlife connectivity mitigation measures that address the needs of target species into the Draft CAP and EIR. Unfortunately, as currently written, it appears that the DEIR does not include such measures. The EIR should encourage the involvement of wildlife connectivity experts from CDFW and other agencies, organizations, academic institutions, communities, and local groups starting at the initial planning stage of development and transportation projects so that habitat connectivity can be strategically integrated into project design and appropriately considered in the project budget. The EIR should require that water infrastructure projects assess current wildlife use and include adequate adjustments to future projects to enhance wildlife's ability to use or navigate through such projects in order to reduce impacts to species.

B. The DEIR should include a habitat replacement ratio of 3:1 onsite or 5:1 offsite and ensure funding in perpetuity.

Mitigation Measure BIO-4, BIO-8 and BIO-9 all only call for a minimum 1:1 mitigation ratio for restoration, preservation, or creation of designated critical habitat, which is grossly insufficient. Avoidance of impacts to sensitive habitats and designated critical habitat should be prioritized, after which in-kind mitigation should be a minimum of 3:1 given that critical habitat is designated for threatened and endangered species that are on a trajectory towards extinction without protective action and are already struggling to survive in the long-term, and 5:1 for off-site restoration or habitat creation with continued monitoring, adaptive management strategies, and well-defined success criteria, to be funded in perpetuity.

9-13

Life on Earth is experiencing a sixth mass extinction, with species disappearing at a rate of more than 1,000 times greater than the background extinction rate. Habitat loss and fragmentation are the primary drivers of the extinction crisis.[5] As the world confronts multiple crises, it has to take an intersectional approach to creating and implementing solutions. If climate action plans only exacerbate the global extinction crisis, they should not be considered a solution to the climate crisis.

Additionally, conservation of nature is a listed strategy in the Draft CAP because of the known carbon sequestration ability of natural lands (Draft CAP 5.73). Therefore, any other project associated with the DRAFT CAP that would deplete our remaining natural lands, adequate habitat replacement ratios must be implemented as mitigation to ensure the net impact of that project is positive.

C. The DEIR's conclusion of "less than significant impacts" to hydrology and water quality does not reflect the best available science.

The DEIR claims that "individual projects implemented under the proposed CAP would generally be located at existing, developed Metropolitan facilities" and that "as such, these projects would not result in substantial changes to drainage patterns resulting in siltation, erosion, runoff, or flooding" (DEIR 170). This assumption that new projects won't impact the hydrology because they will exist on already developed Metropolitan facilities does not account for the impacts associated with changes in how those facilities operate. If a new project increases the amount of water that is extracted, the associated water body will be impacted.

9-14

Waterbodies throughout the world are impacted by hydrologic alterations. MWD's past and current operations have significantly reshaped California and Colorado's hydrology. One example is the San Francisco Bay Delta, that has changed considerably as a result of anthropogenic drivers (Hutton et al., 2017). Particularly the construction of the State Water Project (SWP) and the Central Valley Project (CVP) with their network of dams, pump stations, and aqueducts for water storage and transport to other parts of the state, construction of dams,

[5] United Nations. Nature's Dangerous Decline 'Unprecedented'; Species Extinction Rates 'Accelerating.' Published 2019. https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/

expansion of irrigated agriculture, and growth in population have all influenced the Delta hydrology (Hutton et al., 2017).

The DEIR's claim that no future project associated with the Draft CAP will have a significant impact on the hydrology or water quality is a gross oversight, especially because of the lack of clarity within the existing document on specific measures and projects that will be implemented. Whether there is investment in more imported water, which will impact Northern California hydrology (Hutton et al., 2017), or investment in localized water recycling, stream flow and therefore hydrology will be impacted.[6] The EIR must account for these impacts and set a standard of mitigation measures for each type of project that could be potentially implemented to ensure the DRAFT CAP does not cause more environmental harm than it solves. 9-14

X. Conclusion

Thank you for the opportunity to submit comments on the Draft CAP and associated DEIR. The Center strongly supports many of the goals of the Draft CAP. But these goals are not supported by clear, enforceable, and funded policies. In addition, the DEIR does not accurately reflect the scientifically documented impacts of MWD's projects on ecosystems. The Center urges MWD to revise the CAP to provide more specific metrics and the associated EIR to better assess and mitigate the impacts to sensitive wildlife and wildlife movement. 9-15

Please do not hesitate to contact us if you would like to meet to further discuss these issues.

Sincerely,

Elizabeth Reid-Wainscoat
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Center for Biological Diversity
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ereidwainscoat@biologicaldiversity.org

[6] Mika, K., Gallo, E., Read, L., Edgley, R., Truong, K., Hogue, T., ... & Gold, M. (2017). LA sustainable water project: Los Angeles river watershed. https://escholarship.org/uc/item/42m433ps

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Response to Comment Letter 9

COMMENTER: Elizabeth Reid-Wainscoat, Campaigner, Urban Wildlands, Center for Biological Diversity

DATE: January 7, 2022

Response 9-1

The commenter provides information about the Center for Biological Diversity and summarizes the main themes of the comment letter, specifically the opinion that the Draft CAP suffers from a lack of specificity on tracking and implementation measures that would ensure significant reductions in regional greenhouse gas emissions and that the Draft PEIR does not accurately assess and mitigate impacts to hydrology, sensitive species, and wildlife connectivity.

This comment is acknowledged and specific responses to the commenter's concerns are provided in the responses below.

Response 9-2

The commenter provides information describing how climate change is an urgent and existential concern. The commenter states that, in California, climate change will transform the climate, resulting in impacts including, but not limited to, increased temperatures and wildfires and a reduction in snowpack and precipitation levels and water availability.

The comment is acknowledged. Background on climate change and its impacts is included in Chapter 2, *Project Description*, of the Draft PEIR and in Chapter 2.2 *Climate Change Impacts,* of the Draft CAP. The comment does not raise concerns regarding the adequacy of the Draft PEIR, the Draft CAP, or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 9-3

The commenter states the opinion Metropolitan has a responsibility to ensure that it is reducing GHG emissions and contributing to the state's achievement of its emissions reduction targets.

The comment is acknowledged. Metropolitan's CAP addresses its fair share of GHG emissions using operational controls consistent with state targets and methodologies to reduce emissions. The comment does not raise concerns regarding the adequacy of the Draft PEIR, the Draft CAP, or the CEQA process. No changes to the Draft PEIR or CAP are warranted in response to this comment.

Response 9-4

The commenter states the opinion the Draft CAP's GHG Emissions Inventory is improperly narrow in scope, and the forecasts do not account for climate change. Specifically, the commenter suggests the characterization and exclusion of SWP emissions and their being accounted for in the California DWR CAP is the type of exclusion that led to invalidation of Sonoma County's CAP in 2019, stating that it fails to account for transboundary emissions.

Metropolitan recognizes that there are transboundary emissions associated with water provided by DWR's SWP. However, unlike the emissions in the Sonoma County CAP, these emissions are currently being accounted for and managed by DWRs, which has its own Greenhouse Gas Emissions Reduction Plan that includes a complete emissions inventory, identifies measures to reduce emissions, and has a monitoring and reporting program to ensure progress towards meeting its adopted targets which are in line with state targets. As discussed in Metropolitan's CAP, these emissions also fall outside of Metropolitan's operational control. Furthermore, Metropolitan will

continue to work with DWR to align efforts, where applicable. While aggregated emissions are not used in the Metropolitan's CAP, Metropolitan understands that having an aggregated emissions factor for the imported water to Southern California is beneficial to better understand the overall emissions related to imported water, therefore a discussion of DWR's emissions is provided in Topical Response A and a detailed discussion of the overall embedded energy of water imported to Southern California has been added to Appendix B of the Final CAP.

The comment does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR are warranted in response to this comment.

Response 9-5

The commenter suggests an alternate way to calculate GHG emissions forecasts and provides information describing how GHG emission forecasts could be recalculated to assume drought conditions will continue.

Metropolitan recognizes that forecasts are an estimate of a likely outcome based on the available information at the time of the analysis. The Metropolitan CAP forecast uses past data to estimate emissions per acre foot only and demand projections consistent with the 2020 UWMP. Historic Metropolitan data includes years with nearly 100 percent CRA pumping which provides a worst-case scenario for Metropolitan emissions. This paired with increased demand, as forecasted by the UWMP, provides the "high" estimate used in the Metropolitan CAP. This is expected to be a worst-case scenario. Metropolitan has committed to performing annual GHG inventories and five-year updates to the CAP to ensure it stays on track to meet its GHG reduction goals. The five-year updates to the CAP will also include a new forecast to ensure that the most recent data is included for future forecasts ensuring that Metropolitan captures any changing climatic conditions that would affect its ability to reliability reduce its GHG emissions.

The comment does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 9-6

The commenter states the opinion the Draft CAP's tracking methods are flawed and suggests Metropolitan rely on the per capita GHG emissions analysis, as well as the overall GHG emissions reported, to determine progress towards goals.

As stated in Chapter 4.3, *Metropolitan's GHG Emissions Reduction Targets,* Metropolitan will pursue a linear per capita GHG emissions reduction pathway to meet its GHG reduction goals. The carbon budget is an appropriate, conservative, and more accurate methodology to track a GHG emissions for a jurisdiction that has variable emissions over time. Using this approach, Metropolitan will track and account for 100 percent of its total GHG emissions between 2005 and its interim target in 2030 as well as its long-term goal of carbon neutrality by 2045. Without the carbon budget, Metropolitan could theoretically emit a very high amount of GHG emissions for every year up to 2030 and then have a low emissions year in 2030 and "meet its target". With the carbon budget approach, GHG emissions are accounted for annually, which allows Metropolitan to monitor the success of its programs and pivot, if necessary, to meet its interim 2030 goal, as well as its long-term goal of carbon neutrality by 2045. Additionally, Metropolitan's is utilizing CAPDash, a web-based tracking tool, to track and report its GHG emissions. Metropolitan will track its mass emissions, per capita emissions, and the carbon budget to ensure it is meeting its established targets.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 9-7

The commenter suggests the Draft CAP's reduction strategies and measures are non-binding and unenforceable. The commenter suggests a lead agency cannot rely on policies and measures that simply "encourage" GHG efficiency and emissions reductions as mitigation measures, citing *State CEQA Guidelines* Section 15183.5.

Metropolitan completed an emissions forecast used to estimate the emissions reductions necessary to achieve carbon neutrality by 2045 under three potential scenarios. Metropolitan's CAP includes two types of measures: quantifiable measures and supportive measures. Every quantifiable measure included in the CAP has an implementation date and specific action and assumptions that were used to calculate the associated GHG reductions. The specific calculations are identified in Appendix C. As shown in the CAP, Metropolitan will meet its established GHG reduction goal using the identified, quantifiable measures in the CAP for all modelled scenarios. While the CAP also has supportive measures, such as conducting studies or encouraging behaviors, no GHG reductions are applied or expected for these supportive measures. They do, however, provide an important foundation for the development of future quantitative measures.

In addition, as described in detail in Section 5.0 of the CAP, *Metropolitan's GHG Emissions Reduction Strategy*, the CAP includes specific strategies that, when implemented, can achieve carbon neutrality by 2045 and satisfy the requirements of *State CEQA Guidelines* Section 15183.5(b)(1)(D). Furthermore, *State CEQA Guidelines* Section 15183.5 does not require that all measures in a qualified GHG reduction plan be binding and enforceable. Rather, for future projects which may tier their GHG impact analyses from the CAP, Section 15183.5(b)(2) states:

> An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project.

Future projects which may tier their GHG impact analyses from the CAP would be required to evaluate consistency with the qualified CAP. If applicable measures of the CAP are not by themselves binding and enforceable, such measures may be incorporated as mitigation measures in future project-specific environmental review documents, consistent with the *State CEQA Guidelines*. This does not preclude the CAP from serving as a qualified GHG reduction plan pursuant to *State CEQA Guidelines* Section 15183.5. Given the discussion above, no changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 9-8

The commenter suggests there is no evidence of funding for many of the various programs set forth in the Draft CAP, nor evidence in the record that people or industry will actually participate in the voluntary programs described in the Draft CAP. This comment also states the opinion the Draft CAP fails as a CEQA compliance tool because it relies upon non-binding measures that lack performance standards.

State CEQA Guidelines Section 15183.5 does not require evidence of funding for programs in order for a CAP to serve as a qualified GHG reduction plan for tiering and streamlining of GHG impact analyses. Rather, the *State CEQA Guidelines* require performance standards for measures or groups of measures that, if implemented on a project-by-project basis, would collectively achieve the specified emissions level. Section 5.0, *Metropolitan's GHG Emissions Reduction Strategy*, of the CAP outlines all CAP measures intended to achieve carbon neutrality by 2045 and includes target metrics for each measure, consistent with this requirement. As discussed in Response 9-7, though supportive measures such as conducting studies or encouraging behaviors do not have specific GHG reductions tied to

their them, they do, however, provide an important foundation for the development of future quantitative measures. Given the discussion above, no changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 9-9

The commenter suggests increasing wastewater recycling programs to reduce reliance on imported water should be a central goal in the Draft CAP. The commenter opines that currently, the Draft CAP does not have any specific goals associated with the listed metric of "acre-feet of water generated" (CAP page 5.71).

Metropolitan's CAP is a comprehensive document that identifies GHG reduction measures to reduce its GHG emissions associated with all emissions sectors. Metropolitan's many conservation programs are intended to reduce water consumption while its energy sustainability programs target greener energy for water deliveries. The RRWP reference on page 5.13 is one such measure intended to reduce reliance on imported water supplies, however this Program is still in the planning phase. As such, it was listed as a Phase 2 measure (2030-2045). As more data becomes available, future iterations of the CAP will identify specific goals for the listed metric of acre-feet of water generated. Taken together, this balanced approach will ensure that Southern California has a reliable supply of water into the future.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to either the Draft PEIR or CAP are warranted in response to this comment.

Response 9-10

The commenter suggests that Strategy 9 of the CAP should only include natural carbon sequestration solutions, not industrial carbon capture and storage. The commenter further recommends Metropolitan commit to land preservation and native habitat restoration as a central component of the CAP instead of merely studying the potential of both natural and industrial carbon storage strategies.

Metropolitan agrees that natural carbon sequestration methods on natural and working lands are a key strategy in fighting climate change and provide many co-benefits. As discussed in the CAP, Metropolitan will use the information from the studies to develop quantifiable carbon sequestration programs in future CAP updates.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR or CAP are warranted in response to this comment.

Response 9-11

The commenter states the Draft CAP does not identify funding sources for implementation measures. The commenter adds the Implementation and Monitoring Section of the CAP states, "the Climate Working Group will identify policies and projects for implementation, work with relevant departments to draft and review required projects or policies, present items to Metropolitan management to identify funding and obtain approval, and track implementation metrics," and opines the omission of funding calls into question whether many programs outlined in the CAP will ever be implemented.

Metropolitan has funding available to maintain, update, and enhance its operations. The process of allocating funds includes biennial budgeting through the capital improvement program (CIP) budget cycle. Metropolitan will also be able to augment the CIP budgets with additional grants and other incentive programs. Many of the actions included in the CAP are cost comparable to baseline

operations and even provide long-term savings. Refer also to Response 9-8, above, regarding identification of funding sources for implementation of CAP measures.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process.

Response 9-12

The commenter recommends the Draft PEIR better assess and mitigate the impacts to hydrology, sensitive species and wildlife movement. Specifically, the commenter questions the Draft PEIR's conclusion of "less than significant impacts" to wildlife movement and states that the Draft PEIR must analyze the proposed program's potential impacts to riparian corridors. The commenter cites literature on the importance and ongoing fragmentation of such corridors and encourages Metropolitan to incorporate clear, enforceable wildlife connectivity mitigation measures that address the needs of target species.

As discussed on page 113 of the Draft PEIR under Threshold BIO-D, proposed projects would generally occur within urbanized areas at or near existing Metropolitan facilities. These facilities are fenced and developed and therefore, implementation of program activities proposed under the CAP would not impede wildlife movement. It is anticipated that project activities in both the Palo Verde and the Bay Delta regions would be small in nature and would avoid impeding or interfering with wildlife movement. Additionally, there is sufficient adjacent habitat in these areas to facilitate wildlife movement such that development in these areas would not isolate wildlife from adjacent movement corridors and would not substantially interfere with wildlife movement. As such, impacts to wildlife movement would be less than significant and no mitigation would be required.

Impacts to riparian corridors are also discussed under Threshold BIO-B and BIO-C. As noted on page 113 of the Draft PEIR, projects would be designed and located to avoid or minimize impacts to riparian and wetland habitat to the extent feasible. Additionally, if, during project-level analysis, it is determined that construction or operation of any covered activity would result in significant impacts to riparian habitats, sensitive natural communities, or state or federally protected wetlands, implementation of MM BIO-7 (Jurisdictional Delineation and Impact Avoidance), MM BIO-8 (Wetlands, Drainages and Riparian Habitat Restoration), and MM BIO-9 (Sensitive Natural Community Avoidance and Mitigation) would reduce these impacts to a less than significant level. Given the discussion above, no changes to the Draft PEIR are warranted in response to this comment.

Response 9-13

The commenter recommends the Draft PEIR, specifically Mitigation Measures BIO-4, BIO-8, and BIO-9, include a habitat replacement ratio of 3:1 on-site or 5:1 off-site and ensure funding in perpetuity. Additionally, the commenter adds that since conservation of nature is a listed strategy in the Draft CAP, any other project associated with the CAP that would deplete remaining natural lands should incorporate adequate habitat replacement ratios to ensure the net impact of the project is positive.

Mitigation Measures BIO-4, BIO-8 and BIO-9 require a minimum mitigation ratio of 1:1 and do not prohibit implementation of higher mitigation ratios for individual projects. The minimum ratio of 1:1 is intended to ensure impacts are mitigated such that the project would have a net neutral impact and thus, impacts would not rise to the level of significance under CEQA. If an individual project implemented under the CAP would result in impacts that require mitigation, the mitigation ratio will be determined through consultation with the appropriate regulatory agencies during the permitting process as outlined in the mitigation measures. Given the discussion above, no changes to the Draft PEIR are warranted in response to this comment.

Response 9-14

The commenter states the opinion the Draft PEIR's conclusion of "less than significant impacts" to hydrology and water quality does not reflect the best available science. Specifically, the commenter notes that though projects under the CAP would be implemented on Metropolitan facilities, the Draft PEIR does not account for the impacts associated with changes in how those facilities operate (e.g., increasing the amount of water extracted). The comment suggests the Draft PEIR's claim that no future project associated with the Draft CAP will have a significant impact on the hydrology or water quality is an oversight, especially because of the lack of clarity within the existing document on specific measures and projects that will be implemented.

Impacts related to hydrology and water quality are analyzed in Section 5.7, *Hydrology and Water Quality*, of the Draft PEIR. Potential impacts to this resource area are analyzed relative to the criteria outlined in Appendix G of the *State CEQA Guidelines*. Improvements to Metropolitan facilities that may occur under the CAP generally include infrastructure/pump efficiency improvements (e.g., CAP measures EE-4a through EE-4d) or energy efficiency improvements, such as construction of battery energy storage system (BESS) facilities pursuant to CAP measure E-4. Such improvements are intended to improve the energy efficiency with which Metropolitan facilities operate and would not alter the amount of water extracted in the Plan Area. As stated on page 171 of the Draft PEIR, the CAP does not involve any projects that would directly or indirectly increase water demand. On the contrary, the proposed CAP includes various measures under Strategy 8, *Increase Water Conservation and Local Water Supply*, intended to reduce water demand and, by extension, water extraction.

The nature of individual projects envisioned under the CAP presently would not result in significant impacts to hydrology and water quality. As described on page 50 of the Draft PEIR, the CAP includes CAP measure WC-6, which involves implementing advanced technology systems to increase Metropolitan-owned recycled and groundwater recovery systems to maintain local water supply. This measure may include pursuing projects like the proposed RRWP. However, as discussed in the Draft PEIR, the RRWP is currently being considered by Metropolitan and is not a Board-approved project. While emissions associated with implementation of the RRWP are accounted for in the CAP, the RRWP would be subject to its own CEQA analysis, during which time project-specific impacts to hydrology and water quality would be analyzed at a project-level. Given the discussion above, no changes to the Draft PEIR are warranted in response to this comment.

Response 9-15

The commenter summarizes their previous comments by recommending Metropolitan revise the CAP to provide more specific metrics and the associated Draft PEIR to better assess and mitigate the impacts to sensitive wildlife and wildlife movement.

This general comment is acknowledged, and the individual comments raised by the commenter have been addressed in greater detail in the preceding responses.

Letter 10

SIERRA CLUB CALIFORNIA

January 11, 2022

Adel Hagekhalil
General Manager
& Malinda Stalvey
Environmental Planning Section
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

Re: Voluntary Agreements

Dear General Manager Hagekhalil and Ms. Stalvey:

We hope this letter finds you well in the New Year and we appreciate the extension you gave us to submit these comments. We are writing to provide you with some feedback and concerns on MWD's Climate Action Plan (CAP). 10-1

SWP GHG Emissions

We will not focus so heavily on the energy and greenhouse gases (GHG) components of the CAP, but we have a few comments regarding the State Water Project (SWP). We understand that MWD does not plan to count the GHG from the SWP because they are counted by the State, but MWD should include these numbers in its reports for several reasons:

1. MWD must have an accurate understanding of their energy use when weighing the pros and cons of SWP-related projects such as the Delta Conveyance project, Sites Reservoir, and operations and maintenance needs, especially given the state's and MWD's goal of carbon neutrality. Board members, and the public alike, must have a more complete picture when making decisions on such expensive and controversial projects. 10-2
2. The cost of energy used in the SWP, especially given the effects of subsidence on the California Aqueduct, are passed along to ratepayers, and presenting the full scope to ratepayers is part of the transparency and openness of the new general manager's tenure. 10-3

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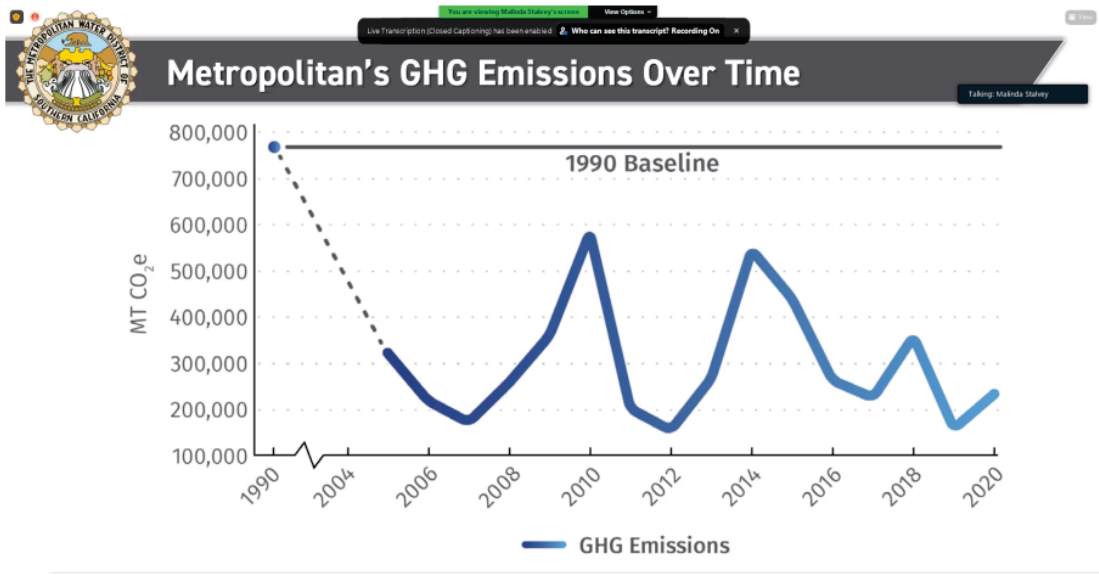

The graph above depicts MWD's GHG emissions over time. But this image is misleading. The increases are seen due to a reliance on the Colorado River during drought years, and the reductions are during years when MWD relied more heavily on the SWP, but the choice to not include SWP energy gives the appearance that MWD was not using as much energy in these years. Such a depiction can make MWD's local projects seem less appealing to board members when comparing their energy use to imported water projects with these misleading figures. Local supply and reuse projects are critical to the long-term sustainability of water in Southern California. 10-4

Carbon Neutrality

MWD has a goal of carbon neutrality by 2045, but the Delta Conveyance project is estimated to be online in 2040 if it were built. Meeting the 2045 goal would likely be very difficult to meet with such an energy-intensive project, which seems to be a motivation not to include SWP energy outputs in the CAP calculations, which is misleading for the CAP Project and renders the PEIR inadequate, if not incomplete. 10-5

Carbon Capture and Sequestration

The CAP says that MWD is planning to both "investigate and implement" carbon capture and sequestration. We caution against committing to implementation before fully investigating the risks of the process to Delta (or Kern County) communities and working with them to understand the consequences. Carbon wells need over 100 years of monitoring. At this point in time, the risks of improper carbon capture and storage can lead to slow carbonic acid leaks, and it is impossible to detect where the leaks will appear in groundwater, which can lead to geysers forming in communities and under homes. 10-6

Commendable Goals

We are pleased to see the following goals: 10-7

- Increase water conservation and local water supply
- Expand water conservation educational workshops

- Provide funding and monitoring of local stormwater recharge and reuse projects
- Reduced natural gas emissions by 50% by 2030 and 100% by 2045
- Update annually new MWD buildings with all-electric construction and retrofitting
- Achieve zero waste by 2045
- Incentivize more sustainable commutes by 2045
- Improve efficiency and using carbon-free electricity by 30% by 2030 and 50% by 2045
- Move to near-zero and zero emission vehicle fleets by 2030 and 2045
- Reduce landfill waste by 67% by 2030 and 100% by 2045

10-7

Components Missing from the CAP

There are several topics that we would like to see included in the CAP-PEIR. The plan does not include alternative solutions (e.g., solar panels on all MWD properties by 2035 for shading and generation), the PEIR says only that there will not be a do-nothing plan. There are no mentions of unintended consequences and risks of harm to the environment or communities. These components should be included in the CAP to better understand the holistic value of MWD's efforts to limit its carbon output.

10-8

If you have further questions, please do not hesitate to reach out. Thank you for your consideration.

Sincerely,

Caty Wagner
Southern California Water Organizer
Sierra Club California

Response to Comment Letter 10

COMMENTER: Caty Wagner, Southern California Water Organizer, Sierra Club California

DATE: January 11, 2022

Response 10-1

The commenter understands Metropolitan does not plan to count the GHG emissions from the SWP because they are counted by the state but suggests Metropolitan include these numbers in its report.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Metropolitan's CAP is a GHG reduction plan aimed at reducing GHG emissions from sources within its operational control, therefore emissions were calculated for its own operations including conveyance, treatment and distribution of SWP water from where it enters Metropolitan's system. DWR has its own CAP, which identifies emissions reductions for its operations. While an aggregated number will not be used in the Metropolitan's CAP, Metropolitan understands that having an aggregated emissions factor for the imported water to Southern California is beneficial to better understand the overall emissions related to imported water, therefore a discussion of DWR's emissions is provided in Topical Response A and a detailed discussion of the overall embedded energy of water imported to Southern California has been added to Appendix B of the Final CAP. No changes to the Draft PEIR are warranted in response to this comment.

Response 10-2

The commenter recommends Metropolitan include SWP emissions in its CAP in order to have an accurate understanding of its energy use when discussing pros and cons of the projects related to the SWP, such as the Delta Conveyance project, Sites Reservoir, and operations and maintenance needs.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. As discussed in Response 10-1, Metropolitan has included a discussion of DWR's emissions in Topical Response A and a detailed discussion of the overall embedded energy of water imported to Southern California has been added to Appendix B of the Final CAP. However, Metropolitan does not own or operate the SWP, therefore a discussion about the pros and cons of SWP related projects has not been included.

Response 10-3

The commenter notes energy costs associated with the SWP are passed to ratepayers and presenting the full scope to ratepayers is part of the transparency and openness of the new general manager's tenure.

As discussed in Response 10-1, Metropolitan has included a discussion of DWR's emissions in Topical Response A and a detailed discussion of the overall embedded energy of water imported to Southern California has been added to Appendix B of the Final CAP. A discussion of the energy costs associated with the SWP, which is outside of the operational control of Metropolitan, is outside the scope of the CAP. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 10-4

The commenter suggests the graphical depiction of Metropolitan's GHG emissions over time is misleading, as the choice not to include SWP energy emissions gives the appearance that Metropolitan was not using as much energy in years when it depended more heavily on SWP water.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. Metropolitan's CAP includes a complete emissions inventory of its operations. The SWP is not within Metropolitan's operational control and emissions associated with operation and maintenance of the SWP are covered under the DWR's CAP. However, Metropolitan has included a discussion of DWR's emissions in Topical Response A and a detailed discussion of the overall embedded energy of water imported to Southern California has been added to Appendix B of the Final CAP. No changes to the Draft PEIR are warranted in response to this comment.

Response 10-5

The commenter expresses concern regarding Metropolitan's ability to meet the 2045 carbon neutrality goal, since the Delta Conveyance project is estimated to be operational in 2040. The comment states the opinion that meeting the 2045 goal would be difficult with such an energy-intensive project. The commenter further opines this seems to be a motivation not to include SWP energy outputs in the CAP calculations and renders the PEIR inadequate, if not incomplete.

The commenter states the opinion that the exclusion of SWP energy from CAP calculations renders the Draft PEIR inadequate or incomplete but does not raise a significant environmental issue indicating why the document is inadequate or incomplete. The proposed Delta Conveyance Project would be owned, operated, and funded by the DWR and is not a proposed project or activity that would be covered under Metropolitan's CAP and, therefore, is not analyzed in the Draft PEIR. The Draft PEIR analyzes and discloses potential environmental impacts associated with implementation of the CAP as it is described in Chapter 2, *Project Description*, of the Draft PEIR. No changes to the Draft PEIR are warranted in response to this comment.

Response 10-6

The commenter cautions against committing to implementation of carbon capture and sequestration before fully investigating the risks of the process to Delta or Kern County communities and recommends working with these communities to understand the consequences of improper carbon capture and storage.

CAP measure CS-3 involves developing pilot projects to enhance carbon sequestration on Metropolitan-owned properties within the Sacramento-San Joaquin River Delta, as described on page 51 of the Draft PEIR. No such projects are proposed in Kern County. As noted on page 51 of the Draft PEIR, any such projects, if deemed feasible, would comply with existing laws and regulations pertaining to carbon capture and sequestration. Furthermore, as stated on page 51 of the Draft PEIR, such projects would be aligned with the CARB's Approved Carbon Capture and Sequestration Protocol, which includes monitoring and oversight requirements to avoid impacts to public health, natural resources, or the environment. Individual projects to be implemented under the CAP would undergo the appropriate level of project-specific environmental review, including compliance with all applicable noticing and review requirements pursuant to CEQA. No changes to the Draft PEIR are warranted in response to this comment.

Response 10-7

The commenter commends specific goals included in the CAP.

This comment is acknowledged. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 10-8

The commenter states the CAP and Draft PEIR do not include alternative solutions, such as solar panels on all Metropolitan properties by 2035 for shading and generation and does not address unintended consequences and risks of harm to the environment or communities.

As stated in *State CEQA Guidelines* Section 15126.6(a):

> An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation…The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives.

A range of potentially feasible alternatives to the proposed program, including alternatives considered but rejected, are described in Chapter 7, *Alternatives*, of the Draft PEIR. As explained on page 191 of the Draft PEIR, while the commenter may suggest various GHG reduction measures that may be pursued, funded, or supported to a greater degree, Metropolitan has proposed a CAP that based on its assessment of local conditions, regulatory requirements, and feasibility, provides a full spectrum of GHG reduction measures at levels that can be feasibly achieved and quantified based upon the information and technology available today. The potential environmental impacts associated with the CEQA-required "No Program Alternative" are also described in this chapter. While the "No Program Alternative" may not avoid all significant and unavoidable impacts identified for the proposed program, Chapter 7, *Alternatives*, concludes it would result in similar but reduced impacts to resource areas where the proposed program would result in significant and unavoidable impacts, specifically air quality, cultural resources, and noise. As such, the Draft PEIR considers a range of potentially feasible alternatives intended to address one or more potentially significant impacts. The commenter does not provide any evidence the alternatives considered in the Draft PEIR are inadequate nor any evidence the alternative suggested by the commenter would address any of the potential significant impacts identified in the Draft PEIR.

The commenter suggests the CAP and Draft PEIR do not address unintended consequences and risks of harm to the environment or communities but does not provide any evidence or information regarding potential unintended consequences or risks of harm that could occur as a result of program implementation. The Draft PEIR analyzes and discloses potential environmental impacts associated with implementation of the CAP as it is currently written and as it is described in Chapter 2, *Project Description*, of the Draft PEIR. No changes to the Draft PEIR are warranted in response to this comment.

Letter 11

LOS ANGELES WATERKEEPER®

January 12, 2022

Ms. Malinda Stalvey, Senior Environmental Specialist
The Metropolitan Water District of Southern California
Environmental Planning Section
P.O. Box 54153
Los Angeles, CA 90054-0153
Sent via email to: EP@mwdh2o.com

RE: DRAFT CLIMATE ACTION PLAN

To Ms. Stalvey:

On behalf of Los Angeles Waterkeeper, a nonprofit environmental watchdog that fights for the health of the region's waterways, and for sustainable, equitable and climate-friendly water supplies, I am writing to provide the following comments on The Metropolitan Water District of Southern California's (MWD's) Draft Climate Action Plan (CAP).

First, we commend MWD for taking the initiative to develop a Climate Action Plan and committing to carbon neutrality by 2045, as required by the State of California. We also appreciate MWD's acknowledgement of its role in mitigating the climate crisis. The conveyance, treatment, and distribution of water is energy-intensive, and it is critical that MWD, as the nation's largest water wholesaler, address the water-energy-climate nexus head on. MWD is poised to lead water agencies nationwide, and we believe the following recommendations will move MWD closer to the agency's ambitious and necessary commitments. 11-1

That said, **MWD must address the State Water Project in its CAP**. MWD's Energy Sustainability Plan includes the agency's net energy use and costs, which are dominated by pumping imported water through the State Water Project (SWP) and Colorado River Aqueduct (CRA) systems. Between 2013 and 2018, the SWP constituted 54% of MWD's overall electricity requirements and 75% of its electricity costs on average. In comparison, the CRA constituted 44% of MWD's overall electricity requirements and 18% of its electricity costs during the same time period.[1] Despite this, the Draft Climate Action Plan fails to include the SWP's GHG emissions, potential actions to mitigate those emissions and measures to protect the Delta from climate impacts. 11-2

While we understand the desire to not double count GHG emissions already assessed through the California Department of Water Resources' Climate Action Plan, MWD cannot ignore its role in the SWP in its own CAP. MWD is the largest SWP contractor and is responsible for the largest share of operational costs, including energy costs. MWD also has an outsized role in the planning and implementation of projects within the SWP due to its majority share. Moreover, asking the public to try to piece together various climate action plans to understand the impacts of MWD's policies, programs and projects does not rise to the level of transparency to which I know this agency aspires. MWD has a responsibility to its member agencies, ratepayers and the general public to address the SWP's climate

[1] Metropolitan Water District of Southern California (July 2020), *Energy Sustainability Plan, Executive Summary, p. i.*

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vulnerabilities and impacts in its CAP as well as in its decision-making on management, operations, construction, and funding related to the SWP.

By excluding SWP operations from the CAP, MWD fails to look at its system holistically. Admittedly, CRP emissions increase during drought years when SWP allocations are decreased. The inverse is also true, but not accounted for in MWD's GHG calculations or management decisions. Thus, emissions will appear artificially low when maximizing imports from the SWP. As the CAP acknowledges, GHG reporting protocols generally require an organization to limit its GHG accounting to within its operational boundaries. However, considering MWD's influence over SWP operations, MWD staff must account for the energy use and emissions associated with its operations even if solely in a qualitative manner. 11-2

MWD should develop a climate resilience and adaptation plan. Many of MWD's strategies to mitigate its GHG emissions are significant, especially the divestment from coal and its own installation of renewable energy at its facilities. However, MWD must also fully address the immediate impacts of climate change, assess the whole system's climate vulnerabilities (including physical infrastructure and social vulnerabilities) and develop a proactive climate adaptation plan that builds resilience into the system. This plan should address all operations over which MWD has significant influence, including the SWP. And through coordination with the State, MWD can reduce the impacts of unpredictable precipitation and drought, and design infrastructure and ecosystem restoration that protects communities and wildlife. 11-3

MWD should consider deeper emissions cuts in the near term. The latest Intergovernmental Panel on Climate Change (IPCC) report warns the climate is changing faster than expected and climate scientists agree that the faster we act, the less severe the consequences. MWD should consider additional near-term actions to accelerate its emissions reductions by 2030. Specifically, MWD should include a commitment of utilizing 100% renewable energy for all its operations and should assess potential methane emissions from its facilities, including reservoirs. 11-4

LA Waterkeeper supports MWD's shift towards a *One Water* approach that fully incorporates and addresses the water-energy-climate nexus. As MWD looks to pull together its climate action, resilience and *One Water* planning, the connection between water and climate must be at the core of its work.

Thank you for the opportunity to comment on the Draft Climate Action Plan. Please do not hesitate to reach out to me at bruce@lawaterkeeper.org or 619-851-9997 with any questions and for further discussion of these recommendations. LA Waterkeeper looks forward to being an ally and resource as MWD pursues the critically important *One Water* approach that prioritizes resilience and equity.

Sincerely,

Bruce Reznik
Executive Director

Response to Comment Letter 11

COMMENTER: Bruce Reznik, Executive Director, Los Angeles Waterkeeper

DATE: January 12, 2022

Response 11-1

The commenter provides background on Los Angeles Waterkeeper and commends Metropolitan for creating the CAP.

This comment is acknowledged. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 11-2

The commenter recommends Metropolitan address the SWP in its CAP. The commenter understands not wanting to double-count GHG emissions considered by the state but suggests that Metropolitan should account for the energy use and emissions associated with SWP operations, even if solely in a qualitative manner. As currently presented, the commenter states the opinion that emissions appear artificially low when maximizing imports from the SWP.

Metropolitan's CAP is a GHG reduction plan aimed at identifying GHG emissions from within its operational control; therefore, emissions were calculated for its own operations including conveyance, treatment and distribution of SWP water from where it enters Metropolitan's system. DWR has its own CAP, which identifies emissions reductions for its operations. While an aggregated number will not be used in the Metropolitan's CAP, Metropolitan understands that having an aggregated emissions factor for the imported water to Southern California is beneficial to better understand the overall emissions related to imported water, therefore a discussion of DWR's emissions is provided in Topical Response A and a detailed discussion of the overall embedded energy of water imported to Southern California has been added to Appendix B of the Final CAP.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR are warranted in response to this comment.

Response 11-3

The commenter recommends Metropolitan develop a climate resilience and adaptation plan. Specifically, the commenter suggests the plan should address all operations over which Metropolitan has significant influence, including the SWP.

As described in Response 1-1, Metropolitan's IRP and UWMP address climate resilience and adaptation by focusing on water supply reliability and how Metropolitan ensures a reliable supply of water during periods of drought and changing climatic conditions. The CAP complements these two plans by creating a GHG reduction plan. The IRP is currently being updated and will be released in the coming months. The following links include both current documents and information about the planning process:

- https://www.mwdh2o.com/planning-for-tomorrow/how-we-plan/integrated-resource-plan/
- https://www.mwdh2o.com/planning-for-tomorrow/how-we-plan/

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 11-4

The commenter recommends Metropolitan consider deeper emissions cuts in the near term. Specifically, the commenter suggests Metropolitan include a commitment of utilizing 100 percent renewable energy for all its operations and should assess potential methane emissions from its facilities, including reservoirs. Finally, the commenter supports Metropolitan's shift toward a One Water approach that fully incorporates and addresses the water-energy-climate nexus.

Metropolitan supports the transition for 100 percent renewable energy for all its operations but must balance the need for a reliable water delivery system and the cost of transitioning to 100 percent renewable energy to its ratepayers. At this time, neither the retail nor the wholesale market is capable of providing a reliable source of 100 percent renewable energy.[5] As described in CAP Strategies 4 and 5, Metropolitan has developed a comprehensive plan to transition to 100 percent renewable energy including evaluating operations that can be shifted to lower emissions periods, installation of Battery Energy Storage Systems (BESS) to capture energy during periods of low grid emissions and discharging when renewable energy is not produced, transitioning one of our facilities from energy supplied by the retail market to available hydropower currently sold to the wholesale market, and investigating the feasibility of installing additional solar and large scale battery storage systems, to name a few. Additionally, as the state begins to realize the benefits of SB 100, which calls for 100 percent of electric retail sales to come from renewable energy in California by 2045, Metropolitan's operations will benefit from the investments in renewable and zero-carbon resources.

Currently, there is no accepted protocol for measuring and verifying annual methane emissions from lakes and reservoirs. Current approaches for estimating GHG emissions from reservoirs do not account for carbon sequestration in reservoir sediments and do not account for the complete carbon cycle in reservoirs including carbon inflows, stocks, and outflows. Additionally, current approaches do not recognize a difference between a natural lake system fed by rivers and runoff rather than pass through terminal reservoirs that are fed by aqueducts and pipelines and typically discharge into water conveyance systems or groundwater recharge basins. As protocols are developed, Metropolitan will include this analysis in its emissions calculations.

The comment relates to the contents of the proposed CAP and does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

[5] http://www.caiso.com/Pages/default.aspx

Letter 12

From: kris kwak <rubydog2@hotmail.com>
Sent: Sunday, November 21, 2021 6:21 PM
To: Stalvey,Malinda K <mstalvey@mwdh2o.com>
Subject: Draft CAP - SCH No 2020060450

We received letter concerning the above draft.
We live in Granada Hills and have view of DWP water treatment plant.
Will the above draft affect us?
Appear the 2 proposed sites are Sacramento and San Diego.
Will DWP expand their water treatment plant in the future.

12-1

Thank You
Kristelle

Get Outlook for Android

Response to Comment Letter 12

COMMENTER: Kristelle Kwak, Resident

DATE: November 21, 2021

Response 12-1

The commenter requests clarification regarding whether the proposed program will affect them, as residents of Granada Hills with a view of an existing water treatment plant in the area. The commenter asks if there are plans to expand the water treatment plant in the future.

As described in Section 2.5, *Description of Covered Projects with Potential for Physical Impacts*, of the Draft PEIR, Metropolitan's Joseph Jensen (Jensen) Water Treatment Plant (WTP) in Granada Hills, California is considered as a proposed site for a BESS facility, pursuant to CAP measure E-4. Activities associated with CAP measure E-4, are described on page 46 of the Draft PEIR, and Figure 10 of the Draft PEIR shows the proposed locations for BESS facilities at the Jensen WTP. As shown in Figure 10, proposed locations would be located within the existing footprint of the Jensen WTP; no expansion of the Jensen WTP is proposed as part of implementation of the CAP.

The Draft PEIR identifies significant and unavoidable impacts with respect to air quality, cultural resources, and noise. For all other environmental issue areas, implementation of the CAP would result in no impact, less than significant impacts, or less than significant impacts with incorporation of mitigation measures. This comment does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process, and no changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Letter 13

From: Liz Amsden
To: EPT
Subject: CAP PEIR
Date: Saturday, January 1, 2022 9:35:16 AM

To whom it may concern:

Some thoughts on the Metropolitan Water District's proposed Climate Action Plan.

Which is a good start on a complex and vexing problem. A lot of thought has gone into it but I read a certain amount of constraint between the lines, limitations set by expectations and by data points that feel dated

13-1

Scope 3 addresses carbon sequestration as one of the routes to be pursued. This has been contemplated a number of times over the past decades and seems to fade into obscurity every time. What is the time and cost involved compared to benefit? Does it even come close to offsetting the current carbon being released from the poles and the Himalayas due to ongoing global warming?

I do support your commitment to water conservation and investing in local water supplies. However, what is the MWD doing to protect the people's rights to the water commons - what falls from the sky and flows through our rivers and fills our lakes?

13-2

That is water that should be conserved for all uses, drinking water, fishes, eco-habitats rebuilding water tables. Water is a human right and should not be auctioned off to feed the greed of multinationals such as Nestles or to irrigate crops which are patently unsuitable for the semi-desert valleys of California, or even to maintain senior water rights.

What is being done to prevent evaporation of water in the aqueducts feeding into SoCal? What is being done to stop contamination by Big Ag and Big Oil/fracking? What is being done to reduce the salinity of the water to ensure downstream users don't receive toxic chemicals?

13-3

How are you rectifying the cowboy approach of the dam-builders in the American west that have forever destroyed its river systems?

13-4

To that extent, I request you look at the following issues in reformulating and implementing your Plan:

- The need to preserve or return ecosystems to their states prior to the damming of the western rivers and draining of the aquifers and river systems – both the State Water Project and the Colorado River Aqueduct and the various backroom deals related thereto;

13-5

- Why is the MWD still supporting the current iteration of the Twin Tunnels Project which is NOT needed by LA County and charges LA County households huge amounts for the benefit Central Valley agribusinesses who care little for the land and more about the tax savings of their use of antiquated anti-environmental incentives?

13-6

- There are many conservation options that are not being pursued because they do not suit the political aspirations of those in power and the profiteers who enable them – how will the

13-7

MWD address this?

- In drought year of 2014 with water use strongly regulated, Los Angeles saw significant cut-backs that were then abandoned in favor of keeping the LADWP from having to increase unit charges to cover its fixed costs – what can you do to re-implement and enforce these measures without creating economic hardship? — 13-8
- Yes, the per unit charge will have to be raised – hopefully with households reducing use so their net expense remains within reason - but why should MWD customers pay for the Central Valley's poor husbandry? — 13-9
- Has the MWD and other agencies discussed leveraging their power to revamp the existing water rights mish-mash into a system that will be more flexible and fairer for all in years to come? — 13-10
- California doesn't 'owe' luxury foodstuffs and alfalfa to any state or country; its agricultural sector needs to come to terms with the fact that most of the state is semi-desert with limited water resources that are difficult to replenish and should adjust their crops and methods accordingly – cutting pesticides, moving to less harmful fertilizing methods, installing drip irrigation systems used in Israel rather than continuing to spray precious water into the air where it does not even reach the ground let alone the roots of the plants, etc. — 13-11
- Again, the water rights regulations need to be redone to reflect reality and the future of the state, not to preserve deeded water amounts
- High water-demand plants should be relegated to greenhouse cultivation
- Indoor vertical farming (closed-system greenhouses) can operate year round, recycle water and use little if any pesticides and chemical fertilizers, both of which are contaminating our groundwater and drinking water supplies
- With the experience of the pandemic years, look at how much of your work can now be done by telecommuting to reduce emissions, reduce stress, reduce traffic, and how that can be increased in the future — 13-12
- Co-office use will reduce costs at all levels including carbon footprints
- Consider what existing spaces can be converted to affordable housing, small business incubators, recycling facilities, and bringing the manufacture of necessary goods back to the United States — 13-13
- Cover the canals to reduce evaporation and generate solar power — 13-14
- Stop the Delta project, the most recent iteration of the Twin Tunnels scheme which would not only be an ecological disaster with a disproportional cost falling on Los Angeles households but primarily subsidize Central Valley agribusinesses that care little for the land and more about personal profit margins and tax benefits, planting high water-demand crops and use inefficient irrigation to maintain their primary water rights — 13-15
- How do we repair and care for California's multiple ecological systems; even if we conserve every drop, it doesn't mean that fish will have enough free water to breed- destruction of one species can impact many others and severely impact various economic systems throughout the state
- How are you addressing chemicals getting into our aquifers from your construction projects as well as from fracking, BigAg run-off, adjacent landfills (i.e. Scholl Canyon), runoff pollution, salt/alkalinity build-up, etc.? — 13-16
- Divide electricity into coal, oil and hydro which need to be phased out as soon as possible and the land restored to prior health be it 10 or 100 years ago, from tidal, solar and wind provided these are established and maintained in an ecologically sound and sustainable manner — 13-17
- Seriously investigate desalinization but NOT in the way that it is currently being pursued in California which is incredibly destructive of marine habitat and uses ridiculous amounts of carbon energy to producer - investigate Perth's tidal desalination plant and possible Melbourne's (both in Australia)
- BTW, hydro is now considered to be WORSE than other carbon fuels as the dams bury trees

and vegetation that decomposes in addition to the carbon-cost for building and maintaining the infrastructure

- Biodiesel is not more sustainable – there is the cost to create it and the cost to move it and the carbon cost from burning ANY fuel
- Bridge / transitional energy sources having no purpose in this discussion because of all the infrastructure required to build infrastructure to create them, retool equipment to use them and find an aftermarket to capture or dispose of their byproducts, all of which then encourages people to go on using them to justify their initial cost

13-17

The impact of climate change for such a complex entity as the MWD is a multi-tiered challenge and deserves careful assessment and even more careful implementation of policies to ensure that it actually achieves objectives beneficial to all its stakeholders and not just those with the most power or the loudest voices.

The MWD must address the interrelated ecological issues as well as current and future stakeholder needs.

Extreme caution must be taken to avoid short term profiteering and pretty metrics at the expense of long term restoration needed to repair over a century of mismanagement and safeguard future sustainability.

13-18

These are just a few thoughts.

Sincerely

Liz Amsden
Los Angeles, CA 90042
(323) 254-0590

Response to Comment Letter 13

COMMENTER: Liz Amsden, Resident

DATE: January 1, 2022

Response 13-1

The commenter states the opinion the CAP is a good start on a complex problem but inquires about the time and cost of carbon sequestration and whether these measures come close to offsetting current carbon being released from the poles and the Himalayas due to ongoing global warming.

This comment is acknowledged. The CAP is intended to reduce GHG emissions associated with Metropolitan's operations. Metropolitan would complete a full cost/benefit analysis before implementing carbon sequestration measures. Carbon sequestration provides a significant opportunity to reduce emissions associated with Metropolitan's operations while providing co-benefits of habitat restoration and protecting the natural environment. Emissions outside Metropolitan's operational control, such as DWR's SWP, are outside the scope of the CAP. The comment does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 13-2

The commenter supports commitment to water conservation and investing in local water supplies, but asks what Metropolitan is doing to protect people's rights to water commons.

The commenter's support of water conservation and investing in local water supplies is acknowledged. Metropolitan's core mission is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way. The proposed CAP is intended to reduce GHG emissions associated with Metropolitan's operations; therefore, the document supports Metropolitan's core mission of providing a reliable water supply in an environmentally responsible way. The comment does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR are warranted in response to this comment.

Response 13-3

The commenter asks what is being done to prevent evaporation of water in the aqueducts serving Southern California, as well as what is being done to stop contamination of water due to agricultural practices, oil production, increasing salinity for downstream users.

While there are no projects identified in the proposed CAP that specifically address the evaporation of water in the aqueducts or contamination of water, Metropolitan continually evaluates ways to improve water efficiency and protect water quality. The comment does not raise concerns with the adequacy of the Draft PEIR or the CEQA process, nor does the comment identify concerns with the analysis in the CAP or the GHG reduction measures identified to reduce emissions. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 13-4

The commenter asks how Metropolitan is rectifying the historical approach of constructing dams in the American west in ways that have destroyed river systems.

The comment is acknowledged. Metropolitan's mission is to provide a safe and reliable supply of water to Southern California. Metropolitan is continually evaluating its operations to ensure it is providing water in an environmentally and economically responsible way. The comment does not

raise concerns with the adequacy of the Draft PEIR or the CEQA process, nor does the comment identify concerns with the analysis in the CAP or the GHG reduction measures identified to reduce emissions. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 13-5

The commenter suggests the CAP consider the need to preserve or return ecosystems to their states prior to the damming of the western rivers and draining of the aquifers and river systems.

The comment is acknowledged. Please refer to Response 13-4.

Response 13-6

The commenter suggests the CAP consider why Metropolitan supports the current iteration of the Twin Tunnels Project, adding the opinion the project is not needed by Los Angeles County and charges County households for the benefit of Central Valley agri-businesses.

The comment is acknowledged. Please refer to Response 13-4.

Response 13-7

The commenter suggests the CAP consider how Metropolitan will address conservation options that the commenter believes are not being pursued because they do not suit the political aspirations of those in power and the profiteers who enable them.

The comment is acknowledged. No specific examples of conservation options that should have been considered by Metropolitan are offered by the commenter. Please refer to Response 13-4.

Response 13-8

The commenter suggests the CAP consider re-implementing and enforcing 2014 water use regulations that realized significant cutbacks without creating economic hardship.

Regulatory water restrictions such as those imposed by the State Water Board in 2014 are the result of an Executive Order issued by the Governor declaring a State of Emergency. Metropolitan does not have the authority to impose water use regulations. Metropolitan recognizes that water conservation is key to ensuring a reliable supply of water to its service area. Water conservation measures are included as part of Strategy 8 of the proposed CAP. The comment does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 13-9

The commenter suggests the CAP consider why Metropolitan customers should pay for the Central Valley's poor husbandry.

The comment is acknowledged. Please refer to Response 13-4.

Response 13-10

The commenter suggests the CAP consider revamping the existing water rights mish-mash into a system that will be more flexible and fairer for all in years to come.

The comment is acknowledged. Please refer to Response 13-4.

Response 13-11

The commenter suggests the CAP consider reforms to the state's agricultural system, including cutting pesticides, moving to less harmful fertilizing methods, installing drip irrigation systems, etc. The commenter further requests the CAP consider relegating high water-demand plants to greenhouse cultivation and supports indoor vertical farming.

The comment is acknowledged. Please refer to Response 13-4.

Response 13-12

The commenter suggests the CAP consider the benefits of telecommuting and co-office use.

Strategy 6 of the CAP addresses the issue of telecommuting and incentivizing more sustainable commutes. Specifically, Measure EC-5 of the proposed CAP would allow for 50 percent of employees located at Metropolitan's headquarters to telecommute or use flexible schedules through 2030 to reduce travel time, vehicle miles traveled, and GHG emissions. This comment does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 13-13

The commenter suggests the CAP consider what existing spaces can be converted to affordable housing, small business incubators, recycling facilities, and bringing the manufacturing of necessary goods back to the United States.

The comment is acknowledged. Please refer to Response 13-4.

Response 13-14

The commenter suggests the CAP consider covering canals to reduce evaporation and generate solar power.

This comment is acknowledged. Please refer to Response 13-4.

Response 13-15

The commenter opposes the Delta (Twin Tunnels) Project and suggests the CAP consider how to repair and care for California's multiple ecological systems.

The comment is acknowledged. Please refer to Response 13-4.

Response 13-16

The commenter asks how Metropolitan repairs and care for California's multiple ecological systems, especially ensuring enough free water for fish to breed.

The comment is acknowledged. Please refer to Response 13-4.

Response 13-17

The commenter suggests the CAP consider aquifer contamination from Metropolitan's construction projects, as well as from agricultural practices, landfills, runoff pollution, and salinity.

Impacts to hydrology and water quality associated with implementation of the proposed CAP, including potential degradation of groundwater quality, are addressed in Section 5.7, *Hydrology and Water Quality*, of the Draft PEIR. As discussed in that section, construction-related impacts to water

quality are determined to be less than significant with adherence to best management practices required in Metropolitan's standard construction specifications and regulatory compliance, including coverage under the statewide Construction General Permit. The commenter provides no evidence that construction of any project to be implemented under the proposed CAP would result in aquifer contamination such that this impact would be potentially significant.

Impacts to hydrology and water quality associated with agricultural practices, landfills, and salinity are beyond the scope of the proposed CAP, which is intended to reduce GHG emissions associated with Metropolitan's operations. As such, these issues are not discussed further in the Draft PEIR. Given the discussion above, no changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 13-17

The commenter suggests the CAP consider the benefits and liabilities of various energy sources. Specifically, the commenter states the opinion coal, oil, and hydroelectric sources should be phased out as soon as possible, that Metropolitan should consider less-destructive or energy-intensive desalination processes and questions the sustainability of biodiesel.

Metropolitan appreciates the comment. Metropolitan has already divested itself from the use of coal and plans to electrify its operations completely by 2045. Measures included in Strategies 4 and 5 will ensure increased energy efficiency and a transition to 100 percent carbon free electricity by 2045. While Metropolitan plans to shift its fleet to zero emission vehicles as outlined in Strategy 2: Zero Emission Fleet, the limited availability of electric medium- and heavy-duty vehicles, will require the use of carbon-based fuel sources during the transition to zero emissions vehicles. Using alternative fuels like biodiesel or biogas, which can be used interchangeably in traditional diesel-powered engines are short-term measures that can be implemented to reduce emissions from conventional diesel fuel during the transition to a decarbonized Metropolitan fleet. The comment does not raise concerns regarding the adequacy of the Draft PEIR or the CEQA process. No changes to the Draft PEIR or Draft CAP are warranted in response to this comment.

Response 13-18

The commenter suggests Metropolitan address the interrelated ecological issues as well as current and future stakeholder needs.

The comment is acknowledged. Please refer to Response 13-4.

CHAPTER 2
CHANGES TO THE DRAFT PEIR

Introduction

As provided in Section 15088(d) of the *State CEQA Guidelines* (14 California Code of Regulations 15000 et seq.), responses to comments may take the form of a revision to a draft EIR or may be a separate section in the Final EIR. This section complies with the latter and provides changes to the Draft PEIR presented in strikethrough text (~~strikethrough~~) signifying deletions and underlined text (underline) signifying additions. These notations are meant to provide clarification, corrections, or minor revisions as needed as a result of public comments or because of changes in the proposed program since the release of the Draft PEIR, as required by Section 15132 of the *State CEQA Guidelines*. None of the corrections and additions constitutes significant new information or substantial project changes requiring recirculation as defined by Section 15088.5 of the *State CEQA Guidelines*.

Changes to the Draft PEIR

Changes to the Draft PEIR are provided in this section. Page numbers correspond to the Draft PEIR. After the location or locations of the changes (by page number), a brief explanation of the nature of the change is provided, followed by the text from the Draft PEIR with changes shown in ~~strikethrough~~/underline.

Page 8 and Page 116

Mitigation Measure BIO-5 has been revised to remove an erroneous reference to Mitigation Measure BIO-1. This change does not alter the meaning or intent of the mitigation measure and does not result in a change to the impact findings of the Draft PEIR. The following change has been made in in Table 1 of Section ES.6, *Summary of Impacts and Mitigation Measures*, and in Section 4.2.5.2, *Mitigation Measures*, of the Draft PEIR.

MM BIO-5 **Endangered/Threatened Species Avoidance and Minimization During Construction.** The following measures shall be applied to aquatic and terrestrial species, where appropriate. Metropolitan shall select from these measures as appropriate depending on site conditions, the species with potential for occurrence, and the results of the project-specific biological resources assessment ~~(Mitigation Measure BIO-1)~~.

Pre-construction surveys for federal and/or state listed species with potential to occur shall be conducted where suitable habitat is present by a qualified biologist not more than 72 hours prior to the start of construction activities. The survey area shall include the proposed disturbance area and all proposed ingress/egress routes, plus a species-specific buffer. If any life stage of federal and/or state listed species is found within the survey area, the appropriate measures in the BO or HCP/ITP issued by the USFWS/NMFS (relevant to federally listed species) and/or the ITP issued by the CDFW (relevant to state listed species) shall be implemented; or if such guidance is not in place for the activity, the qualified biologist shall recommend an appropriate

course of action, which may include consultation with USFWS, NMFS, and/or CDFW.

The activity limits of disturbance shall be flagged. Areas of special biological concern within or adjacent to the limits of disturbance shall have Environmental Sensitive Area fencing installed between said area and the limits of disturbance.

All activities occurring within or adjacent to sensitive habitats that may support federally and/or state endangered/threatened species shall have a qualified biologist present during all initial ground disturbing/vegetation clearing activities. Once initial ground disturbing/vegetation clearing activities have been completed, the biologist shall conduct pre-activity clearance surveys, as needed to ensure protection of endangered/threatened species.

If pumps are used for dewatering activities, all intakes shall be completely screened with wire mesh not larger than five millimeters to prevent animals from entering the pump system.

If at any time during construction of the project activity an endangered/threatened species enters the construction site or otherwise may be impacted by the project activity, all project activities shall cease. At that point, a qualified biologist shall recommend an appropriate course of action, which may include consultation with USFWS, NMFS, and/or CDFW. Alternatively, the appropriate measures shall be implemented in accordance with the BO or HCP/ITP issued by the USFWS (relevant to federal listed species) and/or the ITP issued by the CDFW (relevant to state listed species) and work can then continue as guided by those documents and the agencies, as appropriate.

All trenches, pipes, culverts or similar structures shall be inspected for animals prior to burying, capping, moving, or filling.

Upon completion of the project activity, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the activity, including the pre-construction survey results.

Page 10 and Page 117

Mitigation Measure BIO-7 has been revised to remove an erroneous reference to Mitigation Measure BIO-1. This change does not alter the meaning or intent of the mitigation measure and does not result in a change to the impact findings of the Draft PEIR. The following change has been made in in Table 1 of Section ES.6, *Summary of Impacts and Mitigation Measures*, and in Section 4.2.5.2, *Mitigation Measures*, of the Draft PEIR.

MM BIO-7 **Jurisdictional Delineation and Impact Avoidance.** If the results of the project-specific biological resource assessment ~~Mitigation Measure BIO-1~~ indicate project activities implemented under the proposed CAP would impact wetlands, drainages, riparian habitats, or other areas that may fall under the jurisdiction of the CDFW, USACE, and/or RWQCB, a qualified biologist shall complete a jurisdictional delineation. The jurisdictional delineation shall determine the extent of the jurisdiction for each of these agencies within the project activity site and shall be conducted in accordance with the requirement set forth by each agency. The results shall be provided in a jurisdictional delineation report submitted to Metropolitan, USACE, RWQCB, and CDFW, as appropriate, for review and approval. The project activity shall be designed to avoid or minimize impacts to jurisdictional areas to the maximum extent feasible.

Page 11 and Page 118

Mitigation Measure BIO-9 has been revised to remove an erroneous reference to Mitigation Measure BIO-1. This change does not alter the meaning or intent of the mitigation measure and does not result in a change to the impact findings of the Draft PEIR. The following change has been made in in Table 1 of Section ES.6, *Summary of Impacts and Mitigation Measures*, and in Section 4.2.5.2, *Mitigation Measures*, of the Draft PEIR.

MM BIO-9 **Sensitive Natural Community Avoidance and Mitigation.** If the results of the project-specific biological resource assessment ~~Mitigation Measure BIO-1~~ indicate project activities implemented under the proposed CAP would impact sensitive natural communities, impacts shall be avoided through final project activity design modifications.

If Metropolitan determines sensitive communities cannot be avoided, impacts shall be mitigated on-site or off-site at an appropriate ratio to fully offset project activity impacts (minimum ratio of 1:1). Temporarily impacted areas shall be restored to pre-project conditions. An HMMP shall be developed by a qualified biologist and submitted to the agency overseeing the project activity for approval.

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THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

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THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Metropolitan
Climate Action Plan

Final Program Environmental Impact Report

Volume 2

May
2022

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CHAPTER 1
INTRODUCTION TO FINAL PROGRAM EIR – VOLUME 2

1.1 Introduction

This Final Program Environmental Impact Report (Final PEIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.), as amended. The Metropolitan Water District of Southern California (Metropolitan) is the lead agency for the environmental review of the proposed Climate Action Plan (CAP or proposed program) evaluated herein and has the responsibility for approving the proposed program.

As described in the *State CEQA Guidelines* (14 California Code of Regulations [CCR] 15000 et seq.), public agencies are charged with the duty to avoid or substantially lessen significant environmental effects, with consideration of other conditions, including economic, social, technological, legal, and other benefits. As required by CEQA, this Final PEIR assesses the potentially significant direct and indirect environmental effects of the proposed program, as well as the potentially significant cumulative impacts that could occur from implementation of the proposed program. This Final PEIR is an informational document only, the purpose of which is to identify the significant effects of the proposed program on the environment and to indicate the manner in which those significant effects can be avoided or significantly lessened (including feasible mitigation measures); to identify any significant and unavoidable adverse impacts that cannot be mitigated to below a significant level; and to identify reasonable and feasible alternatives to the proposed program that would avoid or substantially lessen any significant adverse environmental effects associated with the proposed program and achieve the fundamental objectives of the proposed program.

1.2 Contents and Organization of Final PEIR

This Final PEIR is prepared pursuant to Sections 15088, 15089, and 15132 of the *State CEQA Guidelines*. The Final PEIR, in compliance with Section 15132 of the *State CEQA Guidelines*, contains the following:

- Final PEIR, Volume 1
    - **Final Executive Summary.** The Final Executive Summary provides the contents and organization of the Final PEIR, a summary of procedural compliance with CEQA, and a brief description of the proposed program.
    - **Chapter 1: Responses to Comments Received.** This chapter includes a list of persons, organizations, and public agencies that provided written comments on the Draft PEIR and Draft CAP during the public review period. This chapter also includes a copy of the comments received during the public review process for the Draft PEIR and Draft CAP, as well as Metropolitan's responses to these written comments. Each comment is assigned a comment number, which corresponds to a response number and response.
    - **Chapter 2: Changes to the Draft PEIR and Draft CAP.** This chapter contains a summary of changes made to the documents since publication of the Draft PEIR and Draft CAP as a result of comments received. Revisions were made to clarify information presented in the Draft PEIR and only minor technical changes or additions have been made to the Draft CAP.

These changes and additions to the PEIR and CAP do not raise important new issues related to significant effects on the environment. Such changes are "insignificant," as the term is used in Section 15088.5(b) of the *State CEQA Guidelines*. This chapter describes changes that were made and presents textual changes made since public review as signified by strikethrough (~~strikethrough~~) where text is removed, and by underlined text (underline) where text is added for clarification.

- Final PEIR, Volume 2
  - **Chapter 1: Introduction to Final PEIR – Volume 2.**
  - **Chapter 2: Findings of Fact in Support of the Proposed Program and Statement of Overriding Considerations.** This chapter of the Final PEIR provides a summary of the impacts associated with the proposed program and the findings regarding alternatives to the proposed program. This chapter also includes a summary of the general findings, legal effects of the findings, and a summary of the independent review and analysis. Lastly, this chapter includes a Statement of Overriding Considerations, pursuant to *State CEQA Guidelines* Sections 15043 and 15093, which requires the lead agency's decision-making body to balance, as applicable, the program's economic, social, or other benefits, including region-wide or statewide environmental benefits, against the occurrence of significant environmental effects that have not been avoided when determining whether to approve the program.
  - **Chapter 3: Mitigation Monitoring and Reporting Program.** This chapter of the Final PEIR provides the mitigation monitoring and reporting program (MMRP) for the proposed program. The MMRP is presented in table format and identifies mitigation measures for the proposed program, the party responsible for implementing the mitigation measures, the timing of implementing the mitigation measures, and the entity responsible for monitoring and reporting compliance with each mitigation measure.

1.3 California Environmental Quality Act Review

Metropolitan has complied with CEQA and the *State CEQA Guidelines* during preparation of the PEIR for the proposed program. Pursuant to Section 15082 of the *State CEQA Guidelines*, a Notice of Preparation (NOP) and Scoping Meeting was prepared and published by Metropolitan on June 23, 2020 and circulated to local, state, and federal agencies and to members of the public and other interested agencies, organizations, and individuals. The NOP was also sent to the State Clearinghouse at the California Governor's Office of Planning and Research to solicit participation from state agencies in determining the scope of the Draft PEIR. The State Clearinghouse assigned a state identification number (SCH No. 2020060450) to the Draft PEIR. A virtual scoping meeting was held on July 15, 2020 at 10:00 a.m. to present the proposed program, describe the environmental review process, and provide an opportunity for agency representatives and the public to assist Metropolitan in determining the scope and content of the environmental analysis for the PEIR. Pursuant to Section 15082 of the *State CEQA Guidelines*, recipients of the NOP for the proposed program were requested to provide responses within 30 days of their receipt of the NOP. As such, the review period for the NOP ended on July 22, 2020.

Metropolitan received a total of ten written comment letters on the NOP from the following parties:

- South Coast Air Quality Management District (SCAQMD)
- Mohave Desert Air Quality Management District (MDAQMD)
- San Joaquin Valley Unified Air Pollution Control District (SJVAPCD)
- Ventura County Air Pollution Control District (VCAPCD)

- Stanislaus County Environmental Review Committee
- Stanislaus County Public Works
- Ventura County Watershed Protection District
- California Highway Patrol (CHP)
- Native American Heritage Commission (NAHC)
- California Department of Fish and Wildlife (CDFW)

All comments received during the NOP public notice period were considered during the preparation of the Draft PEIR. Appendix A of the Draft PEIR includes the NOP and copies of the comment letters received on the NOP.

Pursuant to CEQA and its implementing guidelines, the Draft PEIR was circulated for a 45-day public review and comment period which began on November 18, 2021 and concluded on January 7, 2022. The Draft PEIR was distributed to the State Clearinghouse and a Notice of Availability of the Draft PEIR was distributed to interested parties and agencies. Copies of the Draft PEIR were made available to the general public for review during normal operating hours at the following location:

The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, California 90012

The Draft PEIR was also available for review on Metropolitan's website, and at nine public libraries within the Plan Area for the proposed program.

Volume 1 of this Final PEIR contains the Executive Summary and Chapters 1 and 2, which provide responses to comments received during the public comment period for the Draft PEIR and any changes made to the Draft PEIR. Volume 2, Chapters 2 and 3, of this Final PEIR make detailed findings with respect to the potential effects of the proposed program and refer, where appropriate, to the mitigation measures set forth in this Final PEIR.

The Final PEIR and the administrative record concerning the proposed program provide additional information in support of the Findings of Fact (Volume 2, Chapter 2) herein. The Findings of Fact are hereby incorporated in the Final PEIR in its entirety. Furthermore, the mitigation measures set forth in the Final PEIR and the MMRP are incorporated by reference in the Findings. The MMRP was developed in compliance with California Public Resources Code Section 21081.6 and is contained in Volume 2, Chapter 3, of this Final PEIR.

1.4 Proposed Program Description

1.4.1 Overview and Scope of the Program

Metropolitan is proposing a CAP to identify strategies to reduce greenhouse gas (GHG) emissions and achieve the proposed GHG reduction targets. The CAP includes a baseline GHG emissions inventory of Metropolitan's operations from 1990 through 2020, an emissions forecast through 2045, emissions reduction targets consistent with Senate Bill (SB) 32 and Executive Order B-55-18, actions and policies that Metropolitan could implement to achieve GHG reductions, and an implementation roadmap. The CAP would apply to Metropolitan's operations within the proposed Plan Area, described in the following section.

1.4.2 Overview of the Region

The Plan Area consists of the following six counties in Southern California: Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura. Portions of northeastern Imperial County within the Palo Verde Valley, as well as four islands in the Sacramento-San Joaquin River Delta area, are also included in the Plan Area. The Plan Area includes all of Metropolitan's service area and its member agencies' jurisdictions, as well as all areas where Metropolitan owns land or facilities.

The Plan Area spans approximately 38,213 square miles across six ecoregions, including Southern California Mountains and Valley, Southern California Coast, Sonoran Desert, Mojave Desert, Colorado Desert, and California Central Valley (Great Valley) (United States Department of Agriculture 2007). The Plan Area contains a population of approximately 22,176,450 across 202 incorporated cities and unincorporated county regions (California Department of Finance [DOF] 2020; United States Census Bureau 2020). It also includes over 220 miles of Pacific Ocean coastline, ranges in elevation from 234 feet below mean sea level to approximately 11,503 feet above mean sea level, and contains a national park, one national recreation area, all or portions of four national forests, and three United States Census Bureau-designated Metropolitan Statistical Areas.

1.4.3 Program Objectives

The proposed program is designed to reduce GHG emissions associated with Metropolitan's operations. Specifically, the objectives of the proposed program include the following:

- Identify and quantify emissions associated with Metropolitan operations to prepare a baseline GHG emissions inventory in order to track emissions reduction progress over time
- Adopt an emissions reduction target that is consistent with existing state emissions reduction targets while preparing Metropolitan to meet future state targets
- Identify and quantify specific reduction actions and policies that Metropolitan may implement to achieve the goal of reducing GHG emissions from its construction and operational activities
- Provide a roadmap for future activities to achieve consistency with the CAP and use CEQA streamlining tools for analysis of GHG emissions pursuant to the requirements of *State CEQA Guidelines* Section 15183.5

1.4.4 Program Description

The proposed program contains the following primary components.

1.4.4.1 Emissions Inventory

The proposed CAP contains an inventory of Metropolitan's GHG emissions from 1990 to 2020. Due to the geographically disparate nature of Metropolitan's operations, emissions reported in the inventory are based on activities over which Metropolitan has direct operational control. The inventory delineates emissions by Scope, as defined in the Local Governments for Sustainability reporting frameworks and detailed below. The emissions inventory reports Metropolitan's GHG emissions in metric tons of carbon dioxide equivalent (CO_2e).

- **Scope 1 Emissions**. Scope 1 emissions are those associated with direct emissions from sources owned or controlled by Metropolitan. This includes emissions from direct fuel combustion, including natural gas, propane, welding gasses, and gasoline and diesel used to power Metropolitan's vehicle fleet.

- **Scope 2 Emissions**. Scope 2 emissions are those indirect emissions associated with the consumption of Metropolitan's purchased electricity use. Specifically, emissions generated at power plants that supply electricity for Metropolitan operations. Metropolitan purchases electricity from power generated from within California and from outside of California in the southwestern United States, which includes electricity generated from hydropower at the Hoover Dam. Scope 2 emissions also include transmission and distribution losses that occur as electricity is delivered to Metropolitan facilities.
- **Scope 3 Emissions**. Scope 3 emissions are other indirect emissions that occur as a result of Metropolitan's operations, including emissions associated with waste generation, water consumption and wastewater generation from Metropolitan-owned buildings, employee commutes, and construction activities.

The proposed CAP also includes an emissions forecast through 2045 to account for potential changes in hydrology, climate, climate and air quality regulations, population growth, operations, and future construction projects that may affect Metropolitan's emissions in the future. Furthermore, the emissions forecast allows for comparison between forecasted GHG emissions and reduction targets to understand the reductions necessary to achieve Metropolitan's GHG reduction goals.

1.4.4.2 Reduction Target

The proposed CAP establishes a GHG reduction target aligned with applicable state GHG reduction policies. The CAP considers various reduction levels, target methodologies, and tracking mechanisms to quantify GHG emissions reductions and measure progress towards meeting the established GHG reduction target. Ultimately, the CAP includes a linear per capita target or "Linear Reduction to Carbon Neutral by 2045 – Per Capita Target" with a Carbon Budget tracking mechanism.

1.4.4.3 GHG Reduction Measures

In order to achieve the proposed CAP's emissions reduction target, GHG emissions reduction measures would need to be implemented. The CAP includes 39 proposed GHG emissions reduction measures that, if implemented, could help Metropolitan reduce its Scope 1, Scope 2, and Scope 3 emissions. Reduction measures for each Scope are grouped into nine strategies that could be employed at Metropolitan's various facility types during facility maintenance activities and future expansion and construction activities, as well as policies and projects to explore new technologies and practices to conserve resources. The reduction measures do not include actions taken by Metropolitan to date that have resulted in GHG emissions reductions, such as Metropolitan's early adoption of solar facilities at several of its treatment plants and Leadership in Energy Efficiency and Design (LEED) certification for several of its facilities. However, the measures may build or expand upon these past actions. Most measures within the nine categories are either administrative (e.g., studies, investigations) in nature or involve replacement of existing infrastructure with newer, more efficient infrastructure at the same location and, therefore, would not have physical impacts to the environment.

1.4.5 Areas of Controversy

Section 15123(b)(2) of the *State CEQA Guidelines* requires that an EIR identify areas of controversy which are known to the lead agency, including issues raised by other agencies and the public. Areas of controversy associated with the proposed program are made known through comments received during

the NOP process, as well as input solicited during public scoping meetings and an understanding of the community issues in the study area.

The comments on the NOP for the draft PEIR for the proposed CAP generally expressed concern over the following issues: alternatives analysis and impacts to biological species and jurisdictional habitats (CDFW), air quality impacts from construction or operation of projects implemented under the proposed program (SJVAPCD, MDAQMD, SCAQMD, and VCAPCD), impacts to tribal cultural resources (NAHC), and watershed management (Ventura County Public Works). Appendix A of the Draft PEIR contains a copy of the NOP and the comment letters received during the NOP scoping period.

1.4.6 Summary of Environmental Impacts and Mitigation Measures

Table 1 includes a brief description of the identified environmental impacts associated with each threshold analyzed in detail in the draft PEIR, proposed mitigation measures, and the level of significance after mitigation.

Table 1 Summary of Environmental Impacts, Mitigation Measures and Impacts After Mitigation

Impact	Mitigation Measure(s)	Significance After Mitigation
Air Quality		
Impact AQ-A. Implementation of the individual projects proposed under the CAP would potentially conflict with or obstruct implementation of the applicable air quality plan due to construction emissions. This impact would be potentially significant.	**MM AQ-1 Construction Air Quality Assessment** For individual projects to be implemented under the CAP that involve construction activities with an intensity (i.e., size, schedule, equipment, demolition, import/export of soil, architectural coating) greater than the sample project activity, an air quality assessment shall be prepared to evaluate construction emissions in light of the applicable air district thresholds. **MM AQ-2 Implement Emission Reduction Measures** If construction emissions would exceed any of the applicable thresholds, emission reduction measures shall be implemented to reduce emissions below the thresholds. Measures may include, but would not be limited to: • All construction equipment shall be equipped with Tier 4 certified engines or CARB-certified Level 3 diesel particulate filters. All diesel particulate filters shall be kept in working order and maintained in operable condition according to manufacturer's specifications, as applicable. • Construction equipment with lower horsepower ratings shall be utilized, as applicable and practicable. • Ultra-low-sulfur diesel fuel shall be used for stationary construction equipment, as applicable. • Low-emission on-site stationary equipment shall be used, as applicable. • Alternatively-fueled construction equipment (e.g., renewable diesel, natural gas, electric) shall be utilized instead of diesel-fueled construction equipment, as applicable. • The schedule for soil import and/or export shall be extended to reduce the number of daily haul truck trips, as applicable. • The schedule for the coating/painting phase shall be extended to reduce the square footage coated/painted each day, as applicable. • Architectural coatings with a VOC content of less than 250 grams per liter shall be utilized.	Significant and unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
Impact AQ-B. Construction impacts related to criteria air pollutant emissions resulting from implementation of individual projects proposed under the CAP would be potentially significant.	**MM AQ-1** and **MM AQ-2**.	Significant and unavoidable.
Impact AQ-C. Neither construction nor operation of individual projects proposed under the CAP would expose sensitive receptors to substantial pollutant concentrations. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Impact AQ-D. Neither construction nor operation of individual projects implemented under the proposed CAP would result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Biological Resources		
Impact BIO-A. Implementation of individual projects under the proposed CAP would potentially have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or other special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. This impact would be potentially significant.	**MM BIO-1 Special Status Plant Species Surveys** If completion of the project-specific biological resources assessment determines that special status plant species have potential to occur on site, surveys for special status plants shall be completed prior to any vegetation removal, grubbing, or other construction activity of each project activity (including staging and mobilization). The surveys shall be floristic in nature and shall be seasonally timed to coincide with the target species identified in the project activity-specific biological resources assessment. All plant surveys shall be conducted by a qualified biologist no more than one year prior to project implementation (annual grassland habitats may require yearly surveys). Surveys shall be conducted in accordance with current protocols established by the CDFW, USFWS and the local jurisdictions if said protocols exist. If special status plant species are identified, Mitigation Measure BIO-2 shall apply. **MM BIO-2 Special Status Plant Species Avoidance, Minimization, and Mitigation** If state- or federally-listed special status and/or CRPR 1 and 2 plant species are identified during the project-specific biological assessment, the activity shall be re-designed to avoid impacting these plant species to the maximum extent feasible. If CRPR 3 and 4 species are found, the biologist shall evaluate if they meet criteria to be considered special status, and if so, the same process as identified for CRPR 1 and 2 species shall apply. If special status plant species cannot be avoided and would be impacted by a project activity implemented under the proposed CAP, all impacts shall be mitigated at an appropriate ratio (minimum ratio of 1:1) to fully offset project activity impacts, as determined by a qualified biologist for each species. A restoration plan shall be prepared and implemented, as applicable.	Less than significant with mitigation incorporated.

Impact	Mitigation Measure(s)	Significance After Mitigation
	MM BIO-3 Endangered/Threatened Animal Species Habitat Assessment and Protocol Surveys If the results of the project-specific biological resources assessment determine suitable habitat may be present for any federally and/or state endangered or threatened animal species, habitat assessments and/or protocol surveys shall be completed in accordance with CDFW and/or USFWS/NMFS protocols prior to construction. Alternatively, in lieu of conducting protocol surveys, Metropolitan may choose to assume presence within the activity footprint and proceed with implementing appropriate avoidance measures, consultation, and permitting, as applicable. If the target species are detected during protocol surveys, or protocol surveys are not conducted and presence is assumed based on suitable habitat, Mitigation Measure BIO-4 shall apply. **MM BIO-4 Endangered/Threatened Animal Species Avoidance and Mitigation** If habitat is occupied or presumed occupied by federal and/or state-listed species and would be impacted by project activities, the project activity shall be redesigned in coordination with a qualified biologist to avoid impacting occupied/presumed occupied habitat to the maximum extent feasible. If occupied or presumed occupied habitat cannot be avoided, Metropolitan shall consult with USFWS, NMFS, and/or CDFW in order to determine the appropriate course of action, which may include a Biological Opinion (BO) or HCP/ITP issued by the USFWS/NMFS (relevant to federally listed species) and/or the ITP issued by the CDFW (relevant to state listed species). If occupied or presumed occupied habitat cannot be avoided, compensatory mitigation shall be provided (minimum ratio of 1:1) to fully offset impacts to habitat prior to the construction. Compensatory mitigation may be provided through purchase of mitigation bank credits, in-lieu fee, or permittee-responsible habitat restoration/establishment/enhancement/preservation. Compensatory mitigation may be combined/nested with special status plant species and sensitive natural community restoration, where applicable. Temporary impact areas shall be restored to similar pre-project conditions. If on and/or off-site habitat restoration/conservation is identified, a Habitat Mitigation and Monitoring Plan (HMMP) shall be prepared to ensure the success of compensatory mitigation sites. The HMMP shall identify long-term site management needs, routine monitoring techniques, and performance standards for determining that the conservation site has met the necessary criteria to function as a suitable mitigation site. **MM BIO-5 Endangered/Threatened Species Avoidance and Minimization During Construction** The following measures shall be applied to aquatic and terrestrial species, where appropriate. Metropolitan shall select from these measures as appropriate depending on site conditions, the species with potential for occurrence, and the results of the project-specific biological resources assessment ~~(Mitigation Measure BIO-1)~~.	

Impact	Mitigation Measure(s)	Significance After Mitigation
	Pre-construction surveys for federal and/or state listed species with potential to occur shall be conducted where suitable habitat is present by a qualified biologist not more than 72 hours prior to the start of construction activities. The survey area shall include the proposed disturbance area and all proposed ingress/egress routes, plus a species-specific buffer. If any life stage of federal and/or state listed species is found within the survey area, the appropriate measures in the BO or HCP/ITP issued by the USFWS/NMFS (relevant to federally listed species) and/or the ITP issued by the CDFW (relevant to state listed species) shall be implemented; or if such guidance is not in place for the activity, the qualified biologist shall recommend an appropriate course of action, which may include consultation with USFWS, NMFS, and/or CDFW. • The activity limits of disturbance shall be flagged. Areas of special biological concern within or adjacent to the limits of disturbance shall have Environmental Sensitive Area fencing installed between said area and the limits of disturbance. • All activities occurring within or adjacent to sensitive habitats that may support federally and/or state endangered/threatened species shall have a qualified biologist present during all initial ground disturbing/vegetation clearing activities. Once initial ground disturbing/vegetation clearing activities have been completed, the biologist shall conduct pre-activity clearance surveys, as needed to ensure protection of endangered/threatened species. • If pumps are used for dewatering activities, all intakes shall be completely screened with wire mesh not larger than five millimeters to prevent animals from entering the pump system. • If at any time during construction of the project activity an endangered/threatened species enters the construction site or otherwise may be impacted by the project activity, all project activities shall cease. At that point, a qualified biologist shall recommend an appropriate course of action, which may include consultation with USFWS, NMFS, and/or CDFW. Alternatively, the appropriate measures shall be implemented in accordance with the BO or HCP/ITP issued by the USFWS (relevant to federal listed species) and/or the ITP issued by the CDFW (relevant to state listed species) and work can then continue as guided by those documents and the agencies, as appropriate. • All trenches, pipes, culverts or similar structures shall be inspected for animals prior to burying, capping, moving, or filling. • Upon completion of the project activity, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the activity, including the pre-construction survey results. **MM BIO-6 Non-Listed Special Status Animal Species Avoidance and Minimization** Depending on the species identified in the project-specific biological resource assessment , the following applicable measures shall be implemented to reduce the potential for impacts to non-listed special status animal species:	

Impact	Mitigation Measure(s)	Significance After Mitigation
	• Pre-construction clearance surveys shall be conducted by a qualified biologist within 14 days prior to the start of construction (including staging and mobilization). The surveys shall cover the entire disturbance footprint plus a minimum 100-foot buffer and shall identify all special status animal species that may occur on-site. The qualified biologist shall make recommendations for avoidance of non-listed special status species, such as through the use of exclusion fencing, buffer zones, etc. • A qualified biologist shall be present during all initial ground disturbing activities, including vegetation removal, to recover special status animal species encountered during construction activities. • Upon completion of the project activity, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the project activity, including the pre-construction survey results. • If special status bat species may be present and impacted by the project activity, within 30 days of the start of construction a qualified biologist shall conduct presence/absence surveys for special status bats where suitable roosting habitat is present. Surveys shall be conducted using acoustic detectors and by searching tree cavities, crevices and other areas where bats may roost. If active bat roosts or colonies are present, the biologist shall evaluate the type of roost to determine the next step. ◦ If a maternity colony is present, all construction activities shall be postponed within a 250-foot buffer around the maternity colony until it is determined by a qualified biologist that the young have dispersed. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately. ◦ If a roost is determined by a qualified biologist to be used by a large number of bats (large hibernaculum), alternative roosts, such as bat boxes if appropriate for the species, shall be designed and installed near the project activity site. The number and size of alternative roosts installed will depend on the size of the hibernaculum and shall be determined by a qualified biologist. ◦ If other active roosts are located, exclusion devices shall be installed such as valves, sheeting or flap-style one-way devices that allow bats to exit but not re-enter roosts to discourage bats from occupying the site.	
Impact BIO-B. Individual projects implemented under the proposed CAP could result in significant impacts to riparian habitats wetlands and/or sensitive natural communities. This impact would be potentially significant. **Impact BIO-C.** Individual projects implemented under the proposed CAP may result in significant impacts to state or federally protected wetlands. This impact would be potentially significant.	**MM BIO-7 Jurisdictional Delineation and Impact Avoidance** If the results of the project-specific biological resource assessment ~~Mitigation Measure BIO-1~~ indicate project activities implemented under the proposed CAP would impact wetlands, drainages, riparian habitats, or other areas that may fall under the jurisdiction of the CDFW, USACE, and/or RWQCB, a qualified biologist shall complete a jurisdictional delineation. The jurisdictional delineation shall determine the extent of the jurisdiction for each of these agencies within the project activity site and shall be conducted in accordance with the requirement set forth by each agency. The results shall be provided in a jurisdictional delineation report submitted to Metropolitan, USACE, RWQCB, and CDFW,	Less than significant with mitigation incorporated.

Impact	Mitigation Measure(s)	Significance After Mitigation
	as appropriate, for review and approval. The project activity shall be designed to avoid or minimize impacts to jurisdictional areas to the maximum extent feasible. **MM BIO-8 Wetlands, Drainages and Riparian Habitat Restoration** If impacts to jurisdictional drainages, wetlands, riparian habitat, and sensitive vegetation communities cannot be avoided, impacts shall be mitigated at an appropriate ratio to fully offset project-specific impacts (minimum ratio of 1:1). Where feasible, temporarily impacted areas shall be restored to pre-project conditions. An HMMP shall be developed by a qualified biologist and submitted to the agency overseeing the project activity for approval. Alternatively, mitigation shall be accomplished through purchase of credits from an approved mitigation bank or in-lieu fee project. **MM BIO-9 Sensitive Natural Community Avoidance and Mitigation** If the results of the project-specific biological resource assessment ~~Mitigation Measure BIO-1~~ indicate project activities implemented under the proposed CAP would impact sensitive natural communities, impacts shall be avoided through final project activity design modifications. If Metropolitan determines sensitive communities cannot be avoided, impacts shall be mitigated on-site or off-site at an appropriate ratio to fully offset project activity impacts (minimum ratio of 1:1). Temporarily impacted areas shall be restored to pre-project conditions. An HMMP shall be developed by a qualified biologist and submitted to the agency overseeing the project activity for approval.	
Impact BIO-D. Neither construction nor operation of individual projects implemented under the proposed CAP would interfere with movement of native resident or migratory fish or wildlife species or established wildlife corridors. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Impact BIO-E. Neither construction nor operation of individual projects implemented under the proposed CAP would impact protected trees and, as such, would not conflict with local policies or ordinances protecting biological resources. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.

Impact	Mitigation Measure(s)	Significance After Mitigation
Impact BIO-F. Individual projects implemented under the proposed CAP would not conflict with a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan area. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Cultural Resources		
Impact CUL-A. Individual projects implemented under the proposed CAP would have the potential to cause a substantial adverse change in the significant of a historical resource. This impact would be potentially significant.	**MM CUL-1(a) Built Environment Investigation** A historic resources evaluation shall be prepared for any future proposed project facilitated by the CAP involving a property which includes buildings, structures, objects, landscape/site plans, or other features that are 45 years of age or older. The evaluation shall be prepared by a qualified architectural historian or historian who meets the Secretary of the Interior's (SOI) Professional Qualifications Standards (PQS) in architectural history or history. The qualified architectural historian or historian shall conduct an evaluation in accordance with the guidelines and best practices promulgated by the State Office of Historic Preservation to identify any potential historical resources within the proposed project area. The evaluation of the potential resource within its historic context shall be documented. All evaluated properties shall be documented on Department of Parks and Recreation Series 523 Forms. If a property is identified as an eligible historical resource under CEQA, Mitigation Measure CUL-1(b) shall be implemented. **MM CUL-1(b) Built Environment Documentation Program** If eligible built environment historical resources are identified for a future proposed project implemented under the CAP, efforts shall be made to the extent feasible to ensure that impacts are avoided. If avoidance is not possible, a Built Environment Documentation Program shall be implemented. Measures may include but are not limited to, compliance with the Secretary of the Interior's Standards for Treatment of Historic Properties and documentation of the historical resource in the form of a Historic American Building Survey (HABS)- report or HABS-Like report. The HABS or HABS-Like report shall comply with the Secretary of the Interior's Standards for Architectural and Engineering Documentation and shall generally follow the HABS Level III requirements, including digital photographic recordation, detailed historic narrative report, and compilation of historic research. Application of mitigation shall generally be overseen by a qualified architectural historian or historic architect meeting the PQS, unless unnecessary in the circumstances (e.g., preservation in place). **MM CUL-3 Previously Unidentified Resources Encountered During Construction** In the event that any potentially significant cultural resources are unexpectedly encountered during construction, work will be immediately halted and the discovery shall be protected in place. A 50-foot buffer around the exposed resource shall be established until a qualified cultural resources specialist evaluates the discovery. If the qualified cultural resources specialist determines that the discovery represents a potentially significant cultural resource,	Significant and unavoidable

Impact	Mitigation Measure(s)	Significance After Mitigation
	including a potential historical resource, additional investigations may be required to mitigate adverse impacts from project implementation. This additional work may include avoidance, testing, and evaluation or data recovery excavation. Work shall be prohibited in the restricted area until Metropolitan provides written authorization.	
Impact CUL-B. Individual projects implemented under the proposed CAP may cause a substantial adverse change in the significance of an archaeological resource. This impact would be potentially significant.	**MM CUL-2(a) Phase 1 Archaeological Resource Investigation** If archaeological resources are identified during project-specific analysis that may be adversely affected by any future proposed project implemented under the CAP, Metropolitan shall retain a qualified archaeologist meeting the Secretary of the Interior standards in archaeology to complete a Phase 1 cultural resources assessment of the site. A Phase 1 cultural resources assessment will include an archaeological pedestrian survey of the site, if feasible, and sufficient background archival research to determine whether subsurface prehistoric or historic remains may be present. Archival research should include a current records search from the appropriate California Historical Resources Information System information center and a Sacred Lands File search conducted with the Native American Heritage Commission. A Phase 1 report or results documentation shall be submitted to Metropolitan prior to any ground disturbing activities. Recommendations contained therein shall be implemented throughout all ground disturbance activities. **MM CUL-2(b) Extended Phase 1 Investigation** For any projects proposed within 100 feet of a known archaeological site and/or in areas identified as sensitive by the Phase 1 study, an Extended Phase 1 (XPI) study shall be conducted to determine the presence/absence and extent of archaeological resources on the project site. XPI testing should comprise a series of shovel test pits and/or hand augured units and/or mechanical trenching intended to establish the horizontal and vertical boundaries of archaeological site(s) on the project site. No archaeological resources would be collected during the XPI Investigation. If an archaeological site is identified, Mitigation Measure CUL-2I or CUL-2(d) shall be implemented. **MM CUL-2(c) Avoidance of Archaeological Resources** Identified prehistoric or historic archaeological resources shall be avoided and preserved in place, where feasible. Where avoidance and preservation in place is not feasible, additional measures shall be applied as identified in Mitigation Measure CUL-2(d) through CUL-2(g). **MM CUL-2(d) Phase 2 Archaeological Resources Investigation and Evaluation** Where preservation is not feasible, each resource shall be evaluated for significance and eligibility for listing in the CRHR through a Phase 2 archaeological resource evaluation. A Phase 2 evaluation shall include any necessary archival research to identify significant historical associations as well as mapping of surface artifacts, collection of functionally or temporally diagnostic tools and debris, and excavation of a sample of the cultural deposit to characterize the nature of the sites, define the artifact and feature contents, determine horizontal boundaries and depth below surface, and retrieve representative samples of artifacts and other remains. A final Phase 2 Testing and Evaluation report shall be submitted to Metropolitan prior to any ground disturbing activities. Recommendations contained therein shall be implemented throughout all ground disturbance activities.	Significant and unavoidable.

Impact	Mitigation Measure(s)	Significance After Mitigation
	MM CUL-2(e) Phase 3 Archaeological Data Recovery Program If an archaeological resource meets the CRHR eligibility and cannot be avoided, Metropolitan shall implement a Phase 3 Archaeological Data Recovery Program, conducted to exhaust the data potential of significant archaeological sites. The Phase 3 Archaeological Data Recovery Program shall follow a research design prepared by a qualified archaeologist meeting the SOI PQS standards for archaeology and approved by Metropolitan in advance of Phase 3 fieldwork and excavations. The Phase 3 Data Recovery research design will use appropriate archaeological field and laboratory methods consistent with the California Office of Historic Preservation Planning Bulletin 5 (1991), Guidelines for Archaeological Research Design, or the latest edition thereof. The final Phase 3 Data Recovery report shall be submitted to Metropolitan prior to and any ground disturbing activities. Recommendations contained therein shall be incorporated into project design and implemented throughout all ground disturbance activities. **MM CUL-2(f) Processing and Curation of Archaeological Materials** Archaeological materials collected from the sites during the implementation of Mitigation Measures CUL-2(d) through CUL-2(e) shall be processed and analyzed in the laboratory according to standard archaeological procedures. The age of the materials shall be determined using radiocarbon dating and/or other appropriate procedures; lithic artifacts, faunal remains, and other cultural materials shall be identified and analyzed according to current professional standards. The significance of the sites shall be evaluated according to the criteria of the CRHR. The results of the investigations shall be presented in a technical report following the standards of the California Office of Historic Preservation publication "Archaeological Resource Management Reports: Recommended Content and Format (1990 or latest edition)". Upon completion of the work, all artifacts, other cultural remains, records, photographs, and other documentation shall be curated an appropriate established curation facility based on the location of the fieldwork and/or repatriated to local Native Americans as appropriate. All fieldwork, analysis, report production, and curation shall be fully funded by Metropolitan. **MM CUL-2(g) Cultural Resources Monitoring** If recommended by Phase 1 (Mitigation Measure CUL-2(a)), XPI (Mitigation Measure CUL-2(b)), Phase 2 (Mitigation Measure CUL-2(d)), or Phase 3 (Mitigation Measure CUL-2(e)) studies, Metropolitan shall retain a qualified archaeologist to monitor project-related, ground-disturbing activities. **MM CUL-3 Previously Unidentified Resources Encountered During Construction** MM CUL-3 is described above under Impact CUL-A.	
Impact CUL-C. Individual projects implemented under the proposed CAP would be required to comply with all applicable regulations pertaining to the discovery of human remains. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.

Impact	Mitigation Measure(s)	Significance After Mitigation
Noise		
Impact NOI-A. Individual projects implemented under the proposed CAP may result in generation of a substantial temporary or permanent increase in ambient noise levels. This impact would be potentially significant.	**MM NOI-1 Locate Excavation Sites Away from Noise-Sensitive Receivers, Where Feasible** Construction staging and activities shall be located in areas as far as practicable from sensitive receivers or in areas where receivers can be shielded from construction noise. **MM NOI-2(a) Conduct Project-Level Noise Studies for Construction Activities Where Noise-Sensitive Receivers are Present** Project-level construction noise studies shall be conducted for project activities that would exceed the screening criteria for a less-than-significant impact, as summarized in Table 30 and Table 32 of the draft PEIR. Such noise studies shall identify the existing ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during construction of individual projects, compare estimated noise levels to the local jurisdiction's noise limits or to the construction noise criteria in the FTA (2018) *Transit Noise and Vibration Impact Assessment Manual* for those that do not have quantitative construction noise level limits, outline any measures that may be used to reduce noise levels, and determine the amount of noise reduction that would occur with implementation of these measures. If the project-level noise study concludes that noise reduction measures are required, Mitigation Measure NOI-2(b) shall be implemented. **MM-NOI-2(b) Implement Noise Reduction Measures** If the results of the noise study determine noise reduction measures are required, noise reduction measures shall be implemented. Construction noise reduction measures may include, but would not be limited to, the use of mufflers, sound blankets/barriers, and/or enclosures and scheduling construction activities to minimize simultaneous operation of noise-producing equipment. Construction noise measures shall be implemented to reduce noise levels to FTA (2018) construction noise criteria, as feasible. If the individual projects would be constructed concurrently with development projects located within a 0.5-mile radius of the individual project location, the noise study shall also consider the cumulative impact of construction noise on sensitive receivers. If applicable, construction noise reduction measures shall be implemented to reduce cumulative noise levels to local jurisdiction or FTA (2018) construction noise criteria, as feasible. **MM NOI-2(c) Conduct Project-Level Noise Studies for Post-Construction Activities Where Noise Sensitive Receivers are Present** Prior to the commencement of construction activities for individual projects that may be implemented under the CAP where sensitive receivers are located within 1,000 feet of the individual project sites, project-level post-construction noise studies shall be conducted. Such noise studies shall identify the ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during operation of individual projects during the post-construction period, compare estimated noise levels to the noise level standards of the applicable jurisdiction, outline any measures that may be used to reduce noise levels, and determine the amount of noise reduction that would occur with implementation of these measures. Noise reduction measures may include, but would not be	Significant and unavoidable

Impact	Mitigation Measure(s)	Significance After Mitigation
	limited to, alternative site design, alternative orientation of noise sources, and construction of berms and/or barriers. Noise reduction measures shall be implemented to reduce noise levels to the noise level standards of the applicable jurisdiction, as feasible.	
Impact NOI-B. Construction activities associated with implementation of individual projects under the proposed CAP may result in generation of excessive groundborne vibration or groundborne noise levels, depending on the nature and location of such projects. This impact would be potentially significant.	**NOI-3 (a) Locate Excavation Sites Away from Vibration-Sensitive Receivers, Where Feasible** Whenever practicable, vibration-generating equipment including bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers shall operate outside the minimum distances specified in Table 33 of the draft PEIR for historic sites, other structures, and vibration-sensitive receivers during project construction activities. Furthermore, whenever practicable, vibration-generating equipment including bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers shall not be operated concurrently with vibration-generating equipment associated with cumulative development projects located within 600 feet of project construction sites. **NOI-3(b) Conduct Project-Level Vibration Analysis for Construction Activities Where Vibration-Sensitive Receivers are Present** If operation of construction equipment outside the specified buffer distances is not practicable, a detailed study of vibration impacts shall be conducted prior to the commencement of construction for that project. Such vibration studies shall characterize the nearest historic sites, structures, and/or sensitive receivers; estimate the vibration levels receivers will experience during construction of individual projects; compare estimated vibration levels to applicable Caltrans (2020) standards for vibration impacts related to structural damage and human annoyance; outline any measures that may be used to reduce vibration levels; and determine the amount of vibration reduction that would occur with implementation of these measures. Vibration reduction measures may include, but would not be limited to, the use of non-vibratory equipment, vibration monitoring, and repair of structural damage. Construction vibration reduction measures shall be implemented to reduce vibration levels to Caltrans (2020) construction vibration thresholds as feasible. If the individual project would be constructed concurrently with cumulative development projects located within a 600-foot radius of the activity location, the vibration study shall also consider the cumulative impact of combined vibration levels at the nearest sensitive receivers by estimating the combined vibration levels receivers will experience during construction of individual projects and cumulative development; compare estimated vibration levels to applicable standards for vibration impacts related to structural damage and human annoyance described in the Caltrans (2020) *Transportation and Construction Vibration Guidance Manual* (CT-HWANP-RT-20-365.01.01); identify whether the individual project's contribution to any identified cumulative impact would be cumulatively considerable; outline any measures that may be used to reduce the project's contribution to combined vibration levels; and determine the amount of vibration reduction that would occur with implementation of these measures. Such measures may include, but are not limited to, the installation of wave barriers, maximization of the distance between vibratory equipment and receivers, restriction of vibration-generating activities to daytime hours, or	Significant and unavoidable

Impact	Mitigation Measure(s)	Significance After Mitigation
	temporary relocation of affected residents Construction vibration reduction measures shall be implemented to reduce cumulative vibration levels to Caltrans construction vibration thresholds as feasible.	
Impact NOI-C. One individual project to be implemented under the proposed CAP is located within the vicinity of a private airstrip or within an airport land use plan. However, projects implemented under the proposed CAP would not expose people residing or working in the area to excessive noise levels. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Tribal Cultural Resources		
Impact TCR-A. Implementation of projects under the proposed CAP would not cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 5020.1(k), as Native American consultation completed pursuant to Assembly Bill (AB) 52 identified no resources that may be impacted by the proposed project. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.
Impact TCR-B. Implementation of projects under the proposed CAP would not cause a substantial adverse change in the significance of a tribal cultural resource determined to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. Native American consultation completed pursuant to AB 52 identified no resources that may be impacted by the proposed project. This impact would be less than significant.	This impact would be less than significant. No mitigation is required.	Less than significant. No mitigation required.

CARB = California Air Resources Board; VOC = volatile organic compounds; CDFW = California Department of Fish and Wildlife; USFWS = United States Fish and Wildlife Service; CRPR = California Rare Plant Rank; NMFS = National Marine Fisheries Service; BO = Biological Opinion; HCP = Habitat Conservation Plans; ITP = Incidental Take Permit; USACE = United States Army Corps of Engineers; RWQCB = Regional Water Quality Control Board; FTA = Federal Transit Administration; SOI = Secretary of the Interior; PQS = Professional Qualifications Standards; HABS = Historic American Building Survey; CRHR = California Register of Historical Resources; HMMP = Habitat Mitigation and Monitoring Plan

1.5 References Cited

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CHAPTER 2
FINDINGS OF FACT IN SUPPORT OF THE PROPOSED PROGRAM

2.1 Findings on Significant Impacts of the Proposed Program

CEQA requires the lead agency, Metropolitan, to make written findings when deciding to approve a project for which an EIR was certified (California Public Resources Code, Section 21081). Specifically, Section 15091 of the *State CEQA Guidelines* states that:

a) No public agency shall approve or carry out a project for which an EIR has been certified which identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding. The possible findings are:

   (1) Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR.

   (2) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

   (3) Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the final EIR.

b) The findings required by subsection (a) shall be supported by substantial evidence in the record.

Section 15092(b) of the *State CEQA Guidelines* further stipulates that a public agency shall not decide to approve or carry out a project for which an EIR was prepared unless either:

   (1) The project as approved will not have a significant effect on the environment, or

   (2) The agency has:

      (A) Eliminated or substantially lessened all significant effects on the environment where feasible as shown in findings under Section 15091, and

      (B) Determined that any remaining significant effects on the environment found to be unavoidable under Section 15091 are acceptable due to overriding concerns as described in Section 15093.

The PEIR prepared for the proposed program identifies certain significant impacts that may occur as a result of the implementation of the proposed program, either alone or on a cumulative basis in conjunction with other past, present, and reasonably foreseeable projects and programs. Metropolitan is the lead agency with respect to the proposed program pursuant to *State CEQA Guidelines* Section 15367. As the lead agency, Metropolitan is required by CEQA to make findings with respect to each significant effect of the proposed program. The following sections make detailed findings with respect to the potential effects of the proposed program and refer, where appropriate, to the mitigation measures set forth in the Final PEIR.

The Final PEIR and the administrative record concerning the proposed program provide additional facts in support of the findings herein. Changes to the Draft PEIR are shown in ~~strikeout~~/underline of this Final PEIR. Furthermore, the mitigation measures set forth in the Final PEIR and the MMRP are incorporated by reference in these findings. The MMRP was developed in compliance with California Public Resources Code Section 21081.6.

2.1.1 Impacts Related to Air Quality

2.1.1.1 Potentially Significant Impacts Related to Air Quality

As discussed in Section 4.1, *Air Quality*, of the PEIR, implementation of individual projects under the proposed CAP would emit air pollutants stemming from the use of construction equipment (primarily diesel-powered), haul and materials vehicle trips, and fugitive dust. Implementation of the individual projects proposed under the CAP would potentially conflict with or obstruct implementation of the applicable air quality plan or result in a cumulatively considerable net increase of criteria pollutants for which the region is in non-attainment under an applicable federal or state air quality standard due to construction emissions that may exceed applicable thresholds of regional air districts. Implementation of Mitigation Measures (MM) AQ-1 and AQ-2 would reduce combined emissions of criteria pollutants during construction of specific individual projects that may be implemented under the proposed CAP; however, it is not possible to determine whether impacts would be reduced to less-than-significant levels because the magnitude of construction emissions is not known. Therefore, implementation of MM AQ-1 through MM AQ-2 may reduce this impact, but this impact would remain significant and unavoidable.

Neither construction nor operation of individual projects proposed under the proposed program would expose sensitive receptors to substantial pollutant concentrations; impacts related to these factors would be less than significant. Furthermore, neither construction nor operation of individual projects implemented under the proposed program would result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. This impact would be less than significant.

As discussed above, impacts to air quality from the proposed program as a whole would be cumulatively considerable due to the potential for construction of individual projects implemented under the CAP to exceed applicable emissions thresholds of regional air districts.

2.1.1.2 Mitigation

MM AQ-1 **Construction Air Quality Assessment**. For individual projects to be implemented under the CAP that involve construction activities with an intensity (i.e., size, schedule, equipment, demolition, import/export of soil, architectural coating) greater than the sample project activity, an air quality assessment shall be prepared to evaluate construction emissions in light of the applicable air district thresholds.

MM AQ-2 **Implement Emission Reduction Measures**. If construction emissions would exceed any of the applicable thresholds, emission reduction measures shall be implemented to reduce emissions below the thresholds. Measures may include, but would not be limited to:

- All construction equipment shall be equipped with Tier 4 certified engines or CARB-certified Level 3 diesel particulate filters. All diesel particulate filters shall be kept in working order and maintained in operable condition according to manufacturer's specifications, as applicable.

- Construction equipment with lower horsepower ratings shall be utilized, as applicable and practicable.
- Ultra-low-sulfur diesel fuel shall be used for stationary construction equipment, as applicable.
- Low-emission on-site stationary equipment shall be used, as applicable.
- Alternatively-fueled construction equipment (e.g., renewable diesel, natural gas, electric) shall be utilized instead of diesel-fueled construction equipment, as applicable.
- The schedule for soil import and/or export shall be extended to reduce the number of daily haul truck trips, as applicable.
- The schedule for the coating/painting phase shall be extended to reduce the square footage coated/painted each day, as applicable.
- Architectural coatings with a VOC content of less than 250 grams per liter shall be utilized.

2.1.1.3 Findings per State CEQA Guidelines

Consistent with *State CEQA Guidelines* Section 15126.4(a)(1), feasible measures that can minimize significant adverse impacts were developed for the potentially significant impacts described above. The feasible measures are listed above as MM AQ-1 and MM AQ-2. Metropolitan finds that the above mitigation measures are feasible, are adopted, and will substantially reduce the potential air quality impacts. Nonetheless, the impacts would not be reduced to a less-than-significant level. Specific economic, legal, social, technological, or other considerations make mitigation measures or alternatives that would reduce air quality impacts to a less-than-significant level infeasible.

2.1.1.4 Facts in Support of Findings Related to Air Quality

Implementation of MM AQ-1 and MM AQ-2 would reduce potentially significant impacts related to air quality, but due to unknowns with respect to implementation of individual projects under the proposed program, it is possible such impacts may not be reduced to a less-than-significant level. There would be significant and unavoidable impacts related to air quality after implementation of these mitigation measures.

2.1.2 Impacts Related to Biological Resources

2.1.2.1 Potentially Significant Impacts Related to Biological Resources

As discussed in Section 4.2, *Biological Resources,* of the PEIR, implementation of individual projects under the proposed CAP would potentially have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or other special status species in local or regional plans, policies, or regulations, or by CDFW or the U.S. Fish and Wildlife Service. Vegetation clearing, excavation, materials storage, traffic, and other activities could remove habitat, result in impacts on runoff and/or water quality, potentially affecting habitat; air quality impacts (dust, exhaust) could affect adjacent habitat; and construction-related traffic could introduce hazardous materials into habitats. Implementation of Mitigation Measure MM BIO-1 through MM

BIO-6 would reduce this impact to a less-than-significant level. Migratory birds, including most birds that nest in the Plan Area, are protected by the federal Migratory Bird Treaty Act, which forbids most forms of harm to birds, including to their active nests. In addition, California Fish and Game Code (CFGC) Section 3503 makes it unlawful to destroy nests or eggs of any bird. Compliance with the CFGC and MBTA would ensure that impacts to migratory birds would be less than significant.

Individual projects implemented under the proposed CAP could result in significant impacts to riparian habitats and/or sensitive natural communities, or state or federally protected wetlands. Due to the programmatic nature of the proposed CAP, the specific details of individual project activities are unknown at this time, so specific project-level analysis cannot be conducted. However, potential impacts to riparian/wetland habitats could include, but are not limited to, vegetation clearing and excavation resulting in removal of habitat or runoff and/or water quality impacts; excavation, ground clearing, and use of unpaved roads resulting in air quality impacts to adjacent habitats; or equipment and construction personnel introducing hazardous materials into habitats. The level of impact would need to be determined at the project level when specific details are known about each project proposed under the CAP. Nevertheless, projects implemented under the CAP would be designed and located to avoid or minimize impacts to riparian/wetland habitats to the extent feasible. Furthermore, implementation of MM BIO-7 through MM BIO-9 would reduce these impacts to less-than-significant levels.

Neither construction nor operation of individual projects implemented under the proposed CAP would interfere with movement of native resident or migratory fish or wildlife species or established wildlife corridors. In addition, neither construction nor operation of individual projects implemented under the proposed CAP would impact protected trees and, as such, would not conflict with local policies or ordinances protecting biological resources. Such impacts would be less than significant.

Individual projects implemented under the proposed CAP would not conflict with a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan area. This impact would be less than significant.

Depending on the specific location of individual projects to be implemented under the CAP, it is possible that cumulative development in the Plan Area, coupled with implementation of the proposed program, would result in a potentially significant cumulative impact to biological resources. However, projects to be implemented under the proposed program are relatively small, and implementation of MM BIO-1 through MM BIO-9 would reduce project-level impacts to biological resources to a less-than-significant level. Therefore, cumulative impacts are considered less than significant with mitigation incorporated.

2.1.2.2 Mitigation

MM BIO-1 **Special Status Plant Species Surveys.** If completion of the project-specific biological resources assessment determines that special status plant species have potential to occur on site, surveys for special status plants shall be completed prior to any vegetation removal, grubbing, or other construction activity of each project activity (including staging and mobilization). The surveys shall be floristic in nature and shall be seasonally timed to coincide with the target species identified in the project activity-specific biological resources assessment. All plant surveys shall be conducted by a qualified biologist no more than one year prior to project implementation (annual grassland habitats may require yearly surveys). Surveys shall be conducted in accordance with current protocols established by the CDFW, USFWS and the local jurisdictions if said protocols exist. If special status plant species are identified, Mitigation Measure BIO-2 shall apply.

MM BIO-2 **Special Status Plant Species Avoidance, Minimization, and Mitigation.** If state- or federally-listed special status and/or CRPR 1 and 2 plant species are identified during the project-specific biological assessment, the activity shall be re-designed to avoid impacting these plant species to the maximum extent feasible. If CRPR 3 and 4 species are found, the biologist shall evaluate if they meet criteria to be considered special status, and if so, the same process as identified for CRPR 1 and 2 species shall apply.

If special status plant species cannot be avoided and would be impacted by a project activity implemented under the proposed CAP, all impacts shall be mitigated at an appropriate ratio (minimum ratio of 1:1) to fully offset project activity impacts, as determined by a qualified biologist for each species. A restoration plan shall be prepared and implemented, as applicable.

MM BIO-3 **Endangered/Threatened Animal Species Habitat Assessment and Protocol Surveys.** If the results of the project-specific biological resources assessment determine suitable habitat may be present for any federally and/or state endangered or threatened animal species, habitat assessments and/or protocol surveys shall be completed in accordance with CDFW and/or USFWS/NMFS protocols prior to construction.

Alternatively, in lieu of conducting protocol surveys, Metropolitan may choose to assume presence within the activity footprint and proceed with implementing appropriate avoidance measures, consultation, and permitting, as applicable. If the target species are detected during protocol surveys, or protocol surveys are not conducted and presence is assumed based on suitable habitat, Mitigation Measure BIO-4 shall apply.

MM BIO-4 **Endangered/Threatened Animal Species Avoidance and Mitigation.** If habitat is occupied or presumed occupied by federal and/or state-listed species and would be impacted by project activities, the project activity shall be redesigned in coordination with a qualified biologist to avoid impacting occupied/presumed occupied habitat to the maximum extent feasible. If occupied or presumed occupied habitat cannot be avoided, Metropolitan shall consult with USFWS, NMFS, and/or CDFW in order to determine the appropriate course of action, which may include a Biological Opinion (BO) or HCP/ITP issued by the USFWS/NMFS (relevant to federally listed species) and/or the ITP issued by the CDFW (relevant to state listed species).

If occupied or presumed occupied habitat cannot be avoided, compensatory mitigation shall be provided (minimum ratio of 1:1) to fully offset impacts to habitat prior to the construction. Compensatory mitigation may be provided through purchase of mitigation bank credits, in-lieu fee, or permittee-responsible habitat restoration/establishment/enhancement/preservation. Compensatory mitigation may be combined/nested with special status plant species and sensitive natural community restoration, where applicable. Temporary impact areas shall be restored to similar pre-project conditions.

If on and/or off-site habitat restoration/conservation is identified, a Habitat Mitigation and Monitoring Plan (HMMP) shall be prepared to ensure the success of compensatory mitigation sites. The HMMP shall identify long-term site management needs, routine monitoring techniques, and performance standards for determining that the conservation site has met the necessary criteria to function as a suitable mitigation site.

MM BIO-5 **Endangered/Threatened Species Avoidance and Minimization During Construction.** The following measures shall be applied to aquatic and terrestrial species, where appropriate. Metropolitan shall select from these measures as appropriate depending on site conditions, the species with potential for occurrence, and the results of the project-specific biological resources assessment ~~(Mitigation Measure BIO-1)~~.

Pre-construction surveys for federal and/or state listed species with potential to occur shall be conducted where suitable habitat is present by a qualified biologist not more than 72 hours prior to the start of construction activities. The survey area shall include the proposed disturbance area and all proposed ingress/egress routes, plus a species-specific buffer. If any life stage of federal and/or state listed species is found within the survey area, the appropriate measures in the BO or HCP/ITP issued by the USFWS/NMFS (relevant to federally listed species) and/or the ITP issued by the CDFW (relevant to state listed species) shall be implemented; or if such guidance is not in place for the activity, the qualified biologist shall recommend an appropriate course of action, which may include consultation with USFWS, NMFS, and/or CDFW.

- The activity limits of disturbance shall be flagged. Areas of special biological concern within or adjacent to the limits of disturbance shall have Environmental Sensitive Area fencing installed between said area and the limits of disturbance.
- All activities occurring within or adjacent to sensitive habitats that may support federally and/or state endangered/threatened species shall have a qualified biologist present during all initial ground disturbing/vegetation clearing activities. Once initial ground disturbing/vegetation clearing activities have been completed, the biologist shall conduct pre-activity clearance surveys, as needed to ensure protection of endangered/threatened species.
- If pumps are used for dewatering activities, all intakes shall be completely screened with wire mesh not larger than five millimeters to prevent animals from entering the pump system.
- If at any time during construction of the project activity an endangered/threatened species enters the construction site or otherwise may be impacted by the project activity, all project activities shall cease. At that point, a qualified biologist shall recommend an appropriate course of action, which may include consultation with USFWS, NMFS, and/or CDFW. Alternatively, the appropriate measures shall be implemented in accordance with the BO or HCP/ITP issued by the USFWS (relevant to federal listed species) and/or the ITP issued by the CDFW (relevant to state listed species) and work can then continue as guided by those documents and the agencies, as appropriate.
- All trenches, pipes, culverts or similar structures shall be inspected for animals prior to burying, capping, moving, or filling.
- Upon completion of the project activity, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the activity, including the pre-construction survey results.

MM BIO-6 **Non-Listed Special Status Animal Species Avoidance and Minimization.** Depending on the species identified in the project-specific biological resource assessment, the following applicable measures shall be implemented to reduce the potential for impacts to non-listed special status animal species:

- Pre-construction clearance surveys shall be conducted by a qualified biologist within 14 days prior to the start of construction (including staging and mobilization). The surveys shall cover the entire disturbance footprint plus a minimum 100-foot buffer and shall identify all special status animal species that may occur on-site. The qualified biologist shall make recommendations for avoidance of non-listed special status species, such as through the use of exclusion fencing, buffer zones, etc.
- A qualified biologist shall be present during all initial ground disturbing activities, including vegetation removal, to recover special status animal species encountered during construction activities.
- Upon completion of the project activity, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the project activity, including the pre-construction survey results.
- If special status bat species may be present and impacted by the project activity, within 30 days of the start of construction a qualified biologist shall conduct presence/absence surveys for special status bats where suitable roosting habitat is present. Surveys shall be conducted using acoustic detectors and by searching tree cavities, crevices and other areas where bats may roost. If active bat roosts or colonies are present, the biologist shall evaluate the type of roost to determine the next step.
    - If a maternity colony is present, all construction activities shall be postponed within a 250-foot buffer around the maternity colony until it is determined by a qualified biologist that the young have dispersed. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately.
    - If a roost is determined by a qualified biologist to be used by a large number of bats (large hibernaculum), alternative roosts, such as bat boxes if appropriate for the species, shall be designed and installed near the project activity site. The number and size of alternative roosts installed will depend on the size of the hibernaculum and shall be determined by a qualified biologist.
    - If other active roosts are located, exclusion devices shall be installed such as valves, sheeting or flap-style one-way devices that allow bats to exit but not re-enter roosts to discourage bats from occupying the site.

MM BIO-7 **Jurisdictional Delineation and Impact Avoidance.** If the results of the project-specific biological resource assessment ~~Mitigation Measure BIO-1~~ indicate project activities implemented under the proposed CAP would impact wetlands, drainages, riparian habitats, or other areas that may fall under the jurisdiction of the CDFW, USACE, and/or RWQCB, a qualified biologist shall complete a jurisdictional delineation. The jurisdictional delineation shall determine the extent of the jurisdiction for each of these agencies within the project activity site and shall be conducted in accordance with the requirement set forth by each agency. The results shall be provided in a jurisdictional delineation report submitted to Metropolitan, USACE, RWQCB, and CDFW, as appropriate, for review and approval. The project activity shall be designed to avoid or minimize impacts to jurisdictional areas to the maximum extent feasible.

MM BIO-8 **Wetlands, Drainages and Riparian Habitat Restoration.** If impacts to jurisdictional drainages, wetlands, riparian habitat, and sensitive vegetation communities cannot be avoided, impacts shall be mitigated at an appropriate ratio to fully offset project-specific impacts (minimum ratio of 1:1). Where feasible, temporarily impacted areas shall be restored to pre-project conditions. An HMMP shall be developed by a qualified biologist and submitted to the agency overseeing the project activity for approval. Alternatively, mitigation shall be accomplished through purchase of credits from an approved mitigation bank or in-lieu fee project**.**

MM BIO-9 **Sensitive Natural Community Avoidance and Mitigation.** If the results of the project-specific biological resource assessment ~~Mitigation Measure BIO-1~~ indicate project activities implemented under the proposed CAP would impact sensitive natural communities, impacts shall be avoided through final project activity design modifications.

If Metropolitan determines sensitive communities cannot be avoided, impacts shall be mitigated on-site or off-site at an appropriate ratio to fully offset project activity impacts (minimum ratio of 1:1). Temporarily impacted areas shall be restored to pre-project conditions. An HMMP shall be developed by a qualified biologist and submitted to the agency overseeing the project activity for approval.

2.1.2.3 Findings per State CEQA Guidelines

Consistent with *State CEQA Guidelines* Section 15126.4(a)(1), feasible measures that can minimize significant adverse impacts were developed for the potentially significant impacts described above. The feasible measures are listed above as MM BIO-1 through MM BIO-9. Metropolitan finds that the above mitigation measures are feasible, are adopted, and will substantially reduce the potential biological resource impacts such that they would be less than significant with mitigation incorporated.

2.1.2.4 Facts in Support of Findings Related to Biological Resources

Implementation of Mitigation Measures MM BIO-1 through MM BIO-9 would reduce potentially significant impacts related to biological resources such that they would be less than significant with mitigation incorporated.

2.1.3 Impacts Related to Cultural Resources

2.1.3.1 Potentially Significant Impacts Related to Cultural Resources

As discussed in Section 4.3, *Cultural Resources*, of the PEIR, individual projects implemented under the proposed CAP would have the potential to cause a substantial adverse change in the significance of an historical resource. Specifically, alteration of buildings and facilities and the removal or addition of infrastructure that may be necessary components of construction associated with GHG reduction measures could impact historical resources. Implementation of MM CUL-1 and MM CUL-3 may reduce this impact; however, this impact would remain significant and unavoidable.

Effects on archaeological resources can only be determined once a specific project footprint has been identified because the effects are highly dependent on both the individual project site conditions and the characteristics of the proposed ground-disturbing activity. If, during project-level analysis, it is determined that construction or operation of any covered activity would result in significant impacts

to archaeological resources, MM CUL-2 and MM CUL-3 have been included to reduce impacts to archaeological resources to the extent feasible. However, this impact would remain significant and unavoidable.

Human remains could be inadvertently unearthed during ground-disturbing activities. In the event of an unanticipated discovery of human remains during construction of individual projects proposed under the CAP, existing regulations outlined in the state of California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98 would require notification of the County Coroner and determination of origin. With adherence to existing regulations, impacts to human remains would be less than significant.

Cumulative development in the Plan Area could disturb areas that may potentially contain historical and archaeological resources. The potential for impacts from projects under the proposed program is generally site-specific and depends on the location and nature of each project. As discussed above, individual projects implemented under the proposed program have the potential to result in impacts to historical and archaeological resources. While mitigation would reduce impacts to the degree feasible, such impacts may remain significant and unavoidable. Therefore, the potential for cumulative impacts to cultural resources is significant, and the proposed program's contribution to such impacts would be cumulatively considerable.

2.1.3.2 Mitigation

MM CUL-1(a) **Built Environment Investigation.** A historic resources evaluation shall be prepared for any future proposed project facilitated by the CAP involving a property which includes buildings, structures, objects, landscape/site plans, or other features that are 45 years of age or older. The evaluation shall be prepared by a qualified architectural historian or historian who meets the Secretary of the Interior's (SOI) Professional Qualifications Standards (PQS) in architectural history or history. The qualified architectural historian or historian shall conduct an evaluation in accordance with the guidelines and best practices promulgated by the State Office of Historic Preservation to identify any potential historical resources within the proposed project area. The evaluation of the potential resource within its historic context shall be documented. All evaluated properties shall be documented on Department of Parks and Recreation Series 523 Forms. If a property is identified as an eligible historical resource under CEQA, Mitigation Measure CUL-1(b) shall be implemented.

MM CUL-1(b) **Built Environment Documentation Program.** If eligible built environment historical resources are identified for a future proposed project implemented under the CAP, efforts shall be made to the extent feasible to ensure that impacts are avoided. If avoidance is not possible, a Built Environment Documentation Program shall be implemented. Measures may include but are not limited to, compliance with the Secretary of the Interior's Standards for Treatment of Historic Properties and documentation of the historical resource in the form of a Historic American Building Survey (HABS)- report or HABS-Like report. The HABS or HABS-Like report shall comply with the Secretary of the Interior's Standards for Architectural and Engineering Documentation and shall generally follow the HABS Level III requirements, including digital photographic recordation, detailed historic narrative report, and compilation of historic research. Application of mitigation shall generally be overseen by a qualified architectural historian or historic architect meeting the PQS, unless unnecessary in the circumstances (e.g., preservation in place).

MM CUL-2(a) **Phase 1 Archaeological Resource Investigation.** If archaeological resources are identified during project-specific analysis that may be adversely affected by any future proposed project implemented under the CAP, Metropolitan shall retain a qualified archaeologist meeting the Secretary of the Interior standards in archaeology to complete a Phase 1 cultural resources assessment of the site. A Phase 1 cultural resources assessment will include an archaeological pedestrian survey of the site, if feasible, and sufficient background archival research to determine whether subsurface prehistoric or historic remains may be present. Archival research should include a current records search from the appropriate California Historical Resources Information System information center and a Sacred Lands File search conducted with the Native American Heritage Commission. A Phase 1 report or results documentation shall be submitted to Metropolitan prior to any ground disturbing activities. Recommendations contained therein shall be implemented throughout all ground disturbance activities.

MM CUL-2(b) **Extended Phase 1 Investigation.** For any projects proposed within 100 feet of a known archaeological site and/or in areas identified as sensitive by the Phase 1 study, an Extended Phase 1 (XPI) study shall be conducted to determine the presence/absence and extent of archaeological resources on the project site. XPI testing should comprise a series of shovel test pits and/or hand augured units and/or mechanical trenching intended to establish the horizontal and vertical boundaries of archaeological site(s) on the project site. No archaeological resources would be collected during the XPI Investigation. If an archaeological site is identified, Mitigation Measure CUL-2(c) or CUL-2(d) shall be implemented.

MM CUL-2(c) **Avoidance of Archaeological Resources.** Identified prehistoric or historic archaeological resources shall be avoided and preserved in place, where feasible. Where avoidance and preservation in place is not feasible, additional measures shall be applied as identified in Mitigation Measure CUL-2(d) through CUL-2(g).

MM CUL-2(d) **Phase 2 Archaeological Resources Investigation and Evaluation.** Where preservation is not feasible, each resource shall be evaluated for significance and eligibility for listing in the CRHR through a Phase 2 archaeological resource evaluation. A Phase 2 evaluation shall include any necessary archival research to identify significant historical associations as well as mapping of surface artifacts, collection of functionally or temporally diagnostic tools and debris, and excavation of a sample of the cultural deposit to characterize the nature of the sites, define the artifact and feature contents, determine horizontal boundaries and depth below surface, and retrieve representative samples of artifacts and other remains. A final Phase 2 Testing and Evaluation report shall be submitted to Metropolitan prior to any ground disturbing activities. Recommendations contained therein shall be implemented throughout all ground disturbance activities.

MM CUL-2(e) **Phase 3 Archaeological Data Recovery Program.** If an archaeological resource meets the CRHR eligibility and cannot be avoided, Metropolitan shall implement a Phase 3 Archaeological Data Recovery Program, conducted to exhaust the data potential of significant archaeological sites. The Phase 3 Archaeological Data Recovery Program shall follow a research design prepared by a qualified archaeologist meeting the SOI PQS standards for archaeology and approved by Metropolitan in advance of Phase 3 fieldwork and excavations. The Phase 3 Data Recovery research design will use appropriate archaeological field and laboratory methods consistent with the California Office of Historic Preservation Planning Bulletin 5 (1991), Guidelines for Archaeological Research Design, or the latest

edition thereof. The final Phase 3 Data Recovery report shall be submitted to Metropolitan prior to and any ground disturbing activities. Recommendations contained therein shall be incorporated into project design and implemented throughout all ground disturbance activities.

MM CUL-2(f) **Processing and Curation of Archaeological Materials.** Archaeological materials collected from the sites during the implementation of Mitigation Measures CUL-2(d) through CUL-2(e) shall be processed and analyzed in the laboratory according to standard archaeological procedures. The age of the materials shall be determined using radiocarbon dating and/or other appropriate procedures; lithic artifacts, faunal remains, and other cultural materials shall be identified and analyzed according to current professional standards. The significance of the sites shall be evaluated according to the criteria of the CRHR. The results of the investigations shall be presented in a technical report following the standards of the California Office of Historic Preservation publication "Archaeological Resource Management Reports: Recommended Content and Format (1990 or latest edition)". Upon completion of the work, all artifacts, other cultural remains, records, photographs, and other documentation shall be curated an appropriate established curation facility based on the location of the fieldwork and/or repatriated to local Native Americans as appropriate. All fieldwork, analysis, report production, and curation shall be fully funded by Metropolitan.

MM CUL-2(g) **Cultural Resources Monitoring**. If recommended by Phase 1 (Mitigation Measure CUL-2(a)), XPI (Mitigation Measure CUL-2(b)), Phase 2 (Mitigation Measure CUL-2(d)), or Phase 3 (Mitigation Measure CUL-2(e)) studies, Metropolitan shall retain a qualified archaeologist to monitor project-related, ground-disturbing activities.

MM CUL-3 **Previously Unidentified Resources Encountered During Construction.** In the event that any potentially significant cultural resources are unexpectedly encountered during construction, work will be immediately halted and the discovery shall be protected in place. A 50-foot buffer around the exposed resource shall be established until a qualified cultural resources specialist evaluates the discovery. If the qualified cultural resources specialist determines that the discovery represents a potentially significant cultural resource, including a potential historical resource, additional investigations may be required to mitigate adverse impacts from project implementation. This additional work may include avoidance, testing, and evaluation or data recovery excavation. Work shall be prohibited in the restricted area until Metropolitan provides written authorization.

2.1.3.3 Findings per State CEQA Guidelines

Consistent with *State CEQA Guidelines* Section 15126.4(a)(1), feasible measures that can minimize significant adverse impacts were developed for the potentially significant impacts described above. The feasible measures are listed above as MM CUL-1 through MM CUL-3. Metropolitan finds that the above mitigation measures are feasible, are adopted, and will substantially reduce the potential cultural resource impacts. Nonetheless, the impacts would not be reduced to a less-than-significant level. Specific economic, legal, social, technological, or other considerations make mitigation measures or alternatives that would reduce cultural resource impacts to a less than significant level infeasible.

2.1.3.4 Facts in Support of Findings Related to Cultural Resources

Implementation of MM CUL-1 through MM CUL-3 would reduce potentially significant project impacts related to cultural resources, but due to unknowns with respect to implementation of individual projects under the proposed program, it is possible such impacts may not be reduced to a less-than-significant level. There would be significant and unavoidable impacts related to cultural resources after implementation of these mitigation measures.

2.1.4 Impacts Related to Noise

2.1.4.1 Potentially Significant Impacts Related to Noise

As discussed in Section 4.3, *Noise*, of the PEIR, noise levels during construction of individual projects under the CAP, would temporarily increase ambient noise levels in the vicinity of the construction sites due to the operation of construction equipment. The severity of the noise impacts from construction activities would vary depending upon the number and type of equipment utilized for each phase and the proximity to residential, commercial, and industrial receiving land uses. Therefore, impacts would be potentially significant and would be analyzed at the project-level. MM NOI-1 and MM NOI-2 would reduce impacts, but because specific information regarding individual project construction equipment, schedule, and location is not known at this time, construction noise impacts may remain significant and unavoidable. Generally, individual projects implemented under the CAP would not result in new on-site operational noise sources, with the exception of proposed battery energy storage system (BESS) facilities proposed under CAP measure E-4, which may include cooling fans and transformers with the potential to generate continuous noise during operation. The severity of post-construction noise impacts would vary depending on the type and intensity of the individual project, its proximity to sensitive receivers, and the relevant local noise standards. Implementation of MM NOI-2 would reduce potential post-construction noise impacts, but such impacts may remain significant and unavoidable.

Construction activities associated with the proposed program would potentially require the use of equipment that may generate substantial levels of vibration, such as bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers. The severity of construction groundborne vibration impacts would vary depending on the type of equipment used for each construction activity, the nature of the nearest structures and sensitive receivers, and the proximity of such structures/receivers to construction activities. MM NOI-3 would reduce potential construction vibration impacts, but such impacts may remain significant and unavoidable. Individual projects implemented under the CAP would result in no post-construction groundborne vibration impacts, and less than significant construction and post-construction impacts with respect to aircraft noise.

As described above, individual projects implemented under the proposed program may result in significant and unavoidable noise impacts. If concurrent construction activities occur in close proximity to proposed program activities, combined construction noise would have the potential to impact the same sensitive receivers and result in cumulative construction noise and vibration levels that exceed the applicable thresholds of significance. Therefore, cumulative noise impacts would be significant and unavoidable, and the CAP's contribution to such impacts would be cumulatively considerable.

2.1.4.2 Mitigation

MM NOI-1 **Locate Excavation Sites Away from Noise-Sensitive Receivers, Where Feasible.** Construction staging and activities shall be located in areas as far as practicable from sensitive receivers or in areas where receivers can be shielded from construction noise.

MM NOI-2(a) **Conduct Project-Level Noise Studies for Construction Activities Where Noise-Sensitive Receivers are Present.** Project-level construction noise studies shall be conducted for project activities that would exceed the screening criteria for a less-than-significant impact, as summarized in Table 30 and Table 32 of the draft PEIR. Such noise studies shall identify the existing ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during construction of individual projects, compare estimated noise levels to the local jurisdiction's noise limits or to the construction noise criteria in the FTA (2018) Transit Noise and Vibration Impact Assessment Manual for those that do not have quantitative construction noise level limits, outline any measures that may be used to reduce noise levels, and determine the amount of noise reduction that would occur with implementation of these measures. If the project-level noise study concludes that noise reduction measures are required, Mitigation Measure NOI-2(b) shall be implemented.

MM-NOI-2(b) **Implement Noise Reduction Measures.** If the results of the noise study determine noise reduction measures are required, noise reduction measures shall be implemented. Construction noise reduction measures may include, but would not be limited to, the use of mufflers, sound blankets/barriers, and/or enclosures and scheduling construction activities to minimize simultaneous operation of noise-producing equipment. Construction noise measures shall be implemented to reduce noise levels to FTA (2018) construction noise criteria, as feasible.

If the individual project would be constructed concurrently with development projects located within a 0.5-mile radius of the individual project location, the noise study shall also consider the cumulative impact of construction noise on sensitive receivers. If applicable, construction noise reduction measures shall be implemented to reduce cumulative noise levels to local jurisdiction or FTA (2018) construction noise criteria, as feasible.

MM NOI-2(c) **Conduct Project-Level Noise Studies for Post-Construction Activities Where Noise Sensitive Receivers are Present**. Prior to the commencement of construction activities for individual projects that may be implemented under the CAP where sensitive receivers are located within 1,000 feet of the individual project sites, project-level post-construction noise studies shall be conducted. Such noise studies shall identify the ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during operation of individual projects during the post-construction period, compare estimated noise levels to the noise level standards of the applicable jurisdiction, outline any measures that may be used to reduce noise levels, and determine the amount of noise reduction that would occur with implementation of these measures. Noise reduction measures may include, but would not be limited to, alternative site design, alternative orientation of noise sources, and construction of berms and/or barriers. Noise reduction measures shall be implemented to reduce noise levels to the noise level standards of the applicable jurisdiction, as feasible.

MM NOI-3 (a) **Locate Excavation Sites Away from Vibration-Sensitive Receivers, Where Feasible.** Whenever practicable, vibration-generating equipment including bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers shall operate outside the minimum distances specified in Table 33 of the draft PEIR for historic sites, other structures, and vibration-sensitive receivers during project construction activities. Furthermore, whenever practicable, vibration-generating equipment including bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers shall not be operated concurrently with vibration-generating equipment associated with cumulative development projects located within 600 feet of project construction sites.

MM NOI-3(b) **Conduct Project-Level Vibration Analysis for Construction Activities Where Vibration-Sensitive Receivers are Present.** If operation of construction equipment outside the specified buffer distances is not practicable, a detailed study of vibration impacts shall be conducted prior to the commencement of construction for that project. Such vibration studies shall characterize the nearest historic sites, structures, and/or sensitive receivers; estimate the vibration levels receivers will experience during construction of individual projects; compare estimated vibration levels to applicable Caltrans (2020) standards for vibration impacts related to structural damage and human annoyance; outline any measures that may be used to reduce vibration levels; and determine the amount of vibration reduction that would occur with implementation of these measures. Vibration reduction measures may include, but would not be limited to, the use of non-vibratory equipment, vibration monitoring, and repair of structural damage. Construction vibration reduction measures shall be implemented to reduce vibration levels to Caltrans (2020) construction vibration thresholds as feasible.

If the individual project would be constructed concurrently with cumulative development projects located within a 600-foot radius of the activity location, the vibration study shall also consider the cumulative impact of combined vibration levels at the nearest sensitive receivers by estimating the combined vibration levels receivers will experience during construction of individual projects and cumulative development; compare estimated vibration levels to applicable standards for vibration impacts related to structural damage and human annoyance described in the Caltrans (2020) *Transportation and Construction Vibration Guidance Manual* (CT-HWANP-RT-20-365.01.01); identify whether the individual project's contribution to any identified cumulative impact would be cumulatively considerable; outline any measures that may be used to reduce the project's contribution to combined vibration levels; and determine the amount of vibration reduction that would occur with implementation of these measures. Such measures may include, but are not limited to, the installation of wave barriers, maximization of the distance between vibratory equipment and receivers, restriction of vibration-generating activities to daytime hours, or temporary relocation of affected residents Construction vibration reduction measures shall be implemented to reduce cumulative vibration levels to Caltrans construction vibration thresholds as feasible.

2.1.4.3 Findings per State CEQA Guidelines

Consistent with *State CEQA Guidelines* Section 15126.4(a)(1), feasible measures that can minimize significant adverse impacts were developed for the potentially significant impacts described above. The feasible measures are listed above as MM NOI-1 through MM NOI-3. Metropolitan finds that the above mitigation measures are feasible, are adopted, and will reduce the potential noise impacts. Nonetheless, the impacts would not be reduced to a less-than-significant level. Specific economic, legal, social, technological, or other considerations make mitigation measures or alternatives that would reduce noise impacts to a less-than-significant level infeasible.

2.1.4.4 Facts in Support of Findings Related to Noise

Implementation of MM NOI-1 through MM NOI-3 would reduce potentially significant impacts related to noise, but due to unknowns with respect to implementation of individual projects under the proposed program, it is possible such impacts may not be reduced to a less-than-significant level. As such, impacts would remain significant and unavoidable.

2.2 General Findings

1. The potential environmental impacts of the proposed program have been analyzed, and the public has been afforded the opportunity to submit comments pursuant to CEQA requirements.
2. The proposed program would result in direct and/or indirect potentially significant impacts to the following issues: air quality, biological resources, cultural resources, and noise. Impacts to biological resources would be reduced to a less than significant level through the adoption of feasible mitigation measures set forth in the Draft PEIR. However, even with implementation of the mitigation measures set forth in the Draft PEIR, the proposed program would result in significant and unavoidable impacts to air quality, cultural resources, and noise; therefore, a Statement of Overriding Considerations is required.
3. Thirteen comments regarding the Draft PEIR were received during the public review period. Two of these comment letters were received after the public review period closed. Responses to the comments in those letters are provided in Chapter 1 of the Final PEIR, Volume 1, *Responses to Comments*. No new significant effects were identified as a result of public comments. Impacts have been avoided or substantially lessened by the mitigation measures described in the Draft and Final PEIR.

2.3 Legal Effects of Findings

To the extent that these findings conclude that the proposed mitigation measures outlined in the Final PEIR are feasible and have not been modified, superseded, or withdrawn, Metropolitan hereby commits to implementing these measures. These findings, in other words, are not merely informational, but rather constitute a binding set of obligations that will come into effect when Metropolitan approves the proposed program. The mitigation measures that are referenced in the MMRP and adopted concurrently with these findings will be effectuated through the process of construction and implementation of the proposed program.

2.4 Statement of Overriding Considerations

2.4.1 Significant and Unavoidable Impacts

The proposed program would have significant, unavoidable impacts to the following areas, described in detail in Section 2.1 of these Findings of Fact:

Air Quality

- Conflict with or obstruct implementation of the applicable air quality plan
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard

Cultural Resources

- Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5
- Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5

Noise

- Result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- Result in the generation of excessive groundborne noise levels

Metropolitan has adopted all feasible mitigation measures and supplemental mitigation measures with respect to these impacts. Although implementation of these measures would substantially lessen these significant impacts, adoption of the measures will, for these impacts, not fully avoid the impacts.

As a result of these significant and unavoidable impacts, Metropolitan must adopt a Statement of Overriding Considerations pursuant to *State CEQA Guidelines* Sections 15043 and 15093. This provision allows a lead agency to cite a project's general economic, social, or other benefits as a justification for choosing to allow the occurrence of specified significant environmental effects that have not been avoided. The provision explains why, in the agency's judgment, the project's benefits outweigh the unavoidable significant effects. Where another substantive law (e.g., the California Clean Air Act, the federal Clean Air Act, or the California and federal Endangered Species Acts) prohibits the lead agency from taking certain actions with environmental impacts, a statement of overriding considerations does not relieve the lead agency from such prohibitions. Rather, the decision-maker has recommended mitigation measures based on the analysis contained in the Final PEIR, recognizing that other resource agencies have the ability to impose more stringent standards or measures.

CEQA does not require lead agencies to analyze "beneficial impacts" in an EIR. Rather, EIRs are to focus on potential "significant effects on the environment" defined to be "adverse." (California Public Resources Code, Section 21068.) The state legislature amended the definition to focus on "adverse" impacts after the California Supreme Court held that beneficial impacts must also be addressed (see *Wildlife Alive v. Chickering* (1976) 18 Cal.3d 190, 206). Nevertheless, decision-makers benefit from information about project benefits. These benefits can be cited, if necessary, in a Statement of Overriding Considerations (14 CCR 15093).

Metropolitan finds that the proposed program would have substantial benefits as specified in Section 2.4.2, *Substantial Benefits of the Program*, below. Metropolitan, after balancing the specific economic, legal, social, technological or other benefits of the proposed program, determines and finds that the unavoidable adverse environmental effects may be considered "acceptable" due to the following specific considerations.

2.4.2 Substantial Benefits of the Program

2.4.2.1 Reinforcing Metropolitan's Commitment to Environmental Stewardship

The CAP represents the next step of Metropolitan's long-standing commitment to environmental stewardship and complements Metropolitan's various long-range planning efforts. As described in the CAP itself, Metropolitan's mission has evolved to ensure the water reliability of Southern California by incorporating a diverse portfolio of water sources and initiatives to help meet the needs of the region. As such, environmental stewardship and responsibility, particularly as they relate to efficiency and energy reliability, are integral to Metropolitan's mission and operations. Beyond establishing a feasible and implementable pathway to its emissions reduction target of carbon neutrality by 2045, the CAP:

- Incorporates legislation and guidance from state, federal, and international sources;
- Identifies cost-effective energy efficient measures; and
- Integrates actions to achieve California's transportation strategies to transition away from fossil fuels.

The emissions reduction measures contained in the CAP, while intended to achieve reductions in GHG emissions, also have the potential to deliver various environmental co-benefits, including, but not limited to, the following:

- Strategy 6 – Incentivize More Sustainable Commutes – of the CAP includes multiple measures intended to reduce vehicle miles traveled (VMT) by subsidizing transit, encouraging telecommuting and vanpooling, and installing electric vehicle (EV)/ zero-emission vehicle (ZEV) infrastructure. Not only would these measures reduce GHG emissions associated with vehicle use, but they would also result in reductions in air quality contaminant emissions—such as total organic gases (TOG) and diesel particulate matter—associated with mobile sources.
- Strategy 7— Increase Waste Diversion to Achieve Zero Waste—of the CAP includes multiple measures to reduce GHG emissions by reducing the waste produced at Metropolitan's facilities and increasing waste diversion. Not only would these measures reduce GHG emissions associated with solid waste, but they would also result in improved utility and service system impacts by reducing strain on landfill capacity and reducing trash pollution to land and waterways.
- Strategy 8 – Increase Water Conservation and Local Water Supply – of the CAP includes multiple measures to reduce GHG emissions by increasing water conservation. In addition to GHG emissions benefits associated with reduced energy to pump, treat, and heat water, implementing innovative water conservation and education programs would also reduce pollution associated with water runoff due to reduced consumption for uses such as lawn irrigation.

While the Final PEIR identifies several significant and unavoidable impacts, many of these impacts are identified due to the programmatic nature of the analysis and lack of project-specific details at this time. Additionally, many of these impacts—while significant—are associated with short-term construction activities. It should be noted that the PEIR also acknowledges potential longer-term, post-construction beneficial impacts, where appropriate. For example, Chapter 5, *Effects Found Not to be Significant*, describes potential beneficial impacts of CAP measures to CEQA resource areas such as energy, transportation, utilities and service systems, and GHG emissions. As such, despite significant and unavoidable impacts identified in the PEIR, the proposed program also offers a substantial benefit by reinforcing Metropolitan's commitment to environmental stewardship and responsibility, particularly as it relates to the pressing environmental challenge of GHG emissions and global climate change. Lastly, as proposed projects are implemented under the CAP and project-specific details become available, the appropriate level of project-specific CEQA analysis will be conducted to determine the impact significance level for each resource area.

2.4.2.2 Providing a Roadmap for Compliance with State Emissions Targets

The CAP provides Metropolitan with a broad range of feasible and implementable strategies and measures to mitigate or reduce GHG emissions in line with state goals and targets. The emissions reduction regulations establishing these goals and targets are described in Chapter 2, *Project Description*, of the PEIR and include the following:

- **Assembly Bill (AB) 32.** Signed into law in 2006, the California Global Warming Solutions Act codifies a statewide goal of reducing GHG emissions to 1990 levels by 2020.
- **Senate Bill (SB) 32.** SB 32 serves as an update to the emissions reduction target codified under AB 32. Signed into law in 2016, SB 32 establishes a statewide emissions reduction target of 40 percent below 1990 levels by 2030.
- **Executive Order B-55-18.** On September 10, 2018, former Governor Jerry Brown issued this Executive Order, which established a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter.

The CAP is designed to be consistent with the above regulatory goals and targets, specifically by establishing a 2030 target of 40 percent below 1990 levels (consistent with SB 32) and a 2045 target of carbon neutrality (consistent with Executive Order B-55-18). By adopting these targets—as well as the CAP's supporting measures, tracking and implementation mechanisms intended to demonstrate attainment of these targets over time—Metropolitan is creating a roadmap for regulatory compliance and meaningfully contributing to the state's emissions reduction goals.

2.4.2.3 Streamlining California Environmental Quality Act Review for Future Projects

As described in the CAP and consistent with the program objectives described in Chapter 2, *Project Description*, one of the key intents and uses for the proposed program is to provide Metropolitan with a "Qualified GHG Reduction Plan" pursuant to the requirements of *State CEQA Guidelines* Section 15183.5(b)(1). Using a qualified CAP will allow Metropolitan to realize efficiencies in the environmental review process by facilitating tiering of future project-specific GHG emissions analyses from the CAP, if those projects demonstrate consistency with the CAP. Section 1.1 of the CAP document explains the proposed CAP's consistency with the requirements for a qualified CAP, specifically:

- Quantification of existing and projected GHG emissions within the Plan Area (refer to Section 3.0 of the CAP)
- Establishment of a reduction target based on local, regional, or state targets (refer to Section 4.0 of the CAP)
- Identification and analysis of sector-specific GHG emissions from Plan activities (refer to Section 3.0 of the CAP)
- Specification of policies and actions (measures) that, if implemented, would achieve the specific reduction target (refer to Section 5.0 of the CAP)
- Establishment of a mechanism to monitor progress and amend the CAP (refer to Section 6.0 of the CAP)
- Adoption of the document in a public process following environmental review

The proposed program, as described and analyzed in this CEQA document, satisfies the requirements of *State CEQA Guidelines* Section 15183.5(b)(1) and, as such, offers a substantial benefit by facilitating streamlining of GHG emissions analyses for future Metropolitan projects undergoing CEQA review.

2.5 Independent Review and Analysis

Under CEQA, the lead agency must (1) independently review and analyze the EIR; (2) circulate draft documents that reflect its independent judgment; (3) as part of the certification of an EIR, find that the report or declaration reflects the independent judgment of the lead agency; and (4) submit copies of the documents to the State Clearinghouse if there is state agency involvement or if the project is of statewide, regional, or area-wide significance (California Public Resources Code Section 21082.1(c)).

Metropolitan independently reviewed and analyzed the PEIR and determined that it reflects its independent judgment. Moreover, upon completing this review and making this determination, Metropolitan circulated the Draft PEIR for public review. With the preparation of these findings for submittal to Metropolitan's Board of Directors for adoption, Metropolitan finds that this Final PEIR reflects its independent judgment.

CHAPTER 3
MITIGATION AND MONITORING PROGRAM

3.1 Mitigation Monitoring and Reporting Program

The Mitigation Monitoring and Reporting Program (MMRP) for the proposed program has been prepared in accordance with Public Resources Code Section 21081.6 and *State CEQA Guidelines* Section 15091(d). Metropolitan will use this MMRP to track compliance with the required program mitigation measures.

Metropolitan's Board of Directors will consider the MMRP during the certification hearing for the Final PEIR. The final MMRP will incorporate all mitigation measures adopted for the proposed program. Metropolitan makes the finding that the measures included in the MMRP constitute changes or alterations that avoid or substantially lessen the potentially significant environmental effects of the proposed program on the environment.

This MMRP summarizes mitigation commitments identified in the Climate Action Plan Final PEIR. Table 2 provides the MMRP, which includes all mitigation measures, monitoring process, and monitoring timing. Metropolitan is the agency responsible for ensuring implementation of all mitigation measures. Impacts and mitigation measures are presented in the same order as in the Final PEIR. The columns in the table provide the following information:

- **Mitigation Measures:** This column indicates the action(s) that will be taken to reduce the impact to a less-than significant level or to the maximum extent feasible.
- **Responsible Party:** This column indicates the party who must ensure each mitigation measure is implemented and that monitoring, and reporting activities occur.
- **Timing of Implementation:** This column indicates the general schedule for conducting each monitoring task, either during the design phase, prior to construction, during construction, and/or after construction.
- **Implementation Party:** This column lists the party responsible for implementing the mitigation measure.

Table 2 Mitigation Monitoring and Reporting Program

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party
Air Quality			
AQ-1 Construction Air Quality Assessment			
For individual projects to be implemented under the CAP that involve construction activities with an intensity (i.e., size, schedule, equipment, demolition, import/export of soil, architectural coating) greater than the sample program activity, an air quality assessment shall be prepared to evaluate construction emissions in light of the applicable air district thresholds.	Metropolitan	Prior to construction	Metropolitan
AQ-2 Implement Emission Reduction Measures			
If construction emissions would exceed any of the applicable thresholds, emission reduction measures shall be implemented to reduce emissions below the thresholds. Measures may include, but would not be limited to: • All construction equipment shall be equipped with Tier 4 certified engines or CARB-certified Level 3 diesel particulate filters. All diesel particulate filters shall be kept in working order and maintained in operable condition according to manufacturer's specifications, as applicable. • Construction equipment with lower horsepower ratings shall be utilized, as applicable and practicable. • Ultra-low-sulfur diesel fuel shall be used for stationary construction equipment, as applicable. • Low-emission on-site stationary equipment shall be used, as applicable. • Alternatively-fueled construction equipment (e.g., renewable diesel, natural gas, electric) shall be utilized instead of diesel-fueled construction equipment, as applicable. • The schedule for soil import and/or export shall be extended to reduce the number of daily haul truck trips, as applicable. • The schedule for the coating/painting phase shall be extended to reduce the square footage coated/painted each day, as applicable. • Architectural coatings with a VOC content of less than 250 grams per liter shall be utilized.	Metropolitan	• Prior to construction to confirm all applicable reduction measures • Periodic field checks throughout construction to confirm proper implementation of all applicable reduction measures	Metropolitan Contractor

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party
Biological Resources			
BIO-1 Special Status Plant Species Surveys			
If completion of the project-specific biological resources assessment determines that special status plant species have potential to occur on site, surveys for special status plants shall be completed prior to any vegetation removal, grubbing, or other construction activity of each program activity (including staging and mobilization). The surveys shall be floristic in nature and shall be seasonally timed to coincide with the target species identified in the program activity-specific biological resources assessment. All plant surveys shall be conducted by a qualified biologist no more than one year prior to project implementation (annual grassland habitats may require yearly surveys). Surveys shall be conducted in accordance with current protocols established by the CDFW, USFWS and the local jurisdictions if said protocols exist. If special status plant species are identified, Mitigation Measure BIO-2 shall apply.	Metropolitan	No more than one year prior to any vegetation removal, grubbing, or other construction activity and during the appropriate season for the target species	Metropolitan Qualified biologist
BIO-2 Special Status Plant Species Avoidance, Minimization, and Mitigation			
If state- or federally listed special status and/or CRPR 1 and 2 plant species are identified during the project-specific biological assessment, the activity shall be re-designed to avoid impacting these plant species to the maximum extent feasible. If CRPR 3 and 4 species are found, the biologist shall evaluate if they meet criteria to be considered special status, and if so, the same process as identified for CRPR 1 and 2 species shall apply. If special status plant species cannot be avoided and would be impacted by a program activity implemented under the proposed CAP, all impacts shall be mitigated at an appropriate ratio (minimum ratio of 1:1) to fully offset program activity impacts, as determined by a qualified biologist for each species. A restoration plan shall be prepared and implemented, as applicable.	Metropolitan	• Prior to vegetation removal, grubbing, or other construction activity for re-design or preparation of a mitigation strategy/restoration plan (if avoidance is not feasible) • Within one year of initiation of construction activity for purchase of mitigation • Within one year of completion of construction activity for initial implementation of restoration plan	Metropolitan Qualified biologist
BIO-3 Endangered/Threatened Animal Species Habitat Assessment and Protocol Surveys			
If the results of the project-specific biological resources assessment determine suitable habitat may be present for any federally and/or state endangered or threatened animal species, habitat assessments and/or protocol surveys shall be completed in accordance with CDFW and/or USFWS/NMFS protocols prior to construction. Alternatively, in lieu of conducting protocol surveys, Metropolitan may choose to assume presence within the activity footprint and proceed with implementing appropriate avoidance measures, consultation, and permitting, as applicable. If the target species are detected during protocol surveys, or protocol surveys are not conducted and presence is assumed based on suitable habitat, Mitigation Measure BIO-4 shall apply.	Metropolitan	Prior to construction and during the appropriate season as identified by the survey protocols for the target species	Metropolitan Qualified biologist

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party
BIO-4 Endangered/Threatened Animal Species Avoidance and Mitigation			
If habitat is occupied or presumed occupied by federal and/or state-listed species and would be impacted by program activities, the program activity shall be redesigned in coordination with a qualified biologist to avoid impacting occupied/presumed occupied habitat to the maximum extent feasible. If occupied or presumed occupied habitat cannot be avoided, Metropolitan shall consult with USFWS, NMFS, and/or CDFW in order to determine the appropriate course of action, which may include a Biological Opinion (BO) or HCP/ITP issued by the USFWS/NMFS (relevant to federally listed species) and/or the ITP issued by the CDFW (relevant to state listed species). If occupied or presumed occupied habitat cannot be avoided, compensatory mitigation shall be provided (minimum ratio of 1:1) to fully offset impacts to habitat prior to the construction. Compensatory mitigation may be provided through purchase of mitigation bank credits, in-lieu fee, or permittee-responsible habitat restoration/establishment/enhancement/preservation. Compensatory mitigation may be combined/nested with special status plant species and sensitive natural community restoration, where applicable. Temporary impact areas shall be restored to similar pre-project conditions. If on and/or off-site habitat restoration/conservation is identified, a Habitat Mitigation and Monitoring Plan (HMMP) shall be prepared to ensure the success of compensatory mitigation sites. The HMMP shall identify long-term site management needs, routine monitoring techniques, and performance standards for determining that the conservation site has met the necessary criteria to function as a suitable mitigation site.	Metropolitan	• Prior to construction for re-design, agency consultation, permitting, and preparation of a mitigation strategy/HMMP (if avoidance is not feasible) • Within one year of initiation of construction activity for purchase of mitigation • Within one year of completion of construction activity for initial implementation of HMMP	Metropolitan Qualified biologist
BIO-5 Endangered/Threatened Species Avoidance and Minimization During Construction			
The following measures shall be applied to aquatic and terrestrial species, where appropriate. Metropolitan shall select from these measures as appropriate depending on site conditions, the species with potential for occurrence, and the results of the project-specific biological resources assessment ~~(Mitigation Measure BIO-1)~~. Pre-construction surveys for federal and/or state listed species with potential to occur shall be conducted where suitable habitat is present by a qualified biologist not more than 72 hours prior to the start of construction activities. The survey area shall include the proposed disturbance area and all proposed ingress/egress routes, plus a species-specific buffer. If any life stage of federal and/or state listed species is found within the survey area, the appropriate measures in the BO or HCP/ITP issued by the USFWS/NMFS (relevant to federally listed species) and/or the ITP issued by the CDFW (relevant to state listed species) shall be implemented; or if such guidance is not in place for the activity, the qualified biologist shall recommend an appropriate course of action, which may include consultation with USFWS, NMFS, and/or CDFW.	Metropolitan	• Not more than 72 hours prior to the start of construction activities in suitable habitat for the target species for pre-construction surveys; prior to construction for agency consultation (if applicable) • Pre-, during, and post- construction for implementation of BO or HCP/ITP • Prior to construction for disturbance limit flagging • During initial ground disturbing/vegetation clearing within	Metropolitan, Qualified biologist Contractor

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party
• The activity limits of disturbance shall be flagged. Areas of special biological concern within or adjacent to the limits of disturbance shall have Environmental Sensitive Area fencing installed between said area and the limits of disturbance. • All activities occurring within or adjacent to sensitive habitats that may support federally and/or state endangered/threatened species shall have a qualified biologist present during all initial ground disturbing/vegetation clearing activities. Once initial ground disturbing/vegetation clearing activities have been completed, the biologist shall conduct pre-activity clearance surveys, as needed to ensure protection of endangered/threatened species. • If pumps are used for dewatering activities, all intakes shall be completely screened with wire mesh not larger than five millimeters to prevent animals from entering the pump system. • If at any time during construction of the program activity an endangered/threatened species enters the construction site or otherwise may be impacted by the program activity, all program activities shall cease. At that point, a qualified biologist shall recommend an appropriate course of action, which may include consultation with USFWS, NMFS, and/or CDFW. Alternatively, the appropriate measures shall be implemented in accordance with the BO or HCP/ITP issued by the USFWS (relevant to federal listed species) and/or the ITP issued by the CDFW (relevant to state listed species) and work can then continue as guided by those documents and the agencies, as appropriate. • All trenches, pipes, culverts or similar structures shall be inspected for animals prior to burying, capping, moving, or filling. • Upon completion of the program activity, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the activity, including the pre-construction survey results.		or adjacent to sensitive habitats for qualified biologist monitoring • During dewatering for wire mesh screening • During construction for halting work if target species enters the construction site • During construction for trench inspections • Within one-year of completion of construction activity for final compliance report	
BIO-6 Non-Listed Special Status Animal Species Avoidance and Minimization			
Depending on the species identified in the project-specific biological resource assessment, the following applicable measures shall be implemented to reduce the potential for impacts to non-listed special status animal species: • Pre-construction clearance surveys shall be conducted by a qualified biologist within 14 days prior to the start of construction (including staging and mobilization). The surveys shall cover the entire disturbance footprint plus a minimum 100-foot buffer and shall identify all special status animal species that may occur on-site. The qualified biologist shall make recommendations for avoidance of non-listed special status species, such as through the use of exclusion fencing, buffer zones, etc.	Metropolitan	• Within 14 days prior to construction for pre-construction surveys • During all initial ground disturbing activities for qualified biologist monitoring (if target species encountered) • Within one-year of completion of construction activity for final compliance report • Within 30 days prior to	Metropolitan Qualified biologist Contractor

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party
• A qualified biologist shall be present during all initial ground disturbing activities, including vegetation removal, to recover special status animal species encountered during construction activities. • Upon completion of the program activity, a qualified biologist shall prepare a final compliance report documenting all compliance activities implemented for the program activity, including the pre-construction survey results. • If special status bat species may be present and impacted by the program activity, within 30 days of the start of construction a qualified biologist shall conduct presence/absence surveys for special status bats where suitable roosting habitat is present. Surveys shall be conducted using acoustic detectors and by searching tree cavities, crevices and other areas where bats may roost. If active bat roosts or colonies are present, the biologist shall evaluate the type of roost to determine the next step. o If a maternity colony is present, all construction activities shall be postponed within a 250-foot buffer around the maternity colony until it is determined by a qualified biologist that the young have dispersed. Once it has been determined that the roost is clear of bats, the roost shall be removed immediately. o If a roost is determined by a qualified biologist to be used by a large number of bats (large hibernaculum), alternative roosts, such as bat boxes if appropriate for the species, shall be designed and installed near the program activity site. The number and size of alternative roosts installed will depend on the size of the hibernaculum and shall be determined by a qualified biologist. If other active roosts are located, exclusion devices shall be installed such as valves, sheeting or flap-style one-way devices that allow bats to exit but not re-enter roosts to discourage bats from occupying the site.		construction for presence/absence bat surveys where suitable roosting habitat is present • During construction for implementation of avoidance buffers, installation of alternative roosts/exclusion devices, and removal of roosts	
BIO-7 Jurisdictional Delineation and Impact Avoidance			
If the results of the project-specific biological resource assessment ~~Mitigation Measure BIO-1~~ indicate program activities implemented under the proposed CAP would impact wetlands, drainages, riparian habitats, or other areas that may fall under the jurisdiction of the CDFW, USACE, and/or RWQCB, a qualified biologist shall complete a jurisdictional delineation. The jurisdictional delineation shall determine the extent of the jurisdiction for each of these agencies within the program activity site and shall be conducted in accordance with the requirement set forth by each agency. The results shall be provided in a jurisdictional delineation report submitted to Metropolitan, USACE, RWQCB, and CDFW, as appropriate, for review and approval. The program activity shall be designed to avoid or minimize impacts to jurisdictional areas to the maximum extent feasible.	Metropolitan	Prior to construction	Metropolitan Qualified biologist

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party
BIO-8 Wetlands, Drainages and Riparian Habitat Restoration			
If impacts to jurisdictional drainages, wetlands, riparian habitat, and sensitive vegetation communities cannot be avoided, impacts shall be mitigated at an appropriate ratio to fully offset project-specific impacts (minimum ratio of 1:1). Where feasible, temporarily impacted areas shall be restored to pre-project conditions. An HMMP shall be developed by a qualified biologist and submitted to the agency overseeing the program activity for approval. Alternatively, mitigation shall be accomplished through purchase of credits from an approved mitigation bank or in-lieu fee program.	Metropolitan	• Prior to construction for preparation of a mitigation strategy/HMMP • Within one year of initiation of construction activity for purchase of mitigation • Within one year of completion of construction activity for initial implementation of HMMP	Metropolitan Qualified biologist
BIO-9 Sensitive Natural Community Avoidance and Mitigation			
If the results of the project-specific biological resource assessment ~~Mitigation Measure BIO-1~~ indicate program activities implemented under the proposed CAP would impact sensitive natural communities, impacts shall be avoided through final program activity design modifications. If Metropolitan determines sensitive communities cannot be avoided, impacts shall be mitigated on-site or off-site at an appropriate ratio to fully offset program activity impacts (minimum ratio of 1:1). Temporarily impacted areas shall be restored to pre-project conditions. An HMMP shall be developed by a qualified biologist and submitted to the agency overseeing the program activity for approval.	Metropolitan	• Prior to construction for preparation of a mitigation strategy/HMMP • Within one year of initiation of construction activity for purchase of mitigation • Within one year of completion of construction activity for initial implementation of HMMP	Metropolitan Qualified biologist Contractor
Cultural Resources			
CUL-1(a) Built Environment Investigation			
A historic resources evaluation shall be prepared for any future proposed project facilitated by the CAP involving a property which includes buildings, structures, objects, landscape/site plans, or other features that are 45 years of age or older. The evaluation shall be prepared by a qualified architectural historian or historian who meets the Secretary of the Interior's (SOI) Professional Qualifications Standards (PQS) in architectural history or history. The qualified architectural historian or historian shall conduct an evaluation in accordance with the guidelines and best practices promulgated by the State Office of Historic Preservation to identify any potential historical resources within the proposed project area. The evaluation of the potential resource within its historic context shall be documented. All evaluated properties shall be documented on Department of Parks and Recreation Series 523 Forms. If a property is identified as an eligible historical resource under CEQA, Mitigation Measure CUL-1(b) shall be implemented.	Metropolitan	Prior to construction	Metropolitan Qualified architectural historian or historian

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party
CUL-1(b) Built Environment Documentation Program			
If eligible built environment historical resources are identified for a future proposed project implemented under the CAP, efforts shall be made to the extent feasible to ensure that impacts are avoided. If avoidance is not possible, a Built Environment Documentation Program shall be implemented. Measures may include but are not limited to, compliance with the Secretary of the Interior's Standards for Treatment of Historic Properties and documentation of the historical resource in the form of a Historic American Building Survey (HABS)- report or HABS-Like report. The HABS or HABS-Like report shall comply with the Secretary of the Interior's Standards for Architectural and Engineering Documentation and shall generally follow the HABS Level III requirements, including digital photographic recordation, detailed historic narrative report, and compilation of historic research. Application of mitigation shall generally be overseen by a qualified architectural historian or historic architect meeting the PQS, unless unnecessary in the circumstances (e.g., preservation in place).	Metropolitan	Prior to construction	Metropolitan Qualified historian
CUL-2(a) Phase 1 Archaeological Resource Investigation			
If archaeological resources are identified during project-specific analysis that may be adversely affected by any future proposed project implemented under the CAP, Metropolitan shall retain a qualified archaeologist meeting the Secretary of the Interior standards in archaeology to complete a Phase 1 cultural resources assessment of the site. A Phase 1 cultural resources assessment will include an archaeological pedestrian survey of the site, if feasible, and sufficient background archival research to determine whether subsurface prehistoric or historic remains may be present. Archival research should include a current records search from the appropriate California Historical Resources Information System information center and a Sacred Lands File search conducted with the Native American Heritage Commission. A Phase 1 report or results documentation shall be submitted to Metropolitan prior to any ground disturbing activities. Recommendations contained therein shall be implemented throughout all ground disturbance activities.	Metropolitan	Prior to construction	Metropolitan Qualified archaeologist
CUL-2(b) Extended Phase 1 Investigation			
For any projects proposed within 100 feet of a known archaeological site and/or in areas identified as sensitive by the Phase 1 study, an Extended Phase 1 (XPI) study shall be conducted to determine the presence/absence and extent of archaeological resources on the project site. XPI testing should comprise a series of shovel test pits and/or hand augured units and/or mechanical trenching intended to establish the horizontal and vertical boundaries of archaeological site(s) on the project site. No archaeological resources would be collected during the XPI Investigation. If an archaeological site is identified, Mitigation Measure CUL-2(c) or CUL-2(d) shall be implemented.	Metropolitan	Prior to construction	Metropolitan Qualified archaeologist

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party
CUL-2(c) Avoidance of Archaeological Resources			
Identified prehistoric or historic archaeological resources shall be avoided and preserved in place, where feasible. Where avoidance and preservation in place is not feasible, additional measures shall be applied as identified in Mitigation Measure CUL-2(d) through CUL-2(g).	Metropolitan	Prior to and during construction activities	Metropolitan Qualified archaeologist Contractor
CUL-2(d) Phase 2 Archaeological Resources Investigation and Evaluation			
Where preservation is not feasible, each resource shall be evaluated for significance and eligibility for listing in the CRHR through a Phase 2 archaeological resource evaluation. A Phase 2 evaluation shall include any necessary archival research to identify significant historical associations as well as mapping of surface artifacts, collection of functionally or temporally diagnostic tools and debris, and excavation of a sample of the cultural deposit to characterize the nature of the sites, define the artifact and feature contents, determine horizontal boundaries and depth below surface, and retrieve representative samples of artifacts and other remains. A final Phase 2 Testing and Evaluation report shall be submitted to Metropolitan prior to any ground disturbing activities. Recommendations contained therein shall be implemented throughout all ground disturbance activities.	Metropolitan	Prior to construction activities	Metropolitan Qualified archaeologist Contractor
CUL-2(e) Phase 3 Archaeological Data Recovery Program			
If an archaeological resource meets the CRHR eligibility and cannot be avoided, Metropolitan shall implement a Phase 3 Archaeological Data Recovery Program, conducted to exhaust the data potential of significant archaeological sites. The Phase 3 Archaeological Data Recovery Program shall follow a research design prepared by a qualified archaeologist meeting the SOI PQS standards for archaeology and approved by Metropolitan in advance of Phase 3 fieldwork and excavations. The Phase 3 Data Recovery research design will use appropriate archaeological field and laboratory methods consistent with the California Office of Historic Preservation Planning Bulletin 5 (1991), Guidelines for Archaeological Research Design, or the latest edition thereof. The final Phase 3 Data Recovery report shall be submitted to Metropolitan prior to and any ground disturbing activities. Recommendations contained therein shall be incorporated into project design and implemented throughout all ground disturbance activities.	Metropolitan	Prior to construction activities	Metropolitan Qualified archaeologist Contractor

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party
CUL-2(f) Processing and Curation of Archaeological Materials			
Archaeological materials collected from the sites during the implementation of Mitigation Measures CUL-2(d) through CUL-2(e) shall be processed and analyzed in the laboratory according to standard archaeological procedures. The age of the materials shall be determined using radiocarbon dating and/or other appropriate procedures; lithic artifacts, faunal remains, and other cultural materials shall be identified and analyzed according to current professional standards. The significance of the sites shall be evaluated according to the criteria of the CRHR. The results of the investigations shall be presented in a technical report following the standards of the California Office of Historic Preservation publication "Archaeological Resource Management Reports: Recommended Content and Format (1990 or latest edition)". Upon completion of the work, all artifacts, other cultural remains, records, photographs, and other documentation shall be curated an appropriate established curation facility based on the location of the fieldwork and/or repatriated to local Native Americans as appropriate. All fieldwork, analysis, report production, and curation shall be fully funded by Metropolitan.	Metropolitan	Following implementation of MM CUL-2(d) and CUL-2(e)	Metropolitan Qualified archaeologist
CUL-2(g) Cultural Resources Monitoring			
If recommended by Phase 1 (Mitigation Measure CUL-2(a)), XPI (Mitigation Measure CUL-2(b)), Phase 2 (Mitigation Measure CUL-2(d)), or Phase 3 (Mitigation Measure CUL-2(e)) studies, Metropolitan shall retain a qualified archaeologist to monitor project-related, ground-disturbing activities.	Metropolitan	• Prior to ground-disturbing activities for retaining a qualified archaeologist • During project ground-disturbing activities for monitoring	Metropolitan Qualified archaeologist
CUL-3 Previously Unidentified Resources Encountered During Construction			
In the event that any potentially significant cultural resources are unexpectedly encountered during construction, work will be immediately halted, and the discovery shall be protected in place. A 50-foot buffer around the exposed resource shall be established until a qualified cultural resources specialist evaluates the discovery. If the qualified cultural resources specialist determines that the discovery represents a potentially significant cultural resource, including a potential historical resource, additional investigations may be required to mitigate adverse impacts from project implementation. This additional work may include avoidance, testing, and evaluation or data recovery excavation. Work shall be prohibited in the restricted area until Metropolitan provides written authorization.	Metropolitan	During ground-disturbing activities	Metropolitan Qualified archaeologist Contractor
Noise			
NOI-1 Locate Excavation Sites Away from Noise-Sensitive Receivers, Where Feasible			
Construction staging and activities shall be located in areas as far as practicable from sensitive receivers or in areas where receivers can be shielded from construction noise.	Metropolitan	During construction	Metropolitan Contractor

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party
NOI-2(a) Conduct Project-Level Noise Studies for Construction Activities Where Noise-Sensitive Receivers are Present			
Project-level construction noise studies shall be conducted for project activities that would exceed the screening criteria for a less-than-significant impact, as summarized in Table 30 and Table 32 of the draft PEIR. Such noise studies shall identify the existing ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during construction of individual projects, compare estimated noise levels to the local jurisdiction's noise limits or to the construction noise criteria in the FTA (2018) *Transit Noise and Vibration Impact Assessment Manual* for those that do not have quantitative construction noise level limits, outline any measures that may be used to reduce noise levels, and determine the amount of noise reduction that would occur with implementation of these measures. If the project-level noise study concludes that noise reduction measures are required, Mitigation Measure NOI-2(b) shall be implemented.	Metropolitan	Prior to construction	Metropolitan Qualified noise specialist Contractor
NOI-2(b) Implement Noise Reduction Measures			
If the results of the noise study determine noise reduction measures are required, noise reduction measures shall be implemented. Construction noise reduction measures may include, but would not be limited to, the use of mufflers, sound blankets/barriers, and/or enclosures and scheduling construction activities to minimize simultaneous operation of noise-producing equipment. Construction noise measures shall be implemented to reduce noise levels to FTA (2018) construction noise criteria, as feasible. If the individual project would be constructed concurrently with development projects located within a 0.5-mile radius of the individual project location, the noise study shall also consider the cumulative impact of construction noise on sensitive receivers. If applicable, construction noise reduction measures shall be implemented to reduce cumulative noise levels to local jurisdiction or FTA (2018) construction noise criteria, as feasible.	Metropolitan	During construction	Metropolitan Qualified noise specialist Contractor
NOI-2(c) Conduct Project-Level Noise Studies for Post-Construction Activities Where Noise Sensitive Receivers are Present			
Prior to the commencement of construction activities for individual projects that may be implemented under the CAP where sensitive receivers are located within 1,000 feet of the individual project sites, project-level post-construction noise studies shall be conducted. Such noise studies shall identify the ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during operation of individual projects during the post-construction period, compare estimated noise levels to the noise level standards of the applicable jurisdiction, outline any measures that may be used to reduce noise levels, and determine the amount of noise reduction that would occur with implementation of these measures. Noise reduction measures may include, but would not be limited to, alternative site design, alternative orientation of noise	Metropolitan	Prior to the commencement of construction activities	Metropolitan Qualified noise specialist Contractor

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party
sources, and construction of berms and/or barriers. Noise reduction measures shall be implemented to reduce noise levels to the noise level standards of the applicable jurisdiction, as feasible.			
NOI-3(a) Locate Excavation Sites Away from Vibration-Sensitive Receivers, Where Feasible			
Whenever practicable, vibration-generating equipment including bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers shall operate outside the minimum distances specified in Table 33 of the draft PEIR for historic sites, other structures, and vibration-sensitive receivers during program construction activities. Furthermore, whenever practicable, vibration-generating equipment including bulldozers, loaded trucks, pile drivers/pneumatic post drivers, bore/drill rigs, vibratory rollers, and jackhammers shall not be operated concurrently with vibration-generating equipment associated with cumulative development projects located within 600 feet of program construction sites.	Metropolitan	During construction	Metropolitan Contractor
NOI-3(b) Conduct Project-Level Vibration Analysis for Construction Activities Where Vibration-Sensitive Receivers are Present			
If operation of construction equipment outside the specified buffer distances is not practicable, a detailed study of vibration impacts shall be conducted prior to the commencement of construction for that project. Such vibration studies shall characterize the nearest historic sites, structures, and/or sensitive receivers; estimate the vibration levels receivers will experience during construction of individual projects; compare estimated vibration levels to applicable Caltrans (2020) standards for vibration impacts related to structural damage and human annoyance; outline any measures that may be used to reduce vibration levels; and determine the amount of vibration reduction that would occur with implementation of these measures. Vibration reduction measures may include, but would not be limited to, the use of non-vibratory equipment, vibration monitoring, and repair of structural damage. Construction vibration reduction measures shall be implemented to reduce vibration levels to Caltrans (2020) construction vibration thresholds as feasible. If the individual project would be constructed concurrently with cumulative development projects located within a 600-foot radius of the activity location, the vibration study shall also consider the cumulative impact of combined vibration levels at the nearest sensitive receivers by estimating the combined vibration levels receivers will experience during construction of individual projects and cumulative development; compare estimated vibration levels to applicable standards for vibration impacts related to structural damage and human annoyance described in the Caltrans (2020) *Transportation and Construction Vibration Guidance Manual* (CT-HWANP-RT-20-365.01.01); identify whether the individual project's contribution to any identified cumulative impact would be cumulatively considerable; outline any measures that may be used to reduce the project's contribution to combined vibration levels; and determine the amount of vibration	Metropolitan	Prior to and during construction	Metropolitan Qualified noise specialist Contractor

Mitigation Measure	Responsible Party	Timing of Implementation	Implementation Party
reduction that would occur with implementation of these measures. Such measures may include, but are not limited to, the installation of wave barriers, maximization of the distance between vibratory equipment and receivers, restriction of vibration-generating activities to daytime hours, or temporary relocation of affected residents Construction vibration reduction measures shall be implemented to reduce cumulative vibration levels to Caltrans construction vibration thresholds as feasible.			

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THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

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THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Climate Action Plan

May 2022

Prepared by:

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Report No. ER 1637A

May 2022

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EXECUTIVE SUMMARY

The Metropolitan Water District of Southern California's (Metropolitan) core mission is to provide a clean, reliable water supply to Southern California. Changing climatic conditions, variable precipitation patterns, availability of water supplies, changes in consumer demands, and sea level rise will change the way Metropolitan provides its services and how it operates its regional water system. Metropolitan recognizes the potential impact of climate change to water availability and is committed to environmental stewardship to protect this valuable resource. Reducing greenhouse gas (GHG) emissions is an important step in protecting California and the region from the effects of climate change. Reducing GHG emissions from Metropolitan's operations supports California's overall GHG reduction goals. This Climate Action Plan (CAP) sets targets for reducing GHG emissions from Metropolitan's operations, including conveyance, storage, treatment, and delivery of water to its 26 member water agencies. Additionally, this CAP complements Metropolitan's existing long-range planning efforts, including the Integrated Water Resources Plan, Energy Sustainability Plan, and Capital Investment Plan. Through the implementation of this CAP, Metropolitan will strengthen its commitment to environmental sustainability, increase the resiliency of its operations, and strategically achieve GHG reduction goals. For additional details on the purpose of this CAP and Metropolitan's history and existing operations, refer to Section 1.0, Purpose, Overview, and Environmental History and Leadership.

ES

California-friendly garden

Diamond Valley Lake, West Dam

PURPOSE OF THE CAP

CALIFORNIA AND INTERNATIONAL GHG REDUCTION GOALS

California passed the California Global Warming Solutions Act of 2006 (Assembly Bill 32 or AB 32), creating a comprehensive strategy to reduce greenhouse gas (GHG) emissions in California. AB 32 required the California Air Resources Board (CARB) to develop a Scoping Plan that details the strategy and GHG reduction goals for the State. On the international stage, the Paris Agreement, a legally binding, international global climate agreement, establishes a roadmap for nations to remain under 2 degrees Celsius of warming by the end of the century with a goal of limiting the temperature increase to 1.5 degrees Celsius. Based on the scientific research supporting the Paris Agreement goals, the 2017 Scoping Plan outlines California's strategic vision for achieving at least a 40 percent reduction in GHG emissions from 1990 levels by 2030.

In its Fifth Assessment Report (AR5), the Intergovernmental Panel on Climate Change (IPCC), concluded there's a more than

95%

likelihood that human activities are a principal cause of our warming planet over the past 50 years.[1]

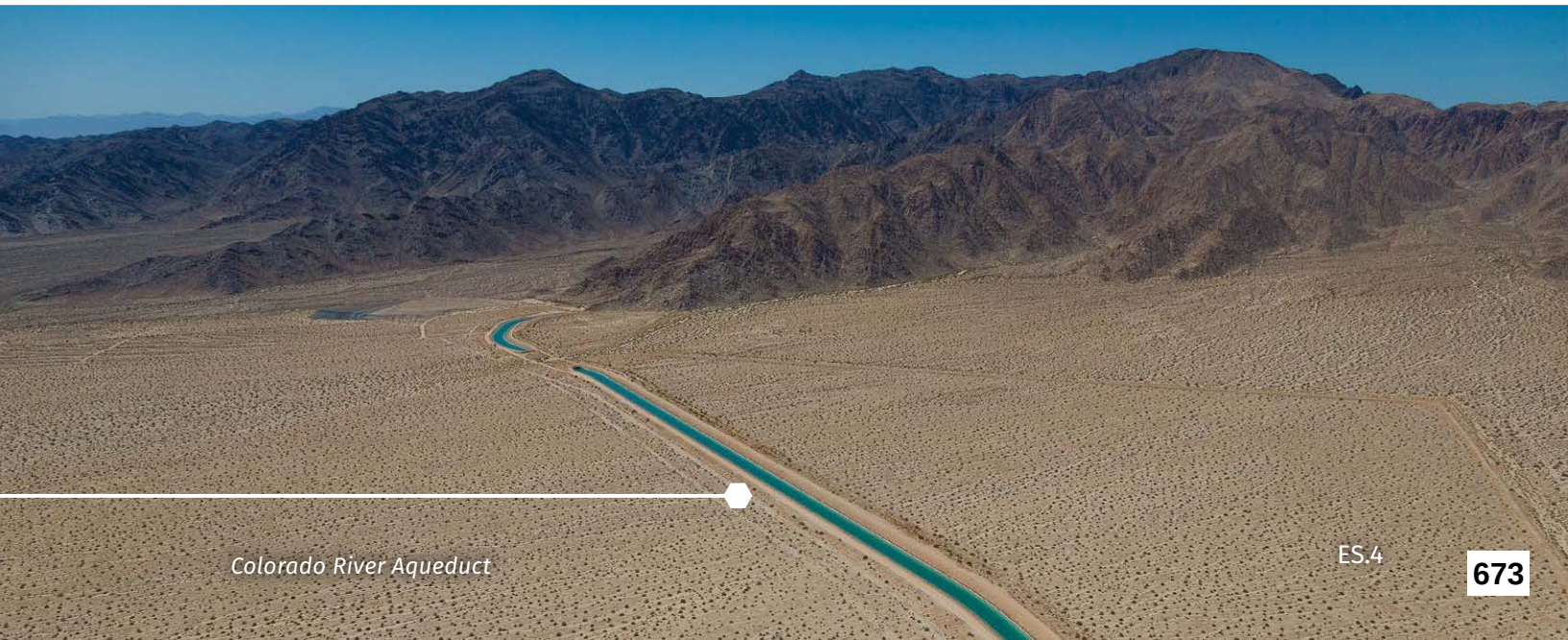
1. *https://archive.ipcc.ch/report/ar5/syr/*

This Climate Action Plan (CAP) is consistent with all California GHG reduction legislation, including Senate Bill (SB) 32 and Executive Order (EO) B-55-18, which expands upon AB 32. The CAP also meets the requirements of Section 15183.5(b)(1) of the State CEQA Guidelines for a "Qualified GHG Reduction Plan" (CAP or Plan). A qualified CAP allows Metropolitan to tier future project-level GHG emissions analyses if projects demonstrate consistency with the CAP goals. Section 4.2, California Regulations and GHG Emissions Targets, of this CAP, California Regulations and GHG Emissions Targets, can be referenced for more information on the regulatory context of the CAP.

SCIENTIFIC CONTEXT

The gases that make up Earth's atmosphere act like a blanket that allows high-energy light from the Sun to pass through to Earth, while reflecting and absorbing lower-energy heat radiating back from Earth. The trapping of this heat is known as the greenhouse effect because atmospheric gases function similar to the windows of a greenhouse, which trap the Sun's rays and create a much warmer space inside as compared to the outside air.

The greenhouse effect regulates the Earth's climate, maintaining conditions suitable for life on Earth. However, a rapid increase of GHGs can cause excess heat to be trapped, affecting global temperatures and climate. Human activities such as burning fossil fuels, deforestation, and land development release GHGs that contribute to global warming. For more detailed information, please refer to Section 2.0, Scientific Context and Climate Change Impacts.



Colorado River Aqueduct

ES

Weymouth Water Treatment Plant

METROPOLITAN'S GREENHOUSE GAS EMISSIONS

METROPOLITAN'S GHG EMISSIONS INVENTORY

Metropolitan imports its water supply from two sources - Northern California via the State Water Project (SWP), which is owned and operated by the California Department of Water Resources (DWR), and the Colorado River via the Colorado River Aqueduct (CRA). Metropolitan's GHG emissions are calculated based on sources within its operational control, thus water from the Colorado River pumped from Lake Havasu in San Bernardino County and water from the SWP where Metropolitan takes delivery of its SWP supplies. Metropolitan takes delivery of the SWP at several locations including the Foothill Feeder immediately downstream of Castaic Lake in Los Angeles County, through the Rialto Pipeline and Inland Feeder which connect to the Devil Canyon Powerplant after-bays in San Bernardino County, through the Box Springs Feeder, and through the Perris Pressure Control Structure at Lake Perris in Riverside County. See Appendix B for more information on emissions associated with the DWR's SWP.

Metropolitan's GHG emissions are primarily generated from the purchase and consumption of electricity used for conveyance, treatment, and delivery of water throughout Metropolitan's Southern California service area. Metropolitan's GHG emissions vary due to the amount of water pumped from the Colorado River to meet the demands of Southern California. Higher Colorado River pumping generally correlates to dry years with low SWP allocations. Through the implementation of energy and water efficiency projects, as well as state legislation, overall emissions from Metropolitan operations have decreased since 1990, even during extreme drought events that resulted in increased pumping on the CRA.

The GHG inventory was calculated using the protocol from the International Council for Local Environmental Initiatives (ICLEI) and The Climate Registry (TCR). The data is organized into three source categories, or scopes, related to the level of operational control the organization or reporting entity has over the emission source. Figure ES-1 shows Metropolitan's GHG emissions by scope as well as the sources of emissions within each scope.

FIGURE ES-1: GHG Emissions by Scope

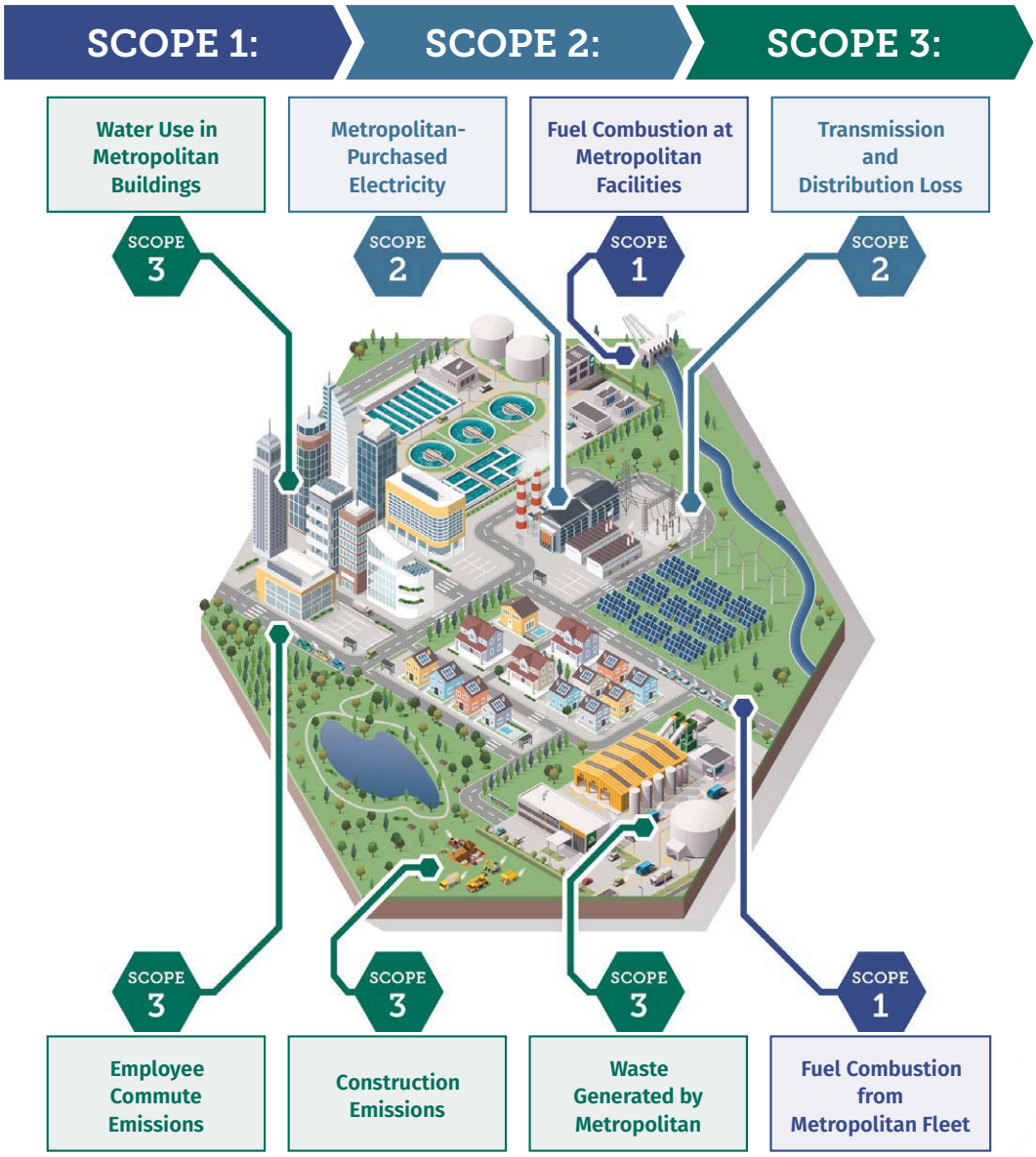
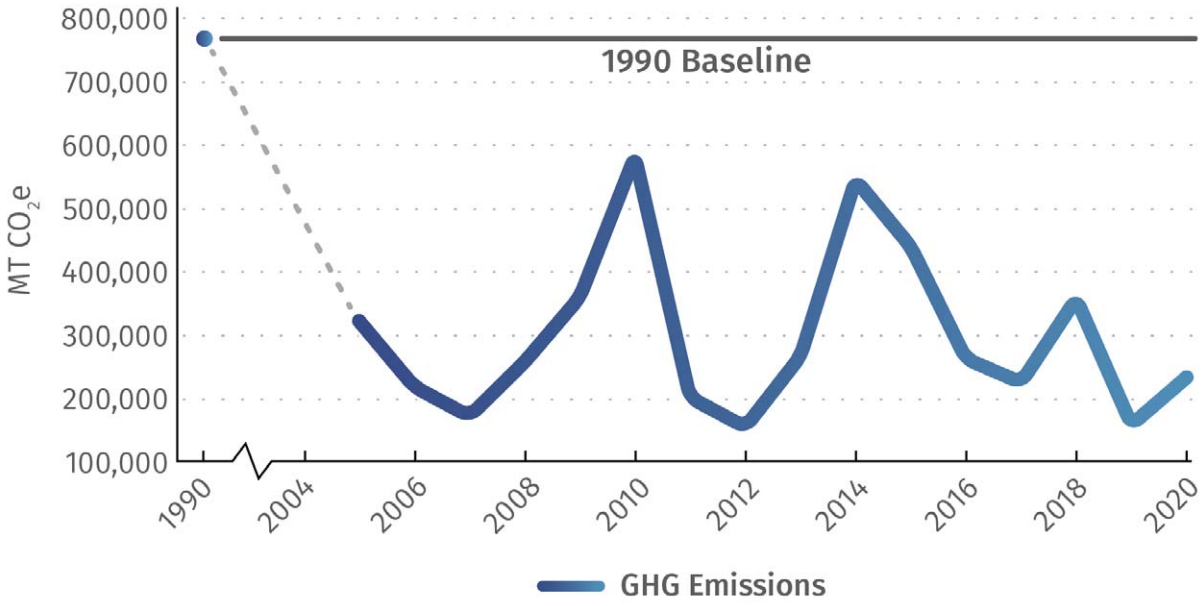


Figure ES-2 illustrates Metropolitan's historical GHG emissions in metric tons of carbon dioxide equivalent (MT CO_2e).[2] For more information on historic emissions please see Section 3.2, Historical Metropolitan GHG Emissions. Metropolitan's emissions are highly variable depending on the amount of CRA pumping during each calendar year.

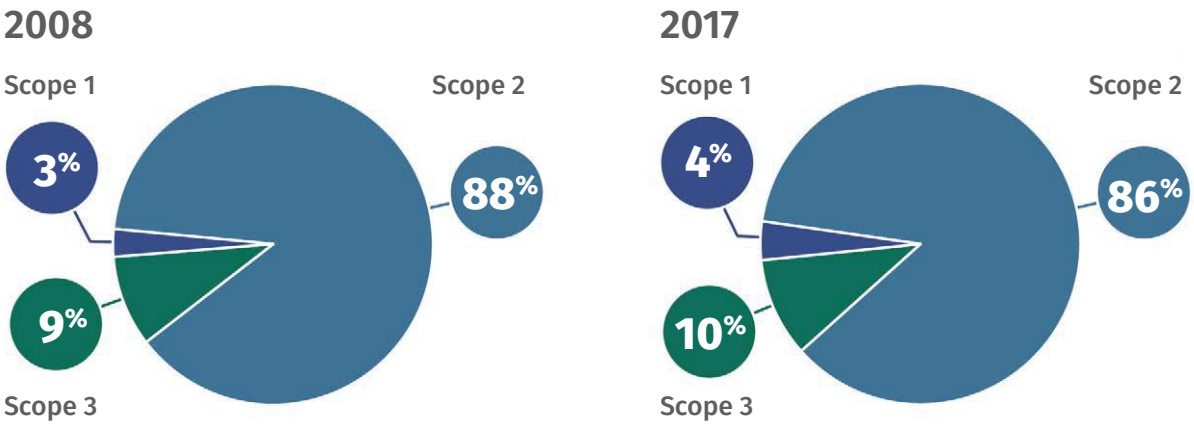
FIGURE ES-2: Metropolitan GHG Emissions Over Time

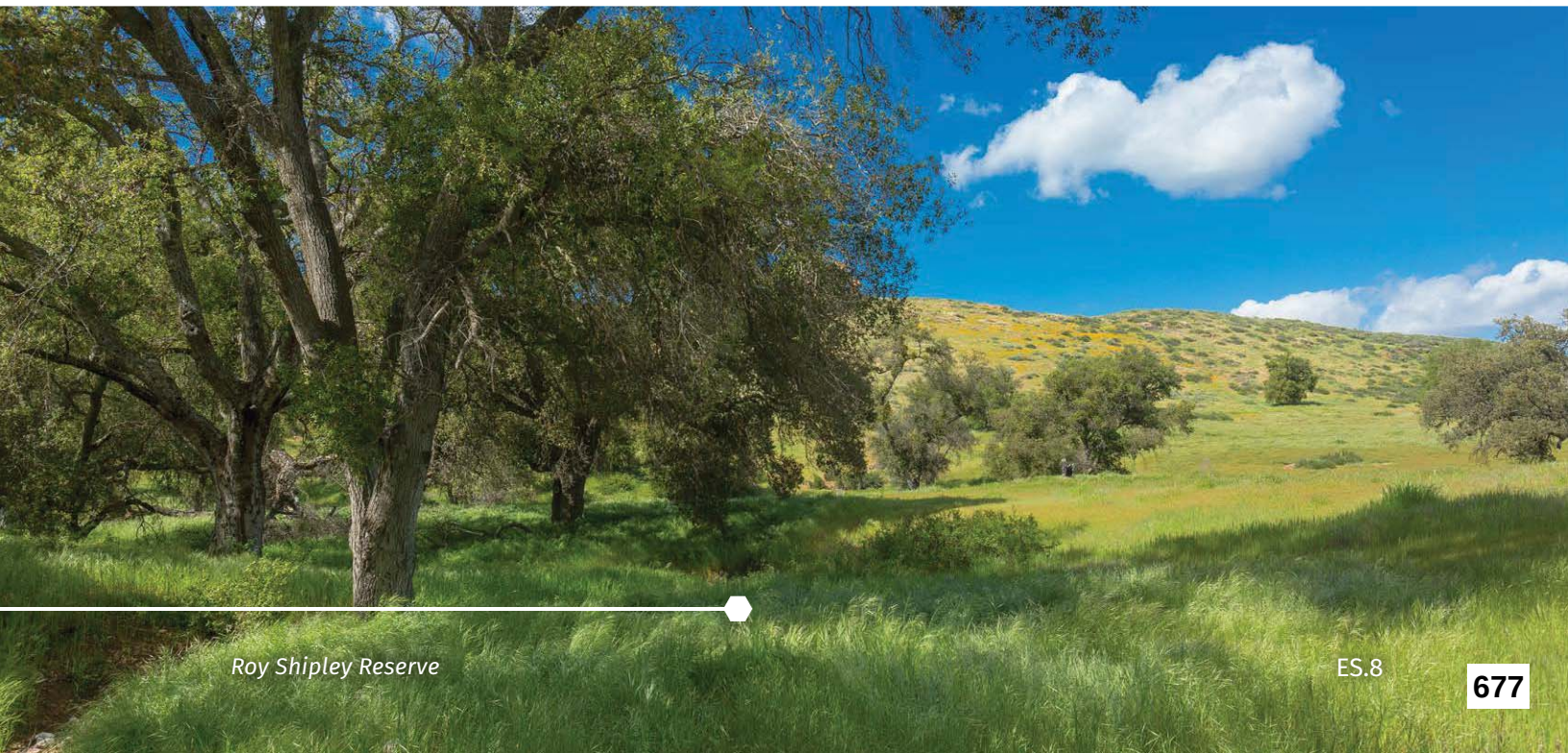


Emissions are categorized into three scopes. Scope 1 emissions are associated with fuel use associated with combustion in equipment or vehicles, propane and natural gas use at Metropolitan facilities, and fugitive emissions. Scope 2 emissions are indirect emissions associated with the purchase and consumption of electricity, and Scope 3 emissions are from other indirect emissions, such as those associated with employee commutes, waste generation, water consumption, and emissions associated with construction projects. Metropolitan's emissions are largely dominated by Scope 2 emissions (electricity). Figure ES-3 shows the breakdown of Metropolitan's emissions in 2008 and 2017 by scope. For more detailed information on Metropolitan's GHG inventory, please refer to Section 3.1, Metropolitan Operational Boundary and Emissions Sources and Section 3.2, Historical Metropolitan GHG Emissions.

2. *MT CO_2e – Metric tons of carbon dioxide equivalent. This is a measure of all greenhouse gases (carbon dioxide, methane, nitrogen dioxide, and others) converted into tons of carbon dioxide using the global warming potential. For more information, see Section 2, Scientific Context and Climate Change Impacts.*

FIGURE ES-3: Metropolitan Emissions By Scope



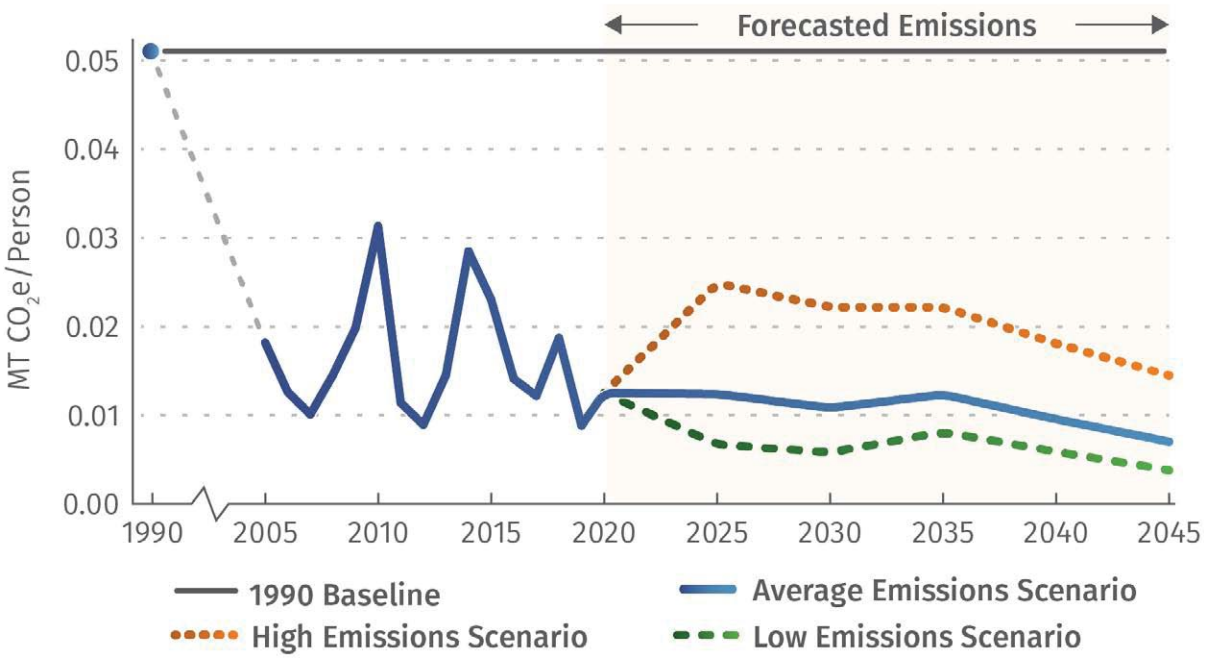


Roy Shipley Reserve

METROPOLITAN'S GHG EMISSIONS FORECAST

To better estimate future emissions, Metropolitan prepared an emissions forecast through 2045 under high-, average-, and low-emissions scenarios, which are based on projections for water demand in its 2020 Urban Water Management Plan. Section 3.3, Metropolitan GHG Emissions Forecast details Metropolitan's forecast results. Figure ES-4 illustrates Metropolitan's GHG emissions forecasts through 2045.

FIGURE ES-4: GHG Emissions Forecast and Potential Range (Per Capita)



Joshua Tree area desert landscape

EMISSIONS REDUCTION TARGETS

The emissions inventory and forecast provide a basis for Metropolitan to establish targets for future GHG reductions. Metropolitan established a 2030 target of 40% below 1990 levels by 2030 for GHG emissions reduction to achieve consistency with SB 32 and a 2045 target of carbon neutrality consistent with EO B-55-18. By defining specific reduction targets, Metropolitan can track its progress towards meeting its goals and measure the success of its CAP. CEQA Guidelines Section 15183.5(b)(1) requires that plans establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable. Metropolitan will utilize a per capita emissions calculation to track progress towards meeting its GHG reduction goals. The per-capita GHG emissions forecast provides a metric to measure each person's GHG emissions generated from water use. This approach can clearly illustrate the positive effect an individual's lower water use can have on GHG emissions. Metropolitan will pursue a linear per capita GHG emission reduction pathway, as demonstrated in Figure ES-5, to exceed the State's target of 40 percent below 1990 levels by 2030 (0.0309 MT CO_2e per person) and make significant progress towards ultimately achieving carbon neutrality by 2045 (0.0 MT CO_2e per person). Table ES-1 provides more detail on Metropolitan's adopted GHG reduction targets and how they compare to the state reduction targets. For more information on the emissions reductions targets, please refer to section 4.3, Metropolitan's GHG Emissions Reduction Targets.

FIGURE ES-5: Metropolitan's Per Capita GHG Emissions Targets

TABLE ES-1: Comparison of Metropolitan and California GHG Reduction Targets

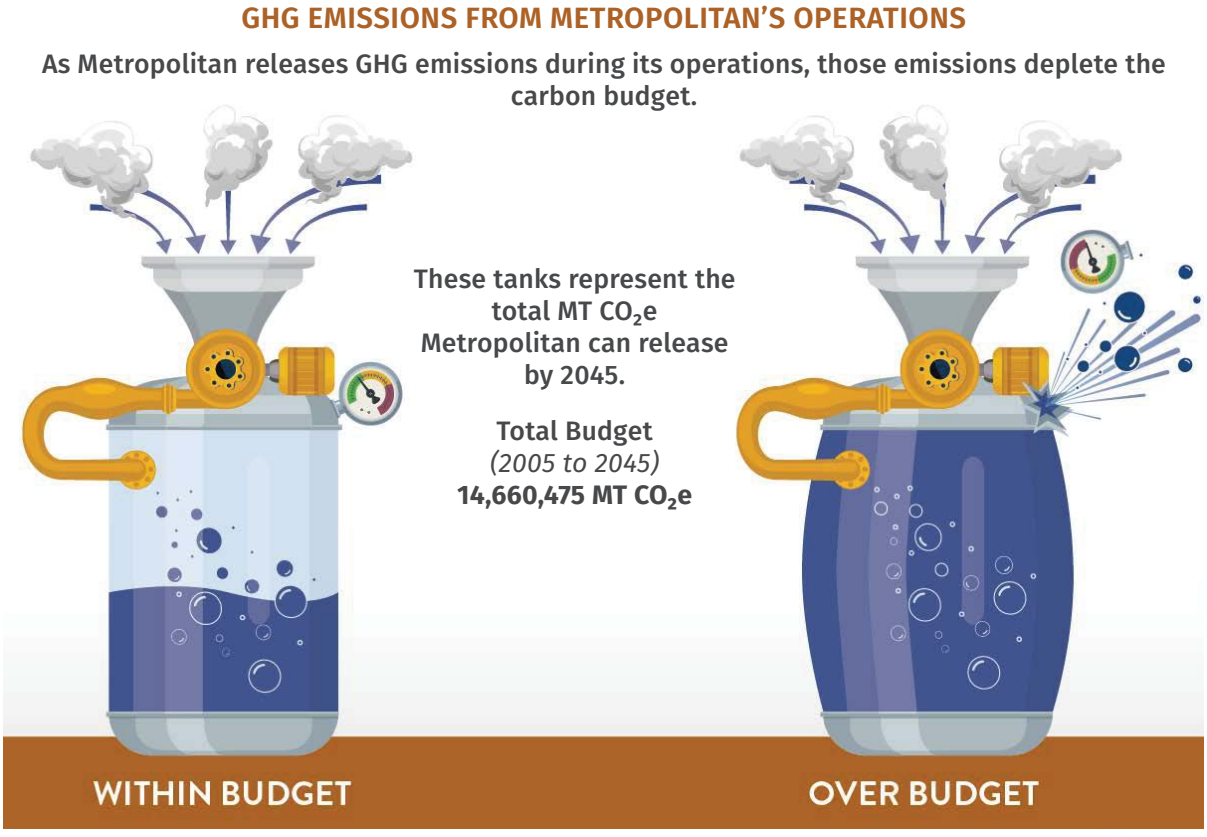
Target	Per Capita Emissions (MT CO_2e)	Associated Mass Emissions* (MT CO_2e)	Percent Reduction (Below 1990)
Metropolitan's 1990 Per Capita Emissions (AB32 Target)	0.0516	771,514	N/A
Minimum Per Capita Reduction Target for SB 32 Consistency	0.0309	638,423	40%
Metropolitan's Per Capita 2030 GHG Emissions Target+	0.0141	290,192	73%
Metropolitan's 2045 Per Capita Goal	0	0	100%
California's EO B-55-18 Per Capita Goal	0	0	100%

+Pending final population numbers
**Associated Mass Emissions are calculated by multiplying the per capita emissions target by the projected population in that year. Final mass emission values will be updated based on actual population data.*

METROPOLITAN'S CARBON BUDGET

Metropolitan's GHG emissions fluctuate from year to year depending on the amount of water pumped from the Colorado River. Consequently, GHG emissions recorded in any one particular year are not necessarily representative of Metropolitan's overall progress towards meeting its GHG emissions reduction targets. To account for this factor, Metropolitan will track its emissions annually using a carbon budget approach. Figure ES-6 illustrates the carbon budget approach as applied to Metropolitan's operations.

FIGURE ES-6: How a Carbon Budget Works



Between 2005 and 2020, Metropolitan used approximately 4,770,038 MT CO_2e of its total carbon budget of 14,660,475 MT CO_2e. This accounts for only 53 percent of the total budget allocated for this timeframe. As shown in Figure ES-7, Metropolitan has approximately 9.9 million MT GHG emissions (as CO_2e) remaining until 2045

FIGURE ES-7: Metropolitan's Remaining Carbon Budget as of 2020

Estimated Carbon Budget (2005–2045)

14,660,475 MT CO_2e

Allocated Carbon Budget (2005–2020)

8,924,634 MT CO_2e

Carbon Budget Used Through 2020

4,770,038 MT CO_2e

Percent of 2020 Carbon Budget Used

53%

Total Carbon Budget Remaining

9,890,437 MT CO_2e

As shown in Table ES-2, under current projections, Metropolitan is expected to stay within the carbon budget through 2030 in all three scenarios. However, achieving carbon neutrality will require additional reductions regardless of the water demand scenario modeled. In order to stay within its established carbon budget, Metropolitan developed a suite of GHG reduction strategies outlined in Section 5.0, Metropolitan's GHG Emissions Reduction Strategy.

TABLE ES-2: Metropolitan's Forecasted Carbon Budget Outcomes

Emissions Levels	Remaining Budget 2030 (MT CO_2e)	Remaining Budget 2045 ($MTCO_2e$)
Low Emissions	6,405,936	6,704,456
Average Emissions	5,465,774	4,413,932
High Emissions	3,384,248	(718,236)

( ) denotes a negative value

Lake Havasu

Inland Feeder

METROPOLITAN'S GHG EMISSIONS REDUCTION STRATEGY

This CAP includes specific strategies that will help Metropolitan achieve carbon neutrality while providing co-benefits such as improved infrastructure reliability, increased energy resiliency, and decreased costs associated with energy procurement and maintenance. The following section presents the nine GHG reduction strategies included in the CAP. For more detailed information on the strategies, refer to section 5.0, Metropolitan's GHG Emissions Reduction Strategy.

SCOPE 1:

DIRECT EMISSIONS

Strategy 1: Phase Out Natural Gas Combustion at Facilities

Combustion of fossil fuels at Metropolitan facilities emits over 1,000 MT CO_2e annually. Natural gas-powered equipment can be electrified over time as the equipment reaches the end of its useful life. Carbon-free electricity can then be used to power equipment, further reducing emissions.

Strategy 2: Zero Emissions Vehicle Fleet

Metropolitan's vehicle fleet emits an average of 7,000 MT CO_2e per year. Decarbonizing Metropolitan's fleet and powering it with carbon-free electricity or other zero-emission technology would allow for this emission source to achieve carbon neutrality.

Strategy 3: Use Alternative Fuels to Bridge the Technology Gap to Zero Emission Vehicles and Equipment

While zero-emission vehicles are being developed, using low-carbon intensity fuels like renewable diesel in older vehicles can help reduce GHG emissions in the near-term.

SCOPE 2:

INDIRECT EMISSIONS FROM ELECTRICITY

Strategy 4: Utilize Low-Carbon and Carbon-Free Electricity

Electricity consumption is Metropolitan's single largest and most variable emissions source. While the California Renewables Portfolio Standard Program (SB 100) mandates that emissions from retail electricity will be reduced over time, additional steps are necessary to generate and procure carbon-free electricity to reach Metropolitan's carbon neutrality goal. This strategy includes purchasing low-carbon and carbon-free electricity, implementing time-of-use strategies, and developing additional carbon-free energy generation like wind, solar, and hydropower.

Strategy 5: Improve Energy Efficiency

Increasing the efficiency of electric-powered equipment can substantially reduce GHG emissions. Improving pump efficiency, installing light emitting diode (LED) lighting and energy recovery systems can reduce total demand for electricity from Metropolitan operations, saving money and decreasing emissions.

SCOPE 3:

OTHER INDIRECT EMISSIONS

Strategy 6: Incentivize More Sustainable Commutes

While Metropolitan does not have direct control over the manner in which its employees travel to and from their jobs, Metropolitan can facilitate alternative commute strategies, including use of active and shared/subsidized transportation, remote work, and charging equipment for electric vehicles.

Strategy 7: Increase Waste Diversion to Achieve Zero Waste

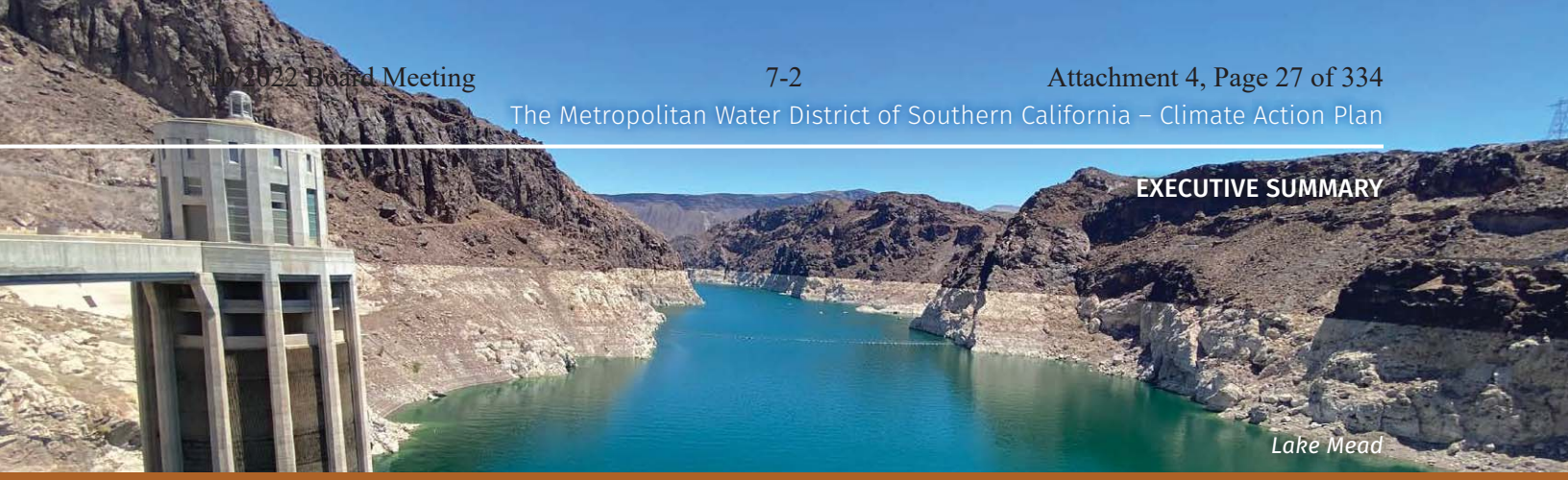
Though waste generated by Metropolitan operations results in only a small fraction of overall annual GHG emissions, Metropolitan will implement specific measures designed to reduce the waste generated at its offices and facilities.

Strategy 8: Increase Water Conservation and Local Water Supply

Metropolitan will continue incentivizing conservation and investing in local projects that increase local water supplies such as groundwater, recycled water, and stormwater.

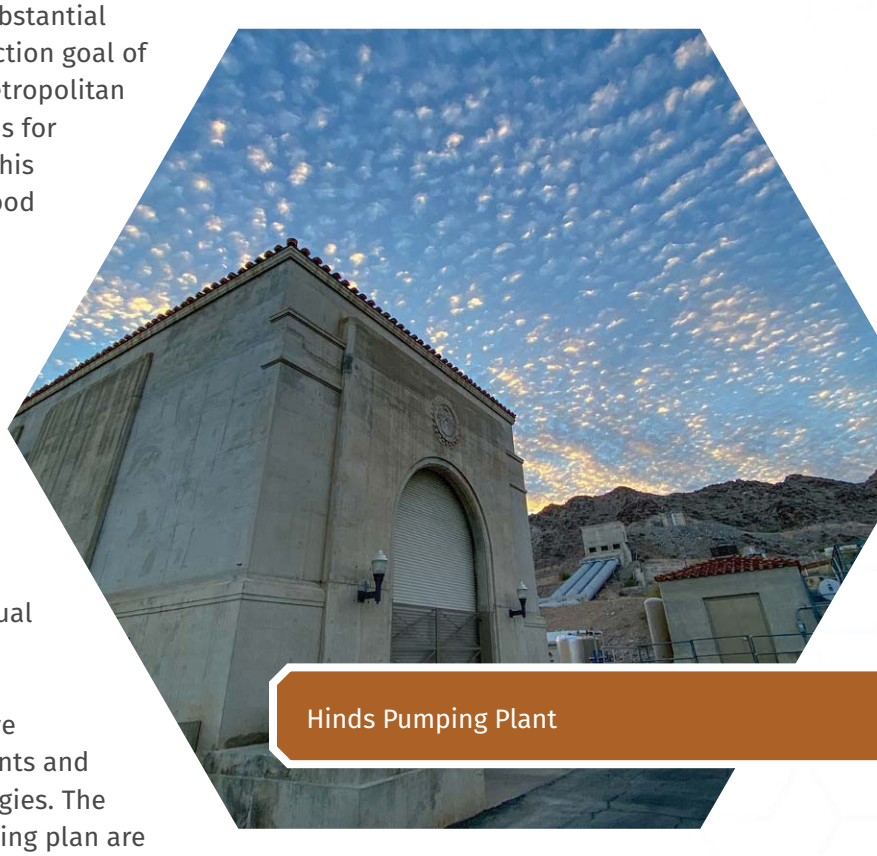
Strategy 9: Investigate and Implement Carbon Capture and Sequestration Opportunities

Carbon sequestration and carbon capture and storage projects could provide Metropolitan a source of "negative" GHG emissions that will support its efforts to achieve carbon neutrality. Metropolitan will continue to track these opportunities as they progress. While GHG reduction through electrification, carbon-free electricity, and efficiency will drive a significant portion of Metropolitan's GHG reduction needs, sequestering and storing carbon will likely play a critical role in achieving and maintaining carbon neutrality for both Metropolitan and California.


Lake Mead

IMPLEMENTATION STRATEGY AND MONITORING

This CAP will guide Metropolitan to achieve the 2030 GHG reduction target and demonstrate substantial progress toward the long-term state reduction goal of carbon neutrality by 2045. At this time, Metropolitan has developed two implementation phases for the GHG reduction measures included in this CAP. Phase 1 will implement well-understood measures over the next 10 years based on cost, available technology, and certainty of future conditions. Phase 2 will follow with measures that show promise, but require additional research, new or emerging technology, or different market conditions before implementation. To maintain accuracy and adapt to changing conditions, Metropolitan will conduct annual updates of the carbon budget and develop an annual progress report to demonstrate successes and areas for continued improvement. Metropolitan will update the CAP every five years to capture new research developments and identify new, adapted, or expanded strategies. The CAP implementation strategy and monitoring plan are detailed in Section 6.0, Implementation and Monitoring.


Hinds Pumping Plant

SECTION 1.0
PURPOSE, OVERVIEW, AND ENVIRONMENTAL HISTORY AND LEADERSHIP

The Metropolitan Water District of Southern California (Metropolitan) recognizes the potential impact of climate change to its core mission of providing a reliable water supply for Southern California. Variable precipitation patterns, timing and availability of water supplies, changes in consumer demands, and sea level rise will all change the way Metropolitan plans to provide its services and how it operates its regional water system. Reducing greenhouse gas (GHG) emissions from water operations supports California's overall strategy to achieve statewide GHG reduction goals. This Climate Action Plan (CAP) sets targets and goals for reducing GHG emissions from Metropolitan's operations, including conveyance, storage, treatment and delivery of water to its 26 member public agencies. The CAP also will have an important role in the environmental review of projects subject to the California Environmental Quality Act (CEQA) that were included in the GHG emissions forecast, as it provides a pathway to tier GHG emissions analysis for projects. In addition, it complements Metropolitan's other long-range planning efforts, including the Integrated Water Resources Plan, Energy Sustainability Plan and Capital Investment Plan.

This section establishes the purpose of the CAP, provides an overview of Metropolitan, and describes Metropolitan's efforts to date in reducing GHG emissions.

1.0

1.0

Diamond Valley Lake

1.1 PURPOSE OF THE CAP

The CAP is a long-range planning document that will inform policy and planning decisions on operations, water resources, capital investments, and conservation and local resource programs. It also can be used by member agencies when considering local policies and programs. Additionally, as mentioned previously, the CAP will allow Metropolitan to streamline the environmental review process for future projects under CEQA. The CAP creates a roadmap that will provide Metropolitan with a broad range of feasible and implementable strategies and measures to mitigate or reduce GHG emissions in line with State goals. The CAP also will help Metropolitan reduce overall GHG emissions from its operations and improve cost effectiveness, while avoiding negative impacts to Metropolitan's core mission. Beyond establishing a feasible and implementable pathway to its emissions reduction target of carbon neutrality by 2045, the CAP will:

- Incorporate legislation and guidance from state, federal, and international sources
- Identify cost-effective energy efficient measures
- Provide co-benefits, such as improved operational resilience and air quality
- Streamline CEQA review for future projects in accordance with CEQA Guidelines Section 15183.5(b)(1)
- Integrate actions to achieve California's transportation strategies to transition away from fossil fuels.

Metropolitan is adopting a long-term goal of achieving carbon neutrality by 2045, consistent with California's Executive Order B-55-18.

METROPOLITAN CAP INTENT AND USE

CEQA GHG Emissions Analyses Streamlining

This CAP is consistent with all state legislation, including Senate Bill (SB) 32 and Executive Order (EO) B-55-18, and meets the requirements of Section 15183.5(b)(1) of the CEQA Guidelines for a "Qualified GHG Reduction Plan" (CAP or Plan).

To meet the requirements of CEQA Guidelines Section 15183.5(b)(1), a qualified CAP must:

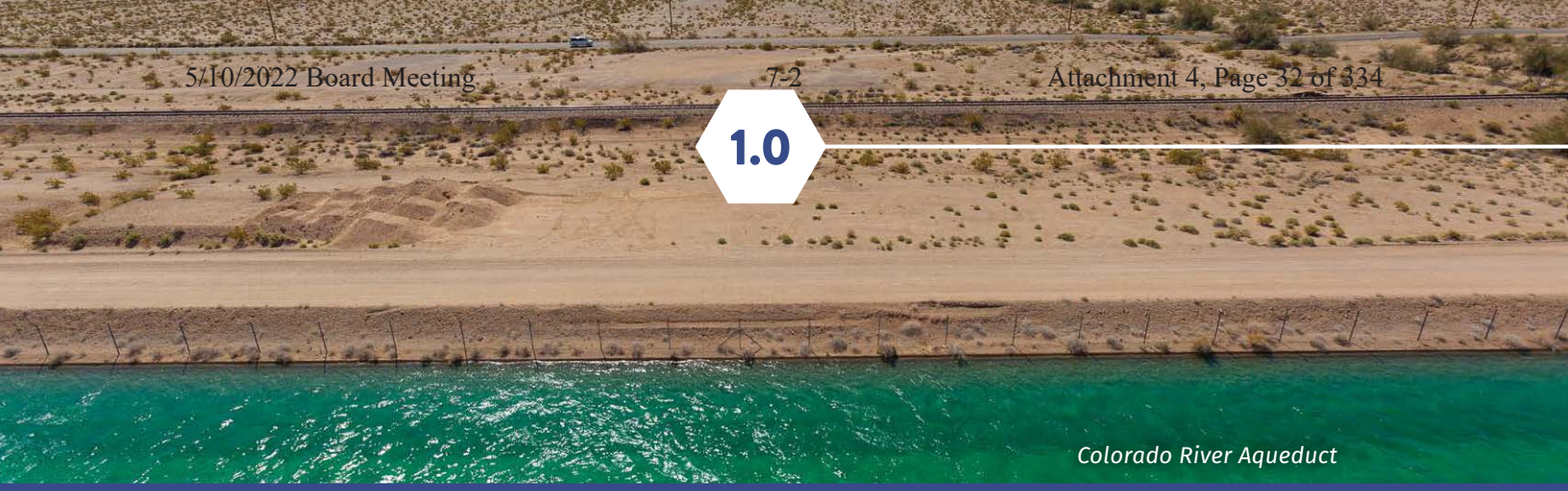
1. Quantify existing and projected GHG emissions within the Plan area (see Section 3.0)
2. Establish a reduction target based on local, regional or state targets (see Section 4.0)
3. Identify and analyze sector specific GHG emissions from Plan activities (see Section 3.0)
4. Specify policies and actions (measures) that, if implemented, would achieve the specified reduction target (see Section 5.0)
5. Establish a mechanism to monitor progress and amend the CAP (see Section 6.0)
6. Adopt the document in a public process following environmental review (see CAP Program Environmental Impact Report).

Using a qualified CAP will allow Metropolitan to tier future project-level GHG emissions analyses from the CAP, if those projects demonstrate consistency with the CAP. Consistency will be determined by conducting annual GHG emissions inventories to ensure Metropolitan is meeting its adopted GHG reduction goals.

CAP Implementation Tracking

Metropolitan is committed to tracking the implementation of this CAP using a specialized tracking tool as well as through annual, third-party verified GHG emissions inventories submitted to The Climate Registry (TCR).[1] Metropolitan will use this information to monitor its consistency with its GHG reduction goals (Section 4.0) and ensure the effectiveness of the CAP at reducing GHG emissions. The CAP measures and actions in Section 5.0, Metropolitan's GHG Emissions Reduction Strategy, are summarized by responsible entity, timing, and monitoring approach. Section 6.0, Implementation and Monitoring, details how GHG emissions will be measured on an annual basis, and how and when the CAP will be updated. At a minimum, the CAP will be updated every five years, or sooner if needed to ensure progress towards meeting Metropolitan's GHG reduction goals. Metropolitan will be responsible for tracking the implementation of the CAP measures and actions as well as staying within the GHG emissions established by the carbon budget defined in Section 4.0.

1. *The Climate Registry was formed to continue the work of the California Climate Action Registry. Created by the State of California in 2001, the California Climate Action Registry promoted and protected businesses' early actions to manage and reduce their GHG emissions. Source:* ***https://www.theclimateregistry.org/who-we-are/about-us/***



1.0

Colorado River Aqueduct

1.2 OVERVIEW OF METROPOLITAN

Formed in 1928 by an act of the California Legislature, Metropolitan is a regional wholesaler providing water for its 26 member public agencies – to deliver either directly or through their sub-agencies – to 19 million people living in Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura counties. Metropolitan's mission is to provide its 5,200-square-mile service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

To fulfill its mission, Metropolitan imports water from the Colorado River and Northern California to supplement local supplies and helps its members develop increased water conservation, recycling, storage, and other resource management projects. Metropolitan's service area is shown in Figure 1-1.

The mission of the Metropolitan Water District of Southern California is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

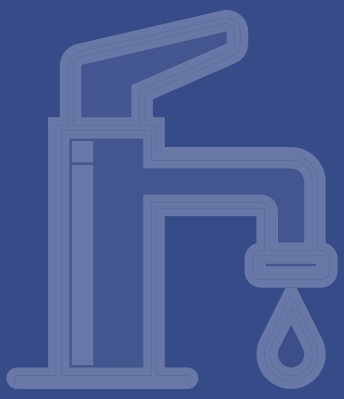


FIGURE 1-1: Metropolitan's Service Area

METROPOLITAN'S WATER SOURCES

Metropolitan imports water from two sources:

- The Colorado River via the Colorado River Aqueduct (CRA), which is owned and operated by Metropolitan. The headwaters of the Colorado River originate in the Rocky Mountains. The system is governed by water rights and agreements among the seven Colorado River Basin states[2] and is managed by the United States Bureau of Reclamation.
- Northern California via the State Water Project (SWP),[3] which delivers water through the California Aqueduct to 29 state contractors. The California Department of Water Resources (DWR) owns and operates the system. Metropolitan is the largest SWP contractor.

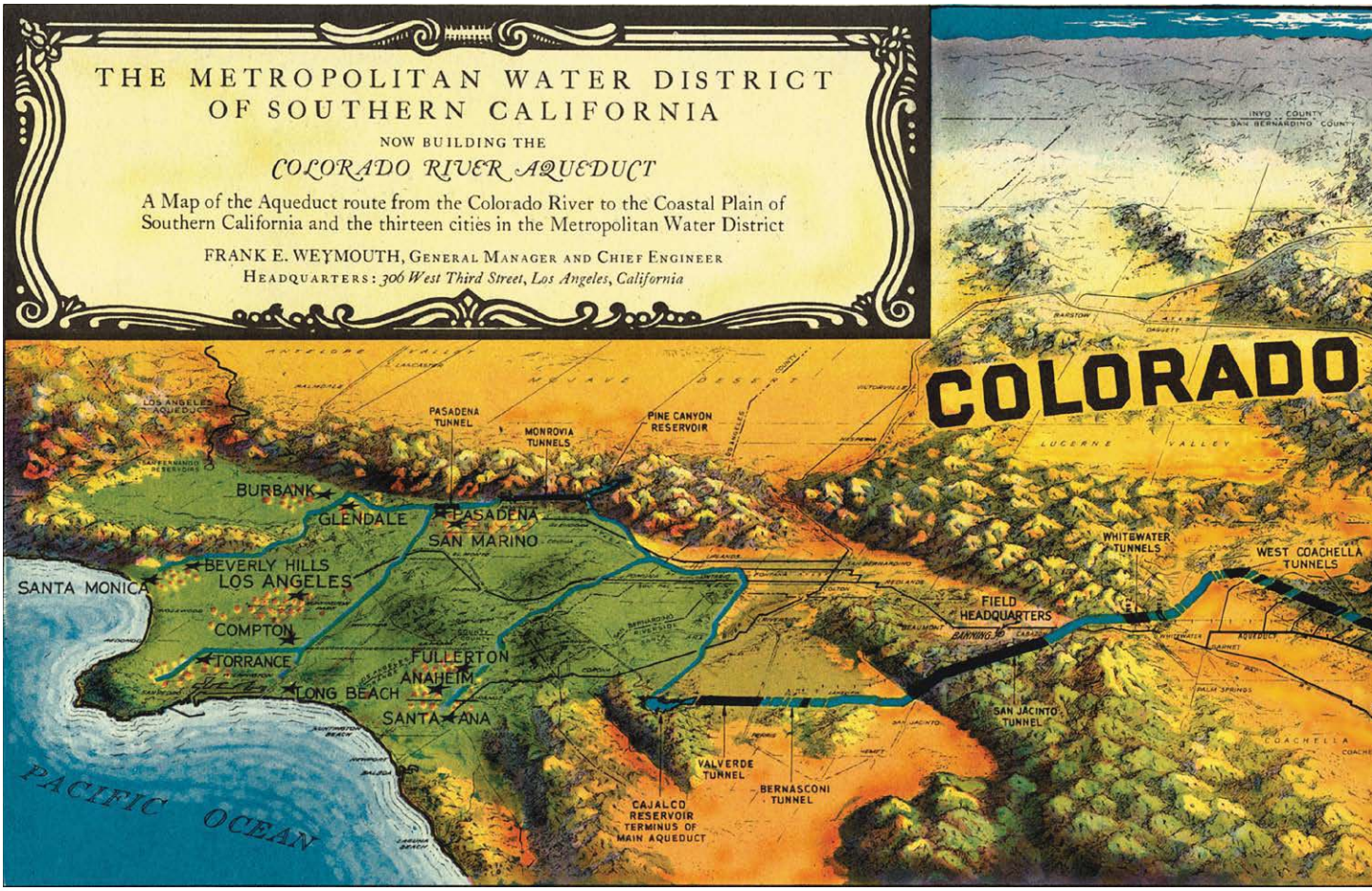
2. *The Colorado River Basin states include Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming. Source:* ***https://www.usbr.gov/lc/hooverdam/faqs/riverfaq.html.***

3. *The SWP is a water storage and delivery system of reservoirs, aqueducts, power plants and pumping plants extending throughout California for more than 700 miles (or approximately two-thirds the length of California).*

An increasing percentage of Southern California's water supply comes from water conservation, water recycling, and other local resources. Metropolitan supports these programs with funding to support additional development.

Metropolitan owns and operates the 242-mile CRA (see Figure 1-2), a system of reservoirs, pump plants, canals, tunnels, and pipelines that convey water from Lake Havasu on the California-Arizona border across the Mojave Desert and southern edge of the San Bernardino Mountains, to Lake Mathews on the east side of the Santa Ana Mountains in western Riverside County.

FIGURE 1-2: Colorado River Aqueduct System



Metropolitan takes delivery of its SWP supplies through the Foothill Feeder immediately downstream of Castaic Lake in Los Angeles County, through the Rialto Pipeline and Inland Feeder which connect to the Devil Canyon Powerplant after-bays in San Bernardino County, through the Box Springs Feeder in Riverside County, and through the Perris Pressure Control Structure at Lake Perris in Riverside County (see Figure 1-3). The operations of the SWP and associated GHG emissions are addressed in the DWR Climate Action Plan and are not included in this CAP.[4]

4. *https://water.ca.gov/Programs/All-Programs/Climate-Change-Program*

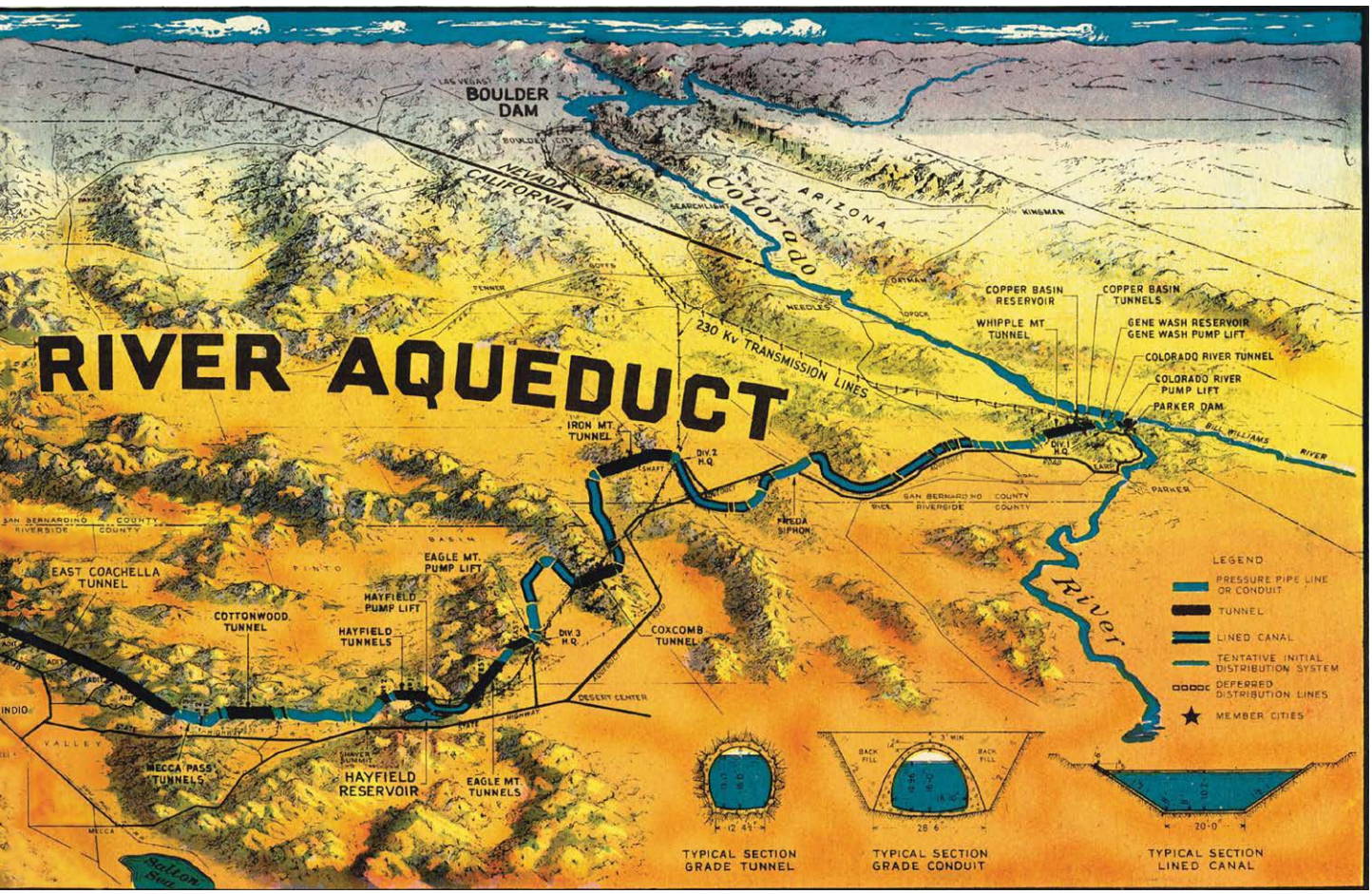


FIGURE 1-3: California Water Map

METROPOLITAN SNAPSHOT

Member agencies
26

Serve area population
(including parts of Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura counties)
19 Million

Miles of water pipelines and tunnels
830

Reservoir storage capacity
(including a six-month emergency supply)
1,072,000 Acre-feet

Hydroelectric generation via 16 plants
131 Megawatts

Water treatment plants
5

METROPOLITAN STATISTICS[5]

Metropolitan supplies water for 19 million people across Southern California (see Figure 1-4) and maintains hundreds of miles of pipelines, several water treatment facilities, and countless pumps and other infrastructure. Water delivered per year (acre-feet) by Metropolitan is shown in Figure 1-5.

FIGURE 1-4: Metropolitan Service Area Population by Year (Millions)

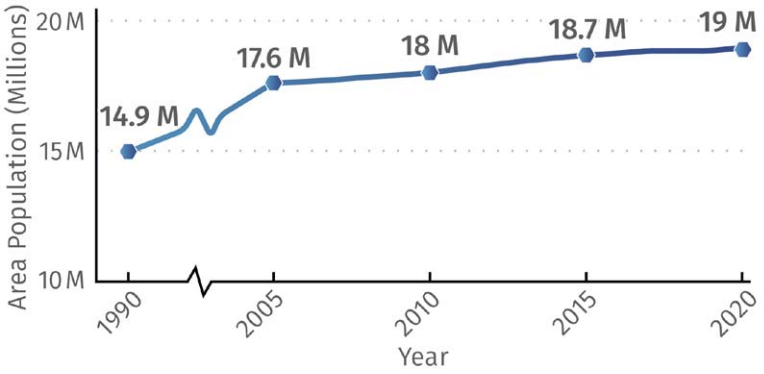
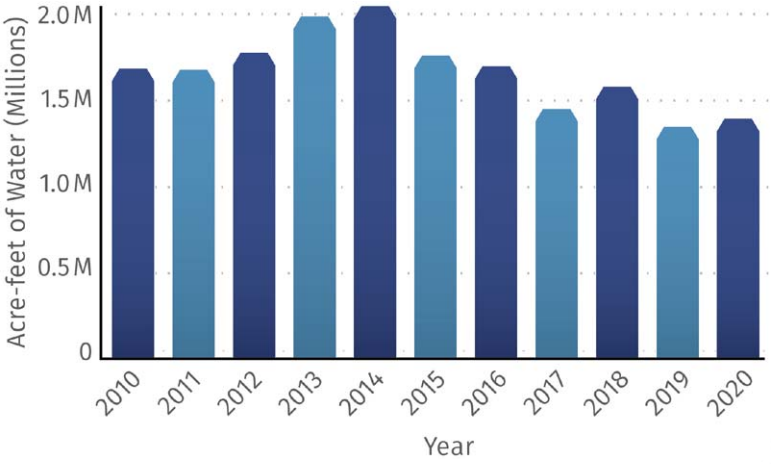


FIGURE 1-5: Water Delivered per Year (Acre-feet) by Metropolitan



5. ***https://www.mwdh2o.com/who-we-are/our-story/***
Accessed April 15, 2020.

ENVIRONMENTAL COMMITMENT AND GHG REDUCTION GOALS

Commitment to Environmental Responsibility

Although Metropolitan was formed in 1928 to build a system to import water from the Colorado River, its mission has evolved to ensure the water reliability of Southern California by incorporating a diverse portfolio of water sources and initiatives to help meet the needs of the region.[6] Early on, Metropolitan's planners and engineers recognized the need for efficiency and energy reliability. The CRA, Metropolitan's first and primary source of water conveyance, was designed to deliver water 242 miles across the arid desert to Southern California, primarily through gravity. Five pump plants along the aqueduct lift the water to cross mountains and allow gravity to continue the work. In 1960, Metropolitan was instrumental in securing a new supply from Northern California, with California voters approving construction of SWP.[7] In 2000, Metropolitan completed construction of Diamond Valley Lake (DVL), the region's largest drinking water reservoir, which helps protect the region from droughts and ensures a reliable supply of water in emergencies. In 2009, Metropolitan completed the Inland Feeder, a 44-mile-long conveyance system that connects the SWP to DVL and the CRA, increasing the operational flexibility necessary to store water in wet years.

6. ***http://www.mwdh2o.com/DocSvcsPubs/mwd_newsletter/aug2011/article4.html***
7. ***https://www.mwdh2o.com/who-we-are/our-story/***

Diamond Valley Lake

Today, Metropolitan continues to adapt to the region's ever-changing needs and challenges by investing in its imported supplies while also making significant investments in conservation, water recycling, groundwater storage, and innovative water transfer and storage projects. Metropolitan also works with its partners on the co-equal goals of restoring the environmental health of the Sacramento-San Joaquin Delta and protecting its water resources to ensure a reliable source of imported water. The CAP represents the next step of Metropolitan's long-standing commitment to environmental stewardship.

Water use efficiency, which includes both short-term conservation efforts and longer-term demand management actions play a key role in water reliability for the region. All water savings actions in Metropolitan's service area and the greater Southern California region will continue to play a priority role in the reduction of GHG emissions. While all of Metropolitan's actions to reduce its GHG emissions will benefit the region, its conservation programs allow Metropolitan to target more specific sectors, communities, and technologies. Underserved (Disadvantaged Communities/DACs) communities represent a significant portion of Metropolitan's Southern California service area. Residents in these areas may lack the resources to take advantage of rebates or incentives for high-efficiency appliances or equipment that can require large, up-front purchases. They also may live in apartments and other multi-family buildings without yards, limiting their participation in outdoor programs such as Metropolitan's landscape transformation program or rebates for smart irrigation controllers.

Metropolitan continually reviews and updates its conservation programs to improve water savings and benefits to communities throughout its service area. For example, in FY 2021-22 Metropolitan is continuing a pilot program to penetrate underserved communities that are traditionally "hard to reach" to increase access to incentives and help ensure equitable distribution of water savings devices. The program targets older multi-family housing (built prior to 1994) and allows contractors to directly install high-efficiency toilets in the housing units. Metropolitan also provides funding to its Member Agencies that helps subsidize their local programs for underserved communities. These local programs are also aimed at generating water savings in underserved communities, and may include replacement of older, high water-using toilets, shower heads, aerators, and other water-saving devices in multi-family housing within Member Agencies' service areas. Other programs include providing leak detection equipment that monitor flows and identifies leaky devices and providing technical assistance for educational programs. Lastly, Metropolitan continues to partner with local utility companies like Southern California Gas Company (SoCalGas) to pursue joint Water-Energy efficiency

programs. One of the longer-running programs allows Metropolitan to provide incentives to SoCalGas to help offset the cost of high-efficiency clothes washers that use less water and gas and expand installations directly into income-qualified, single-family residences.

Metropolitan also includes outreach and messaging campaigns over a variety of media and in multiple languages to ensure that the broader community is aware of the conservation opportunities available to them. Conservation and water use efficiency play a key role in water reliability for the region and water savings actions in local communities will continue to play a priority role in the reduction of GHG emissions. All of these efforts help to ensure a more equitable distribution of conservation funds and that the broader community is educated about water conservation and its contribution to the region's ability to provide a safe and reliable water supply for all.

Partnership with California Native Plant Society

Skinner Water Treatment Plant solar panels

1.3 METROPOLITAN'S GHG EMISSIONS REDUCTION HISTORY AND LEADERSHIP

Metropolitan's GHG emissions are primarily from the purchase and consumption of electricity used for conveyance, treatment, and delivery of water throughout Metropolitan's service area. Since 1990, Metropolitan has continued to take significant steps to reduce GHG emissions by improving its operational efficiency and by supporting the development of local water supplies and water use efficiency for homes, businesses and industries. These actions among others contribute to an overall decrease in Metropolitan's GHG emissions. Some of the GHG emissions reduction projects implemented by Metropolitan to date are summarized below. More information about Metropolitan's Energy Sustainability Plan can be found at ***https://www.mwdh2o.com/planning-for-tomorrow/addressing-climate-change/***.

METROPOLITAN GHG REDUCTION STRATEGIES

Infrastructure Energy Efficiency and Renewable Energy

Through its Capital Investment Plan, Metropolitan helps make significant investments to ensure energy reliability by upgrading its infrastructure with the most efficient technology. Metropolitan also is committed to the development of new innovations through programs like the Technology Feedback Forum, a program that offers innovators and entrepreneurs an opportunity to pitch their new technologies or services to Metropolitan, its member agencies, and their partners. Metropolitan also invests in carbon-free energy resources, including procuring a significant portion of its electricity from hydroelectric power and installing 5.5 megawatt (MW) total capacity of photovoltaic solar power at its facilities. Planning and adoption of new energy technologies is managed through the Energy Sustainability Plan that positions Metropolitan as a leader in energy efficiency and forward-thinking energy management. The development of new initiatives considers the evolving regulatory landscape, economic factors, water supply reliability, and development of new technologies or improvements to existing technologies.

Vehicle Fleet and Facilities

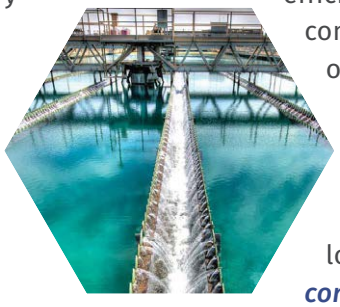
Metropolitan has reduced GHG emissions through its fleet management and facilities design and management. Metropolitan was an early adopter of high-fuel-efficiency and hybrid-electric vehicles for its fleet. Offices and facilities also are strategically located near public transportation. Employees have access to electric vehicle charging stations and the Metropolitan Rideshare Program. This commitment to GHG emissions reduction is further demonstrated through the design of its facilities, with Metropolitan achieving Leadership in Energy and Environmental Design (LEED) Platinum certification at the DVL Visitors Center and LEED Silver certification at the Union Station Headquarters in Los Angeles.

Conservation of Natural Lands

Metropolitan directly contributes to the safeguarding of over 30,000 acres of multi-species preserves within California and more than 8,100 acres of native habitat along the Colorado River through participation in the Lower Colorado River Multi-Species Habitat Conservation Plan. By preserving natural lands, Metropolitan helps ensure that critical habitats and valuable natural carbon stockpiles are protected from future release, contributing to the removal and storage of carbon from the atmosphere.

Water Conservation Efforts

Metropolitan's investment of more than $1 billion in water conservation, recycling, and groundwater recovery has funded projects responsible for the conservation of over 7 million acre-feet of water since 1990. These efforts, coupled with behavior changes by Southern Californians, reduced per capita water use in the region by a third since the 1990 baseline. Metropolitan provides funding, education, and engagement on multiple water conservation programs, including incentives for turf replacement, high efficiency appliances, smart irrigation controllers, and through the funding of water conservation innovation programs. A detailed description of Metropolitan's conservation efforts can be found in the Annual Regional Progress Report located at ***http://www.mwdh2o.com/inthecommunity/conservation-programs/Pages/default.aspx.***



METROPOLITAN HISTORICAL GHG EMISSIONS TIMELINE

Metropolitan's GHG emissions are extremely variable and are tied directly to the amount of water pumped from the Colorado River to help meet the needs of Southern California. Depending on the carbon content of the energy used to pump the water, increased CRA pumping can result in higher GHG emissions. The amount of water Metropolitan pumps from the Colorado River is driven by availability of water on both the Colorado River and SWP systems, available storage, demand, and other factors. Higher Colorado River pumping generally correlates to dry years with low SWP allocations. Through the implementation of energy and water efficiency projects as well as state legislation, overall emissions from Metropolitan operations have decreased since 1990, even during extreme drought events that resulted in increased pumping on the CRA. Although Metropolitan's emissions spike in drought years, the level of GHG emissions associated with these spikes is decreasing over time.

The following graph summarizes Metropolitan's annual GHG emissions since 1990. The major events, reduction actions, and state legislation that have driven Metropolitan's unique GHG emission profile are also included to generate a timeline of emissions from Metropolitan's operations. For more detailed information about legislative drivers of GHG emissions reduction, see Section 4.0, and for more information on Metropolitan's GHG emissions see Section 3.0.

Hinds Pumping Plant

1990

Conservation Credits Program

Metropolitan launches the Conservation Credits Program, providing incentives for water savings and reducing water use by an average of 158,000 acre-feet per year and GHG emissions by an average of 27,000 metric tons (MT) of carbon dioxide equivalent (CO_2e) per year from 1990 to 2018.[8]

1991

No More Coal

Metropolitan stops purchasing electricity from coal-fired power plants, significantly reducing GHG emissions over time.

Groundwater Recovery Program

Metropolitan initiates its Groundwater Recovery Program to encourage treatment and use of degraded groundwater for municipal purposes.[9]

1987–1992

DROUGHT

During these years California experienced one of the longest droughts in its history, resulting in increased Colorado River pumping. The drought was eventually broken by a strong El Niño known as the "March Miracle."

2002

Senate Bill 1078

SB 1078, establishes the California Renewables Portfolio Standards (RPS) Program requiring 20 percent of electricity retail sales be served by renewable energy sources by 2017. Passage of SB 107 in 2006 accelerates this goal to a 2010 deadline.

2005

First GHG Emissions Inventory

Metropolitan completes its first annual GHG emissions inventory reported to the California Climate Action Registry, including Scope 1 and Scope 2 emissions.

Executive Order S-3-05

EO S-3-05 is signed, establishing statewide GHG emissions reduction targets for the years 2020 and 2050. The order calls for the reduction of GHG emissions in California to 1990 levels by 2020 and 80 percent below 1990 levels by 2050.

2006

Solar at DVL Visitors Center

Metropolitan installs 0.5 MW of roof-mounted solar panels at the DVL Visitors Center, offsetting GHG emissions by approximately 80 MT CO_2e per year.

8. *Water Tomorrow Annual Report to the California State Legislature. February 2019. Pg. 4. Average between 1990 and 2018 was multiplied by emission factors from Metropolitan Conservation Efforts Summary, and then averaged.*

9. *Water Tomorrow Annual Report to the California State Legislature. February 2019. Pg. 5*

Assembly Bill 32

With the passage of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, California becomes the first state in the nation to mandate GHG emissions reductions across all industries. This landmark legislation requires the state to reduce GHG emissions to 1990 levels by 2020. It also directs the California Air Resources Board (CARB) to develop and implement a scoping plan and regulations to meet the 2020 target.

2007

High-Fuel-Efficient Fleet

Metropolitan purchases 11 additional hybrid vehicles, making 30 percent of its passenger car fleet high-fuel-efficient vehicles.

Senate Bill 97

The signing of SB 97 acknowledges that climate change is an environmental issue that requires analysis in CEQA documents. In 2010, CARB adopts guidelines that give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG emissions and climate change impacts. It also allows lead agencies to streamline the analysis of GHG emissions on a project level using a programmatic GHG emissions reduction plan that meets certain criteria.

2008

SoCal Water$mart

Metropolitan launches a program to provide rebates to residential and commercial customers for water-efficiency upgrades.[10]

Senate Bill 375

SB 375, the Sustainable Communities and Climate Protection Act, is signed, establishing regional GHG emission reduction targets for passenger vehicles. Under SB 375, CARB establishes targets for 2020 and 2035 for each region covered by one of the metropolitan planning organizations. Each major metropolitan planning organization must prepare a sustainable communities strategy (SCS) as an integral part of its regional transportation plan.

2009

Solar at Skinner Water Treatment Plant (WTP)

Metropolitan installs a 1 MW photovoltaic power facility at the Skinner Water Treatment Plant, replacing 17 percent of the facility's grid electricity and reducing GHG emissions by approximately 550 MT CO_2e per year.

Senate Bill X7-7

SB X7-7, the Water Conservation Act, is signed, requiring all water suppliers to increase water use efficiency. This legislation sets an overall goal of reducing per capita urban water use by 20 percent by 2020.

10. 2015 IWRP

2007–2009

DROUGHT

These three years of drought were the 12th worst in California's history and the first drought that resulted in the issuance of a statewide emergency. This drought limited water diversions from the SWP resulting in higher CRA pumping and corresponding high emissions that carried over into 2010.

2010

GHG Reduction Strategy

Metropolitan completes an Energy Management and Reliability Study, which established policies and strategies for reducing GHG emissions, increasing revenue and mitigating price volatility.

2011

Senate Bill 2X

SB 2X is signed, requiring California energy providers to buy (or generate) 33 percent of their electricity from renewable energy sources by 2020.

2012

GHG Emissions Reach All-time Low

An 2012 GHG emissions inventory shows GHG emissions from Metropolitan operations at an all-time low due to almost all of Metropolitan's electric energy use being provided by hydro-electric power at the Parker and Hoover Dams in this year.

Assembly Bill 341

AB 341 is signed, directing the California Department of Resources Recycling and Recovery (CalRecycle) to develop and adopt regulations for mandatory commercial recycling. As of July 2012, businesses are required to recycle and jurisdictions must implement a program that includes education, outreach, and monitoring. AB 341 also set a statewide goal of 75 percent waste diversion by the year 2020.

2011–2014

DROUGHT

This period includes the hottest and driest period in California history, leading to increased CRA pumping and GHG emissions. In 2015 Governor Jerry Brown instituted a mandatory 25 percent water restriction. By 2016, California experienced the wettest year on record, replenishing water supplies, but causing widespread damage.

2014

HECW Program

In partnership with SoCal Gas, Metropolitan implements a High Efficiency Clothes Washer (HECW) direct installation program for low income customers.

California Water Action Plan

The California Water Action Plan is issued at the direction of Governor Brown in January, establishing 10 priority actions that guide the state's effort to create more resilient, reliable water systems and to restore

critical ecosystems. The plan is established as California feels the effects of a record-breaking drought. An update to the plan is adopted in 2016 as drought continues.

2015

Metropolitan Headquarters Energy Star Certification

Metropolitan's commitment to sustainability is recognized when the Metropolitan's Headquarters building at Union Station again receives ENERGY STAR certification, this time with a score of 97 out of 100.

2016

Solar at Weymouth WTP

Metropolitan installs a 3 MW photovoltaic power facility at the Weymouth Water Treatment Plant, replacing 45 percent of the facility's grid electricity and reducing GHG emissions by approximately 1,500 MT CO_2e per year.

Senate Bill 32

SB 32 is signed, requiring CARB to develop technologically feasible and cost-effective regulations to achieve the target of 40 percent below 1990 GHG emission levels by 2030.

2017

Solar at Jensen WTP

Metropolitan installs a 1 MW photovoltaic power facility at the Jensen Water Treatment Plant, offsetting 20 percent of the facility's energy demand and reducing GHG emissions by approximately 550 MT CO_2e per year.

2018

Save Water 365 campaign

Metropolitan launches the Save Water 365 campaign through multiple platforms, encouraging Southern Californians to save water everyday and take advantage of Metropolitan's water efficiency rebate programs.

Executive Order B-55-18

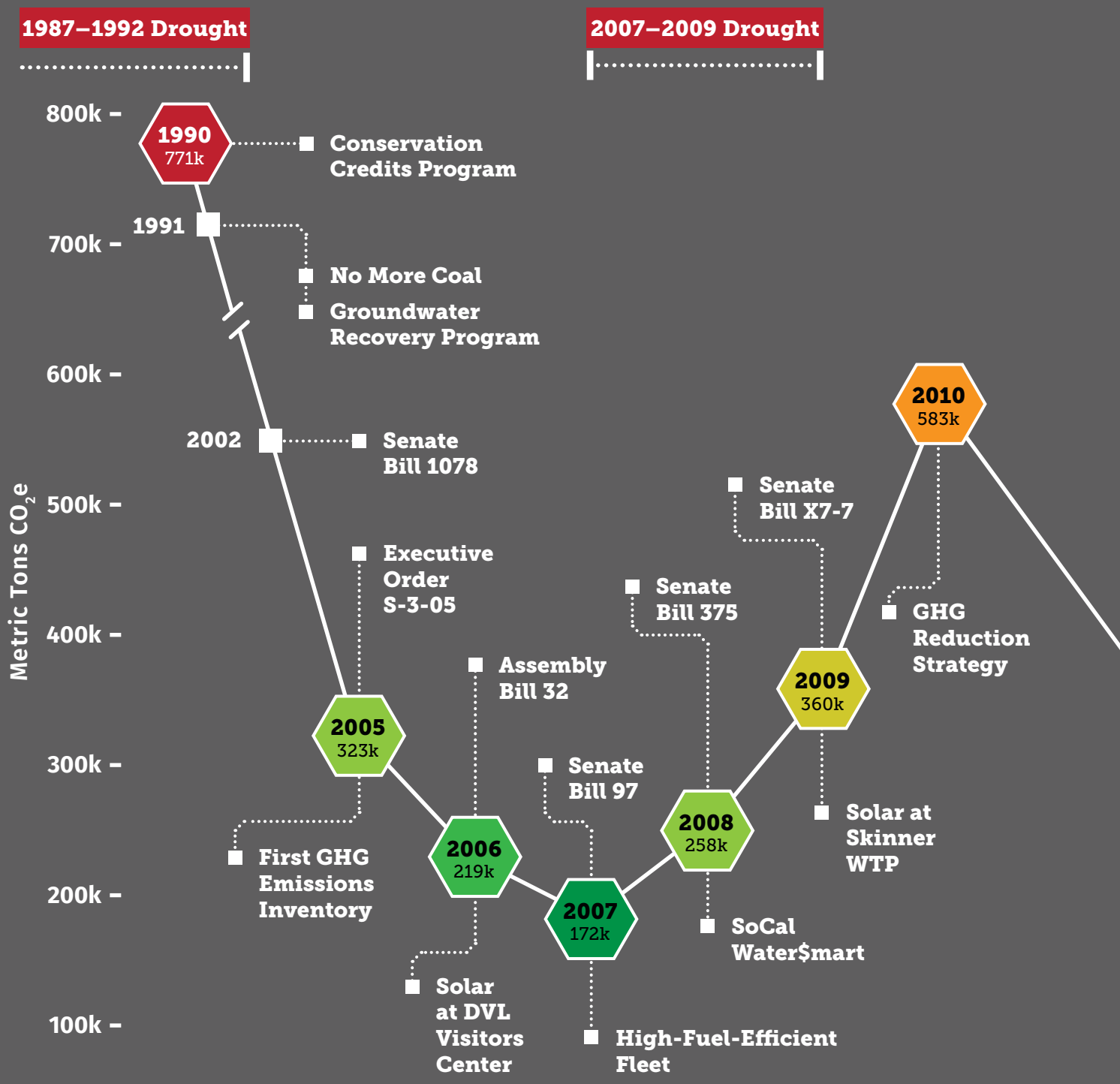
EO B-55-18 is signed, establishing the goal for state agencies to reach carbon neutrality by 2045 and to achieve and maintain net negative emissions thereafter.

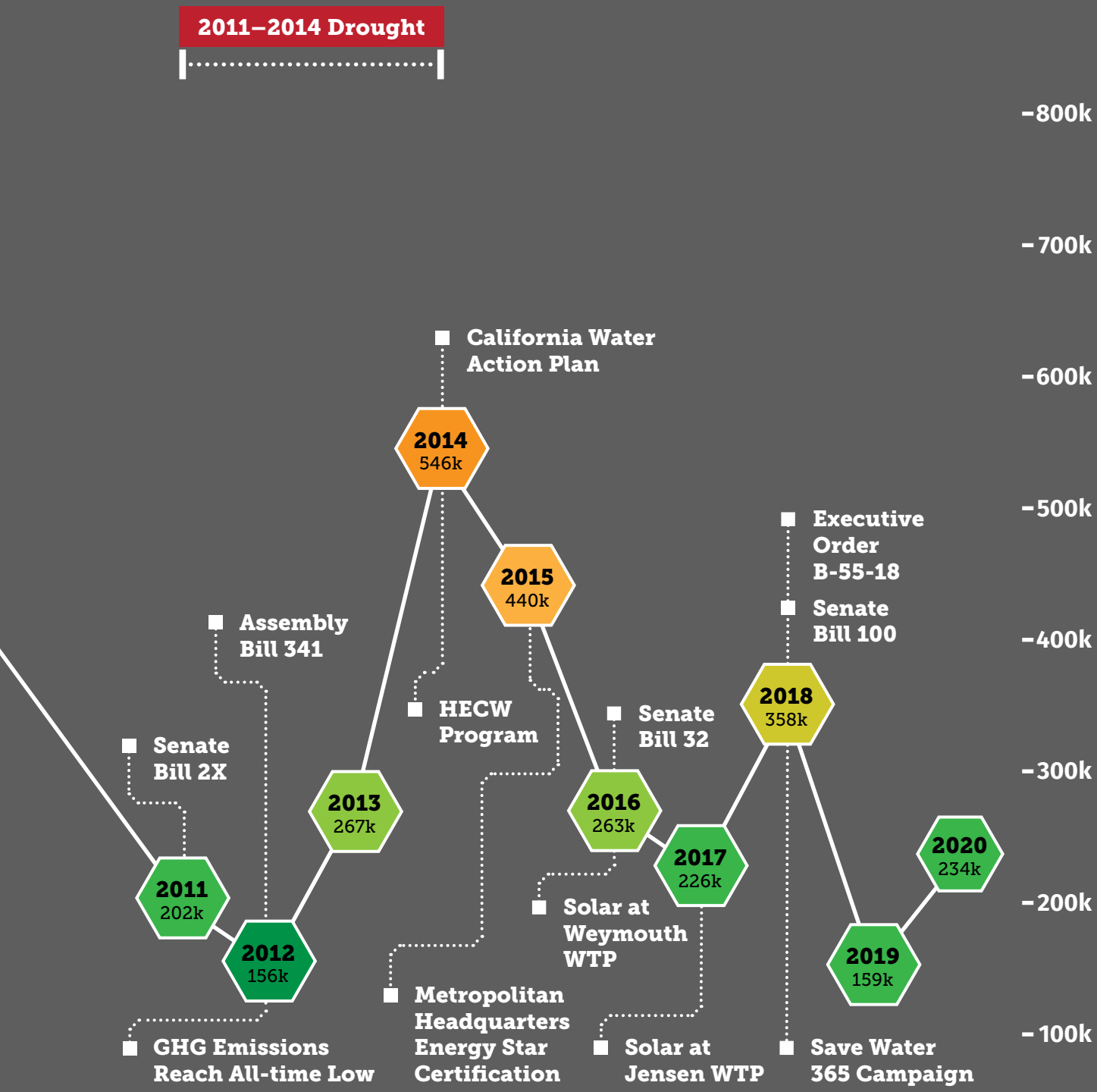
Senate Bill 100

SB 100 requires 100 percent of retail electricity sales to be zero carbon by 2045.

1.0

Historical GHG Emissions Timeline




2011–2014 Drought
800k
700k
600k
500k
400k
300k
200k
100k
California Water Action Plan
2014 546k
2015 440k
Executive Order B-55-18
Senate Bill 100
Assembly Bill 341
HECW Program
Senate Bill 32
2018 358k
Senate Bill 2X
2013 267k
2016 263k
2017 226k
2020 234k
2011 202k
Solar at Weymouth WTP
2012 156k
2019 159k
Metropolitan Headquarters Energy Star Certification
GHG Emissions Reach All-time Low
Solar at Jensen WTP
Save Water 365 Campaign

SECTION 2.0
SCIENTIFIC CONTEXT AND CLIMATE CHANGE IMPACTS

While the scientific understanding of climate change continues to improve and develop, the mechanism driving climate change has been well understood since the middle of the twentieth century. This section provides an overview of the scientific context and forecasted impacts of climate change and how these impacts could affect Metropolitan's operations.

Climate change:
A change in the average conditions — such as temperature and rainfall — in a region over a long period of time.

2.0

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Farming in the Sacramento-San Joaquin Delta

2.1 SCIENTIFIC CONTEXT

GREENHOUSE EFFECT AND GLOBAL WARMING

Greenhouse Effect

Gases in the Earth's atmosphere act like a blanket that allows high-energy light from the Sun to pass through to Earth, while reflecting and absorbing lower-energy heat that has been radiated back from Earth. The trapping of this heat is known as the greenhouse effect because atmospheric gases function similar to the windows in a greenhouse, which trap the Sun's rays and create a much warmer space inside as compared to the outside air. The greenhouse effect regulates the Earth's climate, maintaining conditions suitable for life on Earth. However, a rapid increase of GHGs can cause excess heat to be trapped, affecting global temperatures and climate. This process is depicted in Figure 2-1.

In its Fifth Assessment Report (AR5), the Intergovernmental Panel on Climate Change (IPPC), concluded there's a more than

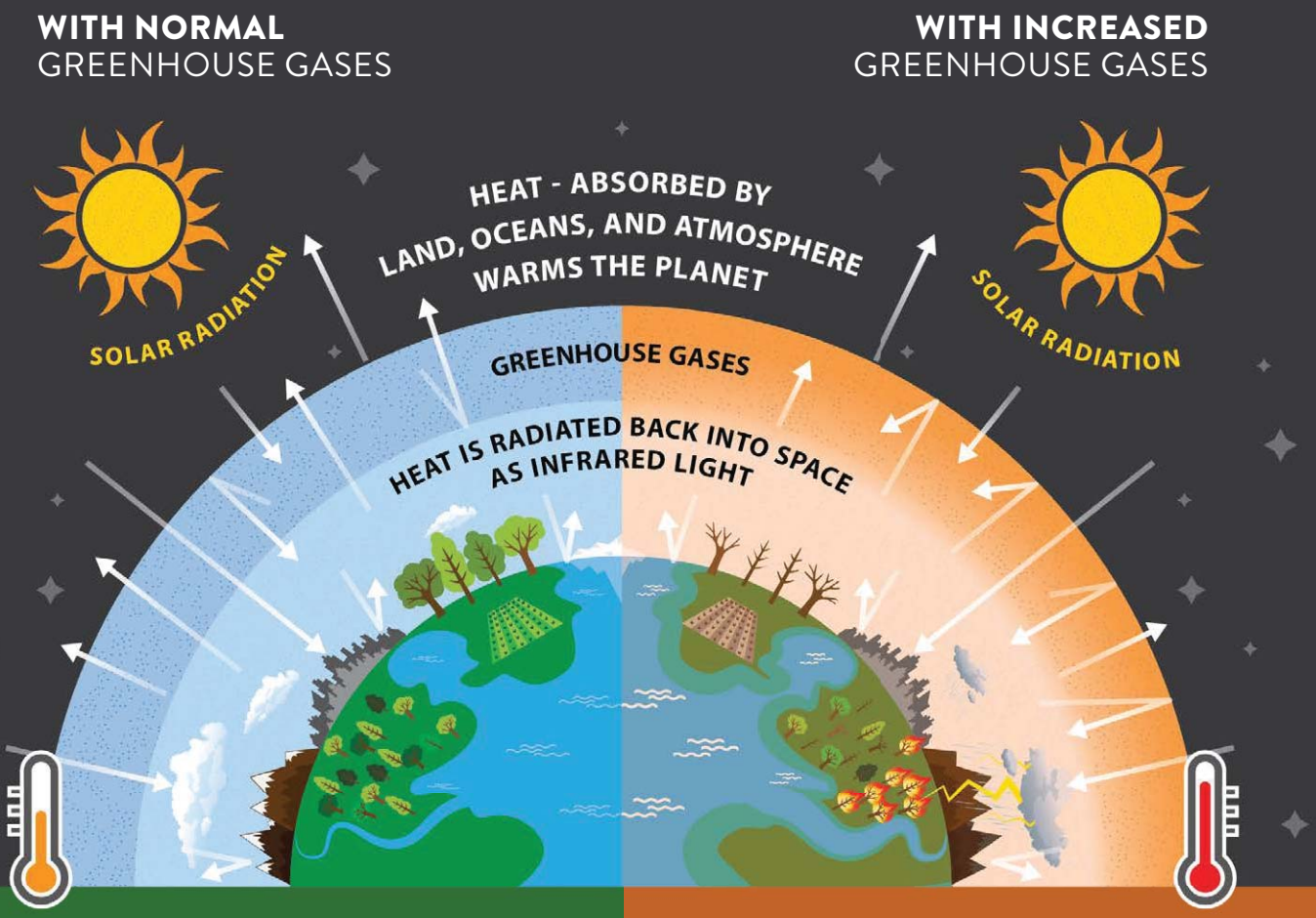
95%

likelihood that human activities are a principal cause of our warming planet over the past 50 years.[1]

1. *https://archive.ipcc.ch/report/ar5/syr/*

FIGURE 2-1: Greenhouse Gas Effect and Associated Climate Impacts

Greenhouse Gas Effect



Some heat continues into space while the rest, trapped by GHGs, help maintain the planet's relatively comfortable temperatures.

LESS GAS =
LESS HEAT TRAPPED IN THE ATMOSPHERE

Retain more reliable:

- Weather
- Temperature
- Rainfall
- Sea Level

Increased GHGs means less heat escapes to space. Between preindustrial times and now, the earth's average temperature has risen by 1.8°F (1.0°C).

MORE GAS =
MORE HEAT TRAPPED IN THE ATMOSPHERE

Results in more intense:

- Storms
- Heat
- Drought
- Sea Level Rise

2.0

GLOBAL GHG CONTRIBUTIONS

Carbon dioxide (CO_2) and other GHGs including methane (CH_4) and nitrous oxide (N_2O) are responsible for the radiative greenhouse effect on Earth. Each GHG has its own global warming potential (GHG), or the extent to which it traps energy in the atmosphere. GHGs utilize CO_2 as a reference point to compare the potential impact of different GHGs. As such, CO_2 has a GHG of one. Methane has a GHG of 21, meaning that each unit of methane causes 21 times more global warming potential than one unit of CO_2, while N_2O has a GHG of 310. Other GHGs include the fluorinated gases, which can have a GHG of up to 22,000 (see Figure 2-4); however, in comparison, fluorinated gases are released in such small quantities that they only contribute about two percent of overall global warming (see Figure 2-2).

When individual GHGs are normalized based on their GHGs, we refer to them as CO_2e. Generally, GHG emissions are quantified in terms of MT CO_2e emitted per year.

As shown in Figure 2-3, the total annual emissions generated anthropogenically have increased continuously since 1970, with an increase of approximately 1.3 percent annually between 1970 and 2000 and an increase of 2.2 percent annually between 2000 and 2010. Globally, economic and population growth were the most direct drivers of increases in CO_2 emissions from fossil fuel combustion, with population growth generally plateauing globally over the three decade period, while economic growth continued to increase rapidly over that same time.

FIGURE 2-2: Overall GHG Contribution

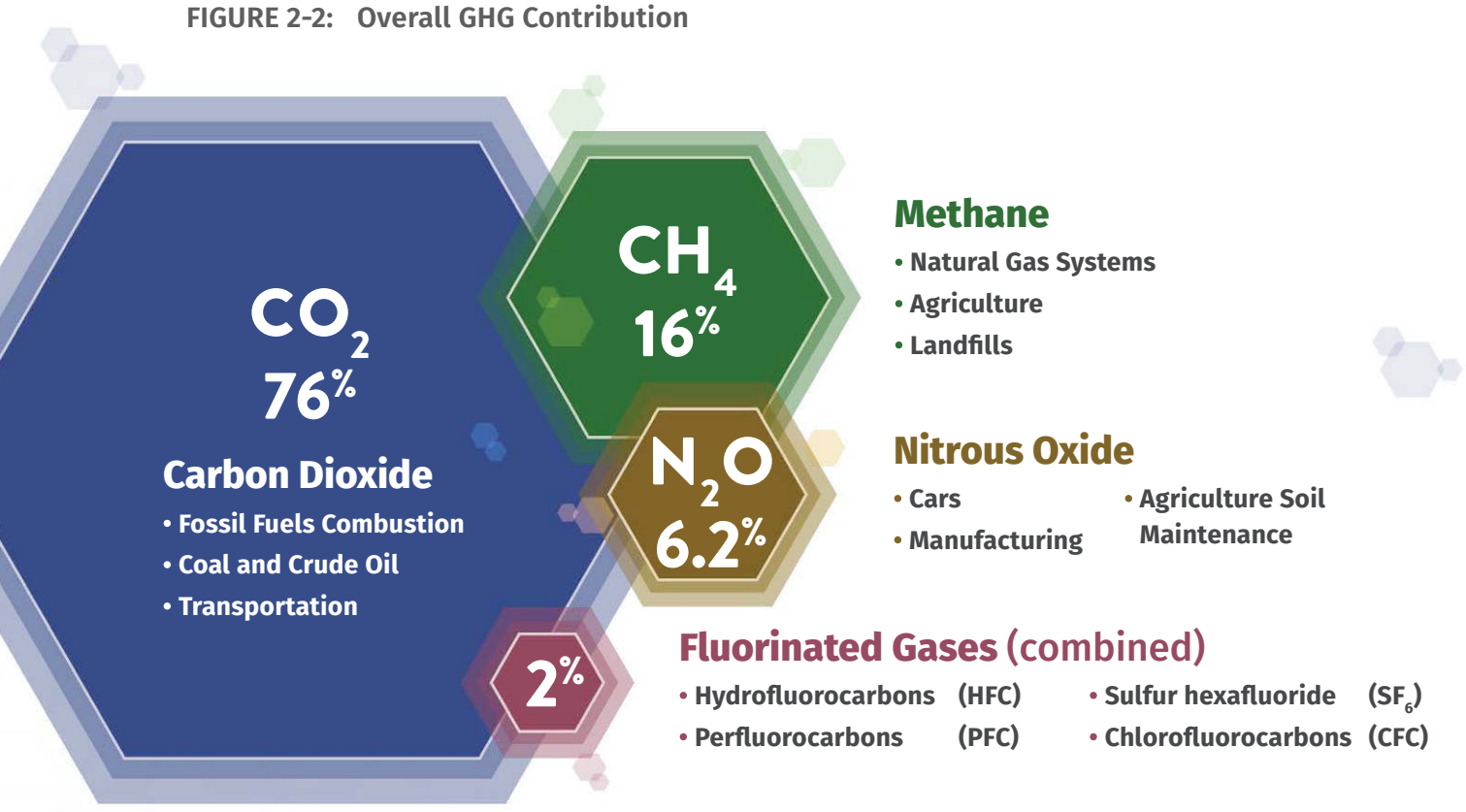
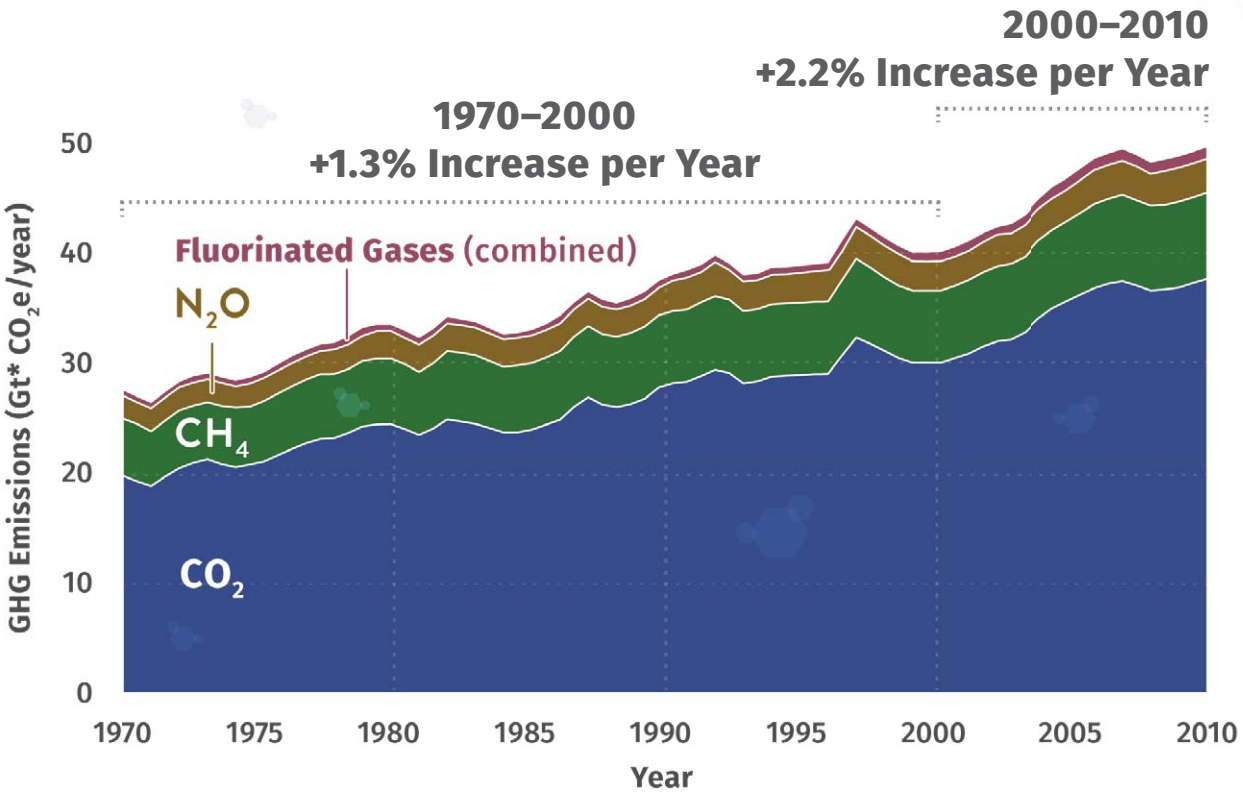
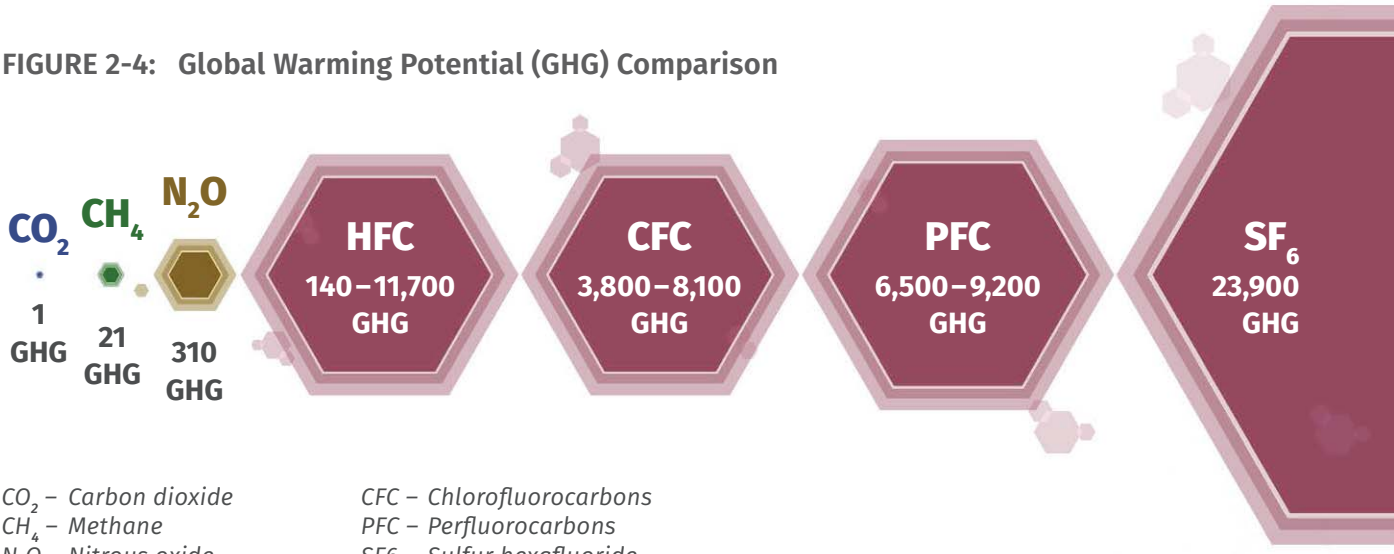


FIGURE 2-3: GHG Contribution Over Time



** Gt = gigaton or one million metric tons*
*Source: IPPC–**https://www.ipcc.ch/site/assets/uploads/2018/02/AR5_SYR_FINAL_SPM.pdf***

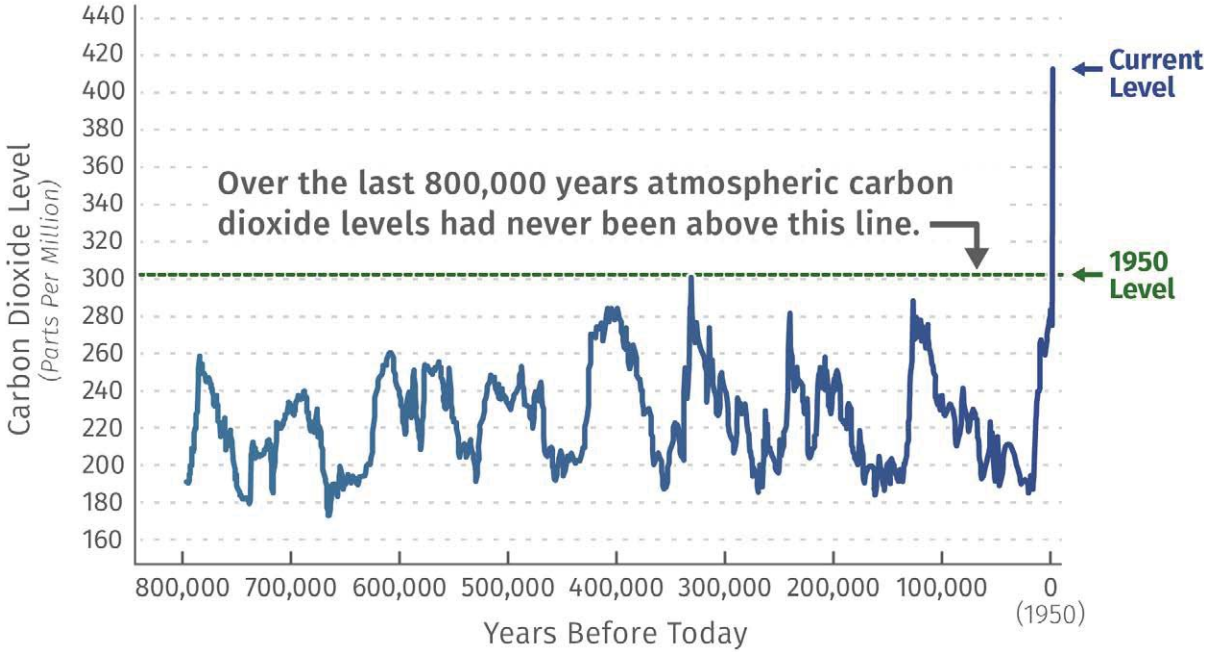
FIGURE 2-4: Global Warming Potential (GHG) Comparison



CO_2 – Carbon dioxide
CH_4 – Methane
N_2O – Nitrous oxide
HFC – Hydrofluorocarbons
CFC – Chlorofluorocarbons
PFC – Perfluorocarbons
SF6 – Sulfur hexafluoride

While CO_2 has the lowest GHG of the GHGs, it is by far the largest contributor due to the total mass of anthropogenic GHG emissions released annually. Since the dawn of the industrial revolution in the mid-nineteenth century, human activities have been emitting large quantities of GHGs into the atmosphere, enough to nearly double the amount of CO_2 from 280 parts per million to over 400 parts per million, which is 100 parts per million higher than any time in the last 800,000 years. The atmospheric concentration of CO_2 over time, based on measuring the composition of air trapped in ice cores from Antarctica,[2] is shown in Figure 2-5.

FIGURE 2-5: Atmospheric Carbon Dioxide Levels



Source: ***https://climate.nasa.gov/evidence/***

The more CO_2 and other GHGs in the atmosphere, the greater the amount of heat trapped on Earth. The mechanisms surrounding anthropogenic (human-caused or based on human activity) global warming are well-understood and widely accepted by the scientific community, with over 97 percent of climate scientists agreeing that the planet is warming at an accelerated rate and that human activities are the root cause.[3]

2. ***https://www.researchgate.net/publication/5370384_High-resolution_carbon_dioxide_concentration_record_650000-800000_years_before_present***

3. *J. Cook, et al, "Consensus on consensus: a synthesis of consensus estimates on human-caused global warming," Environmental Research Letters Vol. 11 No. 4, (13 April 2016); DOI:10.1088/1748-9326/11/4/048002*

GREENHOUSE GAS EMISSIONS

GHG Emission Sources

Anthropogenic processes that release GHGs include the burning of fossil fuels for transportation, heating, and electricity generation; agricultural practices that release methane, such as livestock grazing and crop residue decomposition; and industrial processes that release smaller amounts of high-GHG gases. Deforestation and land cover conversion also contribute to global warming by reducing the Earth's capacity to remove CO_2 from the air and altering the Earth's albedo,[4] or surface reflectance, allowing for absorption of additional solar radiation.

Metropolitan GHG Emission Sources

Metropolitan's sources of GHG emissions include, but are not limited to:

- Energy (water pumping and treatment, facilities operation and construction activities);
- Transportation (fleet vehicle fuel and employee commutes);
- Water (consumption by Metropolitan facilities);
- Waste (generation, diversion, and decomposition); and
- Fugitive emissions (which are small amounts of high GHG gases, from refrigerants and fire suppression equipment).

For a complete description of Metropolitan's emissions and associated GHG emissions see Section 3.0, GHG Emissions Inventory and Forecast.

Whitsett Intake Pumping Plant

4. *Albedo refers to the amount of diffuse radiation of energy out of the total that is reflected by a surface, ranging from 0 (a black body that absorbs all radiation) to 1 where no energy/radiation is absorbed. Source: National Snow & Ice Data Center (NSIDC). 2020.* ***https://nsidc.org/cryosphere/seaice/processes/albedo.html***

AIR QUALITY

According to the United States Environmental Protection Agency (EPA), changes in climate can result in impacts to local air quality.[5] Specifically, atmospheric warming associated with climate change has the potential to increase ground-level ozone emissions. The federal and State Clean Air Acts mandate the control and reduction of certain air pollutants, including ozone (O_3). Under these laws, the EPA and CARB established the National Ambient Air Quality Standards and the California Ambient Air Quality Standards for "criteria pollutants" and other pollutants. Primary criteria pollutants are emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory, etc.) into the atmosphere and include carbon monoxide, volatile organic compounds (VOC)/reactive organic gases (ROG),[6] nitrogen oxides (NO_X), fine particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide, and lead. Secondary criteria pollutants, such as oxidants, O_3, and sulfate and nitrate particulates (smog), are created by atmospheric chemical and photochemical reactions primarily between VOCs and NO_X.

A photochemical reaction (triggered by sunlight) between NO_X and VOCs produces O_3. VOCs are composed of non-methane hydrocarbons (with some specific exclusions), and NO_X is composed of different chemical combinations of nitrogen and oxygen, mainly nitric oxide and nitrogen dioxide. NO_X is formed during the combustion of fuels, while VOCs are formed during combustion and evaporation of organic solvents. As a highly reactive molecule, O_3 readily combines with many different components of the atmosphere.

5. ***https://www.epa.gov/air-research/air-quality-and-climate-change-research***

6. *The California Air Resources Board defines VOC and ROG similarly as, "any compound of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate," with the exception that VOC are compounds that participate in atmospheric photochemical reactions*

Sacramento-San Joaquin Delta

2.2 CLIMATE CHANGE IMPACTS

CALIFORNIA CLIMATE CHANGE IMPACTS

California has undertaken extensive research at the state and local levels in order to support State and local agencies on long-range planning and adaptation strategies to protect infrastructure and resources. The impacts of climate change from potential sea level rise, changing weather patterns, extended drought, increased fire danger, and more severe storms have the potential to affect Metropolitan's infrastructure and water supply. By leveraging these studies as part of the climate action planning process, Metropolitan can identify potential climate vulnerabilities that may occur even while striving to reduce GHG emissions. Potential vulnerabilities are presented here to highlight possible impacts to its operations and infrastructure.

The most apparent effects of climate change in the southwestern United States, including the Metropolitan service area, will likely be in the form of more days of extreme heat, an increase in periods of drought, resulting in a reduction in water supply, as well as increased fire danger from hot, dry conditions, which could threaten critical infrastructure.[7,8] Air quality impacts from heat and wildfires may also continue to be an issue. Due to the size and scope of Metropolitan's operational area, which includes the Sierra Nevada and Colorado River watersheds, the potential climate change impacts to Metropolitan are diverse. The changes expected to impact Metropolitan specifically include: reduced quality and availability of water from the Sierra Nevada and Rocky Mountains snowpacks, sea level rise and coastal displacement affecting local coastal groundwater basins and water quality and levee stability in the Sacramento-San Joaquin Delta, increased risk of large wildfires, increased temperatures and extreme heat events, and exacerbation of air quality problems, each of which are described in more detail below.

7. *https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-southwest_.html*
8. *https://www.nationalgeographic.com/science/article/climate-change-increases-risk-fires-western-us#close*

Sierra Nevada Mountains snowpack

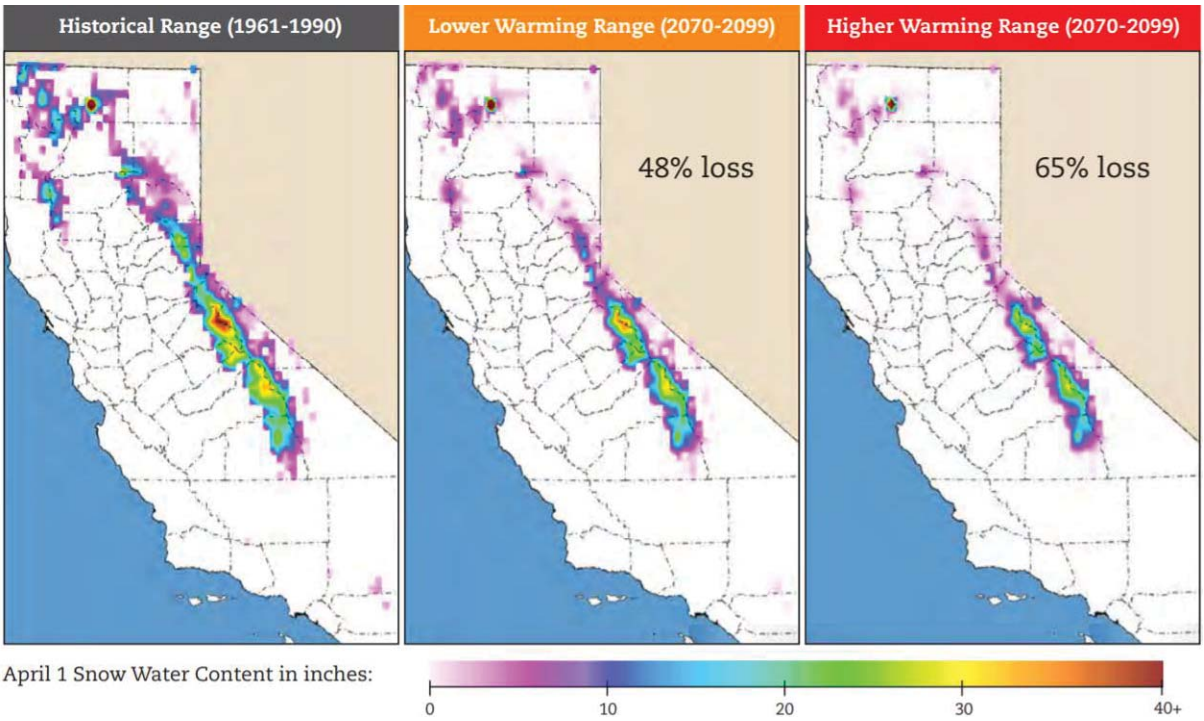
Reduced Quality and Supply of Water from the Sierra Nevada and Rocky Mountains Snowpacks

If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada and Rocky Mountains spring snowpacks by as much as 65 percent by the end of the century (see Figure 2-6).[9] Figure 2-6 shows the historical (1961–1990) and projected (2070–2099) Sierra Nevada snowpack measured in "Snow Water Content in inches"[10] on April 1 based on two warming scenarios or ranges. The effect of different estimates of the sensitivity of the climate system to emissions is generally understood by comparing the temperature projections from different global climate models.[11] As outlined by the California Climate Change Center (2015), the models each contain unique variables and projections that result in different levels of climate sensitivity. In total, there are three climate scenarios or ranges – lower emissions scenario, medium-high emissions scenario, and higher emissions scenario. The lower and higher emissions scenarios characterize a world with similar population growth, but the lower emission scenario anticipates rapid changes in clean technologies and a shift toward a service and information economy (Cayan et al. 2005).

Without the natural storage provided by a deep snowpack, less water will be available through California's dry summer months. This can limit the availability of water traditionally produced from local snowpack. As snow melts sooner and faster, less water can be captured and stored in reservoirs like Oroville, which could reduce the potential to generate hydropower used to power Metropolitan's pumps along the SWP. Further, as outlined in Metropolitan's 2015 Urban Water Management Plan (UWMP) (June 2016),[12] the amount of contractual supplies that the DWR approves for delivery varies annually with contractor demands and projected water supplies from tributary sources to the Delta based on snowpack in the Sierra Nevada Mountains, reservoir storage, operational constraints, and demands of other water users. As such, reduced quality and supply of water from the Sierra Nevada and Rocky Mountains snowpacks may further result in decreased accessibility to water in the Metropolitan service area.

9. **https://water.ca.gov/Programs/All-Programs/Climate-Change-Program/Climate-Change-and-Water**
10. *Snow Water Content is synonymous with Snow Water Equivalent (SWE), a commonly used measurement used by hydrologists and water managers to gauge the amount of liquid water contained within the snowpack.*
11. **https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.169.4744&rep=rep1&type=pdf**
12. **http://www.mwdh2o.com/PDF_About_Your_Water/2.4.2_Regional_Urban_Water_Management_Plan.pdf**

FIGURE 2-6: Historical and Projected Snowpack in the Sierra Nevada Mountains



Source: "California Climate Science and Data for Water Resources Management" published by DWR in 2015

Sea Level Rise and Coastal Displacement

Along with temperature increases and shifting weather patterns associated with climate change, sea level is expected to rise an additional one to nine feet by the end of the century depending on the magnitude of global emissions[13] modeled (Figure 2-7).[14] While sea level rise is most often talked about as a threat to coastal communities and infrastructure, a rising sea will also push more salt water into the Sacramento-San Joaquin Delta, which supplies water to the SWP. To keep saltwater out of critical water supplies, more fresh water will need to be flushed through the Delta, decreasing the amount available for Californians.[15]

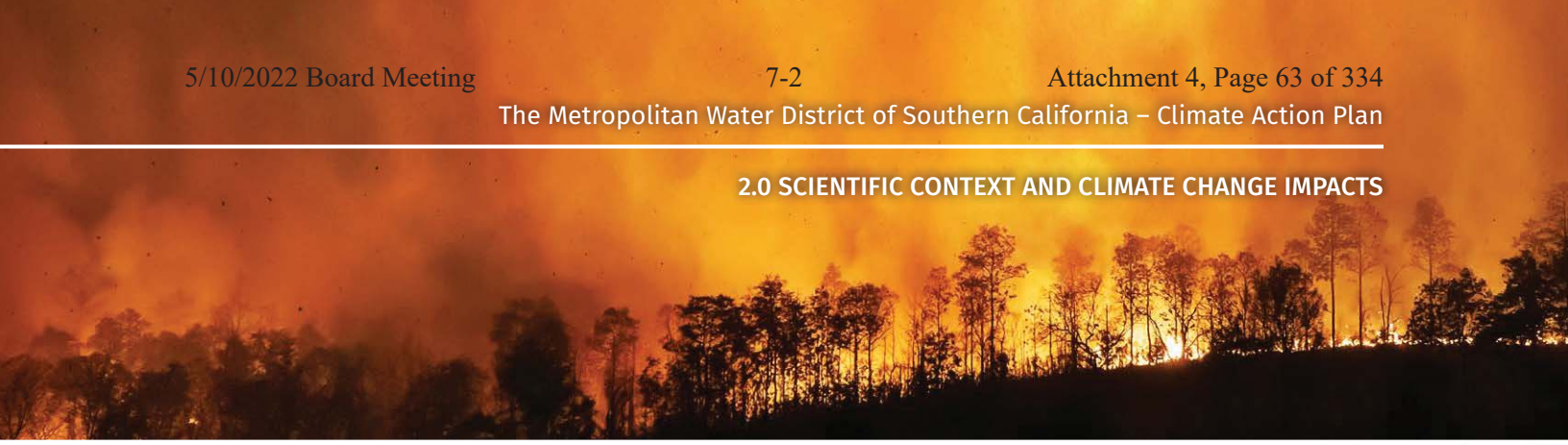
13. *Emissions scenarios refer to a set of six global sea level rise scenarios that reflect different assumptions about the degree to which ocean warming and ice sheet loss will affect the rate and magnitude of global sea level rise that were developed by oceanographers and climatologists. Source: U.S. Climate Resilience Toolkit. September 19, 2019. Sea Level Rise.* ***https://toolkit.climate.gov/topics/coastal/sea level-rise***
14. ***http://www.opc.ca.gov/webmaster/ftp/pdf/docs/rising-seas-in-california-an-update-on-sea level-rise-science.pdf***
15. ***https://water.ca.gov/Programs/All-Programs/Climate-Change-Program/Climate-Change-and-Water***

As demonstrated in Figure 2-7, sea level rise of one meter (3.3 feet) would push salt water farther into the Sacramento-San Joaquin Delta. As sea levels rise, and salt water intrusion takes place, additional water would be required to be pumped through the Delta to ensure salt does not reach potable water supplies. This means less water available for SWP allocations. The Delta system relies on levees that are vulnerable to earthquakes, floods, and rising sea levels. When these levees fail, water rushes into the lower-than-sea-level islands behind them, pulling in salt water from the bay and diminishing water quality before it can be delivered to Southern California, the Bay Area, and Central Valley farmland. However, the proposed Delta Conveyance Facilities could potentially provide salinity protection of water supplies without additional Delta outflow.[16]

FIGURE 2-7: Impacts to the Sacramento-San Joaquin Delta from 1 Meter (3.3 feet) of Sea Level Rise

Source: NOAA. 2020. Sea Level Rise Tool. ***https://coast.noaa.gov/digitalcoast/tools/slr.html***

16. ***http://www.mwdh2o.com/DocSvcsPubs/DeltaConveyance/index.html***



Increased Risk of Large Wildfires

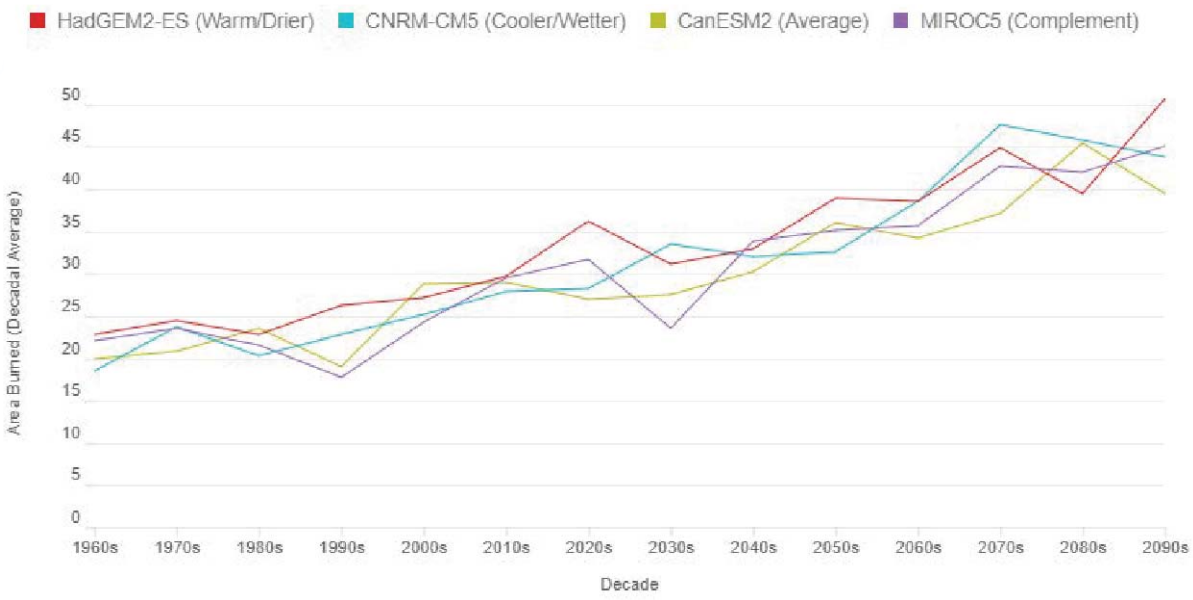
Wildfires in the grasslands and chaparral ecosystems of Southern California are estimated to increase by approximately 30 percent toward the end of the twenty-first century because increases in winter rain will stimulate the growth of more vegetation that will act as fuel in the summer and autumn months. Metropolitan infrastructure within vegetated areas could be impacted by the increased number of fires and hinder potential carbon sequestration projects. For example, the area around Diamond Valley Lake is projected to see an increase in annual acreage burned throughout the rest of the century, potentially impacting infrastructure and water quality (Figure 2-8).[17]

In order to better understand the potential impacts of climate change, scientists use several "scenarios" to help put bounds on the uncertainty associated with modeling complex systems. These scenarios show what California would look like under different climate conditions based on the level of emissions reductions moving forward and the impact of those emissions on precipitation and temperature. The lines in Figure 2-8 show the change between historical and projected burn area for the DVL area under four global emissions scenarios including: warm/drier, cooler/wetter, average, and complement, which is the scenario that is most unlike the other three models and is chosen to give better coverage of the full spread of 10 California GCM model results.[18]

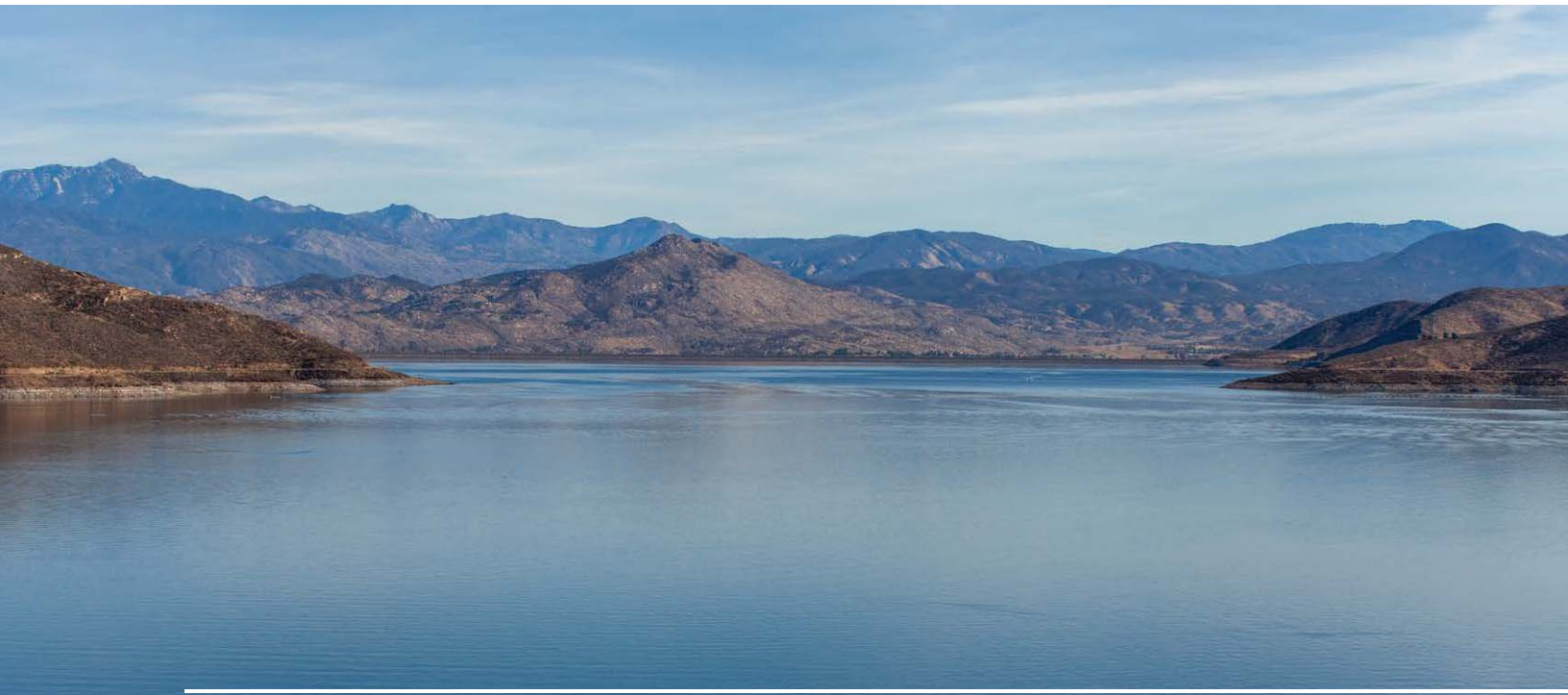
Under each of the scenarios shown, the burned area is projected to increase. This may seem counterintuitive because it may be anticipated that the cooler/wetter scenario may show a significant difference between the warm/drier scenario. However, the timing of rainfall during the year determines growth patterns which, when followed by the higher anticipated temperatures in the warm summer months, could exacerbate fire risk. Likewise, there may also be an impact from larger wildfires on upper watershed areas for the SWP and CRA. For example, during active wildfires, there is a risk of increased contaminants, such as ash, in water, and vegetation that holds soil in place and retains water may be destroyed. In the rainstorms following wildfires, ash, sediment, nutrients, and other contaminants may also be transported into the waterways.[19]

17. *https://cal-adapt.org/tools/wildfire/*
18. *https://www.energy.ca.gov/sites/default/files/2019-11/Projections_CCCA4-CEC-2018-006_ADA.pdf*
19. *https://www.epa.gov/sciencematters/wildfires-how-do-they-affect-our-water-supplies*

FIGURE 2-8: Historical and Projected Area Burned for Diamond Valley Lake Area (Hectares of Land per Year)



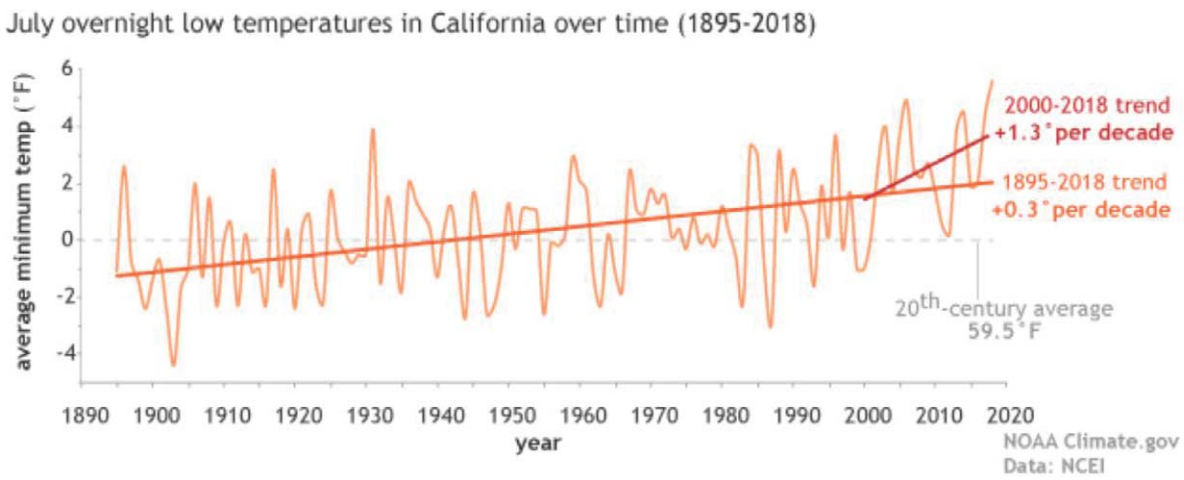
Source: ***https://cal-adapt.org/***



Increased Temperatures and Extreme Heat Events

California is expected to see an average annual temperature increase of 2.5°F by 2030 and 2.7°F by 2050,[20] with inland areas expected to see the most extreme changes.[21] Evidence of increasing annual temperatures has already been documented, as shown in Figure 2-9.[22] Furthermore, according to current climate prediction models, California's average annual temperature increases could range from approximately 3.5°F to 11°F by the end of the century, relative to the annual average temperature for the 1961–1990 time period. In addition, the number of extreme heat days, defined as days with temperatures above the 98th percentile of computed maximum temperature by 2050, in Southern California are expected to increase from approximately four annually on average up to approximately 53 in 2050 and up to approximately 99 in 2100.[23]

FIGURE 2-9: Average Minimum Temperature for July in California 1890 to 2020



Source: ***https://www.climate.gov/news-features/event-tracker/extreme-overnight-heat-california-and-great-basin-july-2018***

20. ***https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf***
21. ***https://cal-adapt.org/tools/annual-averages/***
22. ***https://www.climate.gov/news-features/event-tracker/extreme-overnight-heat-california-and-great-basin-july-2018***
23. ***https://www.opr.ca.gov/facts/climate-change-and-public-health.html***

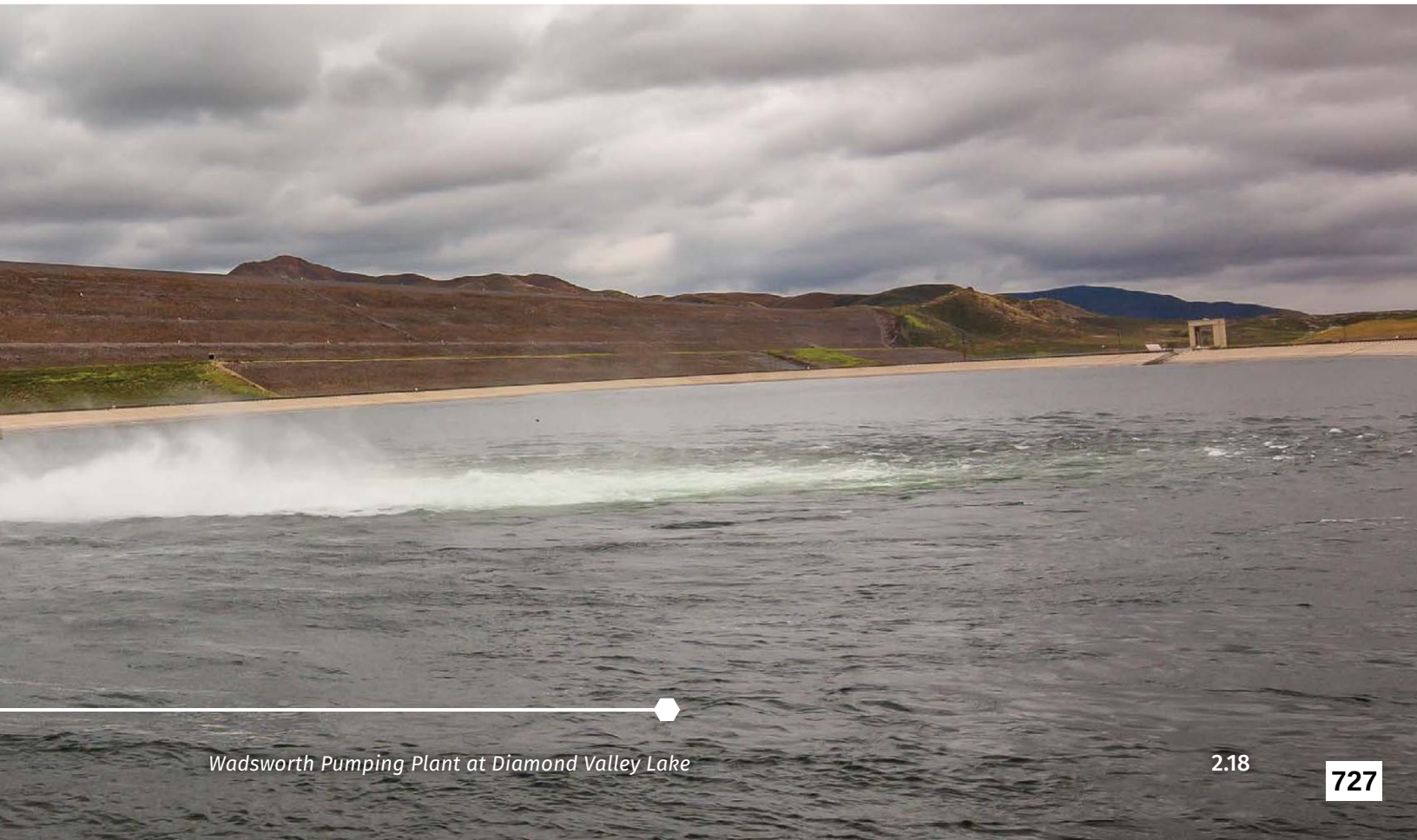
Exacerbation of Air Quality Problems

If temperatures rise to the medium warming range,[24] there could be 75 to 85 percent more days with weather conducive to O_3 formation, relative to current conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems. Increased wildfire events also create poor air quality that impacts human health. For example, researchers at Harvard University linked short-term exposure to $PM_{2.5}$ pollution from events such as wildfires to hospitalizations among older adults for septicemia, fluid and electrolyte disorders, renal failure, urinary tract infections, and skin and tissue disorders. Additionally, there are clear links between $PM_{2.5}$ pollution and cognitive disease, such as dementia.[25]

24. *A medium warming scenario reflects a projected temperature rise between 5.5 and 8°F.*

25. ***https://www.sierraclub.org/sierra/particle-pollution-wildfires-big-problem-for-california***

For Metropolitan, climate change will bring many challenges. Increases in the frequency, duration, and severity of drought and rising temperatures are but a few of the resulting impacts that threaten the reliability of Metropolitan's regional water supply. Metropolitan has long made ensuring a reliable supply of water a planning priority and will need to anticipate and adapt to changing climactic conditions to continue to do so. The 2020 Integrated Water Resources Plan uses scenario analysis to look at a range of futures affected by varying impacts of climate change. The measures identified in this CAP complement Metropolitan's efforts to prepare for these future changes.



Wadsworth Pumping Plant at Diamond Valley Lake

SECTION 3.0
GHG EMISSIONS INVENTORY AND FORECAST

Metropolitan prepared a GHG emissions inventory for activities under its control for each year from 2005–2017 to provide an understanding of emissions over time. The inventory was prepared in accordance with standard accounting protocols from TCR[1] and the International Council for Local Environmental Initiatives (ICLEI).[2] This section defines the boundary of Metropolitan operations, reflects the GHG emissions inventory and sources within that boundary, and provides a summary of the methods and data sources used to inventory Metropolitan's GHG emissions. A full description of the data, methodology, and emissions factors for each inventory year are included in Appendix A. Metropolitan's inventory includes its operational GHG emissions for the baseline year of 1990, as well as each year from 2005 through 2017. Historical GHG emissions were calculated using consistent methodologies to allow accurate comparison between years.

1. *The Climate Registry.* ***https://www.theclimateregistry.org/tools-resources/reporting-protocols/general-reporting-protocol/****.*
2. *ICLEI. 2010. Local Government Operations Protocol.* ***http://icleiusa.org/GHG-protocols/****.*

3.0

3.0

Whitsett Intake Pumping Plant

3.1 METROPOLITAN OPERATIONAL BOUNDARY AND EMISSIONS SOURCES

GHG reporting protocols generally require a clear delineation of an organization's operational boundaries to account for sources of GHG emissions in an inventory. The organizational boundary includes all facilities, equipment, and operations over which the reporting entity (i.e., Metropolitan) has management control. Management control can be defined in either financial or operational terms, but the chosen definition of control must be applied consistently across the organization.

Metropolitan's primary operational infrastructure includes five CRA pumping stations and two smaller pumping stations, 15 hydroelectric facilities, multiple pressure control systems, nine reservoirs, and five water treatment plants. Emissions from supporting infrastructure are also included, such as those from the Union Station Headquarters and various control facilities, fleet vehicles, aircraft owned and operated by Metropolitan, stationary equipment like generators, and waste generation and water use associated with these facilities. In addition, Metropolitan includes employee commutes within its operational boundary. Although Metropolitan does not have complete control over this specific emission source, it can provide programs and infrastructure to influence employee behaviors. Finally, Metropolitan's operational boundary includes construction-related emissions associated with maintenance of existing facilities and new construction undertaken by contractors of Metropolitan. While these emissions are not directly under Metropolitan's control, Metropolitan can make decisions to decrease these emissions over time; therefore, these emissions sources have been included in the overall emissions inventory.

METROPOLITAN'S PRIMARY OPERATIONAL INFRASTRUCTURE:
five CRA pumping stations and two smaller pumping stations, 15 hydroelectric facilities, multiple pressure control systems, nine reservoirs, and five water treatment plants.

GHG EMISSIONS SCOPES

As mentioned above, the ICLEI and TCR reporting protocols were used to analyze the emissions generated by Metropolitan. Both ICLEI and TCR's protocols provide authoritative guidance to account for GHG emissions accurately and consistently.[3,4] Specifically, ICLEI's protocols, including the Local Government Operations Protocol, serve as the national standards for local-scale accounting of emissions that contribute to climate change. These were developed through robust stakeholder consultation and partnerships with leading GHG emission experts. This inventory protocol provides detailed guidance on accounting for emissions from the buildings, facilities, and vehicles operated by a local government or agency, such as Metropolitan. TCR's program aligns with international standards and provides a nexus between business, government, and non-governmental organizations to share policy information and exchange best practices.[5] The protocol used in this analysis was established for TCR's voluntary emission reporting program, which is called the Carbon Footprint Registry. Per the ICLEI and TCR reporting protocols, the data is organized into three source categories, or scopes, related to the level of operational control the organization or reporting entity has over the emission source. It is important to recognize that Metropolitan is a water distributor, and although the ICLEI and TCR protocols were used to analyze the data, only applicable emission sources were included in this inventory.

3. *https://icleiusa.org/GHG-protocols/*
4. *https://www.theclimateregistry.org/tools-resources/reporting-protocols/general-reporting-protocol/*
5. *https://www.theclimateregistry.org/wp-content/uploads/2014/11/General-Reporting-Protocol-Version-2.1.pdf*

Gene Pumping Plant

SCOPE 1: DIRECT EMISSIONS

Scope 1 emissions consist of direct GHG emissions associated with fuel use, such as emissions from gasoline and diesel consumption by Metropolitan's vehicle fleet, propane and natural gas use at its facilities, and unintended fugitive emissions.[6]

SCOPE 2: INDIRECT EMISSIONS FROM ELECTRICITY

Scope 2 emissions consist of indirect GHG emissions associated with the purchase and consumption of electricity used primarily for the transmission, treatment, and distribution of water. Scope 2 also includes electricity transmission and distribution (T&D) losses. T&D losses arise from three primary causes: short- and long-distance transmission losses from the electricity generation station to the step-down transformer substation, distribution losses between the step-down substation and the end user, and transformer losses.[7]

SCOPE 3: OTHER INDIRECT EMISSIONS

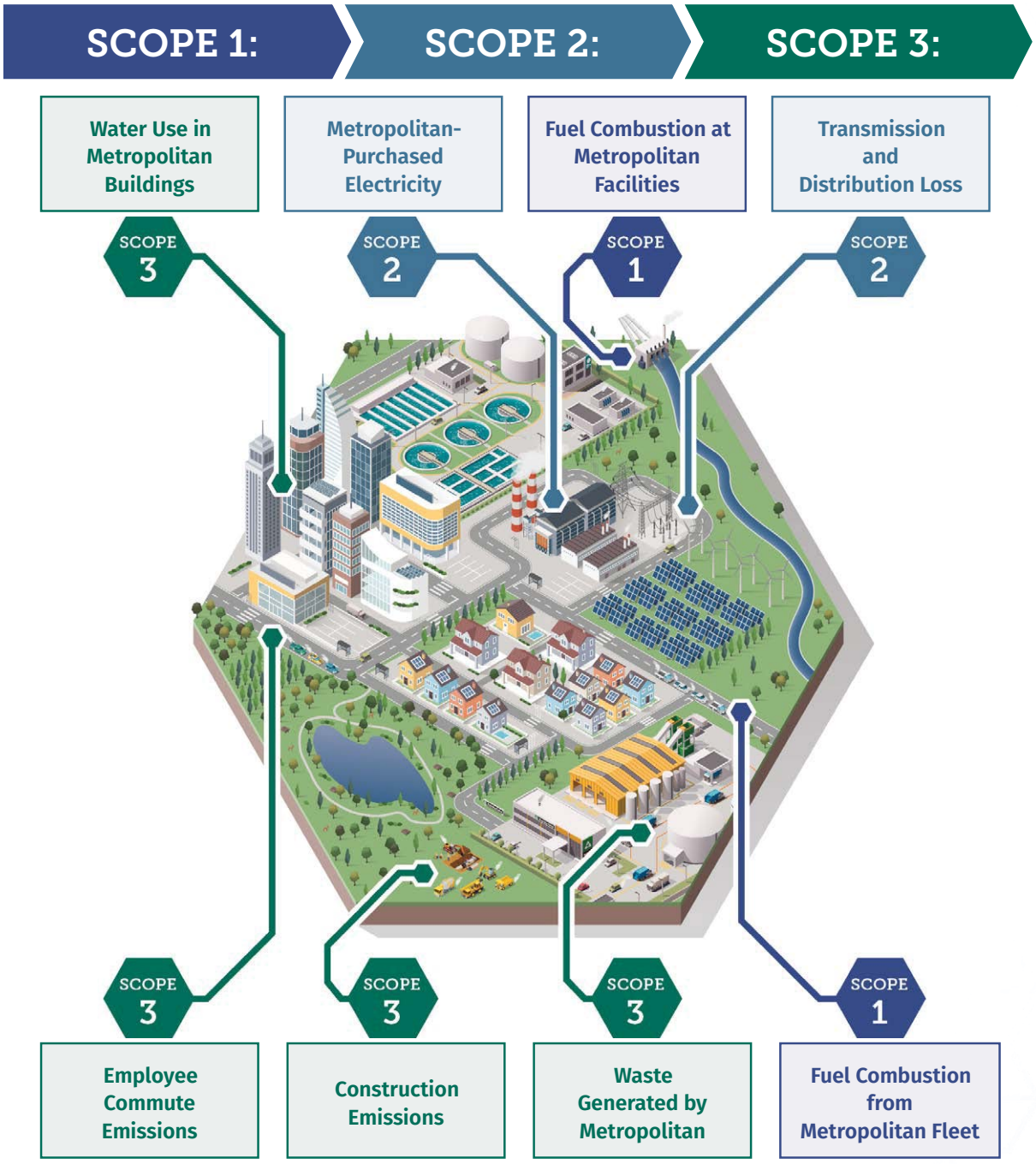
Scope 3 emissions consist of other indirect GHG emissions not captured in Scopes 1 or 2, such as those associated with employee commutes, waste generation, water consumption occurring at Metropolitan facilities, and emissions associated with construction projects.

6. *Fugitive emissions are emissions of gases or vapors from industrial equipment due to leaks or other unintended releases.*

7. ***https://web.stanford.edu/group/efmh/jacobson/Articles/I/TransmisDistrib.pdf***

Section 3.2 provides greater details and examples of each scope. Figure 3-1 illustrates the three types of emissions scopes and the Metropolitan-specific emissions that fall within each scope.

FIGURE 3-1: GHG Emissions by Scope



3.0

Copper Basin Reservoir

3.2 HISTORICAL METROPOLITAN GHG EMISSIONS

Metropolitan has reported its Scope 1 and Scope 2 GHG emissions data to TCR since 2005. In addition, Metropolitan conducted an analysis of Scope 3 emissions for the years 2008 and 2017. These years were chosen as the most recent (2017) and oldest (2008) years for which complete data were available.[8] Unlike Scope 2 electricity use, which changes as a result of pumping, Scope 3 emissions remain relatively constant from year to year. Therefore, the average of the 2008 and 2017 Scope 3 emissions were applied to all inventory years. Metropolitan also calculated a baseline GHG emissions inventory using data records from 1990, to be consistent with the State's long-term emission reduction goals. For a complete description of GHG calculation methodologies and data sources, please refer to Appendix A.

1990 GHG EMISSIONS BASELINE YEAR

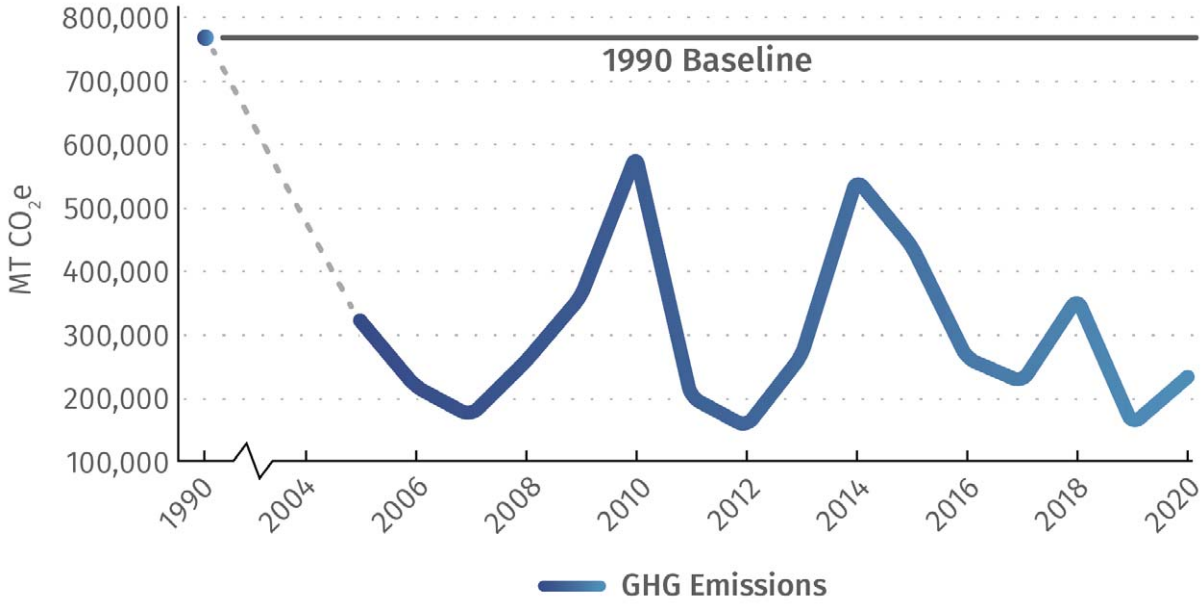
As described in Section 4.0, Regulatory Context and GHG Reduction Targets, AB 32 and SB 32 established the 1990 statewide emissions level as the baseline against which GHG emissions reduction targets are measured. Although Metropolitan did not begin reporting annual GHG emissions until 2005, historical operational data records, including electricity and fuel consumption exist. Using this data, Metropolitan was able to calculate a 1990 emissions inventory that is consistent with California's established baseline date. The 1990 emissions estimate of 771,000 MT CO_2e provides an accurate representation of Metropolitan's operational emissions in 1990 from which future reduction targets can be established.

8. *Complete data refers to Scope 3 data including waste, water, and employee commute which are collected via invoices. Scope 1 and 2 data was available for all inventory years.*

ANNUAL GHG EMISSIONS: 1990 THROUGH 2017

Based on a review of the available data (2005–2017), Metropolitan's annual GHG emissions are highly variable, ranging from a high of 583,000 MT CO_2e[9] in 2010 to a low of 156,000 MT CO_2e in 2012. These fluctuations tie directly to the volume of water pumped from the CRA. Transporting water from the CRA is energy-intensive as a lot of energy is needed to move it long distances. This results in increased GHG emissions. Annual GHG emissions have declined since 1990, even with the periodic energy use spikes related to increased pumping from the CRA in 2010 and 2013. The GHG emission trend has generally decreased from approximately 771,000 MT CO_2e in 1990 to approximately 234,000 MT CO_2e in 2020, a decrease of approximately 70 percent over this time period, although intervening years have been highly variable. Much of the decrease in emissions from 1990 is attributable, in part, to the removal of carbon from electricity required by California's Renewable Portfolio Standard and the Cap-and-Trade Program.[10] In addition, water conservation efforts by Metropolitan and the community have helped keep emissions low even as population increased. Figure 3-2 shows Metropolitan's annual emissions from 1990 through 2020.

FIGURE 3-2: Metropolitan GHG Emissions Over Time



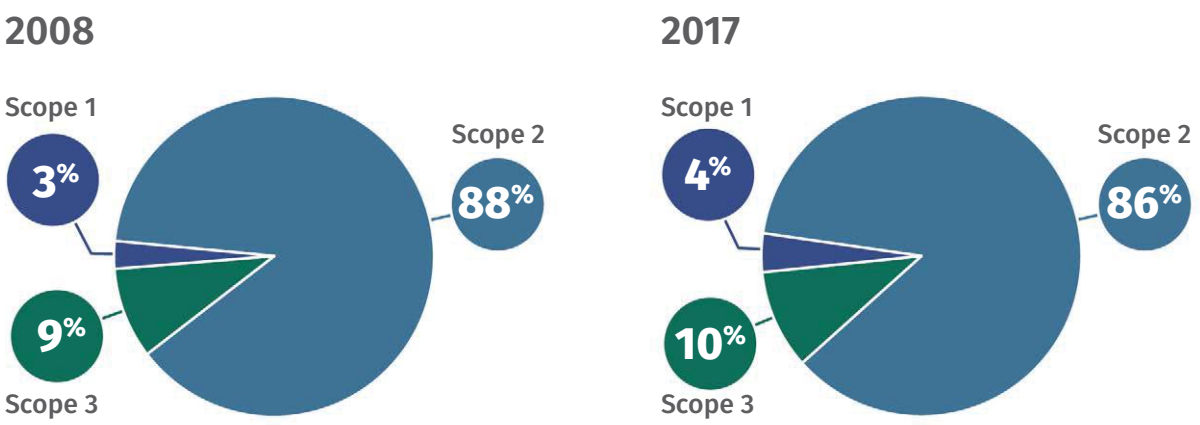
9. *According to the United States Environmental Protection Agency (USEPA), "the unit "CO_2e" represents an amount of a GHG whose atmospheric impact has been standardized to that of one-unit mass of carbon dioxide (CO_2), based on the global warming potential (GWP) of the gas." USEPA. October 2014. Pollution Prevention Greenhouse Gas (GHG) Calculator Guidance.* ***https://www.epa.gov/sites/production/files/2014-12/documents/GHGcalculatorhelp.pdf***

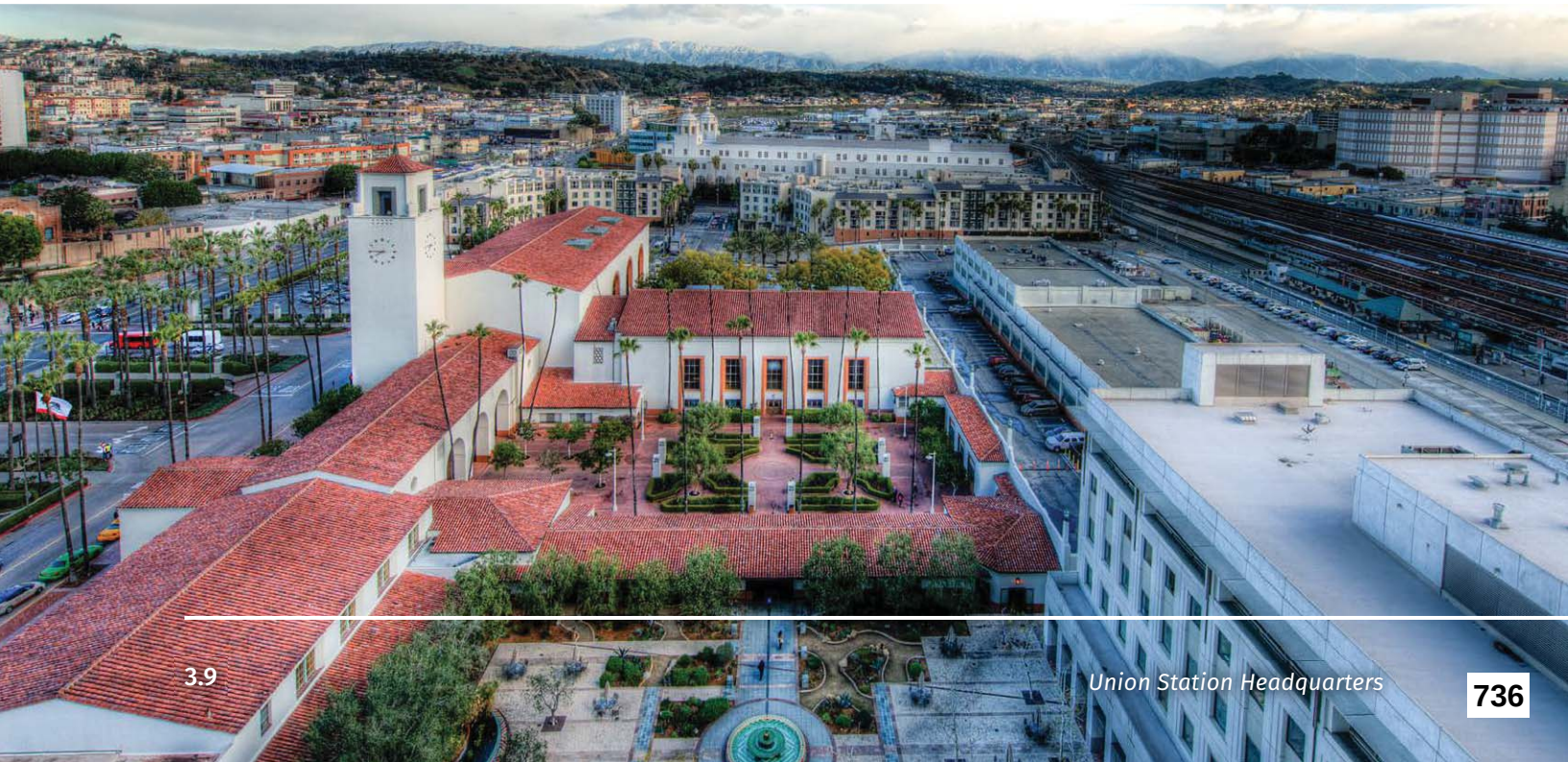
10. ***https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2016/GHG_inventory_trends_00-16.pdf***

GHG EMISSIONS BY SCOPE: 2008 AND 2017

Metropolitan's organization-wide GHG emissions in 2008 and 2017 were estimated at 258,419 MT CO_2e and 226,036 MT CO_2e, respectively. Figure 3-3 details the breakdown of Metropolitan's GHG emissions in both years by scope. The figures clearly show that emissions associated with electricity dominate Metropolitan's GHG emissions (Scope 2). In comparison, Scope 1 and Scope 3 sources contribute a small percentage overall each year.

FIGURE 3-3: Metropolitan GHG Emissions by Scope





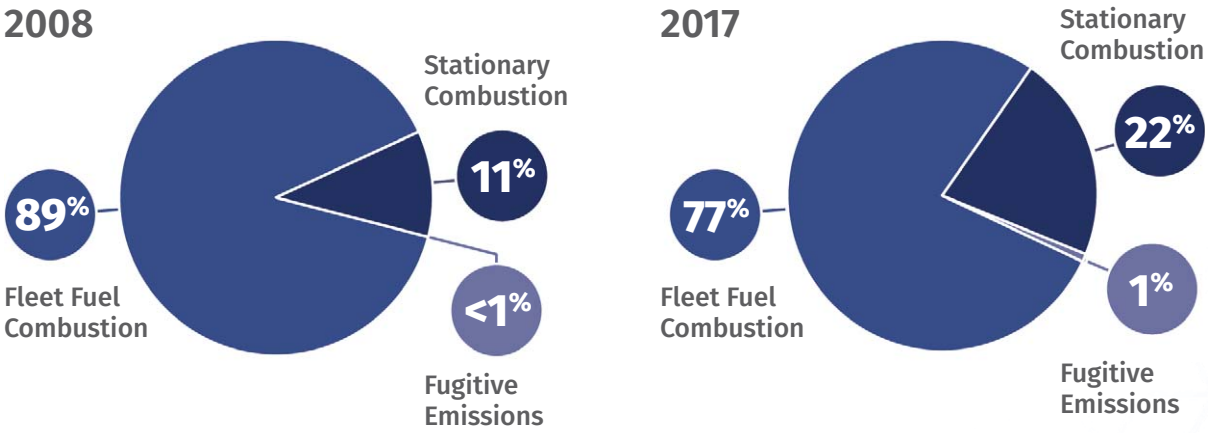
Colorado River Aqueduct shutdown

SCOPE 1:

Metropolitan Scope 1 Emissions

Metropolitan's Scope 1 GHG emissions comprise approximately three percent of total emissions in 2008 and four percent of total emissions in 2017. Figure 3-4 details the breakdown of Metropolitan's Scope 1 GHG emissions in both years by source. The largest source of Scope 1 GHG emissions is mobile combustion of fuel by Metropolitan's vehicle fleet, accounting for approximately 89 percent of total Scope 1 emissions in 2008. This decreased to 77 percent in 2017, largely due to increased vehicle efficiency. Stationary combustion of fuel in Metropolitan buildings is the second largest source of Scope 1 emissions, which accounted for approximately 11 percent of total Scope 1 emissions in 2008. Fugitive emissions make up a small percentage of Scope 1 emissions and include sulfur hexafluoride emissions leakage from electrical equipment, hydrofluorocarbon emissions from refrigerants, and fugitive emissions from use of welding gas.

FIGURE 3-4: Scope 1 Emissions by Source



SCOPE 2:

Metropolitan Scope 2 Emissions

The majority of Metropolitan's GHG emissions are Scope 2, with 88 percent and 86 percent of total emissions coming from Scope 2 emissions in 2008 and 2017, respectively. The small decrease in Scope 2 emissions is attributed to pumping variability on the CRA, availability of water from other sources (SWP), and variable rainfall and pumping requirements as well as decreased emission factors for electricity that are attributable to the increased use of carbon-free electricity. Direct electricity consumption makes up 99 percent of Scope 2 emissions, and T&D losses consistently comprise the remainder. Figure 3-5 details the breakdown of Metropolitan's Scope 2 GHG emissions in both years by source. Pumping associated with the conveyance and distribution of water from the CRA is the primary driver of Metropolitan's electricity demand and overall GHG emissions, representing 75 percent of total emissions in 2008 and 78 percent in 2017. Availability of hydropower from Hoover Dam and Parker Dam also contributes to GHG emissions variability. Because these dams generally produce carbon neutral electricity, the more electricity they generate, the less carbon intensive electricity Metropolitan is required to source from the utilities and wholesale electricity market.

FIGURE 3-5: Scope 2 Emissions by Source

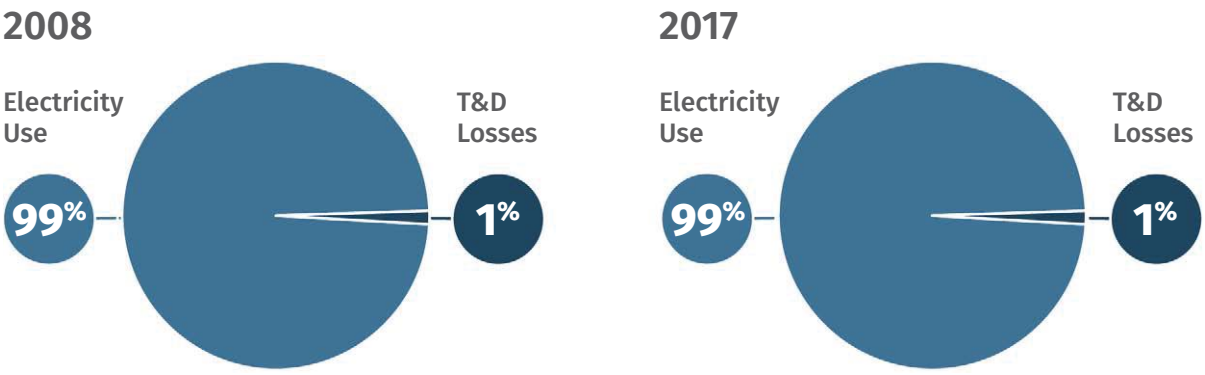
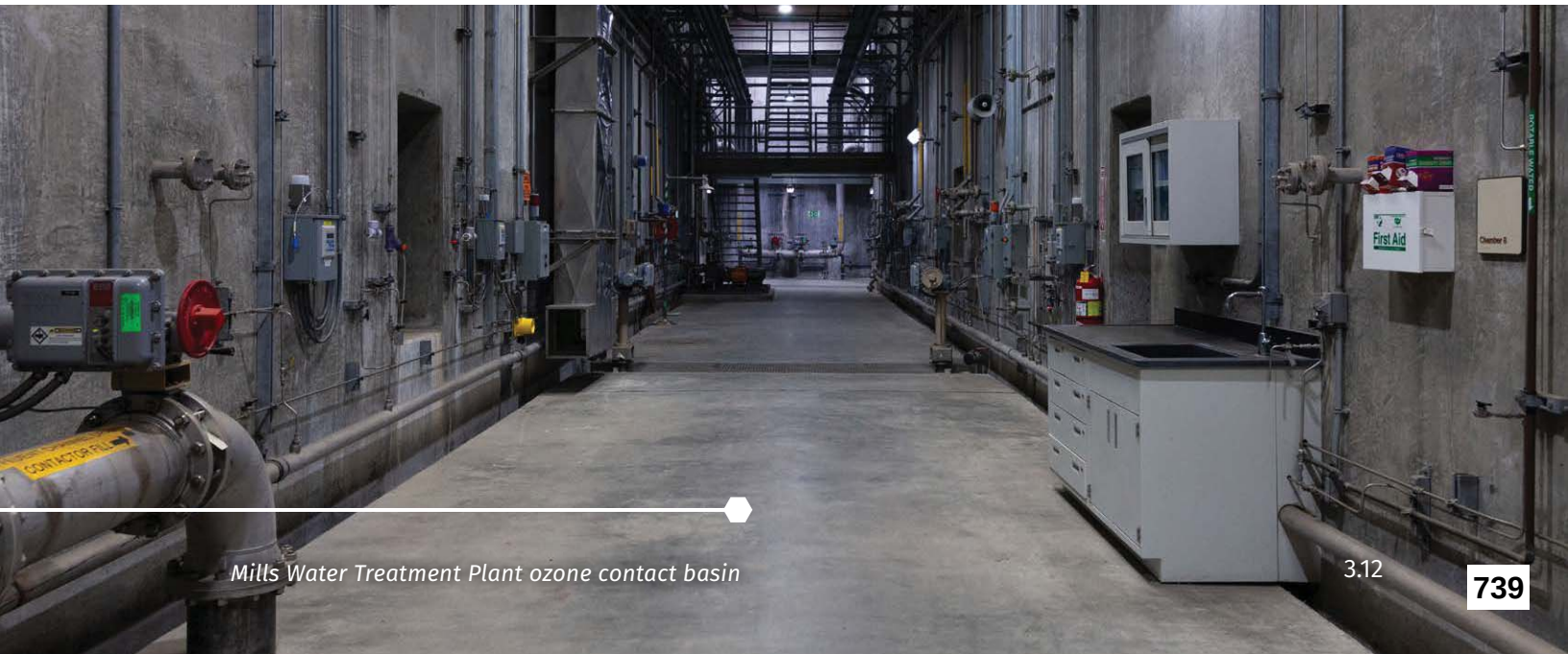


Table 3-1 depicts how much electricity is used throughout Metropolitans various operations. A majority of electricity consumption is due to pumping on the CRA using wholesale power. Other electricity consumption is due to water treatment, reservoir operations, transmission losses, and other facilities including Metropolitan's offices.

TABLE 3-1: Scope 2 Electricity Consumption by End Use (kWh)

Consumption Source	2008	2017
Treatment Plants	42,907,728	48,788,848
Pumping Plants - Wholesale Power	1,762,803,183	1,313,240,090
Pumping Plants - Retail Power	11,420,786	4,875,221
Reservoirs	2,597,860	2,538,876
Power Plants & PCS	2,385,665	2,124,924
Other Facilities	10,203,709	8,073,807
MISC Energy Usage	3,261,236	1,960,488
T&D Losses	26,593,474	14,687,361



Mills Water Treatment Plant ozone contact basin

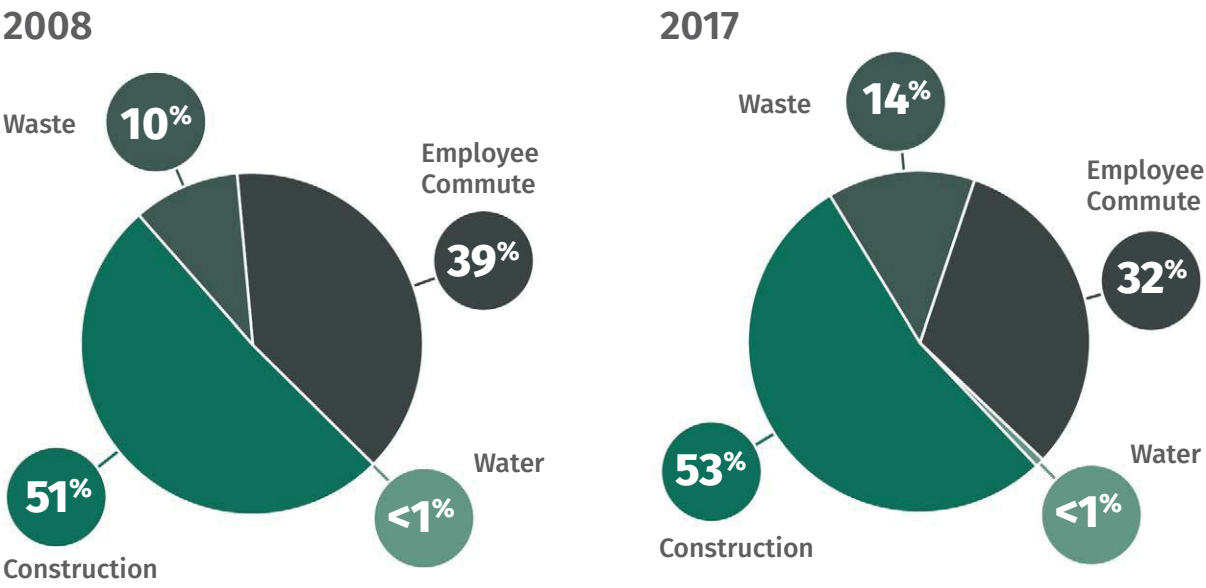
3.0

SCOPE 3:

Metropolitan Scope 3 Emissions

Metropolitan's Scope 3 GHG emissions comprised approximately nine percent of annual emissions in 2008 and 10 percent of annual emissions in 2017. As detailed in Figure 3-6, construction activities represent the largest percentage of Scope 3 emissions, contributing 51 percent in 2008 and 53 percent in 2017. Employee commutes generated 39 percent of inventoried Scope 3 emissions in 2008 but decreased to 32 percent by 2017. Solid waste-associated emissions contributed 9 percent of Scope 3 emissions in 2008 and 14 percent in 2017. In both years, water-related emissions contributed about one percent.

FIGURE 3-6: Scope 3 Emissions by Source



GHG EMISSIONS INVENTORY SUMMARY

Table 3-2 provides a summary of Metropolitan's GHG emissions by sector for both the 2008 and 2017 calendar years. Additional information and details on methodologies and other calendar years can be found in Appendix B.

TABLE 3-2: GHG Emissions Inventory Summary (MT CO_2e)

Scope	Emissions	2008	2017
Scope 1	Mobile Emissions	7,180	6,886
	Stationary Emissions	893	1,918
	SF_6/HFC Emissions	N/A	71
Scope 2	Treatment Plants	18,167	11,727
	Pumping Plants–Wholesale Power	193,731	176,080
	T&D Losses	2,546	1,969
	Pumping Plants–Retail Power	3,595	1,172
	Power Plants & PCS	780	511
	Reservoirs	818	610
	Other Facilities	5,923	1,941
	MISC Energy Usage	1,092	471
Scope 3	Water and Wastewater Services	13	184
	Solid Waste	2,363	3,157
	Employee Commute	9,237	7,257
	Construction	12,081	12,081
Total		**258,419**	**226,036**

Sacramento-San Joaquin Delta

3.3 METROPOLITAN GHG EMISSIONS FORECAST

The annual GHG emissions inventories presented in this CAP provide accurate reference points for GHG emissions in past years. To estimate the level of GHG emissions reductions necessary for Metropolitan to achieve its GHG reduction target and be consistent with the requirements for a qualified GHG emissions reduction plan, an emissions forecast must be prepared.[11] Forecasts of future scope 1, 2, and 3 emissions are based on Metropolitan's projected energy demand and energy sources, the anticipated impact of future Metropolitan projects, the anticipated impact of existing energy efficiency and GHG reduction programs, and regional population growth assumptions.

GHG emissions associated with Metropolitan's operations are tied closely to the location where water is sourced. Metropolitan imports water to the Southern California region from two sources: the Colorado River through the CRA and via the California Aqueduct through the SWP. Water from the CRA requires substantially more electricity usage, as it requires additional pumping across an extended distance from the Colorado River before it enters Metropolitan's distribution system. In contrast, water from the SWP does not require substantial, additional pumping due to the use of gravity to transport the water once it enters Metropolitan's operational control.[12] To account for this variability in electricity use and, therefore, GHG emissions, three forecast scenarios were modeled.

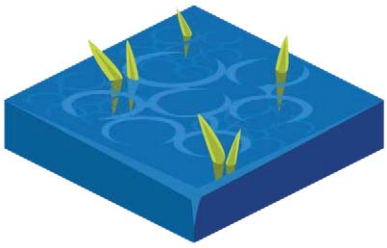
Figure 3-7 provides a description of the three modeled GHG emissions scenarios used to forecast Metropolitan's GHG emissions in 2030 and 2045. To calculate the three GHG emissions scenarios (high, average, and low), the expected water demand forecasts from the 2020 UWMP were combined with Metropolitan-specific per acre-foot emissions factors.

11. ***https://govt.westlaw.com/calregs/Document/I872A68805F7511DFBF66AC2936A1B85A?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=%28sc.Default%29***

12. *However, water from the SWP does have associated emissions not captured by Metropolitan. These emissions are detailed in the DWR CAP found here:* ***https://water.ca.gov/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan***

FIGURE 3-7: Future GHG Emissions Scenarios

LOW EMISSIONS SCENARIO



The low GHG emissions scenario utilizes the assumed water delivery demands for the average rainfall year as defined in the Metropolitan 2015 UWMP. The GHG emissions factor for this scenario is derived by calculating the activity data per acre-foot of delivered water from calendar year 2012, which is the lowest emissions year between 2008 and 2017.[13]

AVERAGE EMISSIONS SCENARIO

The average GHG emissions scenario utilizes the assumed water delivery demands of a single dry year with below-average rainfall as defined in the Metropolitan 2015 UWMP. However, the single dry year forecast assumes a single dry year level of water availability each year through 2045. The average GHG emissions factor for this scenario is calculated by averaging the activity data per acre-foot delivered from 2008-2017.

HIGH EMISSIONS SCENARIO

The high GHG emissions scenario utilizes the assumed water delivery demands for consecutive dry years with below-average rainfall as defined in the Metropolitan 2015 UWMP. The GHG emissions factor for this scenario was derived by using the activity data associated with the year 2010, which is the highest emissions year between 2008 and 2017.

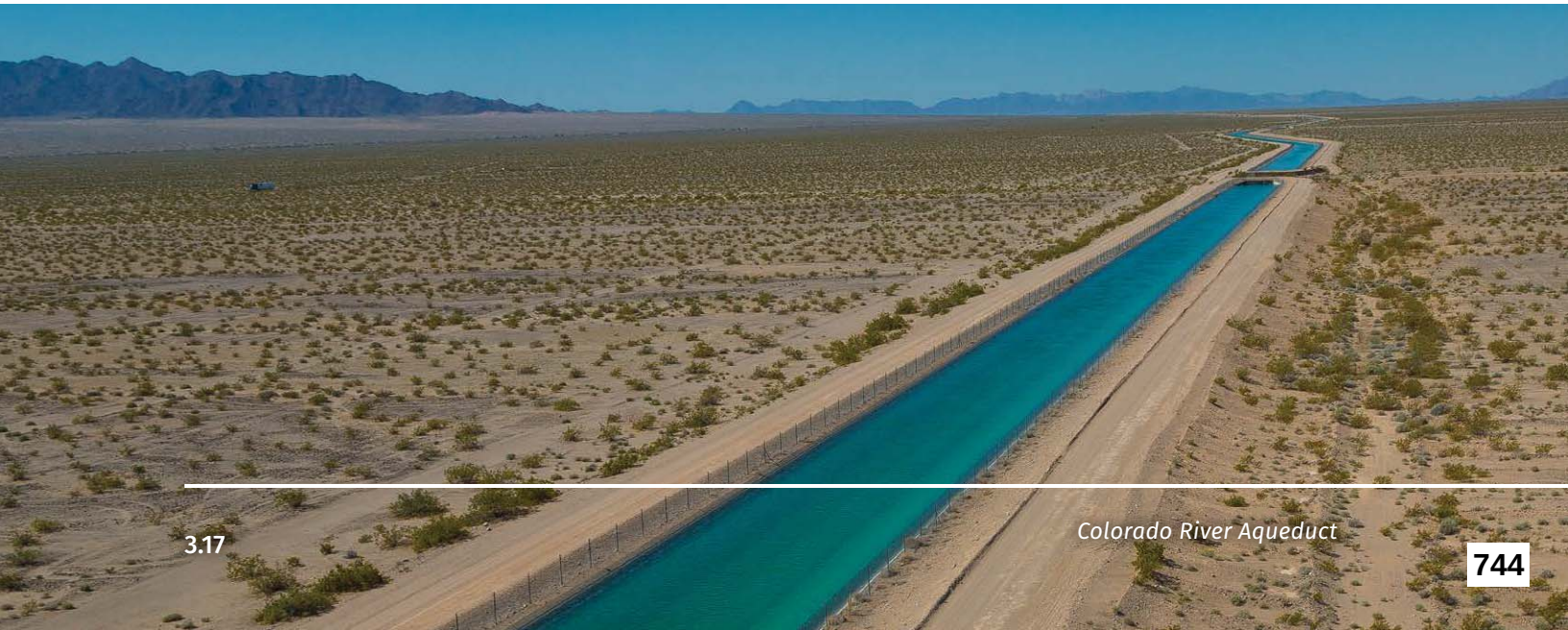
13. *This scenario provides the lowest emissions scenario for Metropolitan. Although this scenario considers multiple "average" rainfall years, due to the expected impacts of climate change (see Section 2.0), the Low Emission Scenario is considered a conservative estimate of the lower bound of future Metropolitan emissions.*

To calculate emissions factors used in forecasting, emissions in previous years (2005 through 2020) were divided by the total deliveries in each year. In years with high CRA pumping, emissions factors are much higher due to the increased electricity consumption required to pump CRA water to Metropolitan's service area. To ensure the most conservative estimates for each scenario were used to forecast the worst-case future emissions scenario, the highest resulting emissions factor (2010) was applied to the multiple dry year scenario for water deliveries from the 2020 UWMP. The average emissions scenario utilized the average emissions factor and the single dry year water delivery forecast from the 2020 UWMP. Finally, the low emissions scenario utilized the lowest emissions factor (2012) and applied the average year forecast from the 2020 UWMP. Table 3-3 provides a summary of the 2020 UWMP factors used in the GHG emissions forecasting.

TABLE 3-3: 2020 Urban Water Management Plan Factors

Inventory Year	Emissions (MT CO_2e)	Deliveries (Acre-feet)	Emissions Factor (MT CO_2e/ Acre-foot)	Scenario Applied
2010	582,952	1,642,000	0.355	High
Average of all years (2005-2020)	298,127	1,794,625	0.170	Average
2012	155,637	1,756,000	0.089	Low

**Numbers may not sum due to rounding.*



Colorado River Aqueduct

ADDITIONAL GHG EMISSIONS FORECAST CONSIDERATIONS

Regional Recycled Water Program Construction and Operation

In addition to forecasting the GHG emissions from existing Metropolitan operations under the high-, average-, and low-emissions scenarios, the planned construction and operational GHG emissions from the proposed Regional Recycled Water Program (RRWP) were also modeled and included in the forecast. The program-specific information was used to estimate the future emissions from the RRWP, including construction and operation of an Advanced Water Treatment Plant, approximately 40 miles of pipelines, three pumping stations, and groundwater injection sites. To approximate annual construction GHG emissions, total construction emissions were divided by an assumed five-year construction schedule from 2025 through 2030. Operational GHG emissions are assumed to begin in 2031. Additional information about the RRWP emissions calculations and assumptions can be found in Appendix B.

State GHG Emissions Reduction Regulations

California has enacted several regulations to reduce GHG emissions generated by energy consumption, water use, and transportation that will assist in reducing Metropolitan's emissions over time. SB 100 (2018) is the primary driver of emissions reductions in the forecast, and it accelerates the State's Renewables Portfolio Standard Program.[14] SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045. Since Metropolitan also receives electricity from other states, the renewable portfolio standards of each state in the Western Electricity Coordinating Council was included in the forecast. California has several other regulations intended to reduce GHG emissions, examples of which include Title 24 and the Advanced Clean Cars Program. Each of these regulations was reviewed and found to have limited impact on Metropolitan operations as they are designed to primarily impact community-level emissions. Furthermore, leaving these expected reductions from State regulations out of the Metropolitan forecast provides a conservative estimate of future emissions.

14. *SB 100 and other regulations are covered in depth in Appendix A.*

Diamond Valley Lake wildflowers

3.0

GHG EMISSIONS FORECAST RESULTS

The GHG emissions forecast projects Metropolitan's future GHG emissions through 2045 under high-, average-, and low-emissions scenarios. Both a mass emissions and a per-capita scenario are included below. The mass emissions forecast shows the total GHG emissions generated by Metropolitan's operations. The mass emissions forecast also serves as the basis for the per-capita forecast, which normalizes for population growth within Metropolitan's service area by dividing mass GHG emissions by Metropolitan's service population. As shown in Figure 3-8 and Figure 3-9, both mass and per-capita GHG emissions are expected to decline in future years due to the implementation of SB 100. SB 100 requires all retail electricity be carbon-free by the year 2045. Table 3-4 and Table 3-5 provide a comparison of the projected mass GHG emissions and per-capita GHG emissions for each emissions scenario in 2030 and 2045 relative to the 1990 emissions baseline.

CARBON-FREE ELECTRICITY: Electricity produced by a resource that generates no carbon emissions, such as renewable energy, nuclear or large hydroelectric sources.

FIGURE 3-8: GHG Emissions Forecast and Potential Range of Emissions

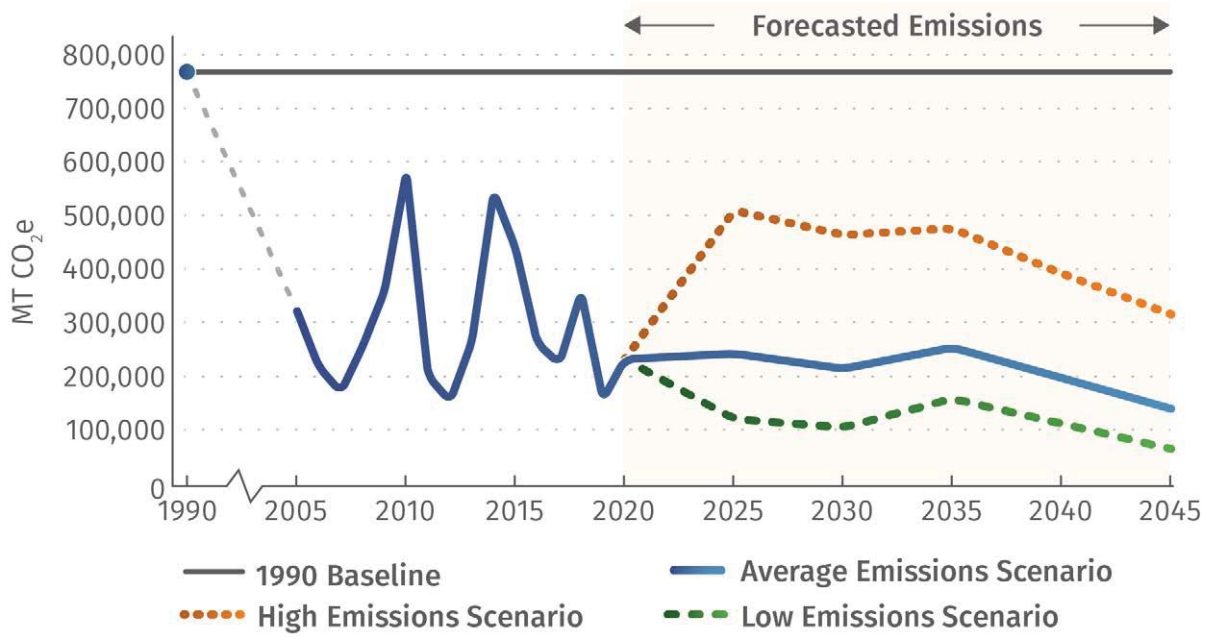


TABLE 3-4: Anticipated Changes to Mass GHG Emissions Between 1990 and 2045 (MT CO_2e)

Emissions Scenario	1990 Emissions (Baseline)	2030 Forecast Emissions	Percent Reduction	2045 Forecast	Percent Reduction
High	771,514	465,664	40%	317,441	59%
Average	771,514	216,460	72%	142,059	82%
Low	771,514	106,615	86%	66,812	91%

FIGURE 3-9: GHG Emissions Forecast and Potential Range (Per Capita)

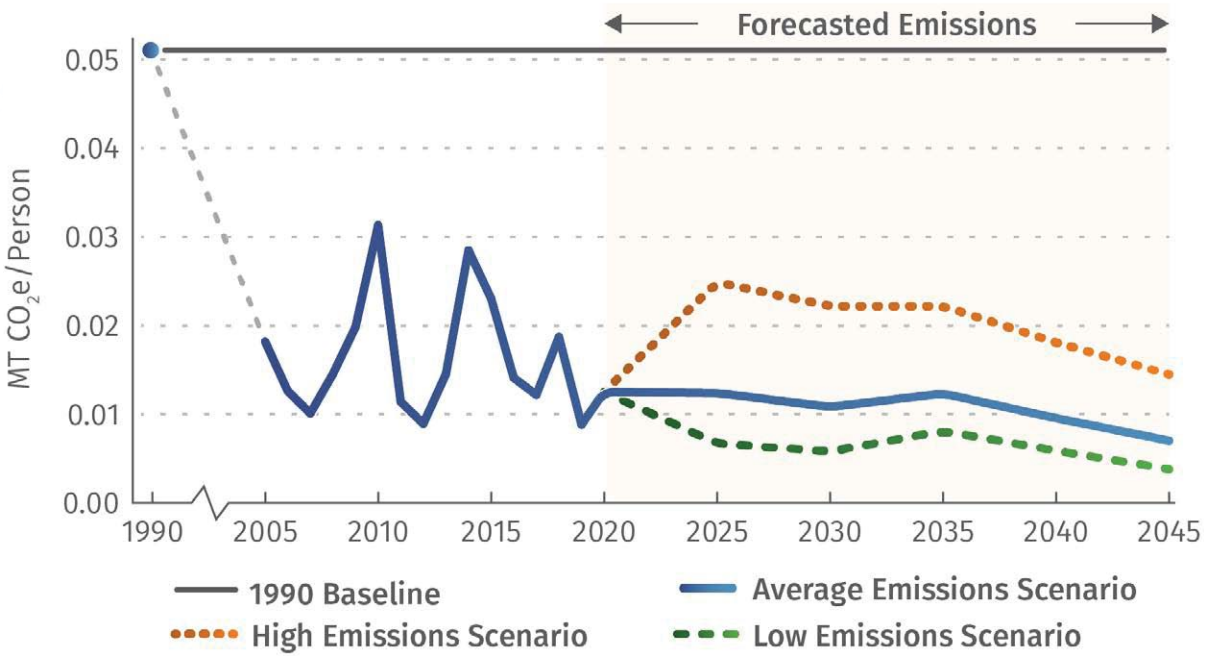


TABLE 3-5: Forecasted Per-Capita GHG Emissions Between 1990 and 2045 (MT CO_2e)

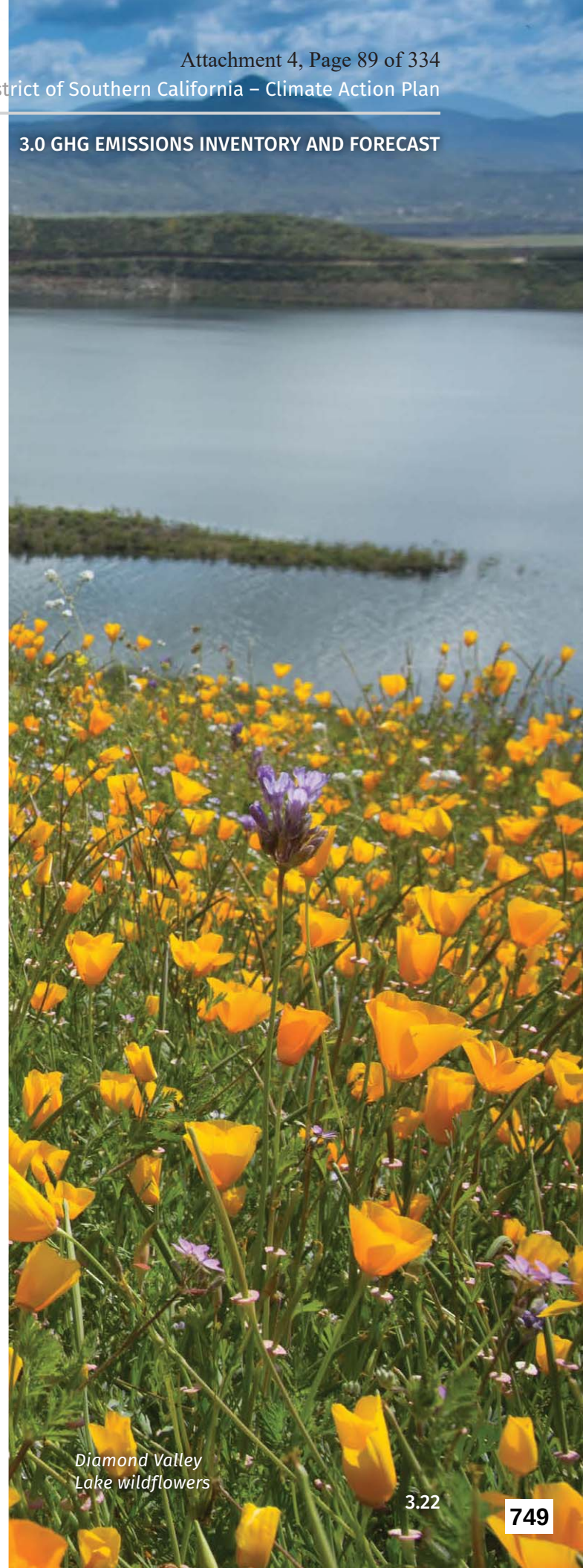
Emissions Scenario	1990 Emissions Baseline (MT/Person/Year)	2030 Forecast (MT/Person/Year)	Percent Reduction	2045 Forecast (MT/Person/Year)	Percent Reduction
High	0.0516	0.0226	56%	0.0144	72%
Average	0.0516	0.0105	80%	0.0064	87%
Low	0.0516	0.0052	90%	0.0030	94%

Population assumptions for the Metropolitan service area are as follows: 1990 population = 14,961,310; 2030 population = 20,634,000; 2045 population = 22,026,000. Population numbers are consistent with the 2020 UWMP and SCAG projections. More information on Metropolitan's per capita water use over time can be found in the 2020 UWMP.

Pursuant to guidance provided in the State's Global Warming Solutions Act of 2006 (AB 32) and the 2017 Scoping Plan, Metropolitan utilized the per capita emissions calculation to track progress and set targets for future GHG reductions (Section 4.0).[15] The per-capita GHG emissions forecast provides a metric detailing each person's GHG emissions generated from water use and can clearly illustrate the effect of water conservation on the basis of an individual's actions. For example, under the average GHG emissions scenario, mass emissions are expected to decrease by 72 percent by 2030 when compared to 1990 levels. However, using the per-capita approach, 2030 GHG emissions are 80 percent lower when compared to 1990 levels, capturing the decrease in water use of an average individual due to Metropolitan's substantial investments in water conservation efforts.

As shown in Table 3-5, Metropolitan's per-capita GHG emissions reductions are expected to range between 56 percent and 90 percent, relative to 1990 emissions by 2030, and between 72 and 94 percent, relative to 1990 emissions by 2045. Due to the variable nature of annual emission rates and the large projected range of future emissions, Metropolitan will use a carbon budget approach to measure progress towards meeting its GHG reduction goals. The carbon budget methodology is outlined in Section 4.0.

15. *See Appendix A for a full discussion of relevant legislation as well as the 2017 Scoping Plan.*



Diamond Valley Lake wildflowers

SECTION 4.0
REGULATORY CONTEXT AND GHG REDUCTION TARGETS

Metropolitan prepared this CAP to ensure that its operations and future projects are implemented in alignment with the State of California's SB 32, which builds on AB 32: The California Global Warming Solutions Act of 2006.[1] In support of AB 32, California established regulatory GHG emissions reduction mechanisms, such as the California Cap-and-Trade Program,[2] and thresholds on future GHG emissions levels. As part of this CAP, Metropolitan established GHG reduction targets consistent with the State's climate goals which would result in Metropolitan's "fair share" of emissions reductions in support of the overall statewide reductions.[3] Fair share emission reductions are determined by assessing whether an entity supports substantial progress toward the statewide reduction targets over time, not whether the entity is meeting a milestone target many years in the future. This section addresses applicable regulations related to GHG emissions and describes Metropolitan's approach to align with these GHG reduction targets and demonstrate progress over time.

1. *In 2016 statewide GHG emissions fell below 1990 levels, generally achieving the goals of AB 32.* ***https://ww2.arb.ca.gov/news/climate-pollutants-fall-below-1990-levels-first-time***
2. *An in-depth description of California's GHG reduction legislation can be found in Appendix A.*
3. *Association of Environmental Professionals, Final White Paper, Beyond 2020 and Newhall, October 18, 2016*

4.0

4.0

4.1 INTERNATIONAL REGULATIONS

INTERNATIONAL REGULATIONS

As a global intergovernmental organization, the United Nations (UN) leads and coordinates climate change response at the global level. The United Nations Framework Convention on Climate Change (UNFCCC) and Paris Agreement are central to the UN's action on climate change. Additional UN policies and programs related to climate change are discussed in Appendix A.

The Paris Agreement

The Paris Agreement (Agreement) is the first international, legally binding, global climate agreement. The Agreement was adopted in 2015 and has been ratified by 189 countries worldwide.[4] The Agreement establishes a roadmap to keep the world under 2°C of warming by the end of the century with a goal of limiting an increase of global temperature to 1.5°C. The Agreement does not dictate one specific reduction target; instead, it relies on individual countries to set nationally determined contributions or reduction targets based on gross domestic product and other factors. According to the Intergovernmental Panel on Climate Change (IPPC), achieving a global warming limit of 1.5°C requires global emissions reductions of at least 49 percent below 2017 emissions[5] through 2030 and carbon neutrality by mid-century,[6] with carbon neutrality being defined as a balance between reducing carbon and GHG emissions emitted into the atmosphere and absorbing carbon from the atmosphere through carbon sequestration and other techniques.

4. *https://unfccc.int/process/the-paris-agreement/status-of-ratification*
5. *https://www.nature.com/articles/d41586-018-06876-2*
6. *https://www.ipcc.ch/sr15/*

Transmission towers near Colorado River Aqueduct

4.2 CALIFORNIA REGULATIONS AND GHG EMISSIONS TARGETS

CALIFORNIA REGULATIONS AND GHG EMISSIONS TARGETS

California is a leader in the development of GHG policy and the mitigation of GHG emissions. Legislation and policy related to climate change mitigation have been in place since 2002. Some of these regulations establish statewide reduction goals, while others establish specific mechanisms to achieve California's goals. California became the first state to establish levels for statewide GHG reduction with the passage of AB 32 in 2006. California has since enacted additional legislation, regulations, and EOs to promote robust GHG emissions reductions across many economic sectors[7]. Although these regulations drive climate policy in California, they do not include requirements for water agencies like Metropolitan. The following is a summary of the most relevant executive and legislative emissions reduction goals established at the state level. Additional relevant policies related to climate change and GHG emissions are discussed in Appendix A.

Executive Order S-3-05 (2005)

EO S-3-05 was signed in 2005, establishing statewide GHG emissions reduction targets for the years 2020 and 2050. The EO calls for the reduction of GHG emissions in California to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The 2050 emissions reduction target would put the State's emissions in line with the worldwide reductions needed to reach long-term climate stabilization as concluded by the IPPC 2007 Fourth Assessment Report.

7. *Scoping Plan Sectors include; Industrial, Electricity, Agriculture, Commercial and Residential, High GWP, Recycling and Waste, and Transportation.*

Assembly Bill 32 (2006)

AB 32, the California Global Warming Solutions Act of 2006, is at the core of California policy related to GHG emissions reductions. By enacting AB 32, California became the first state to mandate GHG emissions reduction across all industries and economic sectors. The landmark legislation converted the 2020 GHG emissions reduction goal set by EO S-3-05 into statewide requirements, mandating the reduction of GHG emissions to 1990 levels by 2020. It also directed CARB to develop and implement a Scoping Plan and other regulations to ensure California would meet the 2020 goal.[8] The Scoping Plan includes the State's GHG inventory and 1990 baseline emission rate.[9]

Senate Bill 32 (2016)

SB 32 extends the provisions of AB 32 by requiring the State to reduce GHG emissions to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). In 2017, the CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 goal. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, along with implementation of recently adopted policies, such as SB 350 (renewable electricity), which was signed in 2020, and SB 1383 (organic waste diversion), which was signed in 2016, both discussed in Appendix B.

Executive Order B-55-18 (2018)

EO B-55-18 establishes a statewide carbon neutrality goal for GHG emissions in all sectors by 2045. The EO states, "Achievement of carbon neutrality will require both significant reduction in carbon pollution and removal of carbon dioxide from the atmosphere, including sequestration in forests, soils, and other natural landscapes."[10] It further directs the CARB to update the Scoping Plan to reflect this goal.

8. *The SB32 scoping plan does not include specific goals or requirements for water agencies.*
9. ***https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan***
10. ***https://www.gov.ca.gov/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf***

Whitsett Intake Pumping Plant

4.3 METROPOLITAN'S GHG EMISSIONS REDUCTION TARGETS

The emissions inventory and forecast presented in Section 3.0 provide a basis for Metropolitan to establish targets for future GHG reductions. Metropolitan established a 2030 target for GHG emissions reduction to achieve consistency with SB 32 and a 2045 target consistent with EO B-55-18. By defining specific reduction targets, Metropolitan can track its progress towards meeting its goals and measure the success of its CAP. CEQA Guidelines Section 15183.5(b)(1) requires that plans establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable.[11] Metropolitan has chosen to adopt GHG emissions reduction targets that align with State goals as well as international consensus on the GHG reductions needed to avoid the most serious climate change impacts. Consistency with statewide GHG reduction goals has been established through case law as an appropriate methodology for establishing significance under CEQA.[12]

ESTABLISHING AND TRACKING GHG REDUCTION TARGETS

With the release of the 2017 Scoping Plan,[13] the CARB recognized the need to balance population growth with emissions reductions, and in doing so, provided a new methodology for proving consistency with State GHG reduction goals through the use of per capita efficiency targets. These targets are calculated by dividing a jurisdiction's GHG emissions for each horizon year by the jurisdiction's total population for that target year. Metropolitan will pursue a linear per capita GHG emission reduction pathway to exceed the State's target of 40 percent

11. *14 CCR § 15183.5*
12. *CENTER FOR BIOLOGICAL DIVERSITY v. The Newhall Land and Farming Company. Decided: November, 30 2015.*
13. ***https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf***

below 1990 levels by 2030 (0.0309 MT CO_2e per person) and make significant progress towards the ultimate goal of achieving carbon neutrality by 2045 (0.0 MT CO_2e per person). Measuring progress towards meeting the established target using a per capita emissions approach is achieved by using Metropolitan's 1990 GHG emissions and then dividing by the population of Metropolitan's service area in that year to calculate a baseline per capita emissions rate of 0.0516 MT CO_2e per person in 1990. Using Metropolitan's long-term goal of carbon neutrality, a per capita emissions rate of 0.0 MT CO_2e per person was established for the year 2045, and interim targets (between 1990 and 2045) were established by drawing a straight line between these two points. The straight line approach results in a per capita target that is 73 percent below 1990 levels by 2030, as shown in Table 4-1, which exceeds the State's 40 percent reduction goal.

While the GHG reduction targets have been determined using a per capita approach, Metropolitan will measure progress towards these goals by calculating its total operational GHG emissions in MT CO_2e. In order to better understand the total emissions allowable in each year, the per capita target in MT CO_2e per person is multiplied by the expected service area population in each year. This generates a total MT CO_2e value for that year as shown in Table 4-1 in the "Associated Mass Emissions" column.

TABLE 4-1: Comparison of Metropolitan and California GHG Reduction Targets

Target	Per Capita Emissions (MT CO_2e)	Associated Mass Emissions* (MT CO_2e)	Percent Reduction (Below 1990)
Metropolitan's 1990 Per Capita Emissions (AB32 Target)	0.0516	771,514	N/A
Minimum Per Capita Reduction Target for SB 32 Consistency	0.0309	638,423	40%
Metropolitan's Per Capita 2030 GHG Emissions Target	0.0141	290,192	73%
Metropolitan's 2045 Per Capita Goal	0	0	100%
California's EO B-55-18 Per Capita Goal	0	0	100%

+Pending final population numbers
**Associated Mass Emissions are calculated by multiplying the per capita emissions target by the projected population in that year. Final mass emission values will be updated based on actual population data.*

FIGURE 4-1: Metropolitan's Per Capita GHG Emissions Targets (MT CO_2e per Person)

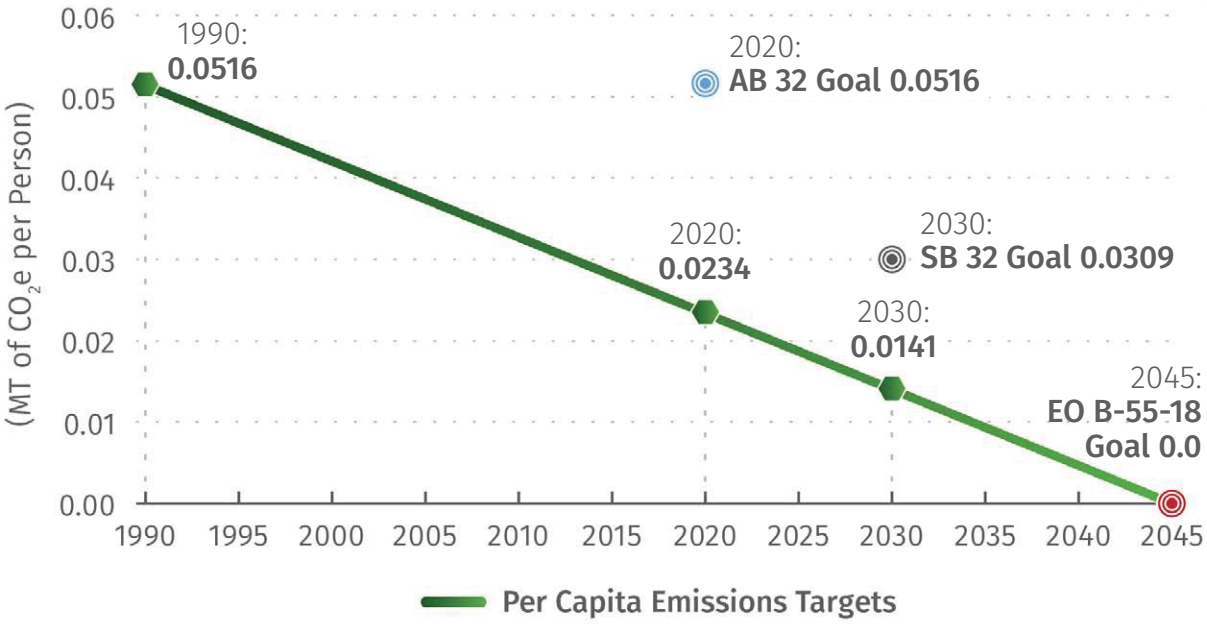
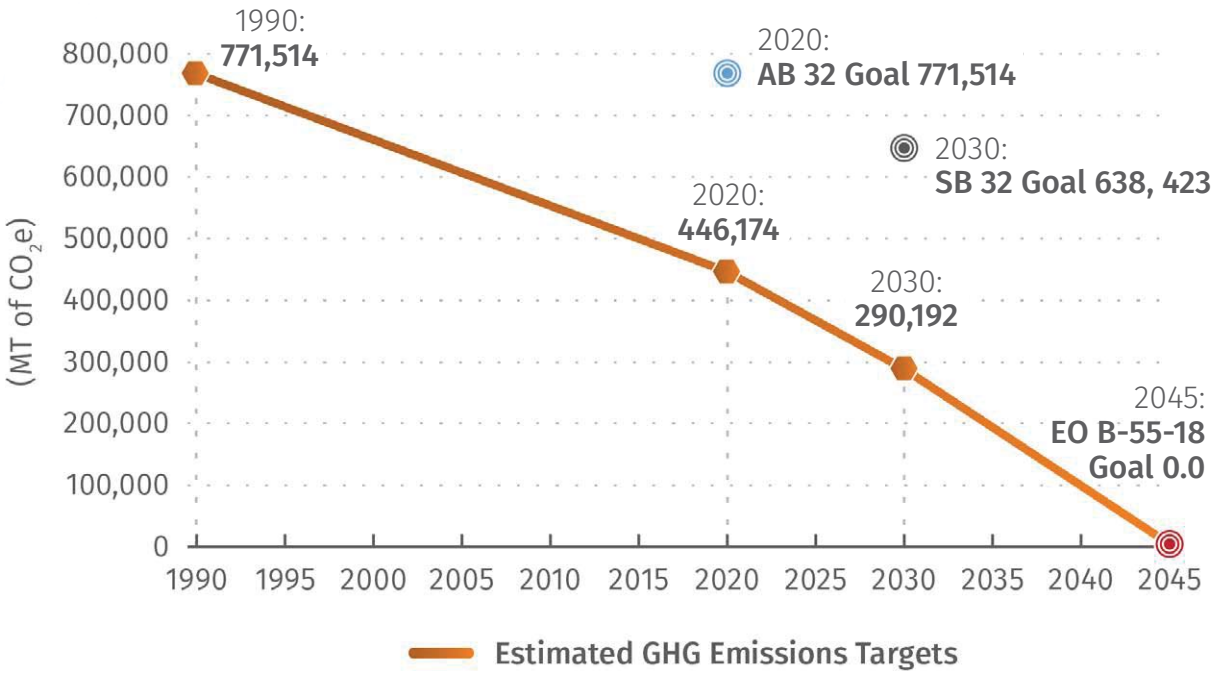


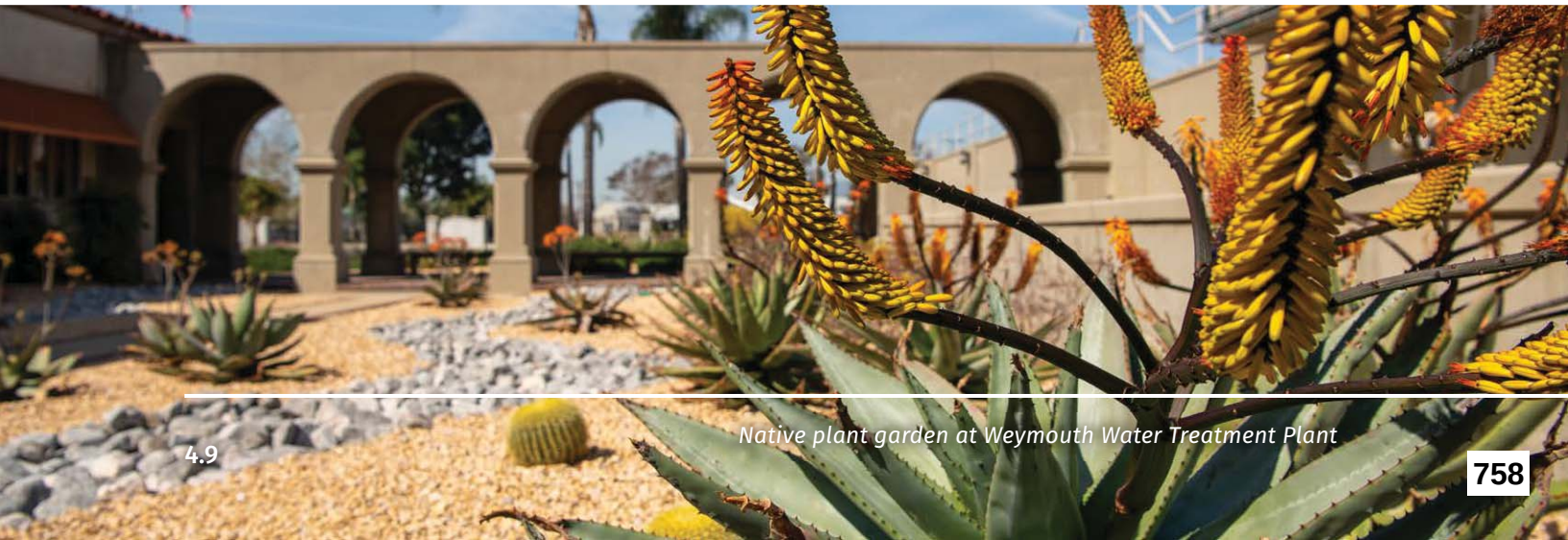
Figure 4-1 describes the complete per capita reduction pathway. The figure shows Metropolitan will meet or exceed the per capita emissions target for all three California goals described by AB 32, SB 32, and EO B-55-18. The use of per capita reduction targets to show progress towards GHG reduction goals was established and promoted by the State in the 2017 Scoping Plan Update.[14] Figure 4-2 illustrates the per capita reduction pathway translated into mass emissions. Per capita emissions are translated to mass emissions by multiplying by the population in each year. As shown in Figure 4-2, Metropolitan's target pathway exceeds the State's emissions reduction goals in 2020 and 2030 before ultimately reaching carbon neutrality in line with the State's long-term goal in 2045. The current population values are projected and will need to be updated over time as actual population numbers are established. This will change the allowable emissions (MT CO_2e) in each year by effectively including a variable that considers the actual service population in determining the emission reductions. Normalizing the emissions by dividing the total emissions by population removes population growth as a variable and allows Metropolitan to focus on deep decarbonization over time. Furthermore, achieving the 2045 target of carbon neutrality may be an iterative process and require revisions between now and 2045, with changes to State policy or new statewide GHG emissions targets established by the California legislature.

14. *https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf*

FIGURE 4-2: Metropolitan's Per Capita GHG Emissions Targets Translated to Mass Emissions (MT CO_2e)



Metropolitan's estimated emissions in 2030 are well below the State's 2030 target. However, due to the variability associated with Metropolitan's GHG emissions (as discussed in Section 3.0), using any individual year to gain an understanding of Metropolitan's GHG emissions reduction progress would not provide a clear picture of overall emissions reduction trends. Therefore, Metropolitan intends to implement a carbon budget approach to determine GHG emissions reduction progress.



Native plant garden at Weymouth Water Treatment Plant

METROPOLITAN'S CARBON BUDGET AND LINEAR EMISSIONS

Due to the nature of its operations, Metropolitan's GHG emissions fluctuate from year to year depending on water pumped from the Colorado River (see Figure 3-2). Consequently, GHG emissions recorded in any one particular year are not necessarily representative of Metropolitan's overall progress towards meeting its GHG emissions reduction targets. To account for this factor, Metropolitan will track its emissions annually using a carbon budget approach.

The carbon budget is analogous to a tank with a set capacity or a total mass emission cap between 2005 and carbon neutrality in 2045. All of the emissions from Metropolitan's operations go into this tank each year. The total capacity of the tank is Metropolitan's total emissions budget, and over time that tank fills up. As long as Metropolitan produces fewer GHG emissions than can fit in the tank, the target will be achieved regardless of emissions produced during any particular year. This process is illustrated in Figure 4-3. Carbon budgets are widely used in the context of international climate policy and development of global-scale GHG emissions targets.[15,16,17] The importance of staying within the carbon budget has also been established by CARB.[18] As outlined in the 2017 Scoping Plan, California's strategic vision for achieving at least a 40 percent reduction in GHG emissions below 1990 levels by 2030 is based on the level of reductions scientists say is necessary to meet the Paris Agreement goals (CARB 2017). To track progress in achieving the GHG emissions reduction goals, Metropolitan will utilize the per capita target methodology in combination with an established carbon budget.

As described above, Metropolitan will pursue carbon neutrality by 2045 via a linear per capita emissions reduction methodology. To calculate the total carbon budget that corresponds to Metropolitan's GHG emissions reduction targets, the area beneath the reduction curve shown in Figure 4-2 is calculated. The sum of this area represents the carbon budget. Data is not available for the years 1990 through 2004; therefore, the carbon budget begins in 2005, the year in which Metropolitan began submitting data to The Climate Registry. Using this methodology allows Metropolitan to capture its significant progress toward reducing emissions to well below the AB 32 goal of returning to 1990 emissions levels by 2020. According to this methodology, between 2005 and 2045 Metropolitan's total carbon budget is 14,660,475 MT CO_2e.

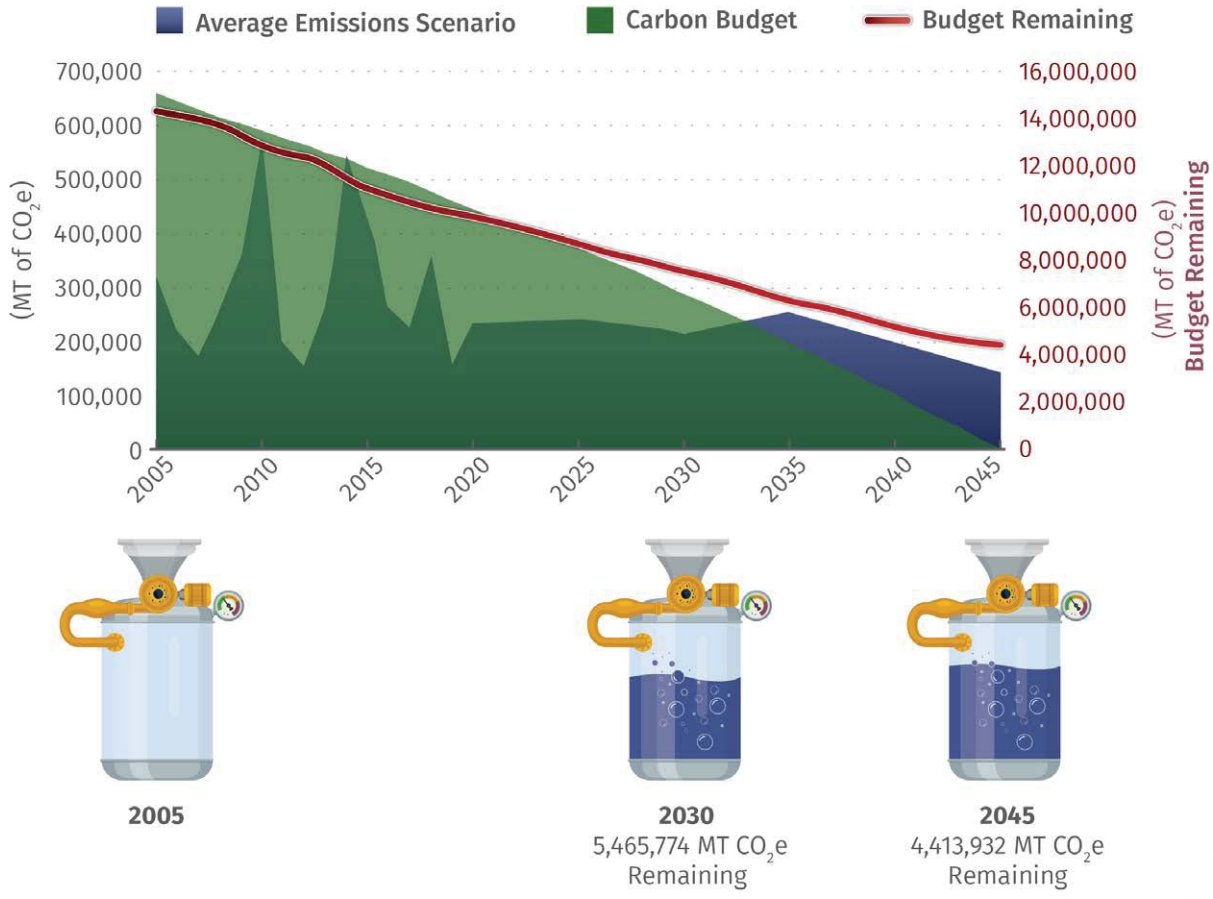
15. *https://www.earth-syst-sci-data.net/11/1783/2019/*
16. *https://www.wri.org/resources/data-visualizations/infographic-global-carbon-budget*
17. *https://www.carbonbrief.org/analysis-why-the-ipcc-1-5c-report-expanded-the-carbon-budget*
18. *https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/meetings/012319/cneutrality_ca.pdf*

FIGURE 4-3: How a Carbon Budget Works

GHG EMISSIONS REDUCTION GAP

In order to better illustrate how the carbon budget will be applied to Metropolitan's operations, each of the emissions scenarios defined in Section 3.0 can be analyzed under the carbon budget approach. Figure 4-4 illustrates Metropolitan's carbon budget contextualized with the average GHG emissions scenario in dark blue with the carbon budget overlaid in green. The tanks below the graph in Figure 4-4 show the remaining budget in each year. Under this scenario, Metropolitan stays within its carbon budget through 2045 (red line) but would still need additional GHG reductions to achieve carbon neutrality by 2045.[19]

FIGURE 4-4: Metropolitan's Projected Carbon Budget Under the Average Emissions Scenario



19. *Based on Metropolitan's historical emissions, it is expected that actual future emissions will continue to be highly variable and Metropolitan will continue to monitor its carbon budget on an annual basis.*

4.0

The average GHG emissions scenario is only one of the potential GHG emissions scenarios Metropolitan is including in its planning process. Table 4-2 and Figure 4-5 show the impact of each of the three forecasted GHG emissions scenarios on the projected carbon budget. In every GHG emissions forecast scenario, Metropolitan is expected to remain within its carbon budget through 2030. Both the average and low emissions scenarios show Metropolitan maintaining a positive budget through 2045. However, under the high emissions scenario, without additional GHG emissions reductions, Metropolitan will deplete its carbon budget by 2043, as shown in Table 4-2. In all scenarios, additional reductions will be needed to achieve carbon neutrality in 2045. This CAP establishes the foundation for achieving these reductions over time and will allow Metropolitan to stay within its allotted carbon budget. Metropolitan will continue to update the CAP with new and additional GHG emissions reduction measures as necessary to remain under the carbon budget regardless of how actual future scenarios play out.

FIGURE 4-5: Metropolitan's Forecasted Carbon Budget Outcomes

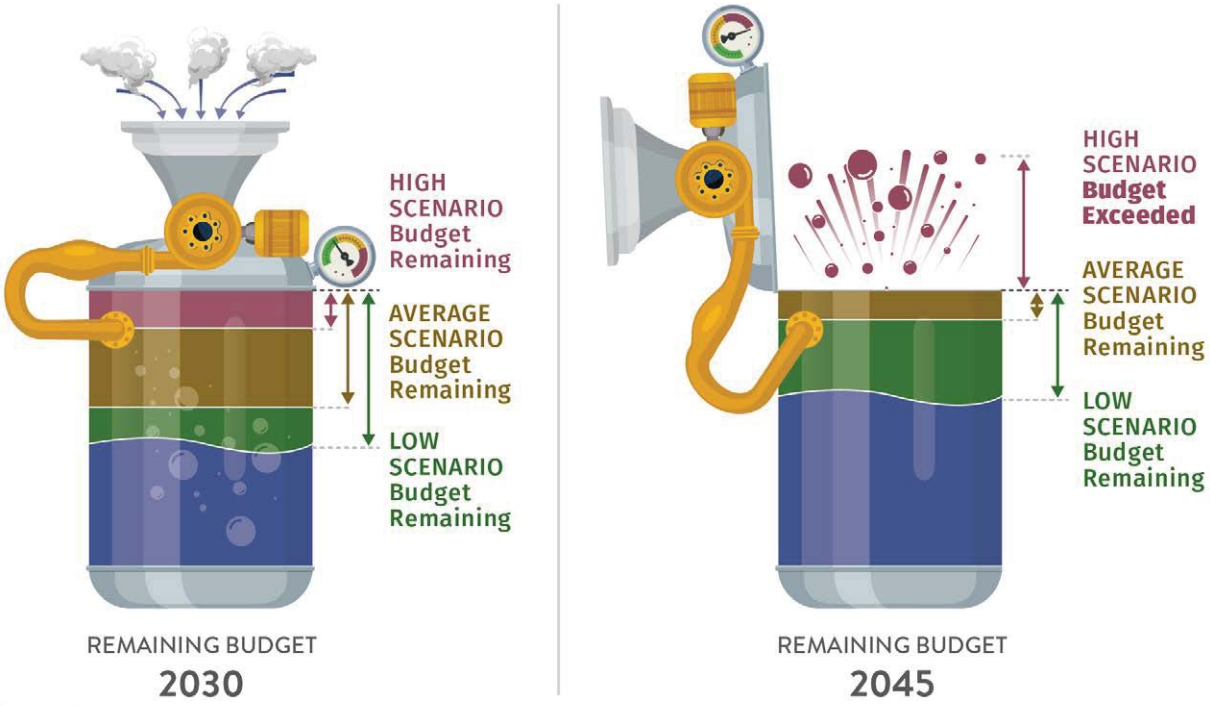


TABLE 4-2: Metropolitan's Forecasted Carbon Budget Outcomes

Emissions Levels	Remaining Budget 2030 (MT CO_2e)	Remaining Budget 2045 (MT CO_2e)
Low Emissions	6,405,936	6,704,456
Average Emissions	5,465,774	4,413,932
High Emissions	3,384,248	*(718,236)*

( ) denotes a negative value

METROPOLITAN'S CURRENT BALANCE

Between 2005 and 2020, Metropolitan used approximately 4,770,038 MT CO_2e of its total carbon budget of 14,660,475 MT CO_2e. This accounts for only 53 percent of the total budget allocated for this timeframe. As shown in Figure 4-6, Metropolitan has approximately 9.9 million MT GHG emissions (as CO_2e) remaining until 2045. In order to stay within its established carbon budget, Metropolitan developed a suite of GHG reduction strategies outlined in Section 5.0.

FIGURE 4-6: Metropolitan's Remaining Carbon Budget as of 2020

Estimated Carbon Budget (2005 to 2045)
14,660,475 MT CO_2e

Allocated Carbon Budget (2005 to 2020)
8,924,634 MT CO_2e

Carbon Budget Used Through 2020
4,770,038 MT CO_2e

Percent of 2020 Carbon Budget Used
53%

Total Carbon Budget Remaining
9,890,437 MT CO_2e

SECTION 5.0
METROPOLITAN'S GHG EMISSIONS REDUCTION STRATEGY

While Metropolitan has made significant progress towards reducing its GHG emissions (especially over 1990 baseline levels), achieving carbon neutrality by 2045 requires additional focused actions. This CAP includes specific strategies that, when implemented, can achieve carbon neutrality and provide co-benefits, such as improved infrastructure reliability, increased energy reliability, and decreased costs associated with energy procurement and maintenance. This section focuses on GHG emission reduction strategies over which Metropolitan has direct operational control (e.g., emissions from construction equipment or fleet vehicle replacement). These strategies or action items can have either quantifiable (i.e., with clear GHG tracking metrics and performance standards) or non-quantifiable (i.e., "supportive") goals associated with them. While "supportive" measures may not be quantifiable, they can provide opportunities to study technologies and strategies that can ensure Metropolitan reaches its GHG reduction goals. An example of a quantifiable measure would be purchasing a specific amount of carbon-free electricity, whereas a supportive measure would be implementing a sustainable purchasing policy. The first example has a quantifiable GHG reduction. The second may reduce emissions somewhere, but that reduction is not quantifiable for Metropolitan. Together, these measures establish a pathway to achieve carbon neutrality and satisfy the requirements of CEQA Guidelines Section 15183.5(b)(1)(D) for a qualified GHG reduction plan. It is important to note that none of the projects listed in Section 5.0 have been approved and are subject to the approval of Metropolitan's Board of Directors or General Manager before implementation.

5.0

Weymouth Water Treatment Plant solar panels

5.0

Sacramento-San Joaquin Delta

5.1 STRATEGY OVERVIEW

Metropolitan serves a critical function within its service area by providing safe and reliable water to its member agencies who then serve homes and businesses throughout Southern California. The transport and delivery of water will always be needed to meet the needs of Southern California's growing population and dynamic economy. While increasing water efficiency can decrease per capita water demand and thus reduce some of Metropolitan's GHG emissions, these actions alone will not be sufficient to meet the goal of carbon neutrality. This comprehensive CAP identifies strategies to reduce GHG emissions, ensures implementation of future technological advances, and incorporates State regulations related to climate change.

Metropolitan has organized its GHG reduction measures into three emission categories or scopes–direct combustion (Scope 1), indirect electrical consumption (Scope 2), and indirect emissions and sequestration (Scope 3)–as well as nine core strategies to systematically reduce overall GHG emissions.[1] These strategies and measures are summarized below. Sections 5.2 through 5.4 detail the specific actions required to reduce emissions and provide a high-level course of action to achieve Metropolitan's goal of carbon neutrality. Through these measures, Metropolitan will be well-positioned to meet its carbon neutrality goal by 2045. By utilizing a carbon budget to track its emissions reductions, Metropolitan can leverage this data to accelerate GHG reduction strategies and identify and implement new technologies, as needed. As outlined in Section 6.0, Metropolitan will evaluate and update the CAP every five years and adjust its implementation measures (such as the amount of carbon-free electricity to purchase) to balance the carbon budget, all the while balancing the cost of the water Metropolitan provides to its customers.

1. *The GHG Protocol, which is discussed in detail in Section 3.0, GHG Emissions Inventory and Forecast, segregates GHG emission sources into 3 scopes based on varying levels of control: Scope 1 –Direct Emissions from the activities that are directly under an organization's control, such as on-site fuel combustion including boilers, fleet vehicles and air-conditioning leaks; Scope 2 – Indirect Emissions from purchased electricity–emissions are created during the production of the electricity that is eventually used by the organization; and Scope 3 – All Other Indirect Emissions from activities of the organization, occurring from sources that it does not own or control, including emissions associated with business travel, procurement, waste and water usage.*

SCOPE 1:

DIRECT EMISSIONS

STRATEGY 1: Phase Out Natural Gas Combustion at Facilities

Natural gas and other fossil fuels combusted in Metropolitan facilities emit approximately 1,000 MT CO_2e per year. While natural gas and other fossil fuels are not the most substantial source of emissions, natural gas-powered equipment can be electrified over time as the equipment reaches the end of its useful life. Once equipment is electrified, carbon-free electricity can be used to power it, further reducing GHG emissions.

STRATEGY 2: Zero Emission Vehicle Fleet

Metropolitan's fleet emits on average 7,000 MT CO_2e per year. Fully electrifying or otherwise decarbonizing Metropolitan's fleet and powering it with carbon-free electricity or other zero emission technology would allow for this emission source to achieve carbon neutrality. However, not all vehicles in Metropolitan's fleet currently have a zero-emission option. While passenger vehicles can take advantage of commercially available zero-emission vehicle technologies (ZEV), such as electric vehicles (EVs), replacement of heavy-duty vehicles will occur at a slower pace as new technologies are introduced.

STRATEGY 3: Use Alternative Fuels to Bridge the Technology Gap to Zero Emission Vehicles and Equipment

Metropolitan currently uses a combination of gasoline, diesel, and compressed natural gas to fuel its fleet. While zero-emission heavy-duty vehicles are being developed, using low-carbon intensity fuels like renewable diesel in its older vehicles can help reduce GHG emissions over the short-term. The use of alternative fuels allows for additional time to fully vet the new zero-emission technology before significant infrastructure investments are made, which could help prevent stranded assets through the proper selection of the most cost-effective alternatives.

While zero-emission heavy-duty vehicles are being developed, using low-carbon intensity fuels like renewable diesel can help reduce GHG emissions over the short term.

SCOPE 2:

INDIRECT EMISSIONS FROM ELECTRICITY

STRATEGY 4: Utilize Low-Carbon and Carbon-Free Electricity

Electricity consumption is Metropolitan's single largest and most variable emission source. While SB100 ensures that emissions from retail electricity will be reduced over time, additional steps will be needed to generate or procure carbon-free electricity to reach Metropolitan's carbon neutrality goal. Purchasing low-carbon and carbon-free electricity, implementing pump time-of-use strategies, and developing additional carbon-free energy generation are all covered under this strategy.

STRATEGY 5: Improve Energy Efficiency

Increased efficiency of electric-powered equipment can substantially reduce GHG emissions. Improving pump efficiency, installing light emitting diode (LED) lighting, and installing energy recovery systems could all reduce the total demand for electricity from Metropolitan systems, saving money and emissions.

SCOPE 3:

OTHER INDIRECT EMISSIONS

STRATEGY 6: Incentivize More Sustainable Commutes

Based on its experiences with the COVID-19 global pandemic, Metropolitan is re-evaluating its remote working options and alternative work schedules. These changes alone may affect when and how employees commute to work, and thus, may reduce Metropolitan's carbon footprint. In addition, Metropolitan tracks employee commuting methods and provides education on alternative commute options as well as discounts on transit passes and EV charging stations at select facilities (e.g., Union Station Headquarters and the Weymouth Water Treatment Plant). Providing EV charging infrastructure encourages employees to drive personal EVs by providing workplace charging options. Collectively, these incentives help Metropolitan lower its carbon footprint.

STRATEGY 7: Increase Waste Diversion to Achieve Zero Waste

To reduce emissions in a variety of sectors, Metropolitan will develop and implement a Net-Zero Waste Plan to eliminate waste generated at offices and other facilities, which would involve diverting 100 percent of organic and inorganic waste streams from the landfill, as well as develop policies to eliminate the use of single-use plastics.

STRATEGY 8: Increase Water Conservation and Local Water Supply

Metropolitan has a long history of incentivizing water conservation, which has had a measurable effect on overall water conservation (and GHG emissions). This can be clearly seen through the decrease in per capita water consumption over time from 0.14 acre-feet per person in 1990 to 0.09 acre-feet per person in 2017, a 36 percent reduction in per capita water use. Metropolitan plans to continue and expand its water conservation efforts into the future. Reduced per capita water consumption allows Metropolitan to meet the water demands of a growing population and reduce operational emissions.

STRATEGY 9: Investigate and Implement Carbon Capture and Sequestration Opportunities

While Strategies 1 through 8 actively reduce GHG emissions from Metropolitan's operations, Strategy 9 looks at opportunities for negative emissions through carbon capture and storage and/or carbon sequestration on natural and working lands (e.g., rangeland, forests, woodlands, wetlands and coastal areas, grasslands, shrubland, farmland, riparian areas, and urban green space). Carbon capture and storage refers to the process of capturing CO_2 emissions from the atmosphere or an industrial process, transporting it, and storing it in deep geological formations, the ocean, or minerals.[2] Carbon sequestration programs will be an important tool to mitigate some of Metropolitan's emissions. It is important to plan and implement sequestration programs that can be used as mitigation. Although no reductions were quantified for this strategy, future CAP updates and projects may utilize carbon sequestration to help Metropolitan achieve carbon neutrality.

Table 5-1 summarizes how each of the strategies established by Metropolitan in this CAP align with the emission sources outlined in ICLEI's[3] Local Government Operations Protocol by scope to provide a transparent outline of how Metropolitan plants to reduce its emissions over the next decade.

2. ***https://www.ipcc.ch/site/assets/uploads/2018/03/srccs_wholereport-1.pdf***
3. *ICLEI is an international non-governmental organization that promotes sustainable development. ICLEI provides technical consulting to local governments to meet sustainability objectives.*

TABLE 5-1: Scope, Strategy, and Measure Summary

Scope	Emissions Source	Strategy
1	Stationary Combustion	Strategies 1, 3
1	Mobile Combustion	Strategies 2, 3
1	Fugitive Emissions	Strategy 9
2	Purchased Electricity	Strategies 4, 5, 8
3	Waste Generation	Strategy 7
3	Employee Commute	Strategy 6
3	Employee Business Travel	Strategies 6, 9

IMPLEMENTATION PHASES AND GHG REDUCTION

The intent of the CAP is to achieve the 2030 GHG reduction target and demonstrate substantial progress toward the long-term State reduction goal of carbon neutrality by 2045. New opportunities are anticipated to emerge that could yield additional reductions beyond those identified in this CAP. Furthermore, it is recognized that climate action planning is an iterative process, and additional phases may be needed to continue and expand the actions in the CAP and to explore new opportunities to meet carbon neutrality. At this time, Metropolitan has developed two implementation phases for the GHG reduction measures considered in the CAP, Phase 1 and Phase 2.

Phase 1 measures are ready for implementation over the next ten years based on their cost, available technology, and certainty about future conditions. Phase 2 measures show promise, but need more research, new technologies, or different financial conditions before they can be implemented. While Metropolitan will work to stay under its carbon budget through 2030 and 2045 through implementation of the identified measures, the high degree of variability in annual emissions could require increased or adapted implementation of the measures outlined in this section.

As discussed in Section 4.0 Regulatory Context and Targets, Table 5-2 shows the carbon budget compared to Metropolitan's expected emissions between 2005 and 2030 under the low average and high emission scenarios. As seen in the table Metropolitan is expected to stay within the carbon budget in all of the emission

forecasts. However due to the uncertainty of future demand potential climate impacts and the long term goal of carbon neutrality Metropolitan will implement the GHG reduction measures outlined in Sections 5.2 through 5.4. The modeled forecasts represent the likely best, worst, and average case for any particular year. The most likely scenario is an oscillation around the mean with some high emission years and some low emission years. However, the measures listed in Table 5-3 (see Section 5.3, Measure Quantification and Summary Table) allow Metropolitan to achieve its GHG reduction goal regardless of actual future conditions.

TABLE 5-2: Carbon Budget and Projected Reduction Gap Through 2030

Scenario	Total Allowable Budget (2005–2030)	Estimated Metropolitan Emissions (2005–2030)	2030 Gap*
Low Emissions Scenario	12,577,075	6,171,139	*(6,405,936)*
Average Emissions Scenario	12,577,075	7,111,301	*(5,465,774)*
High Emissions Scenario	12,577,075	9,192,827	(3,384,248)

Additional GHG reductions will be needed to achieve carbon neutrality in 2045. While the strategies listed above provide a high-level pathway for Metropolitan to achieve carbon neutrality and the measures outlined in this CAP provide a framework to achieve that goal, utilization of new technologies and the implementation of existing and future state policies will ensure that Metropolitan will ultimately reach its goal.

Execution of the established strategies and implementation of the supporting measures are detailed in Section 6.0, Implementation and Monitoring. Following the implementation strategy outlined in Section 6.0 will be critical to meeting the GHG emissions reduction targets established by Metropolitan.

The measures in Table 5-3 allow Metropolitan to achieve its GHG reduction goal regardless of actual future conditions.

5.0

Great Blue Heron forages for food, Yolo Bypass

5.2 GHG REDUCTION MEASURES CO-BENEFIT SUMMARY

Reducing emissions and mitigating the potential impacts of climate change have a range of additional co-benefits that result in a positive impact or benefit to Metropolitan and its service area. For example, eliminating direct emissions would also reduce the amount of carbon monoxide and other pollutants released into the atmosphere, thereby incrementally improving regional air quality and community health. Likewise, as discussed in Section 5.6, Measure WC-2 will identify and expand on the current water reduction programs with the highest adoption rates and highest water reduction impacts. Expanding those programs will increase water conservation while also reducing GHG emissions. A co-benefit analysis has been conducted for each strategy and is outlined in the following section. Although there are myriad co-benefits related to reducing emissions, this analysis focuses on five primary co-benefits.

COMMUNITY HEALTH

One of the primary co-benefits of reducing GHG emissions is directly improving community health. For example, replacing natural gas and propane-consuming equipment with electrically-powered equivalents, as outlined in Measure DC-2, would result in cleaner air because burning natural gas and propane results in the release of carbon monoxide, nitrogen dioxide, and particulate matter (PM).[4] According to a California Energy Commission study of public health and electrification would significantly reduce air pollutant emissions, resulting in improved air quality and a reduction in mortality rates from pollution.[5] The analysis specifically notes that the monetized health benefits for combined changes in O_3 and $PM_{2.5}$[6] from electrification would result in $108 billion per year in cost-savings

4. ***https://www.epa.gov/indoor-air-quality-iaq/sources-combustion-products-introduction-indoor-air-quality***
5. ***https://ww2.energy.ca.gov/2019publications/CEC-500-2019-049/CEC-500-2019-049.pdf***
6. *$PM_{2.5}$ stands for particulate matter below 2.5 micrometers or below (a unit of measurement). $PM_{2.5}$ is small particulates found in the air that can enter lungs and cause health issues.* ***https://www.cdc.gov/air/particulate_matter.html***

by 2050 for California, including $56 billion in benefits for the South Coast Air Basin.[7] Similarly, electrifying the fleet (Strategy 2) would result in a reduction of gasoline and diesel fuel combustion, which similarly provides incremental benefits to air quality and human health.

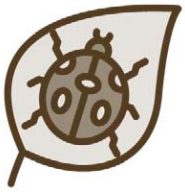
COST SAVINGS

Although implementation of the GHG emissions reduction measures generally requires an investment of either time or money, many measures have longer-term cost savings that are attributable to reduced utility and transportation costs or avoided waste. These cost savings co-benefits can range in timeframe and monetary returns, and do not account for the potentially significant economic benefits of avoiding impacts associated with climate change, such as increased drought and sea level rise. Examples of cost saving measures to be implemented by Metropolitan are the energy efficiency measures outlined in Strategy 5. These measures will result in long-term cost-savings from reducing the amount of energy required to operate.

Additionally, establishing a zero emission fleet, as outlined in Strategy 2, would be completed as vehicles are replaced at the end of their natural life. Replacing gasoline powered vehicles with electric vehicles may result in a higher up-front cost. However, recent studies including one by Massachusetts Institute of Technology found that, over the course of the vehicle's useful life, the cost savings associated with fuel savings and decreased maintenance costs result in lower lifecycle costs compared to both hybrid and internal combustion vehicles.[8] Maintenance costs on an electric car are much lower because they have fewer moving parts and fewer fluids to be replaced and are easier on brake systems. Furthermore, the study found that EV lifecycle costs are fairly insensitive to electricity costs and that even a doubling of electricity costs does not change the relative cost comparison between battery electric vehicles and internal combustion vehicles.[9]

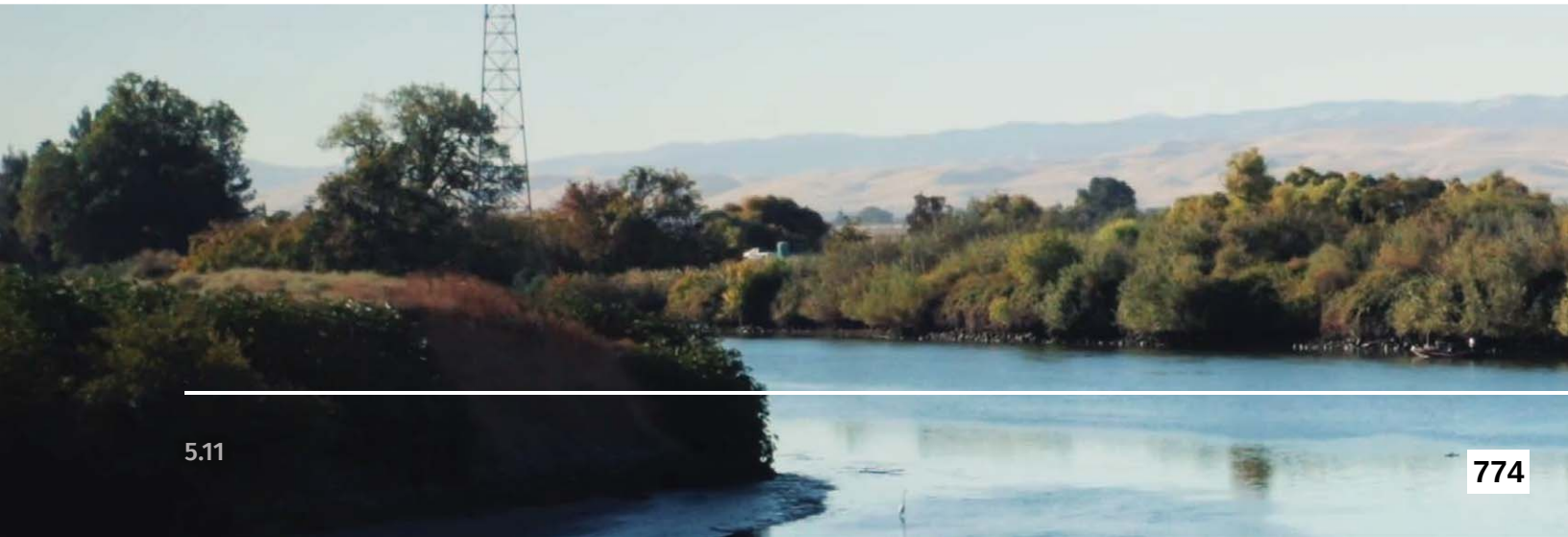
7. *The South Coast Air Basin is one of several regional air basin areas designated by the State to manage air quality. The South Coast Air Basin covers an area of 6,745 square miles and encompasses much of Metropolitan's service area.*
8. ***https://www.carboncounter.com/***
9. ***https://pubs.acs.org/doi/suppl/10.1021/acs.est.6b00177/suppl_file/es6b00177_si_001.pdf***

ECOSYSTEM HEALTH



It is estimated that plastics make up approximately 90 percent of the floating marine debris[10] and, based on a study of beach debris at sites along the Orange County coast, expanded polystyrene foam was the second most abundant form of beach debris.[11] Debris is released into the world's oceans at a rate of 13 million MT of plastic annually, which is equivalent to dumping one standard garbage truck of waste into the ocean every minute.[12] Globally, over 800 species are affected by marine debris, including fish, seabirds, sea turtles, and marine mammals, which can become entangled in or ingest plastic debris, causing suffocation, starvation, and drowning. As of 2018, it is estimated that half of sea turtles worldwide have ingested plastic and plastic waste kills up to a million seabirds a year. Integrating a plan to replace single-use plastics, polystyrene, and other non-biodegradable items with biodegradable or multi-use materials would thereby improve ecosystem health while helping to drive down Metropolitan's GHG emissions. The health of an ecosystem is directly correlated to the health of the humans living in it because humans ultimately depend upon ecosystem products and services (such as availability of fresh water, food, and air).[13] Measure WA-1, discussed in detail in Section 5.4, aims to implement procurement policies that eliminate the use of single-use plastics, polystyrene, and other non-biodegradable items at Metropolitan and reduce the waste stream to the surrounding ecosystems.

10. *United States Department of Commerce, National Oceanic and Atmospheric Administration, Office of Public and Constituent Affairs (1999). Turning to the Sea: America's Ocean Future; United Nations Environment Programme (1995). Global Programme of Action for the Protection of the Marine Environment from Land-based Activities. Note by the Secretariat. UNEP (OCA) /LBA/IG.2/7.*
11. *S. Moore et al. (2001). Composition and Distribution of Beach Debris in Orange County, California. Marine Pollution Bulletin 42.3: 241-245. Plastic pellets used to manufacture plastic products was the most abundant type of debris.*
12. ***https://www.pewtrusts.org/en/research-and-analysis/articles/2018/09/24/plastic-pollution-affects-sea-life-throughout-the-ocean***
13. ***https://www.who.int/globalchange/ecosystems/en/***

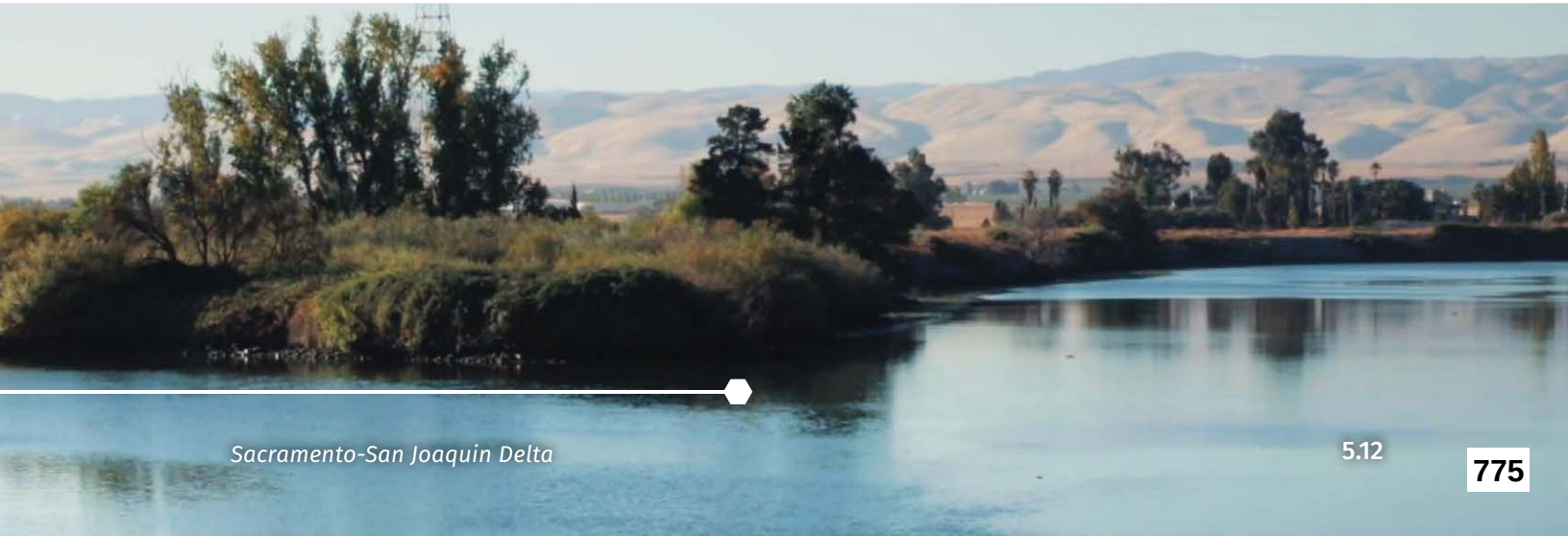


OPERATIONAL RESILIENCE

Metropolitan's core mission is to provide adequate and reliable supplies of high-quality water to its service area in an environmentally and economically responsible way. Operation and maintenance of its infrastructure is essential to Metropolitan's core mission. Operational resilience requires preparation and planning to ensure functioning equipment, operational flexibility, and a robust water supply in spite of changing environmental conditions, including those related to climate change. Many of the CAP strategies and measures increase Metropolitan's operational resilience, adding benefits beyond GHG emissions reduction. Measure E-5, for example, includes the installation of 3.5 MW battery storage systems at treatment plants, which would ensure that these facilities would have on-site power for some period after a major catastrophic event, such as a large earthquake, if the electricity grid is impacted.

WATER CONSERVATION

Retaining a diverse, robust, and sustainable water supply is at the heart of Metropolitan's mission and is woven into various strategies to reduce long-term emissions. As Metropolitan moves forward and faces more extreme impacts of climate change and population growth, water conservation will become even more essential. Water conservation combined with operational resilience results in water supply reliability and ultimately an ability to adapt to more frequent droughts and extreme weather events. This co-benefit is specifically demonstrated through the measures included in Strategy 8.



Sacramento-San Joaquin Delta

5.0

Bald Eagle near the Colorado River Aqueduct

5.3 MEASURE QUANTIFICATION AND SUMMARY TABLE

Table 5-3 summarizes the Phase 1 measures, the co-benefits associated with each measure, and the cumulative emissions reduction potential between 2020 and 2030.[14] In some instances, measures do not directly result in quantitative GHG emission reductions, although they support the overall goals of the CAP; these measures are considered "supportive." The Phase 1 measures have been developed to ensure Metropolitan can stay within its carbon budget even under the high emissions scenario. This approach allows Metropolitan the flexibility to respond to unforeseen circumstances yet stay within the established carbon budget. As mentioned previously, Phase 1 measures are expected to be implemented between 2020 and 2030. Before implementation, each measure will need to be approved by the Metropolitan Board of Directors.

Due to the high degree of uncertainty around Metropolitan's long-term emissions, GHG reduction measures were not quantified through 2045. Each measure is quantified based on the noted implementation timeline and the estimated cumulative emissions reductions through 2030. Cumulative savings provide an estimate on how the carbon budget will be impacted over time. However, based on Metropolitan's emission scenario, GHG savings may vary, and actual GHG emissions reductions will be tracked through the carbon budget and an annual GHG inventory as outlined in Section 6.0.

14. The anticipated reductions by 2030 are shown because 2030 represents California's next major emissions reduction target year.

TABLE 5-3: Phase One Emission Reduction Measure Co-Benefit and Reduction Summary (Implement Between 2020 to 2030)

Phase	#	Measure	Co-Benefits	Cumulative Emissions Reduction 2020–2030
Scope 1: Direct Combustion				
Strategy 1–Phase Out Natural Gas Combustion at Facilities				
1	DC-1	Conduct a survey of all natural gas consuming devices in offices, control buildings, and residential structures and establish a schedule to replace natural gas equipment with electric by 2025.	• Operational Resilience	Supportive
1-2	DC-2	Reduce natural gas emissions by 50 percent by 2030 and 100 percent by 2045 through electrification.	• Community Health • Cost Savings • Operational Resilience	2,830 MT CO_2e
1	DC-3	Update Metropolitan building standards to require all-electric construction for new buildings and retrofits.	• Community Health • Cost Savings • Operational Resilience	Supportive
Strategy 2–Zero Emission Vehicle Fleet				
1	FL-1	Conduct a ZEV/EV Feasibility Study to determine which fleet vehicles can be converted, what chargers/fueling stations are required, and where they should be located by the end of 2022.	• Operational Resilience	Supportive
1	FL-2	Adopt an ZEV/EV first policy for fleet vehicles to obtain ZEVs when technological, operational, or cost effectiveness parameters are met.	• Operational Resilience	Supportive
1	FL-3	Replace fossil fuel passenger fleet vehicles as identified in the ZEV/EV Feasibility Study (FL-1).	• Community Health • Cost Savings • Operational Resilience	Supportive
1	FL-4	Install EV charging and/or ZEV infrastructure at facilities pursuant to the findings of the ZEV/EV Feasibility Study (FL-1).	• Community Health • Operational Resilience	Supportive

TABLE 5-3: Phase One Emission Reduction Measure Co-Benefit and Reduction Summary (Implement Between 2020 to 2030) *(continued)*

Phase	#	Measure	Co-Benefits	Cumulative Emissions Reduction 2020–2030
Strategy 3–Use Alternative Fuels to Bridge the Technology Gap to Zero Emission Vehicles and Equipment				
1	AF-1	Complete a pilot project on the use of renewable diesel rather than conventional diesel for all stationary equipment by 2025.	• Community Health • Cost Savings • Operational Resilience	Supportive
1	AF-2	Complete a pilot project of renewable diesel use in on-road and off-road vehicles by providing at least one renewable diesel tank at Metropolitan-owned fueling depots in 2021.	• Community Health • Cost Savings • Operational Resilience	Supportive
1	AF-3	Based on the results of the study in AF-2, Metropolitan will begin using renewable diesel fuel in 100 percent of Metropolitan's diesel-consuming on-road and off-road vehicles by 2025.	• Community Health • Cost Savings • Operational Resilience	998 MT CO_2e
Scope 2: Electricity				
Strategy 4 – Utilize Low-Carbon and Carbon-Free Electricity				
1	E-1	Analyze marginal emissions rates and evaluate the feasibility of shifting energy use to lower emission periods.	• Operational Resilience	Supportive
1	E-2	Connect the Yorba Linda Hydroelectric Power Plant (YLHEP) behind Metropolitan's Southern California Edison (SCE) electricity meter to directly utilize carbon-free electricity at Metropolitan's Diemer facility by 2025.	• Community Health • Cost Savings • Operational Resilience	6,301 MT CO_2e

TABLE 5-3: Phase One Emission Reduction Measure Co-Benefit and Reduction Summary (Implement Between 2020 to 2030) *(continued)*

Phase	#	Measure	Co-Benefits	Cumulative Emissions Reduction 2020–2030
1	E-3	In markets where available, Metropolitan will switch its retail accounts to green tariff options offered by power providers by 2025 to reduce the Scope 2 GHG emissions associated with retail electricity use.	• Community Health • Operational Resilience	18,048 MT CO_2e
1	E-4	Install 3.5 MW battery storage systems at the Jensen, Skinner, and Weymouth treatment plants. Investigate the use of a software system to track and optimize GHG emissions reduction due to time-of-use strategies by 2025.	• Community Health • Cost Savings • Operational Resilience	219 MT CO_2e
1	E-5	Manage Metropolitan's energy purchases to ensure cost-effective energy supply while achieving the required GHG emissions objective.		1,961,822 MT CO_2e (high emissions scenario)
Strategy 5 – Improve Energy Efficiency				
1	EE-1	Convert all interior and exterior lighting at 50 percent of Metropolitan facilities to LED technologies by 2030 and 100 percent by 2045.	• Cost Savings • Operational Resilience	1,220 MT CO_2e
1	EE-2	Continue programs to analyze CRA pump efficiency and replace or refurbish pumps when cost effective.	• Cost Savings • Operational Resilience	Supportive

TABLE 5-3: Phase One Emission Reduction Measure Co-Benefit and Reduction Summary (Implement Between 2020 to 2030) *(continued)*

Phase	#	Measure	Co-Benefits	Cumulative Emissions Reduction 2020–2030
Scope 3: Other Indirect Emissions				
Strategy 6 – Incentivize More Sustainable Commutes				
1	EC-1	Expand subsidized transit commute program to reduce employee commute miles.	• Community Health • Operational Resilience	Supportive
1	EC-2	Expand employee use of carbon-free and low carbon transportation by providing education programs on the benefits of commute options including public transportation, EV/ZEV options, and vanpools.	• Community Health • Operational Resilience	Supportive
1	EC-3	Install ZEV and/or EV infrastructure as directed by the ZEV/EV Feasibility Study to support at least a 15 percent transition of employee-owned vehicles to ZEVs/EVs by 2025.	• Community Health • Operational Resilience	3,427 MT CO_2e
1	EC-4	Continue to offer benefits to employees who use alternative modes of transportation (e.g. public transportation, bikes).	• Community Health • Operational Resilience	Supportive
1	EC-5	Allow 50 percent of employees located at Metropolitan's headquarters to telecommute or utilize flexible schedules through 2030 to reduce travel time, vehicle miles traveled (VMT), and GHG emissions.	• Community Health • Cost Savings • Operational Resilience	3,345 MT CO_2e

TABLE 5-3: Phase One Emission Reduction Measure Co-Benefit and Reduction Summary (Implement Between 2020 to 2030) *(continued)*

Phase	#	Measure	Co-Benefits	Cumulative Emissions Reduction 2020–2030
Strategy 7 – Increase Waste Diversion to Achieve Zero Waste				
1	WA-1	Develop and implement net zero waste policies and programs at all facilities to reduce landfilled waste by 30 percent by 2030 and achieve zero landfilled waste by 2045.	• Community Health • Ecosystem Health • Operational Resilience	4,517 MT CO_2e
1	WA-2	Implement a program to reduce organic waste at Metropolitan's Union Station building. Contract or team with local organizations and waste disposal companies to route organic waste to anaerobic digestion or composting facilities and edible food-to-food recovery centers.	• Ecosystem Health • Operational Resilience	Supportive
1	WA-3	Develop and implement a sustainable procurement policy.	• Community Health • Ecosystem Health	Supportive
Strategy 8 – Increase Water Conservation and Local Water Supply				
1	WC-1	Expand programs that educate customers on water conservation initiatives through workshops and speaking engagements.	• Cost Savings • Water Conservation	Supportive
1	WC-2	Continue to implement innovative water use efficiency programs.	• Cost Savings • Operational Resilience • Water Conservation	Supportive
1	WC-3	Continue Turf Removal Program to install an average of 1,500,000 square feet (sq. ft.) of water efficient landscapes per year through 2030 through the use of a rebate program.	• Operational Resilience • Water Conservation	968 MT CO_2e

TABLE 5-3: Phase One Emission Reduction Measure Co-Benefit and Reduction Summary (Implement Between 2020 to 2030) *(continued)*

Phase	#	Measure	Co-Benefits	Cumulative Emissions Reduction 2020–2030
1	WC-4	Provide funding for the development and monitoring of local stormwater recharge and use projects to evaluate the water supply benefit of stormwater.	• Ecosystem Health • Operational Resilience • Water Conservation	Supportive
1	WC-5	Continue to promote water efficiency technologies and innovative practices that can be adopted into future water conservation program updates.	• Ecosystem Health • Operational Resilience • Water Conservation	Supportive
Strategy 9 – Investigate and Implement Carbon Capture and Sequestration Opportunities				
1	CS-1	Study carbon capture protocols in the Sacramento-San Joaquin River Delta.	• Community Health • Cost Savings • Ecosystem Health • Operational Resilience	Supportive
1	CS-2	Conduct a five-year research program to increase Metropolitan's knowledge of regenerative agriculture and carbon sequestration opportunities on Metropolitan properties in the Palo Verde Valley.	• Community Health • Cost Savings • Ecosystem Health • Operational Resilience	Supportive
Total Phase 1 Reduction Under High Emission Scenario				**2,003,695**
Remaining Carbon Budget Under High Emission Scenario				**3,384,248**
Remaining Carbon Budget After Measure Implementation				**5,387,943**[15]

15. *Parentheses denotes a negative number. In this case, Metropolitan would have 5,387,943 MT CO_2e remaining in its carbon budget through 2030 under the High Emissions Scenario. Metropolitan would have even larger remaining budgets under the Low and Average Emissions Scenarios.*

Using the Phase 1 measures identified in Table 5-3, Metropolitan can reduce the estimated 725,909 MT CO_2e needed to offset the projected emissions under the high emissions scenario with budget remaining. The actual implementation schedule and the quantified GHG emissions over time will determine the actual emissions reductions necessary for Metropolitan to meet its GHG reduction goals. While purchasing carbon-free electricity from the wholesale market under Measure E-5 may increase costs, it provides Metropolitan the flexibility to ensure that it will meet its GHG reduction goals. However, other Phase 1 and 2 measures, which provide co-benefits such as cost savings, operational resiliency, and water conservation, will be implemented first.

In addition to the Phase I measures, Metropolitan has also identified a suite of Phase 2 measures that have high potential for reducing GHG emissions and providing significant co-benefits. These measures are included in Table 5-4. Phase 2 measures have been quantified by the expected average annual GHG reduction since the timeline for implementation is not yet known. The earlier these measures can be implemented the more reductions Metropolitan will realize. However, more information or the development of new technologies are required before the Phase 2 measures can be deployed. Phase 2 measures also have a longer-term implementation time frame between 2025 and 2045.

Jensen Water Treatment Plant solar panels

TABLE 5-4: Phase Two Emission Reduction Measure Co-Benefit and Reduction Summary

Phase	#	Measure	Co-Benefits	Cumulative Emissions Reduction 2020–2030
Scope 2: Electricity				
Strategy 4 – Utilize Low-Carbon and Carbon-Free Electricity				
2	EE-3	Investigate feasibility of a large-scale (100 MW) battery storage system for the CRA.	• Operational Resilience	Supportive
Strategy 5 – Improve Energy Efficiency				
2	EE-4a	Replace pump impellers at the Iron Mountain pumping plant if directed by findings of the pump assessment (Measure EE-2).	• Cost Savings • Operational Resilience	Supportive
2	EE-4b	Replace pump impellers at Eagle Mountain or Hinds pumping plants if directed by findings of the pump assessment (Measure EE-2).	• Cost Savings • Operational Resilience	Supportive
2	EE-4c	Refurbish motors at Iron Mountain if applicable based on the findings of the pump assessment (Measure EE-2).	• Cost Savings • Operational Resilience	Supportive
2	EE-4d	Refurbish motors at Eagle Mountain or Hinds pumping plants if directed by findings of the pump assessment (Measure EE-2).	• Cost Savings • Operational Resilience	Supportive
2	EE-5	If the proposed RRWP is ultimately constructed, install an inter-stage pumping system on the reverse osmosis brine stream to reduce energy use.	• Cost Savings • Operational Resilience	Supportive

TABLE 5-4: Phase Two Emission Reduction Measure Co-Benefit and Reduction Summary (continued)

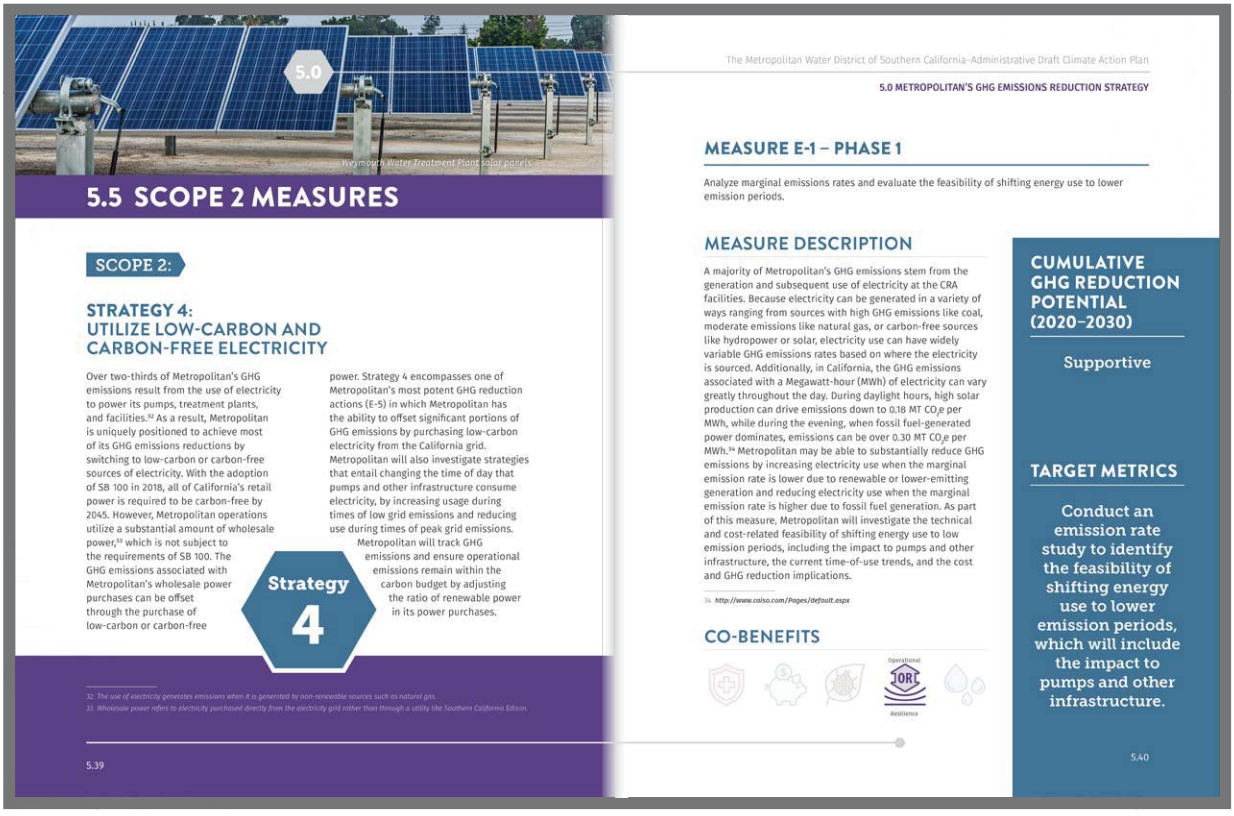
Phase	#	Measure	Co-Benefits	Cumulative Emissions Reduction 2020–2030
Scope 3: Other Indirect Emissions				
Strategy 6 – Incentivize More Sustainable Commutes				
2	EC-6	Replace all Metropolitan vanpool vehicles with ZEVs. Start with a pilot study (Measure FL-1) to evaluate the best approach.	• Community Health • Cost Savings • Operational Resilience	Supportive
Strategy 7 – Increase Waste Diversion to Achieve Zero Waste				
2	WA-4	Partner with municipal agencies, like the City of Los Angeles, to create programs that will allow Metropolitan to provide its fair share of diversion and help local jurisdictions meet the goals of SB 1383 for organics diversion, including food waste and composting.	• Ecosystem Health • Water Conservation	Supportive
Strategy 8 – Increase Water Conservation and Local Water Supply				
2	WC-6	Implement advanced technology systems to increase Metropolitan-owned recycled and groundwater recovery systems to maintain local water supply (e.g., proposed RRWP).	• Ecosystem Health • Operational Resilience • Water Conservation	Supportive
2	CS-3	Establish baseline soil carbon quantities through science-based approaches then develop pilot projects to enhance carbon sequestration and implement larger scale carbon sequestration projects as deemed feasible.	• Community Health • Cost Savings • Ecosystem Health • Operational Resilience	Supportive

5.0

HOW TO READ THE MEASURE SECTIONS

Sections 5.4 through 5.6 include robust details on each of the measures summarized by scope and strategy. Section 5.4 covers Scope 1 strategies and measures, Section 5.5 covers Scope 2 strategies and measures, and Section 5.6 covers Scope 3 strategies and measures.

Details on what is included in each page layout is provided on the following pages. Figures 5-1 and 5-2 provide a visual example of how to review and interpret the information found in these sections. Figure 5-1 shows a typical strategy and identifies the main components of a strategy summary page, while Figure 5-2 shows a specific measure that supports the execution of the strategy.



5.0

Weymouth Water Treatment Plant solar panels

5.5 SCOPE 2 MEASURES

SCOPE 2:

STRATEGY 4: UTILIZE LOW-CARBON AND CARBON-FREE ELECTRICITY

Over two-thirds of Metropolitan's GHG emissions result from the use of electricity to power its pumps, treatment plants, and facilities.[32] As a result, Metropolitan is uniquely positioned to achieve most of its GHG emissions reductions by switching to low-carbon or carbon-free sources of electricity. With the adoption of SB 100 in 2018, all of California's retail power is required to be carbon-free by 2045. However, Metropolitan operations utilize a substantial amount of wholesale power,[33] which is not subject to the requirements of SB 100. The GHG emissions associated with Metropolitan's wholesale power purchases can be offset through the purchase of low-carbon or carbon-free power. Strategy 4 encompasses one of Metropolitan's most potent GHG reduction actions (E-5) in which Metropolitan has the ability to offset significant portions of GHG emissions by purchasing low-carbon electricity from the California grid. Metropolitan will also investigate strategies that entail changing the time of day that pumps and other infrastructure consume electricity, by increasing usage during times of low grid emissions and reducing use during times of peak grid emissions. Metropolitan will track GHG emissions and ensure operational emissions remain within the carbon budget by adjusting the ratio of renewable power in its power purchases.

Strategy 4

32. The use of electricity generates emissions when it is generated by non-renewable sources such as natural gas.
33. Wholesale power refers to electricity purchased directly from the electricity grid rather than through a utility like Southern California Edison.

5.39

The Metropolitan Water District of Southern California–Administrative Draft Climate Action Plan

5.0 METROPOLITAN'S GHG EMISSIONS REDUCTION STRATEGY

MEASURE E-1 – PHASE 1

Analyze marginal emissions rates and evaluate the feasibility of shifting energy use to lower emission periods.

MEASURE DESCRIPTION

A majority of Metropolitan's GHG emissions stem from the generation and subsequent use of electricity at the CRA facilities. Because electricity can be generated in a variety of ways ranging from sources with high GHG emissions like coal, moderate emissions like natural gas, or carbon-free sources like hydropower or solar, electricity use can have widely variable GHG emissions rates based on where the electricity is sourced. Additionally, in California, the GHG emissions associated with a Megawatt-hour (MWh) of electricity can vary greatly throughout the day. During daylight hours, high solar production can drive emissions down to 0.18 MT CO_2e per MWh, while during the evening, when fossil fuel-generated power dominates, emissions can be over 0.30 MT CO_2e per MWh.[34] Metropolitan may be able to substantially reduce GHG emissions by increasing electricity use when the marginal emission rate is lower due to renewable or lower-emitting generation and reducing electricity use when the marginal emission rate is higher due to fossil fuel generation. As part of this measure, Metropolitan will investigate the technical and cost-related feasibility of shifting energy use to low emission periods, including the impact to pumps and other infrastructure, the current time-of-use trends, and the cost and GHG reduction implications.

34. http://www.caiso.com/Pages/default.aspx

CO-BENEFITS

Operational Resilience

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

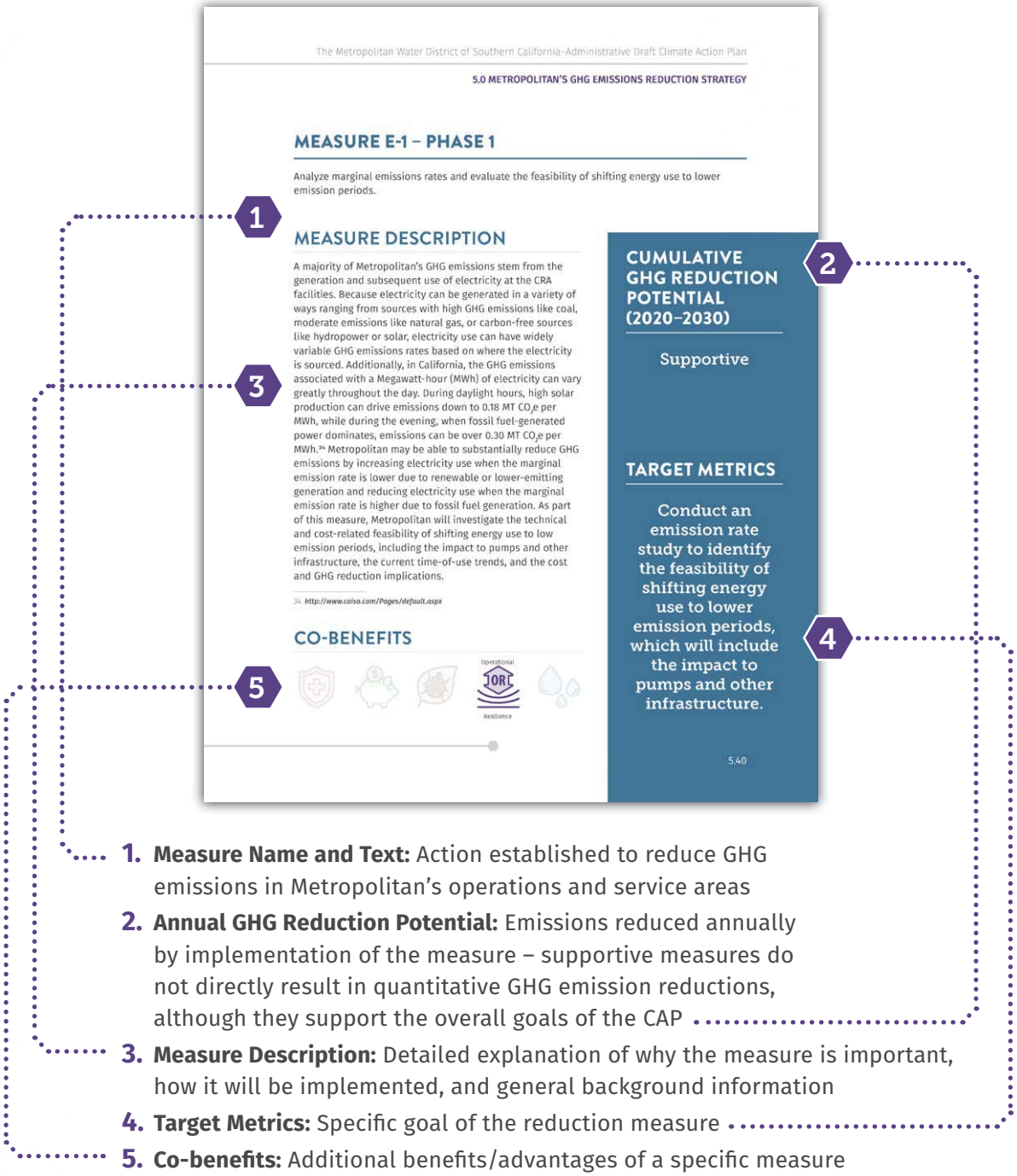
Conduct an emission rate study to identify the feasibility of shifting energy use to lower emission periods, which will include the impact to pumps and other infrastructure.

5.40

FIGURE 5-1: How to Read Strategy Summary Layout Page

1. **Scope:** Categories (1–3) established by the Greenhouse Gas Protocol to better understand the source of emissions
2. **Strategy Number and Name:** Number and name of the specific high-level course of action complemented by the emission reduction measures (Figure 5-2)
3. **Strategy Description:** Detailed summary of the strategy and how it will contribute to Metropolitan's long-term goals

FIGURE 5-2: How to Read Measure Summary Layout Page



1. **Measure Name and Text:** Action established to reduce GHG emissions in Metropolitan's operations and service areas
2. **Annual GHG Reduction Potential:** Emissions reduced annually by implementation of the measure – supportive measures do not directly result in quantitative GHG emission reductions, although they support the overall goals of the CAP
3. **Measure Description:** Detailed explanation of why the measure is important, how it will be implemented, and general background information
4. **Target Metrics:** Specific goal of the reduction measure
5. **Co-benefits:** Additional benefits/advantages of a specific measure

Jensen Water Treatment Plant

5.4 SCOPE 1 MEASURES

SCOPE 1:

STRATEGY 1: PHASE OUT NATURAL GAS COMBUSTION AT FACILITIES

California adopted SB 100 in 2018, making electrification an important strategy for reducing GHG emissions. SB 100 requires that all retail energy sold in California be 100 percent carbon-free by 2045; therefore, electrifying a fossil fuel source like a natural gas hot water heater means that piece of equipment will also be carbon-free by 2045. In addition to GHG reductions, removing natural gas from facilities would also improve indoor and local outdoor air quality by reducing atmospheric $PM_{2.5}$.[16]

16. ***https://www.nrdc.org/experts/pierre-delforge/gas-appliances-pollute-indoor-and-outdoor-air-study-shows***

Strategy 1

SCOPE 1: 5.0

MEASURE DC-1 – PHASE 1

Conduct a survey of all natural gas consuming devices in offices, control buildings, and residential structures and establish a schedule to replace natural gas equipment with electric by 2025.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive Measure Description

MEASURE DESCRIPTION

Completing a survey of all natural gas and propane-consuming equipment in Metropolitan-owned buildings is a critical first step to identifying cost-effective and efficient replacement options, developing a budget, and establishing a replacement schedule. The first step of this measure will include establishing an updated list of Metropolitan-owned facilities and creating a matrix, which outlines the various pieces of equipment and appliances (e.g., water heaters, HVAC, and stoves) at each facility. This matrix may include the facility name, types and number of pieces of equipment, location of equipment, estimated age, and potential cost to replace it. An added benefit of this measure will be an up-to-date inventory of equipment, their condition, and expected replacement schedule, thereby increasing operational resiliency.

TARGET METRICS

Complete a natural gas equipment consumption survey.

CO-BENEFITS

Operational Resilience

MEASURE DC-2 – PHASE 1

Reduce natural gas emissions by 50 percent by 2030 and 100 percent by 2045 through electrification.

MEASURES DESCRIPTION

Upon completion of the survey and replacement schedule matrix (Measure DC-1), Metropolitan will begin replacing natural gas and propane-consuming equipment with electrically-powered equivalents in line with the established timeframes. As part of this measure, the original survey results should be updated and reviewed annually as equipment and appliances are replaced to provide a tracking mechanism. It is anticipated that most equipment would be replaced near the end of its useful life or in an order that replaces the oldest and most antiquated pieces of equipment first. Electrification of natural gas equipment will likely save money over time due to decreased operating costs even when upfront costs may be higher.[17]

17. *https://rmi.org/insight/the-economics-of-electrifying-buildings/*

CO-BENEFITS

Community Health | Cost Savings | Operational Resilience

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

2,830

MT CO_2e

TARGET METRICS

Replace all natural gas consuming equipment with electrically-powered equivalents and measure quantity in therms of natural gas reduced.

SCOPE 1: 5.0

MEASURE DC-3 – PHASE 1

Update Metropolitan building standards to require all-electric construction for new buildings and retrofits.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Adopt an operating policy that updates Metropolitan's building standards to require all-electric new construction and retrofits.

MEASURE DESCRIPTION

Adopt an operating policy requiring new construction to be all-electric. Electrification ensures new buildings can achieve carbon neutrality once electricity is carbon-free. All-electric buildings are often less expensive to build and operate.[18] Switching to electricity also helps avoid potential natural gas cost increases, which are expected to greatly outpace electricity increases.[19] This measure also applies to building retrofits (upgrades and rehabilitation). While electric equipment for residential and commercial applications are readily available and cost-effective today, technologies for some industrial applications may either not be readily available or are cost prohibitive. Industrial applications will be electrified as cost effective technologies become available. An added benefit of all-electric building design and construction is that battery storage or generators can power the whole building in an emergency or outage.

18. ***https://explorer.localenergycodes.com/***
19. ***https://gridworks.org/initiatives/cagas-system-transition/***

CO-BENEFITS

Community Health | Cost Savings | Operational Resilience

SCOPE 1:

STRATEGY 2: ZERO EMISSION VEHICLE FLEET

Transportation is the largest source of GHG emissions in California. While Metropolitan's vehicle fleet represents only two to three percent of Metropolitan's total annual emissions, electrifying the fleet is a key step towards achieving carbon neutrality.[20] Electric passenger vehicles are quickly reaching cost parity with internal combustion vehicles and can even provide cost savings over the lifetime of the vehicle.[21] While heavy duty electric vehicles are not currently available for all commercial requirements, new technology that will advance heavy duty vehicle choices will become available in the near future.[22] Furthermore, the advancement of ZEVs, such as EVs, adoption will be driven at the State level in part by EO N-79-20, which directs CARB to develop regulations to achieve 100 percent zero-emission car sales in California by 2035 and zero-emission medium- or heavy-duty vehicles by 2045. Currently, the most promising ZEVs are electric. However, Metropolitan will continue to consider new technologies as they become available and will consider other alternative ZEVs in the future, if feasible. At this phase, beginning to prepare for an emission-free future will ensure Metropolitan can continue to operate without disruption and leverage grants and financing for EV/ZEV infrastructure while they are available.

20. *Fleet refers to the vehicles that are owned and operated by Metropolitan including all passenger vehicles, work trucks, and other mobile equipment.*
21. ***https://rosap.ntl.bts.gov/view/dot/31875/dot_31875_DS1.pdf***
22. ***https://www.atlasevhub.com/resource/race-to-zero-how-manufacturers-are-positioned-for-zero-emission-commercial-trucks-and-buses-in-north-america/***

Strategy 2

Metropolitan's vehicle fleet

SCOPE 1: 5.0

MEASURE FL-1 – PHASE 1

Conduct a ZEV/EV Feasibility Study to determine which fleet vehicles can be converted, what chargers/fueling stations are required, and where they should be located by the end of 2022.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

MEASURE DESCRIPTION

Completing a ZEV/EV Feasibility Study will provide Metropolitan with a clear understanding of the existing fleet and establish a path forward to replace fossil fuel-powered vehicles with ZEVs/EVs. In analyzing the existing fleet, the uses of the various fleet vehicles will be considered in order to establish an efficient replacement vehicle schedule and budget. A large component of this study will review and address where new ZEV/EV infrastructure may be required and establish an outline of where it should be installed. The assessment will include all of Metropolitan's facilities and will provide detailed recommendations on vehicle replacement, charging infrastructure, and scheduling. In addition to fleet vehicles, the study will also investigate needs and opportunities relating to vanpool vehicles and employee owned vehicles. This measure will be used as a blueprint for transitioning Metropolitan's fleet to zero emissions.

TARGET METRICS

Complete a ZEV/EV Feasibility Study on fleet vehicles.

CO-BENEFITS

Operational Resilience

MEASURE FL-2 – PHASE 1

Adopt an ZEV/EV first policy for fleet vehicles to obtain ZEVs when technological, operational, or cost effectiveness parameters are met.

MEASURE DESCRIPTION

Based on the results of the analysis completed as part of Measure FL-1, Metropolitan will adopt an ZEV/EV first policy for fleet vehicles when vehicles are purchased unless technological, operational, or cost effectiveness issues are identified. The policy will establish a framework for Metropolitan to purchase ZEVs/EVs or the cleanest available bridge technology per South Coast Air Quality Management District (SCAQMD) Rule 1196 for Clean On-Road Heavy-Duty Public Fleet Vehicles and CARB public fleet rules. It is anticipated that new technology will be developed to establish a pathway forward for medium- or heavy-duty vehicles to become powered by electricity or other alternative fuels as time progresses. Switching to EVs may decrease maintenance costs, result in less downtime for vehicle repairs, decrease emissions, and improve air quality.[23] Cost savings from the decreased operations and maintenance of ZEVs/EVs can then be used to offset vehicle purchase costs for future ZEV/EV purchases. In the event that ZEVs/EVs are not available (due to technological constraints or cost effectiveness), fuel efficiency should be prioritized to help decrease overall fossil fuel consumption as described in Measure AF-2.

23. ***https://www.government-fleet.com/327215/nyc-compares-maintenance-costs-for-ev-and-gasoline-vehicles***

CO-BENEFITS

Operational Resilience

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Adopt an ZEV/EV first policy for fleet vehicles.

SCOPE 1: 5.0

MEASURE FL-3 – PHASE 1

Replace fossil fuel passenger fleet vehicles as identified in the ZEV/EV Feasibility Study (FL-1).

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Number of passenger ZEVs purchased.

MEASURE DESCRIPTION

Metropolitan will replace its fossil fuel-powered passenger vehicles with ZEV/EVs at the time of vehicle replacement with a goal of replacing its fossil-fuel fleet with a ZEV/EV passenger fleet, as feasible. While the ZEV/EV Feasibility Study will include all ZEV types, EVs currently appear to be the leading technology. While the upfront price of passenger EVs is continuing to drop, they may still be more expensive than purchasing traditional passenger vehicles. However, when the total lifetime cost of the passenger EVs (which includes vehicle acquisition costs, maintenance, fuel and electricity, ZEV incentives, reduced tolls for EVs or low-emission vehicles on freeways, and insurance) is compared, passenger EVs can result in a significant cost savings on fuel and maintenance, all of which often make up the difference in initial cost.[24] As the state transitions to carbon-free electricity, the benefits of transitioning to EVs become even greater. Even without carbon-free electricity, passenger EVs result in far fewer GHG emissions, improved air quality, energy security, and increased fuel economy. It is anticipated that each of the fossil fuel-powered passenger vehicles that are currently in Metropolitan's fleet would be replaced at the end of their useful life with an ZEV/EV, as feasible.

24. ***https://www.geotab.com/white-paper/going-electric/***

CO-BENEFITS

Community Health | Cost Savings | Operational Resilience

MEASURE FL-4 – PHASE 1

Install EV charging and/or ZEV infrastructure at facilities pursuant to the findings of the ZEV/EV Feasibility Study (FL-1).

MEASURE DESCRIPTION

A core component of establishing a network of EVs/ZEVs is creating a robust charging/refueling infrastructure network that is available, accessible, and reliable. One of the greatest hurdles with EV/ZEV adoption is a lack of available infrastructure.[25] While all ZEV options will be included in the feasibility study, EVs currently appear to be the leading technology. Expanding EV charger availability will be an essential aspect of creating a reliable EV fleet. The analysis completed as part of Measure FL-1 will outline which facilities would benefit from installing EV infrastructure and at what scale. Installation of EV charging stations would include chargers, grid equipment, software, and communication networks. EV charging stations will be used by Metropolitan's fleet, employees, and visitors to Metropolitan facilities. EV chargers will likely be needed at Metropolitan offices like Union Station Headquarters, the five treatment plants, pumping stations, and Metropolitan-owned housing and other facilities.

25. *https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/charging-ahead-electric-vehicle-infrastructure-demand*

CO-BENEFITS

Community Health

Operational Resilience

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Install ZEV/ EV charging infrastructure detailed in the ZEV/EV Feasibility Study.

SCOPE 1:

STRATEGY 3: USE ALTERNATIVE FUELS TO BRIDGE THE TECHNOLOGY GAP TO ZERO EMISSION VEHICLES AND EQUIPMENT

Because of the limited availability of electric medium- and heavy-duty vehicles, the use of alternative fuels like renewable diesel or biogas can serve as a temporary solution to help reduce GHG emissions in the near-term. Although there are opportunities for near-term advances in this area, care will be taken to assure that the measures included in this CAP work towards carbon neutrality without promoting build-out of significant infrastructure for transition fuels that will leave stranded assets. Instead, the measures focus on long-term decarbonization of the fleet as technology becomes available.

Strategy 3

MEASURE AF-1 – PHASE 1

Complete a pilot project on the use of renewable diesel rather than conventional diesel for all stationary equipment by 2025.

MEASURE DESCRIPTION

Metropolitan operates a variety of stationary equipment currently powered by diesel fuel. Replacing the existing diesel fuel with renewable diesel as a short-term measure would reduce emissions with no change in existing infrastructure. Renewable diesel can be used interchangeably in a traditional diesel-powered engine and does not result in any negative operational impacts.[26] According to a study completed by the United States Department of Energy, renewable diesel is also currently cost-competitive with traditional petroleum diesel and sometimes less expensive than conventional petroleum-based diesel in California.[27] In addition, a 2015 study by the California Environmental Protection Agency concluded that renewable diesel has approximately 30 percent less PM emissions, five percent less total hydrocarbon emissions, and 10 percent less NO_X emissions than conventional diesel.[28] Currently, renewable diesel is utilized at a large scale by the United States military and is also used by a variety of city, state, and private fleets.[29] Replacing petroleum diesel with renewable diesel in stationary combustion sources would reduce up to 760 MT CO_2e per year based on the 2017 GHG inventory.

26. *https://www.government-fleet.com/156621/what-you-need-to-know-about-renewable-diesel*
27. *https://afdc.energy.gov/files/u/publication/alternative_fuel_price_report_july_2020.pdf*
28. *https://ww2.arb.ca.gov/sites/default/files/2018-08/Renewable_Diesel_Multimedia_Evaluation_5-21-15.pdf*
29. *https://www.caranddriver.com/research/a31883731/biodiesel-vs-diesel/*

CO-BENEFITS

Community Health | Cost Savings | Operational Resilience

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Complete pilot project on the use of renewable diesel in stationary diesel equipment.

SCOPE 1: 5.0

MEASURE AF-2 – PHASE 1

Complete a pilot project of renewable diesel use in on-road and off-road vehicles by providing at least one renewable diesel tank at Metropolitan-owned fueling depots in 2021.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Install one renewable diesel tank at a Metropolitan-owned fuel depot and complete pilot project.

MEASURE DESCRIPTION

Metropolitan vehicles generally fuel at Metropolitan-owned fueling depots. By contracting with fuel suppliers to replace petroleum diesel with renewable diesel at these facilities, Metropolitan can reduce GHG emissions and easily track the amount of low carbon fuels being utilized in the fleet. In California, renewable diesel fuel costs mirror the cost of petroleum-based diesel fuel.[30] This measure will be implemented through new contracts for renewable fuels and a change in Metropolitan's policy to use only renewable diesel fuel following the results of the pilot project.

30. ***https://www.government-fleet.com/348069/is-renewable-diesel-still-a-miracle-fuel***

CO-BENEFITS

Community Health | Cost Savings | Operational Resilience

MEASURE AF-3 – PHASE 1

Based on the results of the study in AF-2, Metropolitan will begin using renewable diesel fuel in 100 percent of Metropolitan's diesel-consuming on-road and off-road vehicles by 2025.

MEASURE DESCRIPTION

Implementation of this measure is in addition to Measure AF-1, which covers stationary equipment. Similar to stationary equipment, diesel-powered on-road equipment could utilize renewable diesel fuel, which is a domestically-produced, clean-burning, renewable substitute for petroleum diesel fuel, without any modifications to the internal combustion engines. Because the CO_2 emissions associated with renewable diesel fuels are biogenic, those emissions do not contribute to climate change.[31] Only the N_2O and CH_4 emissions increase net GHG emissions in the atmosphere, leading to a significantly lower GHG emission factor for those fuels. The use of these fuels is considered a bridge to reduce emissions in the short term before electric technologies are available for heavy duty and medium duty on-road vehicles. As stated in Measure AF-1, renewable diesel fuel also burns cleaner, resulting in lower air quality emissions. This measure will be implemented by updating contracts with fuel suppliers for renewable diesel fuel and tracking the total volume of diesel fuel consumed.

31. ***https://climatechange.ucdavis.edu/climate-change-definitions/biogenic-carbon/***

CO-BENEFITS

Community Health | Cost Savings | Operational Resilience

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

998

MT CO_2e

TARGET METRICS

Gallons of Petroleum Diesel Fuel replaced with Renewable Diesel Fuel.

5.0

Weymouth Water Treatment Plant solar panels

5.5 SCOPE 2 MEASURES

SCOPE 2:

STRATEGY 4: UTILIZE LOW-CARBON AND CARBON-FREE ELECTRICITY

Over two-thirds of Metropolitan's GHG emissions result from the use of electricity to power its pumps, treatment plants, and facilities.[32] As a result, Metropolitan is uniquely positioned to achieve most of its GHG emissions reductions by switching to low-carbon or carbon-free sources of electricity. With the adoption of SB 100 in 2018, all of California's retail power is required to be carbon-free by 2045. However, Metropolitan operations utilize a substantial amount of wholesale power,[33] which is not subject to the requirements of SB 100. The GHG emissions associated with Metropolitan's wholesale power purchases can be offset through the purchase of low-carbon or carbon-free power. Strategy 4 encompasses one of Metropolitan's most potent GHG reduction actions (E-5) in which Metropolitan has the ability to offset significant portions of GHG emissions by purchasing low-carbon electricity from the California grid. Metropolitan will also investigate strategies that entail changing the time of day that pumps and other infrastructure consume electricity, by increasing usage during times of low grid emissions and reducing use during times of peak grid emissions.

Strategy 4

Metropolitan will track GHG emissions and ensure operational emissions remain within the carbon budget by adjusting the ratio of renewable power in its power purchases.

32. The use of electricity generates emissions when it is generated by non-renewable sources such as natural gas.

33. Wholesale power refers to electricity purchased directly from the electricity grid rather than through a utility like Southern California Edison.

MEASURE E-1 – PHASE 1

Analyze marginal emissions rates and evaluate the feasibility of shifting energy use to lower emission periods.

MEASURE DESCRIPTION

A majority of Metropolitan's GHG emissions stem from the generation and subsequent use of electricity at the CRA facilities. Because electricity can be generated in a variety of ways ranging from sources with high GHG emissions like coal, moderate emissions like natural gas, or carbon-free sources like hydropower or solar, electricity use can have widely variable GHG emissions rates based on where the electricity is sourced. Additionally, in California, the GHG emissions associated with a Megawatt-hour (MWh) of electricity can vary greatly throughout the day. During daylight hours, high solar production can drive emissions down to 0.18 MT CO_2e per MWh, while during the evening, when fossil fuel-generated power dominates, emissions can be over 0.30 MT CO_2e per MWh.[34] Metropolitan may be able to substantially reduce GHG emissions by increasing electricity use when the marginal emission rate is lower due to renewable or lower-emitting generation and reducing electricity use when the marginal emission rate is higher due to fossil fuel generation. As part of this measure, Metropolitan will investigate the technical and cost-related feasibility of shifting energy use to low emission periods, including the impact to pumps and other infrastructure, the current time-of-use trends, and the cost and GHG reduction implications.

34. ***http://www.caiso.com/Pages/default.aspx***

CO-BENEFITS

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Conduct an emission rate study to identify the feasibility of shifting energy use to lower emission periods, which will include the impact to pumps and other infrastructure.

SCOPE 2: 5.0

MEASURE E-2 – PHASE 1

Connect the Yorba Linda Hydroelectric Power Plant (YLHEP) behind Metropolitan's Southern California Edison (SCE) electricity meter to directly utilize carbon-free electricity at Metropolitan's Diemer facility by 2025.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

6,301

MT CO_2e

TARGET METRICS

Connect YLHEP lines behind the SCE meter to utilize carbon-free electricity at the Diemer Plant.

MEASURE DESCRIPTION

The YLHEP currently generates carbon-free electricity by harnessing the power of water as it flows through turbines on its way to the Robert B. Diemer Water Treatment Plant (Diemer Plant). This electricity is currently sold by Metropolitan to the wholesale market and released to the state's electricity grid. In its existing configuration, the Diemer Plant uses retail electricity that has a GHG emission factor greater than zero. By reconfiguring the YLHEP power source behind the meter, the electricity it generates would become directly available to the Diemer Plant, offsetting the need for retail power. This reconfiguration would allow Metropolitan to power the Diemer Plant with carbon-free electricity and generate cost savings for Metropolitan by eliminating external electricity purchases. Excess electricity generated at the YLHEP not utilized by the Diemer Plant would continue to be sold by Metropolitan to SCE.

CO-BENEFITS

Community Health | Cost Savings | Operational Resilience

MEASURE E-3 – PHASE 1

In markets where available, Metropolitan will switch its retail accounts to green tariff options offered by power providers by 2025 to reduce the Scope 2 GHG emissions associated with retail electricity use.

MEASURE DESCRIPTION

Metropolitan can reduce its retail electricity emissions by purchasing low-carbon electricity through green tariff options and potentially reduce the cost of electricity simultaneously. Most retail providers offer a portfolio of green energy options, each with a guaranteed percentage of green energy. The price per kilowatt-hour (kWh) varies depending on the mix of energy. For example, a provider in Los Angeles County currently has three options for both commercial and residential customers:

- 36 percent renewable energy content
- 50 percent renewable energy content
- 100 percent renewable energy content

By implementing this measure, Metropolitan will switch to a mix that offers a middle-of-the-road renewable and carbon -free energy mix. Additional reductions could be achieved by switching to a "greener" option, like a 100 percent renewable electricity program.

CO-BENEFITS

Community Health

Operational Resilience

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

18,048

MT CO_2e

TARGET METRICS

Percent of retail electricity purchased as no or low-carbon.

SCOPE 2: 5.0

MEASURE E-4 – PHASE 1

Install 3.5 MW battery storage systems at the Jensen, Skinner, and Weymouth treatment plants. Investigate the use of a software system to track and optimize GHG emissions reduction due to time-of-use strategies by 2025.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

219

MT CO_2e

MEASURE DESCRIPTION

Although utilizing renewable energy is an excellent option to reduce Scope 2 GHG emissions, many renewable sources are limited to the time of day when there is sun or wind. Therefore, energy storage systems are an essential component to store energy produced during peak renewable power generation periods in order to power systems during periods when renewable power is not produced. By storing renewable energy, Metropolitan will reduce GHG emissions by charging the battery system during periods of low grid emissions and discharging them during periods of high emission electricity. Battery storage systems will also add increased operational resilience by allowing facilities to operate for short periods of time without power from the grid. The batteries can also be used to conduct rate arbitrage by charging during times when electricity is cheapest and offsetting the peak (most expensive) power periods through use of stored energy.

TARGET METRICS

MW of energy storage installed.

CO-BENEFITS

Community Health | Cost Savings | Operational Resilience

MEASURE E-5 – PHASE 1

Manage Metropolitan's energy purchases to ensure cost-effective energy supply while achieving the required GHG emissions objective.

MEASURE DESCRIPTION

The single largest source of GHG emissions associated with Metropolitan's operations relates to electricity consumption. Most of Metropolitan's Scope 2 GHG emissions are tied to the consumption of electricity needed for pumping water along the CRA, which is directly tied to water demands. Metropolitan's water demands are met through its imported water supplies, which vary year-to-year. When Metropolitan is required to meet these demands through increased pumping on the CRA, higher GHG emissions may result. Electricity used to power the pumps along the CRA comes from three distinct sources: Hoover and Parker Dam hydroelectric power, which has an emission factor of zero, energy purchased from the California Independent System Operator (CAISO's) centralized markets, which had an emission factor of approximately 0.239 MT CO_2e per MWh in 2017, and out-of-state electricity, which is delivered through the Arizona, southern Nevada, New Mexico (AZNM) regional grid, which receives power from multiple states outside California and had an emission factor of 0.480 MT CO_2e in 2017.[35] Metropolitan relies on zero-emission large hydro pumping from Hoover and Parker Dams during low pumping periods. The amount of additional electricity purchased from each source during high pumping years varies year-to-year depending on multiple factors. In general, power purchased from the CAISO or AZNM regional grid makes up a higher percentage of Metropolitan's electricity in high pumping years and adds to the higher GHG emissions in those years.

This measure would change electricity procurement policies to reduce reliance on AZNM electricity and increase the use of energy from the CAISO grid or specific lower GHG emission generating resources. Not only will this action reduce a significant amount of GHG emissions in the short term, but emissions will also likely continue to decrease over time due to SB 100. Energy sales in both markets will also likely continue to transition to carbon-free sources, further reducing GHG emissions. However, it is difficult to predict the future market energy mix or the cost of lower emission energy. Since the emissions reduction associated with this measure will change depending on the actual amount of electricity purchased and the source of purchased energy, Metropolitan will meet any shortfall in its carbon budget through

35. ***https://www.epa.gov/sites/production/files/2020-01/documents/egrid2018_summary_tables.pdf***

SCOPE 2: 5.0

low or no carbon energy purchases and other measures that most cost-effectively achieve the carbon budget objective. The GHG emission reductions below show the potential reduction associated with purchasing CAISO electricity instead of AZNM electricity from 2021 through 2030.

CO-BENEFITS

ESTIMATED CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)[36]

High Emissions Scenario

1,961,822 MT CO_2e

Average Emissions Scenario

610,245 MT CO_2e

Low Emissions Scenario

258,371 MT CO_2e

TARGET METRICS

GHG emissions reductions realized to meet the GHG target.

36. Assumes current CAISO emission factor compared to current and forecasted AZNM emission factor.

MEASURE EE-3 – PHASE 2

Investigate feasibility of a large-scale (100 MW) battery storage system for the CRA.

MEASURE DESCRIPTION

Metropolitan will complete a feasibility study to analyze the feasibility of large-scale battery storage for the CRA. As renewable electricity becomes more available, establishing a mechanism to store the energy for times when renewable power may not be available will become essential. This will increase resilience in the water conveyance system in the event of a power outage or during an emergency scenario. The system would also be available to use for rate and GHG emissions arbitrage, allowing Metropolitan to reduce GHG emissions and potentially save money over time. The true costs and savings associated with a storage system of this size would be further defined by the feasibility study. The GHG emissions reduction potential for a 100 MW battery storage array is estimated at 20,000 MT CO_2e annually, on average. However, this measure is supportive because more data is needed before a project of this magnitude is implemented.

CO-BENEFITS

Operational Resilience

AVERAGE ANNUAL GHG REDUCTION POTENTIAL

Supportive

TARGET METRICS

Complete a feasibility study of large-scale battery storage system for the CRA.

SCOPE 2:

STRATEGY 5: IMPROVE ENERGY EFFICIENCY

In addition to reducing the Scope 2 carbon intensity of electricity usage, Metropolitan can reduce GHG emissions associated with electricity use by reducing demand through improvements in energy efficiency. Metropolitan's major electrical demand is associated with the pumping of water, and these pumps are already maintained to a high degree of energy efficiency. However, due to their size and amount of electricity used, even marginal improvements in pump efficiency can lead to substantial cost savings and GHG emissions reductions. Additional opportunities include more efficient lighting systems and more energy-efficient buildings (predominantly covered under Strategy 1). Improvements in electrical efficiency will reduce the total demand for electricity from Metropolitan systems, saving money and reducing GHG emissions over the long term.

Strategy 5

MEASURE EE-1 – PHASE 1

Convert all interior and exterior lighting at 50 percent of Metropolitan facilities to light emitting diode (LED) technologies by 2030 and 100 percent by 2045.

MEASURE DESCRIPTION

Metropolitan's facilities include extensive lighting systems. According to the United States Department of Energy, ENERGY STAR-qualified LEDs use only 20 to 25 percent of the energy and last 15 to 25 times longer than the traditional incandescent bulbs they replace. Likewise, LEDs use 25 to 30 percent of the energy and last eight to 25 times longer than halogen incandescent bulbs. Studies show that LEDs not only reduce energy consumption, but they also provide cost savings over traditional bulbs.[37] Implementation of this measure is estimated to save Metropolitan an estimated 1,700 MWh per year by 2030 and 3,400 MWh per year by 2045.

37. *https://www.energy.gov/energysaver/save-electricity-and-fuel/lighting-choices-save-you-money/led-lighting*

CO-BENEFITS

Cost Savings

Operational Resilience

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

1,220

MT CO_2e

TARGET METRICS

Convert

50%

of facilities to LED by 2030 and 100% facilities by 2045.

SCOPE 2: 5.0

MEASURE EE-2 – PHASE 1

Continue programs to analyze CRA pump efficiency and replace or refurbish pumps when cost effective.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Complete the CRA pump efficiency study, and replace/ refurbish pumps, as needed.

MEASURE DESCRIPTION

To ensure the CRA pumps operate at maximum efficiency, Metropolitan is currently implementing a review of the CRA pumping facilities for operational dependability and efficiency. Based on the results of these studies, pumps will be refurbished or replaced as needed to ensure cost effectiveness and operational resilience. Metropolitan has five pumping plants along the CRA in the California Mojave Desert that transport water 242 miles to its terminus at Lake Mathews.[38] Each pumping plant has nine pumps with a total lift of 1,617 feet. Ensuring that these units are operating at the highest efficiency level will maximize cost savings and enhance operational resilience.

38. *http://www.mwdh2o.com/AboutYourWater/Storage-And-Delivery/Pumping-Plants#:~:text=These%20pumping%20plants%20move%20water,225%20cubic%20feet%20per%20second.*

CO-BENEFITS

Cost Savings

Operational Resilience

MEASURE EE-4A-D – PHASE 2

Implement findings of the CRA pump assessment (from Measure EE-2) to either refurbish or replace pumps at Eagle Mountain, Iron Mountain or Hinds pumping plants.

MEASURE DESCRIPTION

Based on the findings of the pump plant assessment, Metropolitan will refurbish or replace some or all of the pumps at Eagle Mountain, Iron Mountain, and Hinds Pumping Plants. The actual efficiency gain for refurbishment/ replacement of these pumps will be identified by the pump assessment. However, for this analysis, an efficiency gain of two percent was assumed for replacements and 0.5 percent for repairs based on feedback from Metropolitan engineers and industry standards. Even with these marginal efficiency improvements, Metropolitan could substantially reduce GHG emissions over time. However, because the actual efficiency gain will be based on the pump assessment and the implementation would not occur until Phase 2 of the CAP, emission reduction estimates for this measure are not yet considered quantifiable and are not quantified in this report.

- **EE-4a** – Replace impellers at Iron Mountain
- **EE-4b** – Replace impellers at Eagle Mountain or Hinds
- **EE-4c** – Refurbish motors at Iron Mountain
- **EE-4d** – Refurbish motors at Eagle Mountain or Hinds

CO-BENEFITS

Cost Savings

Operational Resilience

AVERAGE ANNUAL GHG REDUCTION POTENTIAL

Supportive

TARGET METRICS

Number of pumps refurbished/ replaced.

SCOPE 2: 5.0

MEASURE EE-5 – PHASE 2

If the proposed RRWP is ultimately constructed, install an inter-stage pumping system on the reverse osmosis brine stream to reduce energy use.

AVERAGE ANNUAL GHG REDUCTION POTENTIAL

Supportive

TARGET METRICS

Install an energy recovery system if the Regional Recycled Water Program is approved.

MEASURE DESCRIPTION

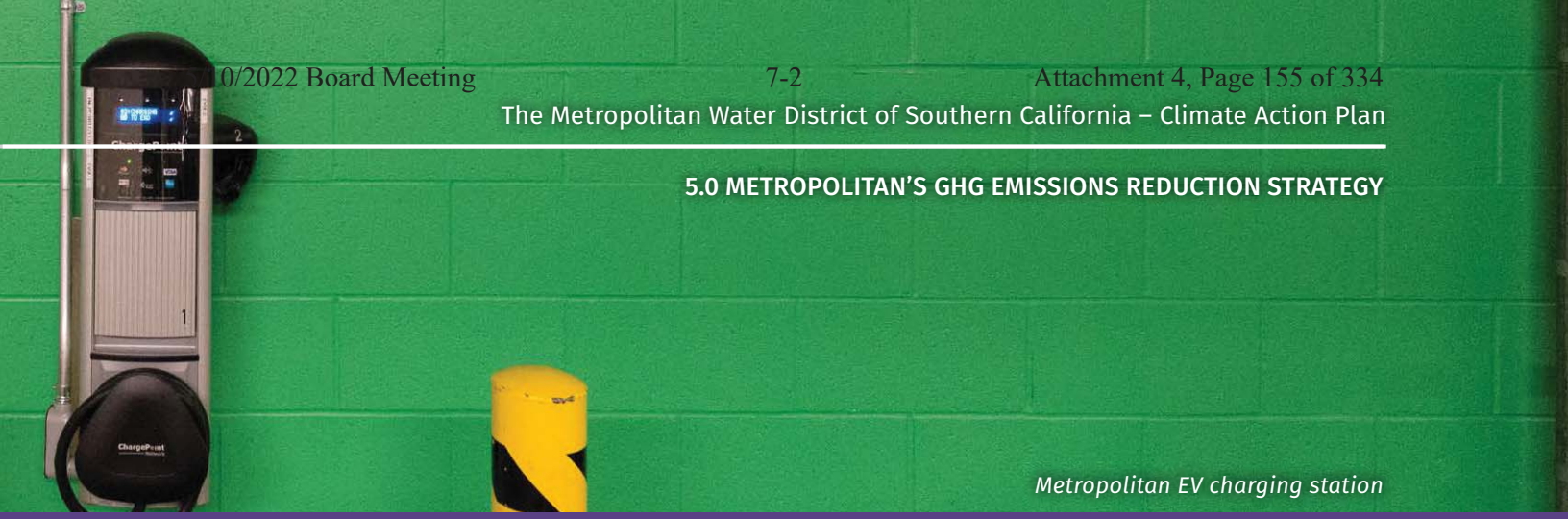
Inter-stage pumping systems help improve balance throughout the reverse osmosis (RO) system, decreasing energy demand by approximately 6 percent.[39] Since the RO system would be the largest consumer of electricity at the proposed RRWP, this measure would help decrease electricity demand and therefore lower GHG emissions associated with electricity use at the proposed facility. If the RRWP is ultimately constructed, Metropolitan will include an inter-stage pumping system to improve overall system efficiency while keeping operating costs and GHG emissions at a minimum.

39. *https://membranes.com/wp-content/uploads/Documents/Technical-Papers/Application/Waste/Operational-Performance-and-Optimization-of-RO-Wastewater-Treatment-Plants-1.pdf*

CO-BENEFITS

Cost Savings

Operational Resilience



Metropolitan EV charging station

5.6 SCOPE 3 MEASURES

SCOPE 3:

STRATEGY 6: INCENTIVIZE MORE SUSTAINABLE COMMUTES

While Metropolitan does not have direct control over the manner in which its employees travel to and from their jobs, Metropolitan can facilitate alternative commute strategies, including use of active and shared/subsidized transportation as well as EVs. By providing EV charging infrastructure, Metropolitan can encourage employees to drive personal EVs and shift how some individuals travel in both their work and non-work time. Reducing the potential hurdles of charging during work can encourage Metropolitan staff to purchase EVs. Metropolitan will continue its transit programs to further encourage staff to commute through shared transit. In addition, working remotely during the COVID-19 pandemic has substantially reduced commuter vehicle miles traveled. Metropolitan will develop a policy allowing for remote work in some capacity moving forward, which will both reduce GHG emissions and commuter vehicle miles traveled for employees.

Strategy 6

SCOPE 3: 5.0

MEASURE EC-1 – PHASE 1

Expand subsidized transit commute program to reduce employee commute miles.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

MEASURE DESCRIPTION

The transit commute program is designed to incentivize employees to use mass transit for their commutes to and from work. Metropolitan will evaluate the current success of the subsidized transit commute program and identify avenues to expand the program to reach new employees or provide additional incentives to current employees to increase the rate of alternative commutes by 2025. One potential subsidy is to add incentives for employees to carpool. The role of transit in Metropolitan's commute portfolio will need to be tracked closely over time due to the impacts of COVID-19. More employees working from home and hesitation to take public transit during the pandemic may shift Metropolitan's approach to reducing emissions from employee commutes.

TARGET METRICS

Miles commuted by alternative transportation.

CO-BENEFITS

Community Health

Operational Resilience

MEASURE EC-2 – PHASE 1

Expand employee use of carbon-free and low carbon transportation by providing education programs on the benefits of commute options including public transportation, EV/ZEV options, and vanpools.

MEASURE DESCRIPTION

Providing education to staff on the use of new programs and policies is a fundamental component of achieving significant and impactful change. Metropolitan has established an employee commute education program that provides clear information on the various commute options available to Metropolitan employees, including public transportation, EV charging options, and vanpools. A portion of the education focuses on how Metropolitan employees can integrate diverse commute options and provides a clear list of benefits, including incentive programs and maps outlining where services are available. Metropolitan will track employee participation. One avenue of sharing information may be through Metropolitan's "Water Talk" newsletter and Rideshare's quarterly e-newsletter "Met's On the Go," which provides highlights of Metropolitan's Rideshare programs and announcements for commuters.

CO-BENEFITS

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Miles commuted by low/no carbon vehicles.

SCOPE 3: 5.0

MEASURE EC-3 – PHASE 1

Install ZEV and/or EV infrastructure as directed by the ZEV/EV Feasibility Study to support at least a 15 percent transition of employee-owned vehicles to ZEVs/EVs by 2025.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

3,427

MT CO_2e

TARGET METRICS

Install ZEV/EV infrastructure to support at least 15% ZEV/EV total adoption by Metropolitan employees.

MEASURE DESCRIPTION

Metropolitan recognizes that current estimates indicate that approximately 90 percent of EV owners charge at home or work with up to 40 percent of charging happening at work.[40] Given this fact, Metropolitan will install additional EV charging stations at its facilities for employees and visitors. Implementation of this measure may encourage Metropolitan employees and visitors to its sites to purchase or lease personal EVs/ZEVs with reduced range anxiety, one of the leading reasons for not moving to EVs/ZEVs. This measure would also allow employees who live further away to commute via personal EVs without worrying about completing round-trip commutes on a single charge. The most appropriate installation locations and charger technologies will be specified in the EV study outlined in Measure FL-1.

40. ***https://avt.inl.gov/sites/default/files/pdf/arra/PluggedInSummaryReport.pdf***

CO-BENEFITS

Community Health

Operational Resilience

MEASURE EC-4 – PHASE 1

Continue to offer benefits to employees who use alternative modes of transportation (e.g., public transportation, bikes).

MEASURE DESCRIPTION

Measure EC-4 supports the implementation of Measure EC-1 by further expanding the benefits Metropolitan will provide to employees who utilize alternative forms of transportation for their commute. Parking cash outs, pre-tax benefits, and other solutions like gift cards or commute competitions will be implemented over time in support of the goal of achieving a reduction in employee commutes.

CO-BENEFITS

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Miles commuted by alternative transportation.

SCOPE 3: 5.0

MEASURE EC-5 – PHASE 1

Allow 50 percent of employees located at Metropolitan's headquarters to telecommute or utilize flexible schedules through 2030 to reduce travel time, vehicle miles traveled (VMT), and GHG emissions.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

3,345

MT CO_2e

MEASURE DESCRIPTION

As a result of the COVID-19 pandemic, many organizations have allowed their staff to work remotely. This remote work has substantially reduced employee commute times, travel costs, and associated GHG emissions during 2020. This measure would implement a policy to allow Metropolitan staff to continue working from home through the end of 2030. The GHG reduction benefit calculated below conservatively assumes 50 percent of all staff would telecommute on average 1.5 times per week. However, as demonstrated during the COVID-19 pandemic, the number of employees who can feasibly work from home at one time is substantially higher than the conservative numbers assumed here.

TARGET METRICS

Reduce employee commute VMT by 11%.

CO-BENEFITS

Community Health | Cost Savings | Operational Resilience

MEASURE EC-6 – PHASE 2

Replace all Metropolitan vanpool vehicles with ZEVs. Start with a pilot study (Measure FL-1) to evaluate the best approach.

MEASURE DESCRIPTION

Metropolitan currently has a rideshare vanpool program in which more than 40 percent of employees participate. Metropolitan's current rideshare program uses approximately 48 conventional vans to allow staff to carpool together instead of driving individually. Based on the EV study described in Measure FL-1, Metropolitan would replace the conventional fossil fuel-operated vans with electric vans. New technologies for passenger vans are already being developed, and some electric options for commercial vans are already available.[41,42] This measure is considered to be part of Phase 2, because no passenger EV vans are currently available to suit this need.[43] Once those technologies are prevalent and cost effective, Metropolitan will move to replace the current Rideshare vanpool fleet with EVs.

41. ***https://www.ford.com/commercial-trucks/e-transit/2022/***
42. ***https://www.vans.mercedes-benz.com/vans/en/mercedes-benz-vans/insights/mercedes-benz-esprinter-emission-free***
43. *While commercial vans are currently available, passenger vans (with seats) are not. They will likely become available in the next several years.*

CO-BENEFITS

Community Health | Cost Savings | Operational Resilience

AVERAGE ANNUAL GHG REDUCTION POTENTIAL

Supportive

TARGET METRICS

Replace all vanpool vehicles with ZEVs.

SCOPE 3:

STRATEGY 7: INCREASE WASTE DIVERSION TO ACHIEVE ZERO WASTE

Though waste generated by Metropolitan operations results in only a small fraction of overall annual GHG emissions, Metropolitan will implement specific measures designed to reduce the waste generated at its offices and other facilities. A majority of the GHG emissions resulting from Metropolitan-generated waste are caused by decomposition of organic material under anaerobic conditions. The remainder of the emissions come from inorganic wastes, such as plastic, which have both upstream and downstream emissions. Therefore, increasing the diversion of organic and inorganic waste streams is a primary measure to reduce waste-related GHG emissions. Waste reduction programs will prioritize organic waste streams, like food waste, first as they contribute the most to overall waste emissions when sent to the landfill.[44] By composting and diverting these items from the landfill, Metropolitan can not only reduce its GHG emissions, but also generate valuable compost, which can be used to sequester carbon and keep it from entering the atmosphere. Organics diversion is a major driver of State regulations including SB 1383.[45]

44. *https://www.usda.gov/foodlossandwaste/why*
45. *https://www.calrecycle.ca.gov/climate/slcp*

Strategy 7

MEASURE WA-1 – PHASE 1

Develop and implement net zero waste policies and programs at all facilities to reduce landfilled waste by 30 percent by 2030 and achieve zero landfilled waste by 2045.

MEASURE DESCRIPTION

Achieving zero landfilled waste is an attainable goal for Metropolitan. While Metropolitan does have control over the items it purchases, without substantial changes to how products are designed and the materials used, zero waste will remain a challenge. However, Metropolitan will continue its efforts to lower its waste generation by implementing procurement policies, updating food service requirements, and adhering to State and local regulations, like SB 1383 that will increase waste diversion as it works towards the ultimate goal of achieving carbon neutrality. This measure assumes a linear reduction of waste starting in 2022 (3.3 percent) and achieving a 30 percent reduction by 2030.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

4,517

MT CO_2e

TARGET METRICS

Reduce waste generation by 30%.

CO-BENEFITS

Community Health

Ecosystem Health

Operational Resilience

SCOPE 3: 5.0

MEASURE WA-2 – PHASE 1

Implement a program to reduce organic waste at Metropolitan's Union Station building. Contract or team with local organizations and waste disposal companies to route organic waste to anaerobic digestion or composting facilities and edible food-to-food recovery centers.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Separate organic waste from other materials at Metropolitan's Union Station building and route organics to local facilities.

MEASURE DESCRIPTION

To reduce organics in the waste stream, Metropolitan will implement composting at the Union Station building food service areas. Composting diverts organic waste from the landfill where it decomposes and generates methane, which is a potent GHG. Organic waste pickup is available through Los Angeles Sanitation & Environment and other waste haulers. Edible organics (food left over from food service, but not provided to Metropolitan staff) can also be diverted and beneficially reused because many local organizations focus on edible food diversion to those in need.[46, 47] As part of this measure, composting with signage will be included in all eating areas and in the kitchen of the food service areas.

46. *https://www.lacitysan.org/san/faces/home?_adf.ctrl-state=po85gh5ho_5*
47. *https://furtherwithfood.org/resources/los-angeles-area-food-recovery-guide-la-food-policy-council/*

CO-BENEFITS

Ecosystem Health

Operational Resilience

MEASURE WA-3 – PHASE 1

Develop and implement a sustainable procurement policy.

MEASURE DESCRIPTION

In order to reduce waste and improve overall sustainability, Metropolitan will develop, adopt, and implement a sustainable procurement policy (SPP). The SPP will set guidelines on the materials Metropolitan will purchase for its operations, including office supplies, cleaning products, building materials, electronics, and durable goods. SPP guidelines and examples for developing and implementing an SPP are available from the EPA, CalRecycle, and StopWaste.[48, 49, 50]

48. *https://www.epa.gov/greenerproducts/about-environmentally-preferable-purchasing-program*
49. *https://www.calrecycle.ca.gov/epp*
50. *https://www.stopwaste.org/at-work/green-purchasing/fact-sheets-guides-and-model-policy/environmentally-preferable-purchasing*

CO-BENEFITS

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Develop and implement an environmentally-preferred purchasing policy.

SCOPE 3: 5.0

MEASURE WA-4 – PHASE 2

Partner with municipal agencies, like the City of Los Angeles, to create programs that will allow Metropolitan to provide its fair share of diversion and help local jurisdictions meet the goals of SB 1383 for organics diversion, including food waste and composting.

AVERAGE ANNUAL GHG REDUCTION POTENTIAL

Supportive

TARGET METRICS

Partner with local jurisdictions to help meet the goals of SB 1383.

Tons of compost utilized.

Tons of organics diverted.

MEASURE DESCRIPTION

SB 1383 calls for the diversion of 75 percent of organics from the waste stream by 2025. In order to achieve this goal, jurisdictions throughout California will need to collect organics, create compost through organics processing, and utilize compost as a soil amendment to sequester carbon and avoid methane emissions. Metropolitan can support this process not only by providing composting at Metropolitan facilities, but also by investigating opportunities to utilize compost application techniques on Metropolitan-owned lands. Compost application to range lands and agricultural fields offers several benefits, including healthier soils, more plant growth, and carbon sequestration.[51] Compost application can also enhance water retention in some soil types, reducing the need for watering.[52] By working to both reduce its own organic waste and find a place for compost application, Metropolitan can support the overall goals of S B 1383 and reduce its own GHG emissions.

51. *https://www.ioes.ucla.edu/project/carbon-sequestration-through-compost/*
52. *https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=16800#:~:text=In%20sandy%20soils%20with%20poor,structure%20ie.%2C%20aggregate%20stability.&text=Adding%20compost%20as%20a%20thin,garden%20and%20farm%20raised%20plants*

CO-BENEFITS

Ecosystem Health

Water Conservation

SCOPE 3:

STRATEGY 8: INCREASE WATER CONSERVATION AND LOCAL WATER SUPPLY

Through the implementation of water conservation programs, per capita water consumption in the Metropolitan service area has decreased from 0.14 acre-feet of deliveries per person in 1990 to 0.09 acre-feet of deliveries per person in 2017, an approximate reduction of 36 percent in per capita water use. This increase in water efficiency has come from a variety of actions by the State, Metropolitan, and the community. Metropolitan has invested millions of dollars to support these actions, including educational programs and incentives for water efficient appliances and turf removal. Reducing water consumption provides many benefits in addition to the potential reduction in GHG emissions. Lower per capita demand means the same amount of water can meet the demand of a growing region while leaving enough water in the ecosystem to support critical habitats. Metropolitan will continue and potentially expand its water conservation efforts into the future through incentivizing conservation and through the proposed Regional Recycled Water Program which, if completed, will provide a substantial source of local water to the Los Angeles Basin.

Strategy 8

Regional Recycled Water Program Advanced Purification Center

SCOPE 3: 5.0

MEASURE WC-1 – PHASE 1

Expand programs that educate customers on water conservation initiatives through workshops and speaking engagements.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

MEASURE DESCRIPTION

Metropolitan already provides educational programs about the benefits of water conservation throughout its service area. Implementation of this measure will ensure that Metropolitan continues to provide these services and expand the message to include the benefits of GHG reduction and resiliency achieved through water conservation.

TARGET METRICS

Expand water conservation education initiatives.

CO-BENEFITS

MEASURE WC-2 – PHASE 1

Continue to implement innovative water use efficiency programs.

MEASURE DESCRIPTION

Metropolitan completed a study of its water use efficiency programs. Metropolitan will commit to continue to review current and past water conservation programs with the goal of identifying the most successful programs on a water reduction per dollar spent basis.

CO-BENEFITS

Cost Savings

Operational Resilience

Water Conservation

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Complete a review of current water reduction programs, expand successful programs and identify new opportunities for program expansion.

SCOPE 3: 5.0

MEASURE WC-3 – PHASE 1

Continue Turf Removal Program to install an average of 1,500,000 square feet (sq. ft.) of water efficient landscapes per year through 2030 through the use of a rebate program.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

968

MT CO_2e

TARGET METRICS

Continue water conservation by removing turf and installing an additional

1,500,000

SQ. FT.

of water efficient landscapes per year.

MEASURE DESCRIPTION

Metropolitan already implements landscape water reduction programs for residents and businesses by offering rebates through its BeWaterWise program.[53] However, there is still an abundance of high-water use landscapes in Metropolitan's service area that could be converted to a drought tolerant landscape to better conserve water. Implementation of this measure will ensure Metropolitan continues to provide the education and incentives necessary to continue retrofitting 1,500,000 sq. ft. of conventional landscapes to water efficient landscapes per year through 2030.

53. ***http://www.bewaterwise.com/***

CO-BENEFITS

Operational Resilience

Water Conservation

MEASURE WC-4 – PHASE 1

Provide funding for the development and monitoring of local stormwater recharge and use projects to evaluate the water supply benefit of stormwater.

MEASURE DESCRIPTION

Metropolitan's Stormwater Pilot Programs provide up to $12.5 million for the development and monitoring of stormwater recharge and direct use projects. The purpose of the Stormwater Pilot Programs is to gain a better understanding of the actual costs and potential water supply benefits associated with stormwater recharge and use by increasing monitoring data collection for new and existing stormwater projects in the region. Funding is open to public and private (non-residential) locations within Metropolitan's service area. Ultimately, these studies will provide a basis for potential future funding approaches for stormwater.

The Recharge Pilot Program is open to new and existing projects that capture stormwater for groundwater recharge. Examples of stormwater recharge projects include capture and recharge through spreading basins, dry wells, or subsurface infiltration galleries. These projects increase groundwater levels and storage in the groundwater basin. The stormwater recharge projects included in this study are designed to benefit the regional water supply by increasing local groundwater production or reducing Metropolitan replenishment demands.

The Direct Use Pilot Program focuses on projects that capture and directly use stormwater on-site, often through an underground cistern. These direct use projects will be used to offset non-potable demands.

CO-BENEFITS

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Provide funding for the development and monitoring of local stormwater recharge and use projects to evaluate the water supply benefit of stormwater.

SCOPE 3: 5.0

MEASURE WC-5 – PHASE 1

Continue to promote water efficiency technologies and innovative practices that can be adopted into future water conservation program updates.

MEASURE DESCRIPTION

1. Metropolitan's Innovative Conservation Program provides funding in cooperation with other entities (currently Southern California Gas Company) for research that will document water savings and reliability of innovative water savings devices. A call for proposals is released approximately every two years, and applicants selected for grant funding are given one to two years to implement their test protocols and deliver a final report to Metropolitan staff. The objective is to evaluate the water savings potential and reliability of innovative water saving devices, technologies, and strategies. **EXAMPLE:** One study evaluates the use of drone imagery to improve irrigation management in golf courses. (http://www.bewaterwise.com/icp-projects.html)

2. Metropolitan's Water Savings Incentive Program provides financial incentives for customized water efficiency projects, including installation of commercial or industrial high-efficiency equipment; industrial process improvements; agricultural and landscape water efficiency improvements; and water management services. New technologies or custom strategies to save water can be tested in real-world settings; if a project or application is repeatedly successful, the technology or strategy may be incorporated into Metropolitan's standard programs.

   EXAMPLE: Fire-fighting training devices allow for recycling of hose water during training cycles. Metropolitan has funded about six of these projects and has seen a high success rate; the device may be considered for a standard incentive.

3. Metropolitan's Conservation Credits Program has a standing committee – the Program Advisory Committee (PAC) – that is comprised of Metropolitan and member and retail agency staff and meets on a regular basis to provide recommendations to Metropolitan's management on all the water efficiency incentive programs. The PAC has the ability to investigate new devices and technologies to determine potential applicability to Metropolitan incentive programs.

MEASURE WC-5 – PHASE 1 (CONTINUED)

MEASURE DESCRIPTION

EXAMPLE: The Municipal Water District of Orange County (MWDOC) has provided information on average water savings associated with conversion of overhead/spray irrigation to drip irrigation in its service area. The MWDOC provided this information to the PAC; the PAC felt it was representative for all member agencies and recommended adoption of the water savings value for other agency projects.

4. Metropolitan's existing program, MWD Innovates, provides developers of new technologies a venue to pitch their ideas and receive feedback from Metropolitan staff.[54] This measure will extend this program through 2030. This measure will realize GHG emissions reduction as a result of implementation of projects approved under this program, and Metropolitan will conduct additional outreach about the program's goals and its benefits. Metropolitan will also increase support of these projects with the potential for funding or pilot projects.

54. ***http://mwdinnovates.com/***

CO-BENEFITS

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Number of new technologies/ ideas reviewed.

SCOPE 3: 5.0

MEASURE WC-6 – PHASE 2

Implement advanced technology systems to increase Metropolitan-owned recycled and groundwater recovery systems to maintain local water supply (e.g., proposed RRWP).

AVERAGE ANNUAL GHG REDUCTION POTENTIAL

Supportive

TARGET METRICS

Acre-feet of water generated by the RRWP that replaces water pumped from the CRA.

MEASURE DESCRIPTION

Metropolitan is in the process of investigating the feasibility of a regional recycled water program that would treat wastewater to potable water quality and send treated water to groundwater injection wells within the Los Angeles area. The development and operation of this facility would substantially increase the amount of local water available and potentially reduce the amount of imported water needed to meet increasing demand, reducing operational GHG emissions. The increased GHG emissions associated with the RRWP have already been included in the GHG emissions forecast, and the savings estimated below are associated with estimates of reduced imported water pumping. Actual GHG emissions savings would depend on changes observed after RRWP implementation.

CO-BENEFITS

Ecosystem Health | Operational Resilience | Water Conservation

SCOPE 3:

STRATEGY 9: INVESTIGATE AND IMPLEMENT CARBON CAPTURE AND SEQUESTRATION OPPORTUNITIES

Carbon sequestration and carbon capture and storage projects could provide Metropolitan a source of "negative" GHG emissions that will support its ability to achieve carbon neutrality. Carbon sequestration generally refers to natural processes such as plant growth or avoided soil carbon loss, while carbon capture and storage refers to technologies that take CO_2 or other GHG emissions out of the atmosphere and store them in deep underground geologic formations. Several carbon sequestration/carbon capture and storage opportunities are being investigated, researched and evaluated. Metropolitan will continue to track these opportunities as they progress. While GHG reduction through electrification, carbon-free electricity, and efficiency will drive a significant portion of the GHG reductions Metropolitan needs, sequestering and storing carbon from the atmosphere will likely play a critical role in achieving and maintaining carbon neutrality for both Metropolitan and California.[55]

Carbon capture will be based on the CARB protocol adopted in 2018 under "Carbon Capture and Sequestration Protocol". Other carbon sequestration opportunities will be vetted through the "Restoration of California Deltaic and Coastal Wetlands" protocol adopted in 2017 by the American Carbon Registry, which operates in the voluntary and regulated carbon markets until the time CARB adopts the protocol into the compliance market.

55. *https://www-gs.llnl.gov/content/assets/docs/energy/Getting_to_Neutral.pdf*

Strategy 9

SCOPE 3: 5.0

MEASURE CS-1–PHASE 1

Study carbon capture protocols in the Sacramento-San Joaquin River Delta.

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Conduct a carbon capture reconnaissance and general assessment that evaluates technological, scientific, economic, and regulatory dimensions relevant to potential carbon capture and storage on Metropolitan properties.

MEASURE DESCRIPTION

Prepare an assessment that will investigate potential opportunities within Metropolitan's Delta property boundaries. The carbon capture protocols will be aligned with CARB's approved "Carbon Capture and Sequestration Protocol" under the Low Carbon Fuel Standard adopted in 2018.

CO-BENEFITS

Community Health | Cost Savings | Ecosystem Health | Operational Resilience

MEASURE CS-2–PHASE 1

Conduct a five-year research program to increase Metropolitan's knowledge of regenerative agriculture and carbon sequestration opportunities on Metropolitan properties in the Palo Verde Valley.

MEASURE DESCRIPTION

Metropolitan will partner with the California State University, Chico Center for Regenerative Agriculture and Resilient Systems to conduct a five-year research program designed to increase Metropolitan's knowledge of regenerative agriculture and carbon sequestration opportunities. The project will compare regenerative land management methods to the current conventional practices used by Metropolitan and contrast cash crop (alfalfa) productivity between the two systems. The program will look at the impacts of traditional fallowing practices, which involve significant inputs of fuel, time, and labor and can also damage soil and increase soil loss. In an effort to reduce or eliminate these impacts, the pilot program will investigate the effects of various cover crops and no-till practices. The benefits of these practices may include improved carbon capture and storage, less soil erosion, and reduced emissions from fuel consumption. The results of the study will be reviewed, and changes to a larger area of agricultural land would follow based on the results.[56]

56. ***https://www.csuchico.edu/regenerativeagriculture/research/metro-district-water-soil-carbon.shtml***

CO-BENEFITS

Community Health | Cost Savings | Ecosystem Health | Operational Resilience

CUMULATIVE GHG REDUCTION POTENTIAL (2020–2030)

Supportive

TARGET METRICS

Complete a regenerative agriculture and carbon sequestration study on Metropolitan properties in the Palo Verde Valley.

SCOPE 3: 5.0

MEASURE CS-3 – PHASE 2

Establish baseline soil carbon quantities through science-based approaches then develop pilot projects to enhance carbon sequestration and implement larger scale carbon sequestration projects as deemed feasible.

AVERAGE ANNUAL GHG REDUCTION POTENTIAL

Supportive

TARGET METRICS

Conduct a Carbon Sequestration Feasibility Study on Metropolitan-owned lands.

Carbon Sequestered in MT CO_2e.

MEASURE DESCRIPTION

Metropolitan owns several separate islands/tracts in the Sacramento-San Joaquin River Delta (California Delta). These properties have significant soil acreages rich in organics, making them potentially strong candidates for carbon sequestration projects. This measure directs Metropolitan to fully research the feasibility of conducing carbon sequestration projects on the islands to reduce GHG emissions. Significant research on current property conditions and the impacts of alternative land use strategies would be required before these programs are implemented and quantified.

CO-BENEFITS

Community Health | Cost Savings | Ecosystem Health | Operational Resilience

Lake Skinner

SECTION 6.0
IMPLEMENTATION AND MONITORING

Through this CAP, Metropolitan is committed to achieving long-term carbon neutrality. The CAP outlines specific strategies and measures to achieve demonstrative GHG emissions reductions in Metropolitan's day-to-day operations (see Section 5.0 for more details). The CAP will be implemented in two phases: Phase 1 from 2020 to 2030 and Phase 2 from 2031 to 2045. Throughout the process, strategies and measures included in the CAP may evolve over time. Implementation of this plan is grounded in science and current best practices in climate action planning. This section details Metropolitan's commitment to continually implement the CAP, monitor progress, and prepare the CAP updates required to achieve its ambitious goals.

6.0

California-friendly rock garden

6.0

Colorado River Aqueduct shutdown work

6.1 CAP IMPLEMENTATION

To ensure that the CAP is being implemented, Metropolitan established the Climate Working Group and developed an internal pathway to prioritize and implement the strategies and measures discussed in Sections 5.4 through 5.6.

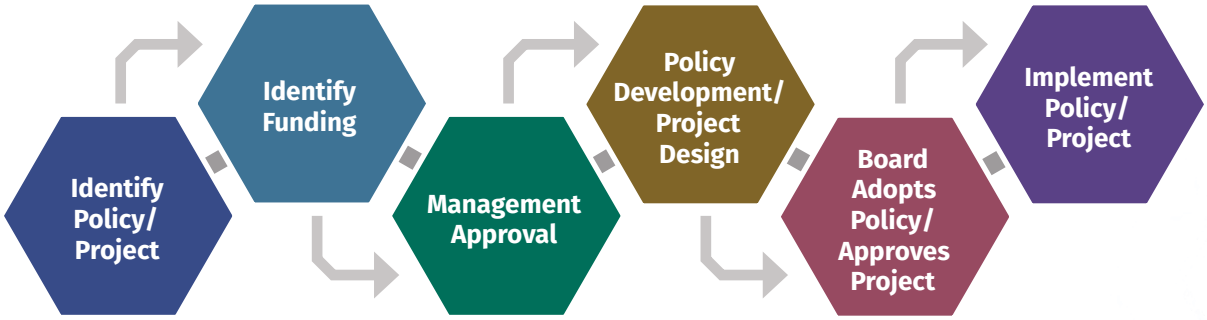
The Climate Working Group is comprised of a key group of Metropolitan team members specifically selected from each of the internal responsible departments, as shown in Figure 6-1.

FIGURE 6-1: Metropolitan Responsible Departments

The Climate Working Group will identify policies and projects for implementation, work with relevant departments to draft and review required projects or policies, present the items to Metropolitan management to identify funding and obtain approval, and track implementation metrics. The Climate Working Group also will work with all relevant departments to develop policies/project design, as appropriate. Plans, programs and relevant projects will be submitted to the Metropolitan Board of Directors to fund and adopt the new plan, program, policy, or project. Figure 6-2 provides a visual demonstration of the CAP implementation phases, which requires the Climate Working Group to manage the implementation process.

Metropolitan's Environmental Planning Section, along with the Climate Working Group, will track GHG emission reductions realized from implementation of the measures to ensure Metropolitan stays within its carbon budget. The Environmental Planning Section will also be responsible for future updates to the CAP, which are anticipated every five years. Tracking will occur through an annual GHG inventory, which will be used to adjust the remaining carbon budget. Metropolitan is committed to staying within the carbon budget and will implement the monitoring and reporting protocol, update the GHG inventory, and provide an update to the Board of Directors on progress every year starting in the summer of 2022. Table 6-1 includes a complete list of the Phase 1 GHG reduction strategies and measures, the estimated year of implementation for each strategy and measure, and the departments responsible for implementation. Phase 1 measures are those that will be implemented through 2030 and contribute to Metropolitan's plan to stay within its carbon budget even under the high emissions scenario. Table 6-2 includes Phase 2 measures which are focused on long-term GHG emission reduction that will require further development and may be adjusted based on the findings of specified feasibility studies.

FIGURE 6-2: Metropolitan CAP Implementation Process



6.0

RESPONSIBLE METROPOLITAN DEPARTMENTS AND GROUPS

Several departments within Metropolitan will play key roles in the CAP implementation. Each of the departments responsible for CAP implementation are listed below as well as the climate working group that is made up of members from each of these departments as well as additional departments within Metropolitan as outlined in Figure 6-1.

Climate Working Group

The Climate Working Group will be the primary entity responsible for CAP implementation and will be made up of staff from key departments. The Climate Working Group convened at the start of the CAP process, has developed and reviewed each section of the CAP, and will ensure the CAP is implemented over time. The Climate Working Group meets monthly and will take the lead on educating and engaging other departments on the implementation of measures identified in the CAP.

Administrative Services

Administrative Services manages Metropolitan's purchasing processes and rideshare programs and will lead implementation of the employee commute measures, including distribution of subsidized transit passes and education campaigns.

Environmental Planning

Environmental Planning will be responsible for implementation of the CAP, tracking the carbon budget on an annual basis with data validated by TCR, updating the CAPDash tool that tracks progress towards meeting the targets, producing annual progress reports, and developing the five-year CAP updates. CAPDash is a customizable, web-based dashboard developed by Rincon Consultants, Inc. that allows Metropolitan to track the implementation of each measure and meet the requirements of State CEQA Guidelines Section 15183.5(b)(1). Environmental Planning will also work with the Climate Working Group to spearhead the work with other departments and present annual progress reports to Metropolitan's Board of Directors.

Facility Management

Facility Management is tasked with maintaining Metropolitan's building operations and will be critical in implementing waste, energy, and other reduction measures that focus on facility operations.

Fleet

Fleet is responsible for purchasing and maintaining Metropolitan's on-road, off-road, and stationary equipment. The Fleet Department will be responsible for implementing many of the vehicle- and fuel-related measures in the CAP, including Metropolitan's transition to ZEVs and biofuels.

Engineering Department

Engineering, along with Facility Management, discussed above, will lead the implementation of Metropolitan's building and energy efficiency related projects, including the development of electric building policies, existing building electrification projects, and infrastructure changes, such as water pump retrofits.

Water Resources Management/ Water Efficiency

Water Resources Management and its Water Efficiency division are tasked with planning, securing, and managing Metropolitan's water resources. This department will take the lead on many of the water conservation measures such as continuation of the turf removal program (WC-3).

Bay Delta Initiatives

Bay Delta Initiatives is responsible for overseeing efforts to secure a reliable water supply from the SWP through environmental and water supply improvements in the Sacramento-San Joaquin River Delta. Bay Delta Initiatives will be responsible for implementing many of the carbon sequestration measures.

Power Operations and Planning

Power Operations and Planning manages the wholesale power requirements of the CRA pumping operation and the power supplies from Metropolitan's entitlements to the output from Hoover and Parker Dams. Power Operations and Planning also manages power sales from Metropolitan's hydroelectric plant fleet and power issues related to Metropolitan's retail treatment and pumping energy needs.

6.0

THE PHASE 1 IMPLEMENTATION PLAN

The Implementation Plan (Table 6-1) includes the strategies and measures included in Section 5.0 of the CAP, their implementation timeframe, the responsible departments, and the implementation performance metrics. The strategies are intended to identify the general focus areas for GHG emissions reductions, while measures show the specific and quantifiable actions that will be taken to achieve Metropolitan's GHG emission reduction targets and stay within the carbon budget under all emissions scenarios. Each Phase I measure includes specific actions that are known to be feasible and implementable. Based on substantial evidence, including Metropolitan-specific data, these measures are found to be capable of reducing a specific quantity of GHG emissions within a reasonable period of time, considering economic, environmental, legal, social, and technological factors.

TABLE 6-1: Phase 1 Measure Implementation Plan

Phase	#	Measure	Implementation Year	Responsible Department(s) and Group(s)	Implementation Metric
Scope 1: Direct Combustion					
Strategy 1 – Phase Out Natural Gas Combustion at Facilities					
1	DC-1	Conduct a survey of all natural gas consuming devices in offices, control buildings, and residential structures and establish a schedule to replace natural gas equipment with electric by 2025.	2025	• Facility Management • Engineering	Complete Study
1-2	DC-2	Reduce natural gas emissions by 50 percent by 2030 and 100 percent by 2045 through electrification.	2021	• Facility Management • Engineering	Therms Reduced
1	DC-3	Update Metropolitan building standards to require all-electric construction for new buildings and retrofits.	2022	• Facility Management • Engineering	Update Building Standards

TABLE 6-1: Phase 1 Measure Implementation Plan *(continued)*

Phase	#	Measure	Implementation Year	Responsible Department(s) and Group(s)	Implementation Metric
Strategy 2 - Zero Emission Vehicle Fleet					
1	FL-1	Conduct a ZEV/EV Feasibility Study to determine which fleet vehicles can be converted, what chargers/fueling stations are required, and where they should be located by the end of 2022.	2022	• Fleet Management • Engineering • Environmental Planning	Complete Study
1	FL-2	Adopt an ZEV/EV first policy for fleet vehicles to obtain ZEVs when technological, operational, or cost effectiveness parameters are met.	2022	• Fleet Management	Update Policy
1-2	FL-3	Replace fossil fuel passenger fleet vehicles as identified in the ZEV/EV Feasibility Study.	2025	• Fleet Management	Percent ZEVs/EVs in Fleet
1	FL-4	Install EV charging and/or ZEV infrastructure at facilities pursuant to the findings of the ZEV/EV Feasibility Study (FL-1).	2023	• Fleet Management • Facility Management • Engineering	ZEV/EV Infrastructure Installed
Strategy 3 - Use Alternative Fuels to Bridge the Technology Gap to Zero Emission Vehicles					
1	AF-1	Complete a pilot project on the use of renewable diesel rather than conventional diesel for all stationary equipment by 2025.	2022	• Fleet Management	Complete Study
1	AF-2	Complete a pilot project of renewable diesel use in on-road and off-road vehicles by providing at least one renewable diesel tank at Metropolitan-owned fueling depots in 2021.	2021	• Fleet Management	Complete Pilot
1	AF-3	Based on the results of the study in AF-2, Metropolitan will begin using renewable diesel fuel in 100 percent of Metropolitan's diesel-consuming on-road and off-road vehicles by 2025.	2022	• Fleet Management	Gallons of Renewable Diesel Fuel Used

TABLE 6-1: Phase 1 Measure Implementation Plan *(continued)*

Phase	#	Measure	Implementation Year	Responsible Department(s) and Group(s)	Implementation Metric
Scope 2: Electricity					
Strategy 4 – Utilize Low-Carbon and Carbon-Free Electricity					
1	E-1	Analyze marginal emissions rates and evaluate the feasibility of shifting energy use to lower emission periods.	2023	• Power Operations and Planning	Complete Study
1	E-2	Connect the YLHPP behind SCE electricity meter to directly utilize carbon-free electricity at Metropolitan's Diemer facility by 2025.	2025	• Facility Management • Engineering	Complete Project
1	E-3	In markets where available, Metropolitan will switch its retail accounts to green tariff options offered by power providers by 2025 to reduce the Scope 2 GHG emissions associated with retail electricity use.	2025	• Power Operations and Planning	Percent Low-Carbon or Carbon-Free Electricity
1	E-4	Install 3.5 MW battery storage systems at the Jensen, Skinner, and Weymouth treatment plants. Investigate the use of a software system to track and optimize GHG emissions reduction due to time-of-use strategies by 2025.	2023	• Power Operations and Planning • Facility Management • Engineering	Complete Project
1	E-5	Manage Metropolitan's energy purchases to ensure cost-effective energy supply while achieving the required GHG emissions objective.	2021	• Power Operations and Planning	GHG Emissions Reductions

TABLE 6-1: Phase 1 Measure Implementation Plan *(continued)*

Phase	#	Measure	Implementation Year	Responsible Department(s) and Group(s)	Implementation Metric
Strategy 5 – Improve Energy Efficiency					
1	EE-1	Convert all interior and exterior lighting at 50 percent of Metropolitan facilities to LED technologies by 2030 and 100 percent by 2045.	2025	• Facility Management	Percent of Facilities Upgraded
1	EE-2	Continue programs to analyze CRA pump efficiency and replace or refurbish pumps when cost effective.	2023	• Facility Management • Engineering	Complete Study
Scope 3: Indirect Emissions and Sequestration					
Strategy 6 – Incentivize More Sustainable Commutes					
1	EC-1	Expand subsidized transit commute program to reduce employee commute miles.	2022	• Administrative Services	Expand Subsidized Transit Commute Program
1	EC-2	Expand employee use of carbon-free and low carbon transportation by providing education programs on the benefits of commute options including public transportation, ZEV options, and vanpools.	2021	• Administrative Services	Continue Education Program
1	EC-3	Install ZEV and/or EV infrastructure as directed by the ZEV/EV Feasibility Study to support at least a 15 percent transition of employee-owned vehicles to ZEVs/EVs by 2025.	2030	• Facility Management • Engineering	Number of ZEV/EV Infrastructure Installed
1	EC-4	Continue to offer benefits to employees who use alternative modes of transportation (e.g. public transportation, bikes).	2021	• Administrative Services	Maintain Program

TABLE 6-1: Phase 1 Measure Implementation Plan *(continued)*

Phase	#	Measure	Implementation Year	Responsible Department(s) and Group(s)	Implementation Metric
1	EC-5	Allow 50 percent of employees located at Metropolitan's headquarters to telecommute or utilize flexible schedules through 2030 to reduce travel time, VMT, and GHG emissions.	2021	• Administrative Services	Update Policy
Strategy 7 – Increase Waste Diversion to Achieve Zero Waste					
1	WA-1	Develop and implement net zero waste policies and programs at all facilities to reduce landfilled waste by 30 percent by 2030 and achieve zero landfilled waste by 2045.	2023	• Facility Management	Percent Waste Reduction
1	WA-2	Implement a program to reduce organic waste at Metropolitan's Union Station building. Contract or team with local organizations and waste disposal companies to route organic waste to anaerobic digestion or composting facilities and edible food-to-food recovery centers.	2023	• Facility Management	Percent Waste Reduction
1	WA-3	Develop and implement a sustainable procurement policy.	2022	• Administrative Services	Develop and Adopt Policy
Strategy 8 – Increase Water Conservation and Local Water Supply					
1	WC-1	Expand programs that educate customers on water conservation initiatives through workshops and speaking engagements.	2023	◦ Water Resources Management/ Water Efficiency	Expand Program
1	WC-2	Continue to implement innovative water use efficiency programs.	2022	• Water Resources Management/ Water Efficiency	Maintain Program

TABLE 6-1: Phase 1 Measure Implementation Plan *(continued)*

Phase	#	Measure	Implementation Year	Responsible Department(s) and Group(s)	Implementation Metric
1	WC-3	Continue Turf Removal Program to install an average of 1,500,000 square feet (sq. ft.) of water efficient landscapes per year through 2030 through the use of a rebate program.	2021	• Water Resources Management/ Water Efficiency	Maintain Program
1	WC-4	Provide funding for the development and monitoring of local stormwater recharge and use projects to evaluate the water supply benefit of stormwater.	2025	• Water Resources Management/ Water Efficiency	Acre-feet of Stormwater Capacity Installed
1	WC-5	Continue to promote water efficiency technologies and innovative practices that can be adopted into future water conservation program updates.	2025	• Water Resources Management/ Water Efficiency	New Technologies Reviewed
Strategy 9 – Investigate and Implement Carbon Capture and Sequestration Opportunities					
1	CS-1	Study carbon capture protocols in the Sacramento-San Joaquin River Delta.	2025	• Facility Management • Engineering • Bay Delta Initiatives • Water Resources Management	Complete Study
1	CS-2	Conduct a five-year research program to increase Metropolitan's knowledge of regenerative agriculture and carbon sequestration opportunities on Metropolitan properties in the Palo Verde Valley.	2020	• Water Resources Management	Complete Study

6.0

Table 6-2 includes the implementation plan for Phase 2 measures. Because Phase 2 measures still require additional information or new technologies before they can be implemented, the implementation year is not listed. Furthermore, the short-term implementation metric for each of these measures is to complete a feasibility study, with the potential long-term implementation metrics shown in Table 6-1. More detailed implementation metrics and dates will be included in future updates of the CAP. However, the party responsible for research and future implementation are listed as well as the implementation tracking metrics.

TABLE 6-2: Phase 2 Measure Implementation Plan

Phase	#	Measure	Responsible Department(s) and Group(s)	Implementation Metric
Strategy 4 – Utilize Low-Carbon and Carbon-Free Electricity				
2	EE-3	Investigate feasibility of a large-scale (100 MW) battery storage system for the CRA.	• Facility Management • Engineering • Power Operations and Planning	Complete Feasibility Study
Strategy 5 – Improve Energy Efficiency				
2	EE-4a	Replace pump impellers at the Iron Mountain pumping plant if directed by findings of the pump assessment (Measure EE-2).	• Facility Management • Engineering	Replace Impellers
2	EE-4b	Replace pump impellers at Eagle Mountain or Hinds pumping plants if directed by findings of the pump assessment (Measure EE-2).	• Facility Management • Engineering	Replace Impellers
2	EE-4c	Refurbish motors at Iron Mountain if applicable based on the findings of the pump assessment (Measure EE-2).	• Facility Management • Engineering	Refurbish Motors
2	EE-4d	Refurbish motors at Eagle Mountain or Hinds pumping plants if directed by findings of the pump assessment (Measure EE-2).	• Facility Management • Engineering	Refurbish Motors

TABLE 6-2: Phase 2 Measure Implementation Plan *(continued)*

Phase	#	Measure	Responsible Department(s) and Group(s)	Implementation Metric
2	EE-5	If the proposed RRWP is ultimately constructed, install an inter-stage pumping system on the reverse osmosis brine stream to reduce energy use.	• Facility Management • Engineering	Install Energy Recovery System
Strategy 6 – Incentivize More Sustainable Commutes				
2	EC-6	Replace all Metropolitan vanpool vehicles with ZEVs. Start with a pilot study (Measure FL-1) to evaluate the best approach.	• Administrative Services/ Rideshare	Replace All Vanpool Vehicles with EVs
Strategy 7 – Increase Waste Diversion to Achieve Zero Waste				
2	WA-4	Partner with municipal agencies, like the City of Los Angeles, to create programs that will allow Metropolitan to provide its fair share of diversion and help local jurisdictions meet the goals of SB 1383 for organics diversion, including food waste and composting.	• Facility Management	Complete Feasibility Study
Strategy 8 – Increase Water Conservation and Local Water Supply				
2	WC-6	Implement advanced technology systems to increase Metropolitan-owned recycled and groundwater recovery systems to maintain local water supply (e.g., RRWP).	• Facility Management • Engineering	Acre-feet of Water Generated
Strategy 9 – Investigate and Implement Carbon Capture and Sequestration Opportunities				
2	CS-3	Establish baseline soil carbon quantities through science-based approaches then develop pilot projects to enhance carbon sequestration and implement larger scale carbon sequestration projects as deemed feasible.	• Facility Management • Engineering • Bay Delta Initiatives • Water Resources Management	Complete Feasibility Study

Newport Back Bay restoration project

6.2 CAP MONITORING

One requirement of a successful CAP is routine monitoring of progress towards the established GHG reduction goals. For Metropolitan, this will include the monitoring of and reporting on the CAP implementation metrics defined in Sections 5.4 through 5.6 and summarized in the implementation plan. CAP monitoring will also include the preparation of annual GHG inventories. These annual inventories will be used to track carbon budget progress and provide the detail needed to make implementation decisions. Specifically, Metropolitan may need to make adjustments to renewable power purchases to ensure progress towards carbon neutrality by 2045. The Climate Working Group will provide updates on CAP implementation progress and status of the carbon budget to the Board of Directors on an annual basis.

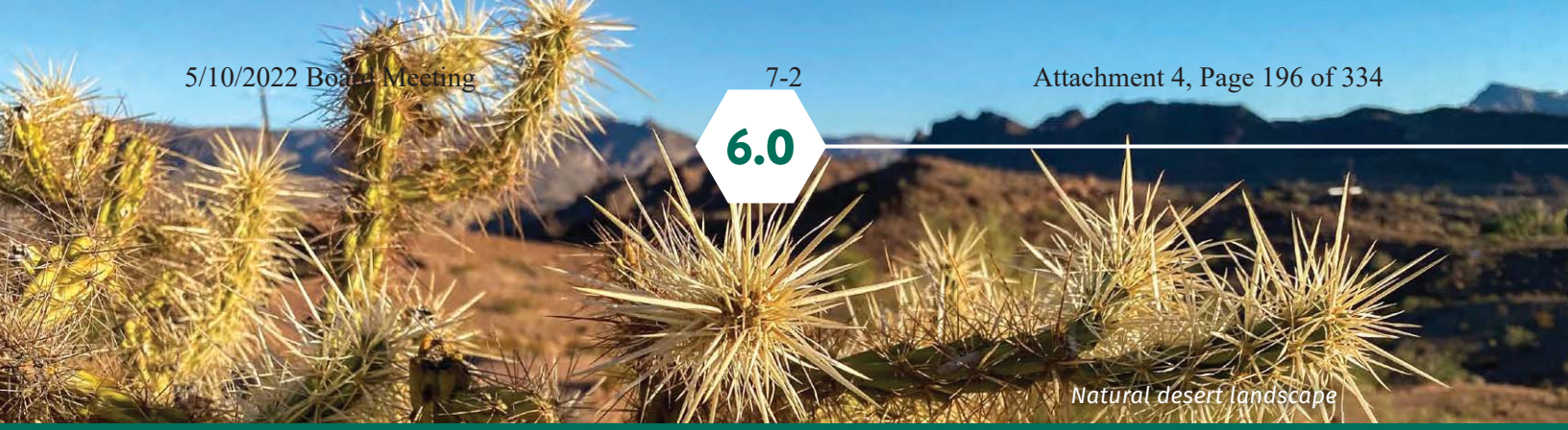
CARBON BUDGET UPDATES

The key step in maintaining the accuracy of the carbon budget is an annual GHG inventory of Metropolitan operations. To ensure the carbon budget is an accurate representation of Metropolitan's GHG emissions and progress towards its targets, Metropolitan will conduct annual updates of the carbon budget. On an annual basis, Metropolitan will record Scopes 1 and 2 GHG emission sources, including fuel consumption and electricity use. Due to the small contribution of Scope 3 emissions to Metropolitan's overall emissions and the relatively difficult data collection process, Metropolitan will conduct a complete inventory, which will also calculate all Scope 3 emissions, every five years. In interim years between major inventories, a Scope 3 estimate will be included. Carbon budget updates will be done every spring, once the prior year's energy data is available. This ensures that the carbon budget results can be tied into decision making across Metropolitan's planning efforts.

ANNUAL MONITORING AND REPORTING OF METROPOLITAN GHG REDUCTION MEASURES

Metropolitan will monitor implementation of the GHG emissions reduction measures and develop an annual progress report, which will include both the most recent carbon budget update and updates on the implementation status of each GHG reduction measure. The process for monitoring and quantifying measure implementation status requires tracking the key target metrics identified in each of the GHG reduction measures in Sections 5.4 through 5.6. In order to provide a transparent mechanism of tracking, Table 6-1 and Table 6-2 identify specific actions, expected implementation timing, and which Metropolitan department(s) will monitor the ongoing implementation of the CAP measures. This process will also include updates to Metropolitan's CAPDash and monitoring software, which will be used to provide transparent and regular updates to stakeholders.

Dennis Underwood Conservation Area

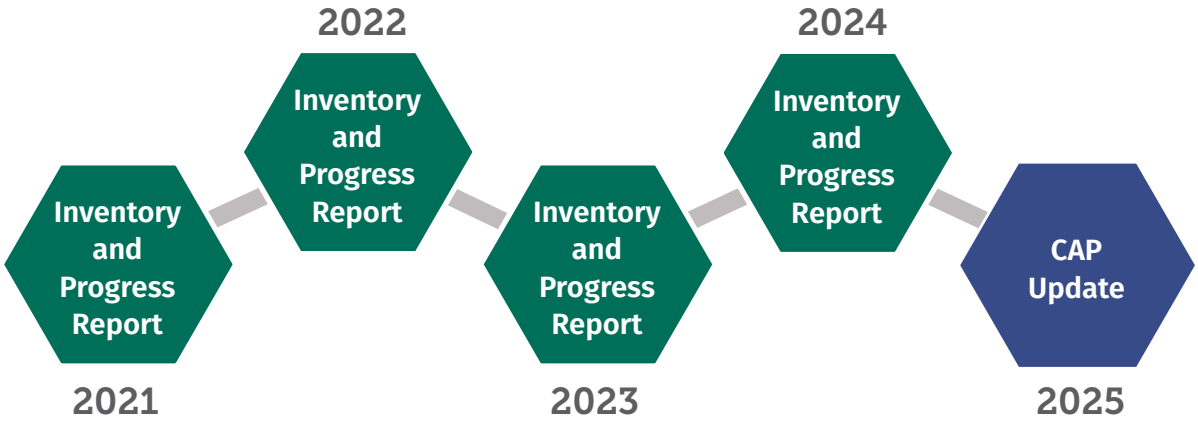


Natural desert landscape

6.3 CAP UPDATE SCHEDULE

Metropolitan's CAP has been designed to provide substantial progress towards achieving carbon neutrality by 2045. As part of this plan, Metropolitan has established a carbon budget with interim targets that exceed the State GHG reduction goals. To support these goals, strategies and measures have been developed that will form the foundation of carbon-neutral operations at Metropolitan. Some of these strategies include transitioning buildings to all-electric power, procuring carbon-free electricity, and transitioning the vehicle fleet to ZEVs. These strategies have been identified to ensure Metropolitan will achieve carbon neutrality over time. However, new technologies, new State regulations, and new incentives as well as Metropolitan's operational conditions will all change over time. Therefore, Metropolitan is committed to conducting comprehensive updates of the CAP every five years. These updates will revisit the strategies in the plan, update actions based on progress to date, and evaluate new technologies and the legislative landscape. The five-year update will also include a comprehensive GHG inventory, identify new opportunities to reduce emissions, revise emissions forecasts to ensure an accurate analysis of Metropolitan's operations, and adjust the implementation schedule accordingly to ensure Metropolitan stays within its carbon budget.

FIGURE 6-3: CAP Update Timeline



Lake Havasu

APPENDICES

Diamond Valley Lake

APPENDIX A:
REGULATORY CONTEXT

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Regulatory Context

As the impacts of climate change are becoming clearer, strategies to address climate change are emerging at all levels of government. This section provides an overview of the regulatory context at the international, state, and local levels relative to Metropolitan's actions toward reducing greenhouse gas (GHG) emissions.

International Climate Action Guidance

1992 United Nations Framework Convention on Climate Change

The primary international regulatory framework for GHG reduction is the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC is an international treaty adopted in 1992 with the objective of stabilizing atmospheric GHG concentrations to prevent disruptive anthropogenic climate change. The framework established non-binding limits on global GHG emissions and specified a process for negotiating future international climate-related agreements.[1]

1997 Kyoto Protocol

The Kyoto Protocol is an international treaty that was adopted in 1997 to extend and operationalize the UNFCCC. The protocol commits industrialized nations to reduce GHG emissions per country-specific targets, recognizing that they hold responsibility for existing atmospheric GHG levels. The Kyoto Protocol involves two commitment periods during which emissions reductions are to occur, the first of which took place between 2008-2012. The second commitment period set new targets and other changes but has not been entered into force (meaning it has not gone into effect).[2]

2015 The Paris Agreement

The Paris Agreement is the first universal, legally binding global climate agreement that was adopted in 2015 and has been ratified by 191 countries worldwide.[3] The Paris Agreement establishes a roadmap to keep the world under 2 degrees Celsius (°C) of warming with a goal of limiting an increase of temperature to 1.5°C. The Paris Agreement does not dictate one specific reduction target, instead relying on individual countries to set nationally determined contributions (NDCs) or reductions based on gross domestic product and other factors. According to the International Panel on Climate Change (IPCC), limiting global warming to 1.5°C will require global emissions to reduce through 2030 and hit carbon neutrality by mid-century.[4]

California Regulations and State GHG Targets

California remains a global leader in the effort to reduce GHG emissions and combat climate change through its mitigation and adaptation strategies. By the early 2000's, California was passing climate change bills including Senate Bill (SB) 1078 and Executive Order (EO) S-3-05 which began to require

[1] United Nations Framework Convention on Climate Change (UNFCCC). United Nations Framework Convention on Climate Change. https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf
[2] UNFCCC. What is the Kyoto Protocol? https://unfccc.int/kyoto_protocol
[3] UNFCCC. Paris Agreement - Status of Ratification. https://unfccc.int/process/the-paris-agreement/status-of-ratification
[4] IPCC. Global Warming of 1.5 C. https://www.ipcc.ch/sr15/

state agencies and utilities to address climate change. With the passage of Assembly Bill (AB) 32 in 2006, California became the first state in the nation to mandate GHG emission reductions across its entire economy. To support AB 32, California has enacted legislation, regulations, and executive orders (EO) that put it on course to achieve robust emission reductions and address the impacts of a changing climate. The following is a summary of executive and legislative actions most relevant to the Climate Action Plan.

2002 Senate Bill 1078

In 2002, Senate Bill (SB) 1078 established the California Renewables Portfolio Standards (RPS) Program which requires that 20 percent of retail electricity sales be composed of renewable energy sources by 2017 and was accelerated in 2006 by SB 107,[5] which requires that 20 percent of retail electricity sales be composed of renewable energy sources by 2010, instead of 2017. EO S-14-08 was signed in 2008 to further streamline California's renewable energy project approval process and increase the state's RPS to the most aggressive in the nation requiring 33 percent renewable power by 2020.[6] SB 350, discussed further below, further accelerated the program which mandated a 50% RPS by 2030.

2002 Assembly Bill 1493

In 2002, AB 1493, also known as the Pavley Regulations, directed the California Air Resources Board (CARB) to establish regulations to reduce GHG emissions from passenger vehicles to the maximum and most cost-effective extent feasible. CARB approved the first set of regulations to reduce GHG emissions from passenger vehicles in 2004, with the regulations initially taking effect with the 2009 model year.

2005 Executive Order S-3-05

EO S-3-05 was signed in 2005, establishing statewide GHG emissions reduction targets for the years 2020 and 2050. The EO calls for the reduction of GHG emissions in California to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The 2050 emission reductions target would put the state's emissions in line with the worldwide reductions needed to reach long-term climate stabilization as concluded by the IPCC *2007 Fourth Assessment Report*.

2006 Assembly Bill 32

California's major initiative for reducing GHG emissions is outlined in AB 32, the "California Global Warming Solutions Act of 2006," which was signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires CARB to prepare a Scoping Plan that outlines the main state strategies for reducing GHG emissions to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions.

Based on this guidance, CARB approved a 1990 statewide GHG baseline and 2020 emissions limit of 427 million metric tons of CO_2 equivalent (MMT CO_2e). The Scoping Plan was approved by CARB on December 11, 2008 and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the

[5] California Public Utilities Commission.2021. Renewables Portfolio Standard (RPS) Program. https://www.cpuc.ca.gov/General.aspx?id=6442463710

[6] Executive Order S-14-08. http://www.climatestrategies.us/library/library/view/292

GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards,[7] and Cap-and-Trade) have been adopted since approval of the Scoping Plan.

In May 2014, CARB approved the first update to the AB 32 Scoping Plan. The 2014 Scoping Plan update defined CARB's climate change priorities for the next five years and set the groundwork to reach post-2020 statewide goals. The update highlighted California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluated how to align the state's longer-term GHG reduction strategies with other state policy priorities, including those for water, waste, natural resources, clean energy, transportation, and land use (CARB 2014).

2007 Executive Order S-1-07

Also known as the Low Carbon Fuel Standard, EO S-1-07, issued in 2007, established a statewide goal that requires transportation fuel providers to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. EO S-1-07 was readopted and amended in 2015 to require a 20 percent reduction in carbon intensity by 2030, the most stringent requirement in the nation. The new requirement aligns with California's overall 2030 target of reducing climate changing emissions 40 percent below 1990 levels by 2030, which was set by SB 32 and signed by the governor in 2016.

2007 Senate Bill 97

Signed in August 2007, SB 97 acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Natural Resources Agency adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and climate change impacts.

2008 Senate Bill 375

SB 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPOs), to prepare a Sustainable Communities Strategy" that contains a growth strategy to meet these emission targets for inclusion in the MPO's Regional Transportation Plan.

In March 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. Each region was assigned a target for 2020 and 2035.[8] Metropolitan's operations span several of these regions.

2009 California Green Building Code

The California Green Building Standards Code (CALGreen) is Part 11 of the California Building Standards Code or Title 24 and is the first statewide "green" building code in the nation. The

[7] On September 19, 2019, the National Highway Traffic Safety Agency and the U.S. Environmental Protection Agency issued a final action entitled the One National Program on Federal Preemption of State Fuel Economy Standards Rule. This action finalizes Part I of the Safer, Affordable, Fuel-Efficient (SAFE) Vehicles Rule. This rule states that federal law preempts State and local tailpipe GHG emissions standards as well as zero emission vehicle (ZEV) mandates. The SAFE Rule withdraws the Clean Air Act waiver it granted to California in January 2013 as it relates to California's GHG and zero emission vehicle programs.

8 https://ww2.arb.ca.gov/sites/default/files/2020-06/SB375_Final_Targets_2018.pdf

purpose of CALGreen is to improve public health, safety, and general welfare by enhancing the design and construction of buildings. Enhancements include higher energy efficiency, better air quality, and improved daylighting. The first CALGreen Code was adopted in 2009 and has been updated in 2013, 2016, and 2019. The CALGreen Code will have subsequent, and continually more stringent, updates every three years.

2009 Senate Bill X7-7

In 2009, SB X7-7, also known as the Water Conservation Act, was signed, requiring all water suppliers to increase water use efficiency. This legislation sets an overall goal of reducing per capita urban water use by 20 percent by2020.

2011 Senate Bill 2X

In 2011, SB 2X was signed, requiring California energy providers to buy (or generate) 33 percent of their electricity from renewable energy sources by 2020.

2012 Assembly Bill 341

AB 341 directed the California Department of Resources Recycling and Recovery (CalRecycle) to develop and adopt regulations for mandatory commercial recycling. As of July 2012, businesses are required to recycle, and jurisdictions must implement a program that includes education, outreach, and monitoring. AB 341 also set a statewide goal of 75 percent waste diversion from landfill by the year 2020.

2014 Assembly Bill 32 Scoping Plan Update

In 2014, CARB approved the first update to the Scoping Plan. This update defines CARB's climate change priorities and sets the groundwork to reach the post-2020 targets set forth in EO S-3-05. The update highlights California's progress toward meeting the near-term 2020 GHG emissions reduction target, defined in the original Scoping Plan. It also evaluates how to align California's longer-term GHG reduction strategies with other statewide policy priorities, such as water, waste, natural resources, clean energy, transportation, and land use.

2014 Assembly Bill 1826

AB 1826 was signed in 2014 to increase the recycling of organic material. GHG emissions produced by the decomposition of these materials in landfills were identified as a significant source of emissions contributing to climate change. Therefore, reducing organic waste and increasing composting and mulching are goals set out by the AB 32 Scoping Plan. AB 1826 specifically requires jurisdictions to establish organic waste recycling programs by 2016, and phases in mandatory commercial organic waste recycling over time.

2015 Senate Bill 350

SB 350, the Clean Energy and Pollution Reduction Act of 2015, has two objectives: to increase the procurement of electricity from renewable sources from 33 percent to 50 percent by 2030 and to double the energy efficiency of electricity and natural gas end users through energy efficiency and conservation.

2015 Executive Order B-30-15

EO B-30-15 was signed in 2015, establishing an interim GHG emissions reduction target to reduce emissions to 40 percent below 1990 levels by 2030. The EO also calls for another update to the CARB Scoping Plan to provide a pathway to achieve this goal.

2016 Senate Bill 32

In September 2016, the governor signed SB 32 into law, extending AB 32 by requiring the state to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged).

2016 Senate Bill 1383

Adopted in September 2016, SB 1383 requires CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. SB 1383 requires achievement of the following reduction targets by 2030:

- Methane – 40 percent below 2013 levels
- Hydrofluorocarbons – 40 percent below 2013 levels
- Anthropogenic black carbon – 50 percent below 2013 levels

SB 1383 also requires CalRecycle, in consultation with CARB, to adopt regulations that achieve specified targets for reducing organic waste in landfills. SB 1383 further requires 20% of edible food disposed of at the time to be recovered by 2025.

2017 Scoping Plan Update

In December 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 goal set by SB 32. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently approved legislation, such as SB 350 and SB 1383.

The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2014 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally appropriate quantitative thresholds consistent with statewide per capita goals of six metric tons (MT) CO_2e by 2030 and two MT CO_2e by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (i.e., city, county, subregional, or regional level), but not for specific individual projects because they include all emissions sectors in the state (CARB 2017).

2018 Senate Bill 100

Adopted in September 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the state's RPS Program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

2018 Executive Order B-55-18

In September 2018, the governor issued Executive Order B-55-18, which established a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter. This goal is in addition to the existing statewide GHG reduction targets established by SB 375, SB 32, SB 1383, and SB 100.

APPENDIX B:
GHG INVENTORY AND FORECAST METHODOLOGY

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Tables

Figures

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1 Introduction

California considers the impact of climate change to be a serious threat to the public health, the environment, and the economic well-being of the State. California has taken an aggressive stance to mitigate the impact on climate change at the State-level through the adoption of legislation and policies to protect natural resources and reduce greenhouse gas (GHG) emissions. The three major State GHG-related goals are established by Assembly Bill (AB) 32 and Senate Bill (SB) 32, and most recently, Executive Order (EO) B-55-18, which has not yet been codified. AB 32 required State Air Resources Board to adopt rules and regulations that would reduce the State's GHG emissions to 1990 levels by 2020; whereas SB 32 requires a 40 percent reduction below 1990 levels by 2030. EO B-55-18 sets a long-term goal of achieving carbon neutrality as soon as possible, but no later than 2045. The goals set by AB 32 were achieved by the State in 2016[1]and many jurisdictions have completed GHG inventories to quantify compliance with their own 2020 goals as well as develop targets to align with the requirements of SB 32 and show progress towards carbon neutrality. The Metropolitan Water District of Southern California (Metropolitan) has chosen to develop a Climate Action Plan (CAP) for its operations and align GHG reduction goals to correspond with State emissions reduction targets.

Estimating GHG emissions enables entities to establish an emissions baseline, track emissions trends, identify the greatest sources of GHG emissions within their jurisdictions, and set targets for future reductions. This inventory is compliant with the Local Governments for Sustainability (ICLEI) *Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories*[2] (Local Government Protocol) and meets the requirements of the California Environmental Quality Act (CEQA) Guidelines Section 15183.5(b) for a 'qualified' GHG emissions reduction plan or CAP. Methodology used in some sections (water/wastewater) has been updated to conform with the industry standard as recommended in the Association of Environmental Professionals (AEP) *California Supplement to the United States Community-Wide GHG Emissions Protocol*[3] (California Supplement). Emissions inventories are an iterative process and must be reviewed annually to ensure consistency with current emissions inventory methodologies and factors.

Emissions contained within this inventory include activities under the jurisdictional control or significant influence of Metropolitan, as recommended by AEP in preparing CEQA-compliant inventories.[3]

[1] California Air Resources Board. California Greenhouse Gas Emissions Inventory. Accessed at: https://ww3.arb.ca.gov/cc/inventory/inventory.htm. Accessed on July 2019

[2] ICLEI. 2010. *Local Government Operations Protocol For the quantification and reporting of greenhouse gas emissions inventories*, Version 1.1

[3] Association of Environmental Professionals. 2013. The California Supplement to the United States Community-Wide Greenhouse Gas (GHG) Protocol.

1.1 Executive Summary

GHG Emissions Inventories

Metropolitan has reported operational GHG emissions to The Climate Registry (TCR) annually since 2005. For each year from 2005 to 2020, Scope 1 and 2 emissions are calculated using operational activity data. Scope 3 emissions were calculated for the year 2008, the first year with complete data, and 2017, the final complete year of data available for the inventory. At the time of developing the CAP the complete scope 3 datasets for 2018, 2019 and 2020 were not available. Scope 3 emissions were found to contribute a relatively small amount of overall emissions, as shown below in Figure 1 and Table 1. Scope 3 emissions from 2008 and 2017 were averaged and the average was then applied to all interim years for consistency. Construction emissions were estimated based on annual construction forecasts for the years 2019 through 2024. An analysis of Metropolitan's Annual Capital Expenditures since 1990 showed construction activities during the period 2019-2024 represents an average or less than average level of construction activity when compared to historical annual capital expenditures adjusted to current dollars. Therefore, the GHG inventory provides a conservative estimate of past emissions (by not inflating historical emissions and thereby making future reduction targets easier to meet). Both Figure 1 and Table 1 summarize the emissions inventory. For an in-depth data analysis of the years 2008 and 2017, including detailed inventory methodologies, please see Section 4 of this appendix.

Figure 1 Metropolitan Emissions by Scope

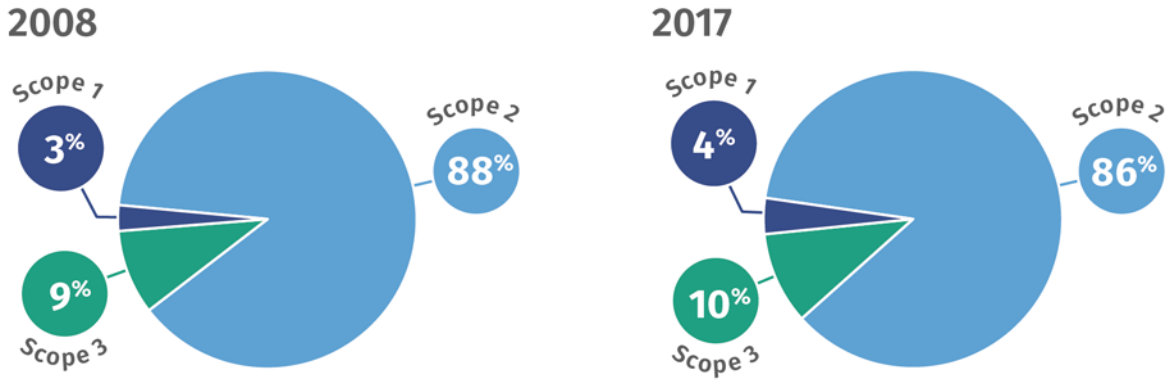


Table 1 2008 and 2017 Emissions by Scope and Sector

Scope	2008 GHG Emissions (MT of CO_2e)	2008 Percent of Total Emissions	2017 GHG Emissions (MT of CO_2e)	2017 Percent of Total Emissions
Scope 1	**8,073**	**3%**	**8,875**	**4%**
Stationary Combustion	893	<1%	1,918	1%
Fugitive Emissions	0	0%	71	<1%
Mobile Combustion	7,180	3%	6,886	3%
Scope 2	**226,651**	**88%**	**194,480**	**86%**
Electricity Consumption	224,105	87%	192,511	85%
T&D Losses	2,546	1%	1,969	1%
Scope 3	**11,613**	**4%**	**10,598**	**5%**
Water and Wastewater	13	<1%	184	<1%
Waste Generation	2,363	1%	3,157	1%
Employee Commute	9,237	4%	7,257	3%
Scope 3 Construction	**12,081**	**5%**	**12,081**	**5%**
Construction Emissions	12,081	5%	12,081	5%
Total Emissions	**258,419**	**100%**	**226,036**	**100%**

Numbers may not sum due to rounding

MT = metric tons

CO_2e = carbon dioxide equivalent

T&D = transmission and distribution

Metropolitan's GHG emissions have steadily decreased compared to 1990 levels even during periods of GHG emissions spikes caused by increased pumping along the Colorado River Aqueduct (CRA) between 2010 and 2014. Emissions in 2017 were 71 percent lower than 1990 emission levels. Figure 2 presents the annual operational emissions for every year Metropolitan has reported emissions to TCR as well as estimated emissions for 1990. Emissions are reported as metric tons (MT) of carbon dioxide equivalents (CO_2e) per standard practice and using the global warming potential (GWP) presented in the Intergovernmental Panel on Climate Change (1995) Second Assessment Report to maintain consistency with State regulations. Future inventories may update these GWPs to maintain consistency with State methodologies. Inventory results highlighted in Figure 2 and Table 2 shows Metropolitan emissions have decreased from approximately 772,000 MT of CO_2e in 1990 to approximately 226,000 MT of CO_2e in 2017.

Figure 2 GHG Emissions 1990 through 2020

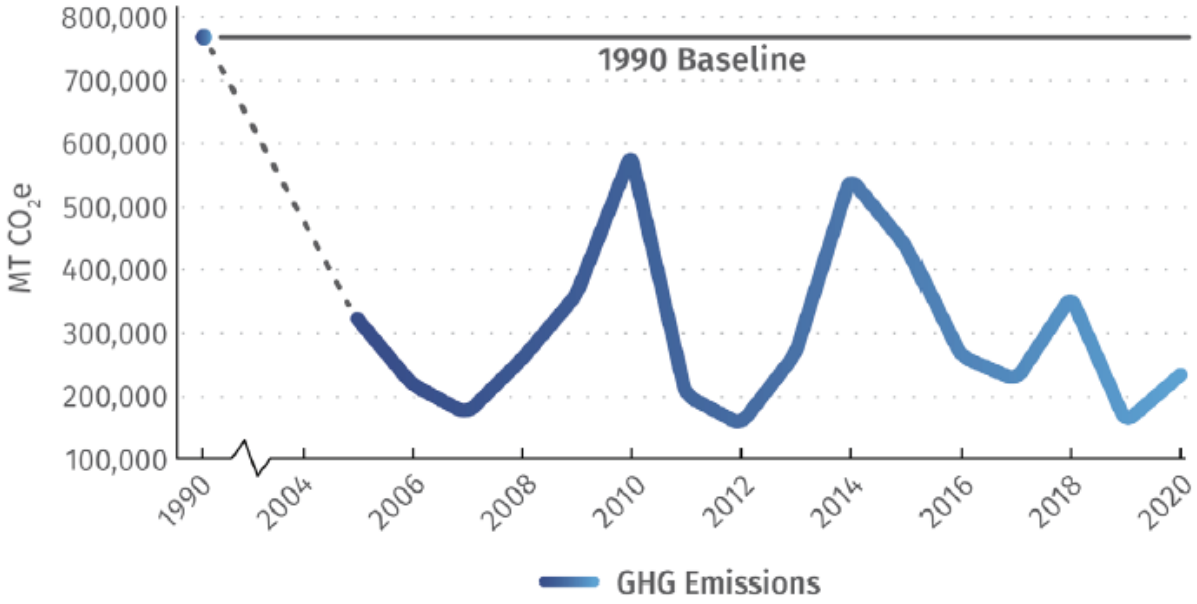


Table 2 Inventory Results 1990 and 2005 Through 2017

Year	Scope 1 & 2 (MT CO_2e)	Scope 3 (MT CO_2e)	Scope 3 Construction (MT CO_2e)	Total Emissions (MT CO_2e)
1990	748,326	11,106	12,081	771,514
2005	300,036	11,106	12,081	323,224
2006	196,167	11,106	12,081	219,355
2007	149,580	11,106	12,081	172,768
2008	234,724	11,614	12,081	258,419
2009	337,269	11,106	12,081	360,457
2010	559,764	11,106	12,081	582,952
2011	179,187	11,106	12,081	202,374
2012	132,449	11,106	12,081	155,637
2013	244,164	11,106	12,081	267,352
2014	522,643	11,106	12,081	545,830
2015	417,213	11,106	12,081	440,400
2016	240,233	11,106	12,081	263,420
2017	203,356	10,599	12,081	226,036
2018	335,099	11,106	12,081	358,287
2019	136,012	11,106	12,081	159,200
2020	211,141	11,106	12,081	234,329

Numbers may not sum due to rounding

MT = metric tons

CO_2e = carbon dioxide equivalent

GHG Emissions Forecast

The GHG inventories provide an accurate depiction of Metropolitan emission trends over time. Because annual emissions change over time due to external factors such as hydrology, climate, population growth, operational changes, and construction projects, Metropolitan also developed an emissions forecast that estimates GHG emissions between 2017 and 2045.[4] The forecast is used to assist Metropolitan in setting targets that are consistent with State-level goals by means of a gap analysis between the forecasted emissions and the reductions targets. Because GHG emissions associated with Metropolitan operations are heavily impacted by water demand and water source, three scenarios were modeled for Metropolitan's forecast. Each of the three scenarios are based on Metropolitan's 2020 Urban Water Management Plan water demand forecast. The three scenarios are intended to capture the full range of possible future emissions. The scenarios account for a high emission scenario where there are multiple-dry years and high operational emissions; an average emission scenario which assumes a single dry year demand level and average operational emissions; and a low emission scenario associated with an average demand year and low operational emissions.

The forecast presented here has been further adjusted to incorporate State and federal programs which are currently codified and are expected to continue being implemented through 2045. However, to be conservative only SB 100 (100% carbon free electricity by 2045) was applied to the forecast. Other State and federal programs may support Metropolitan's GHG emission reductions in the future, but they were not quantified as part of this forecast. In addition, emissions resulting from the construction and operation of the proposed Regional Recycled Water Plant (RRWP) were also included in each of the GHG emission forecasts. Calculating the difference between the adjusted GHG emissions forecast and the reduction targets set by Metropolitan determines the gap to be closed through Metropolitan's CAP policies. Figure 3 presents the projected emissions for Metropolitan through 2045 associated with the three different forecast scenarios (high, average, low). Table 3 includes a comparison of the projected emissions for each scenario in each target year (2030 and 2045) compared to the 1990 emissions baseline. The full methodology used to derive these results are provided in Section 4 of this appendix.

[4] 2018, 2019, and 2020 emissions inventories were received after completion of the forecast and therefore, not used to develop Metropolitan's GHG emissions forecast. However, they have been accounted for in the carbon budget. However, the forecasts are based on the 2020 UWMP which was updated in 2021.

Figure 3 Adjusted Emissions Forecast 1990-2045

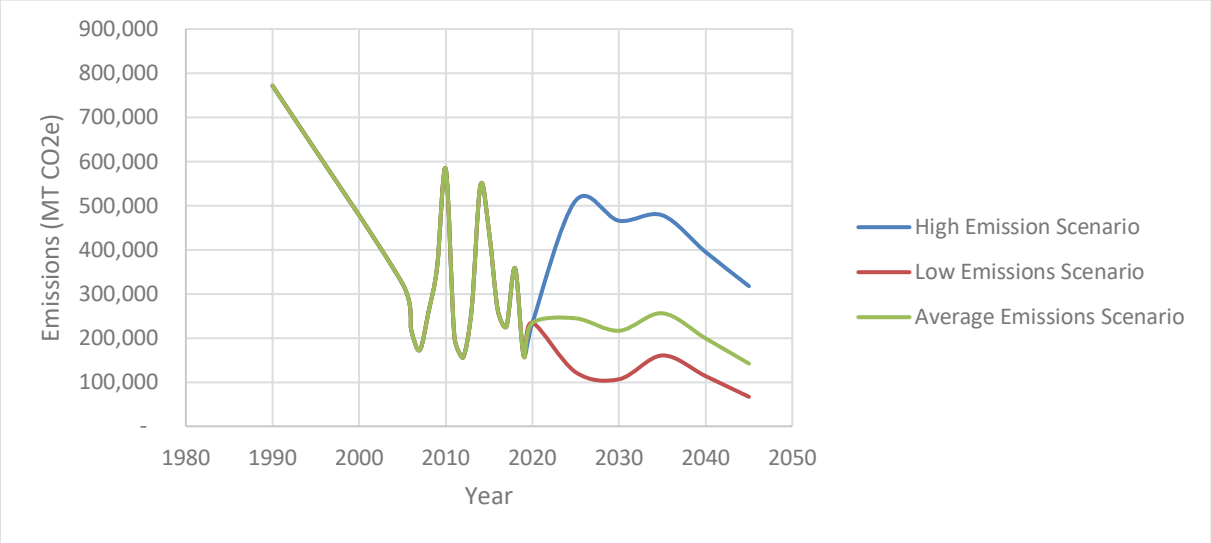


Table 3 Expected Percent Reduction from 1990 by 2030 and 2045

Emissions Scenario	1990 Emissions	2030 Forecast Emissions	Percent Reduction	2045 Forecast Emissions	Percent Reduction
High	771,514	465,664	40%	317,441	59%
Average	771,514	216,460	72%	142,059	82%
Low	771,514	106,615	86%	66,812	91%

1.2 Background

In response to climate change the State of California has enacted several cornerstone GHG reduction legislations. The primary legislative drivers for climate action in California are included below and a full list is included in Appendix A.

- **Executive Order S-3-05,** signed by former Governor Schwarzenegger in 2005, establishes statewide GHG emissions reduction goals to achieve long-term climate stabilization as follows: by 2020, reduce GHG emissions to 1990 levels and by 2050, reduce GHG emissions to 80 percent below 1990 levels. The 2050 goal was accelerated by the 2045 carbon neutral goal established by EO B-55-18, as discussed below.[5]
- **Assembly Bill 32,** known as the Global Warming Solutions Act of 2006, requires California's GHG emissions be reduced to 1990 levels by the year 2020 (approximately a 15 percent reduction from 2005 to 2008 levels). The AB 32 Climate Change Scoping Plan, published in 2008, identifies mandatory and voluntary measures to achieve the statewide 2020 emissions limit, and encourages local governments to reduce municipal and community GHG emissions proportionate with State goals.[6]

[5] Executive Orders are binding only unto State agencies. Accordingly, EO S-03-05 will guide State agencies' efforts to control and regulate GHG emissions but will have no direct binding effect on local government or private actions.

[6] Specifically, the AB 32 Climate Change Scoping Plan states CARB, "encourages local governments to adopt a reduction goal for municipal operations emissions and move toward establishing similar goals for community emissions that parallel the State commitment to reduce GHG emissions by approximately 15 percent from current levels by 2020" (p. 27). "Current" as it pertains to the AB 32 Climate Change Scoping Plan is commonly understood as between 2005 and 2008.

- **Senate Bill 32,** signed by former Governor Brown in 2016, establishes a statewide mid-term GHG reduction goal of 40 percent below 1990 levels by 2030. California Air Resources Board (CARB) formally adopted an updated Climate Change Scoping Plan in December 2017, laying the roadmap to achieve 2030 goals and giving guidance to achieve substantial progress toward 2050 State goals.
- **Executive Order B-55-18,** signed by former Governor Brown in 2018, expanded upon EO S-3-05 by creating a statewide GHG goal of carbon neutrality by 2045. EO S-55-18 identifies CARB as the lead agency to develop a framework for implementation and progress tracking toward this goal in the next Climate Change Scoping Plan Update.

The State of California, via CARB, has issued several guidance documents establishing GHG emissions reduction targets in order for local climate action plans to comply with legislated GHG emissions reductions goals and CEQA Guidelines Section 15183.5(b). In the first *Climate Change Scoping Plan,*[7] CARB encouraged local governments to adopt a reduction target for community emissions paralleling the State commitment to reduce GHG emissions. In 2016, the State adopted SB 32 mandating a reduction of GHG emissions by 40 percent from 1990 levels by 2030 and in 2017 CARB published *California's 2017 Climate Change Scoping Plan* (hereafter referred to as the Scoping Plan Update) outlining the strategies the State will employ to reach these targets.[8] With the release of the Scoping Plan Update, CARB recognized the need to balance population growth with emissions reductions and in doing so, provided a new methodology for proving consistency with State GHG reduction goals through the use of per capita efficiency targets. These targets are generated by dividing a jurisdiction's GHG emissions for each horizon year by the jurisdiction's total population for that target year and are discussed further in the Forecast Section.

1.3 Greenhouse Gases

Scope 1 emissions are defined as direct anthropogenic GHG emissions generated from sources that are owned or directly controlled by the reporting organization. Scope 2 refers to GHG emissions that are indirectly generated due to the consumption of purchased electricity, steam, heating, or cooling. Scope 3 refers to all other indirect emissions not covered under Scope 2 that are associated with sources that are not directly owned or controlled by the reporting organization but are fundamental to the organization's operation. A visualization of each Scope category is provided in Figure 4, *Example Emissions by Scope*.

Metropolitan has reported operational GHG emissions to TCR annually since 2005. For each year, Scope 1 and 2 emissions are calculated using operational activity data. Additionally, Rincon completed a Scope 3 analysis for data years 2008 and 2017 using methodologies described in the Local Government Protocol.[9] These two years were chosen for an in-depth analysis due to guidance from the AB 32 Scoping Plan which suggests using GHG emissions from 2005-2008 to back cast to 1990 since most jurisdictions do not have a GHG inventory for 1990.

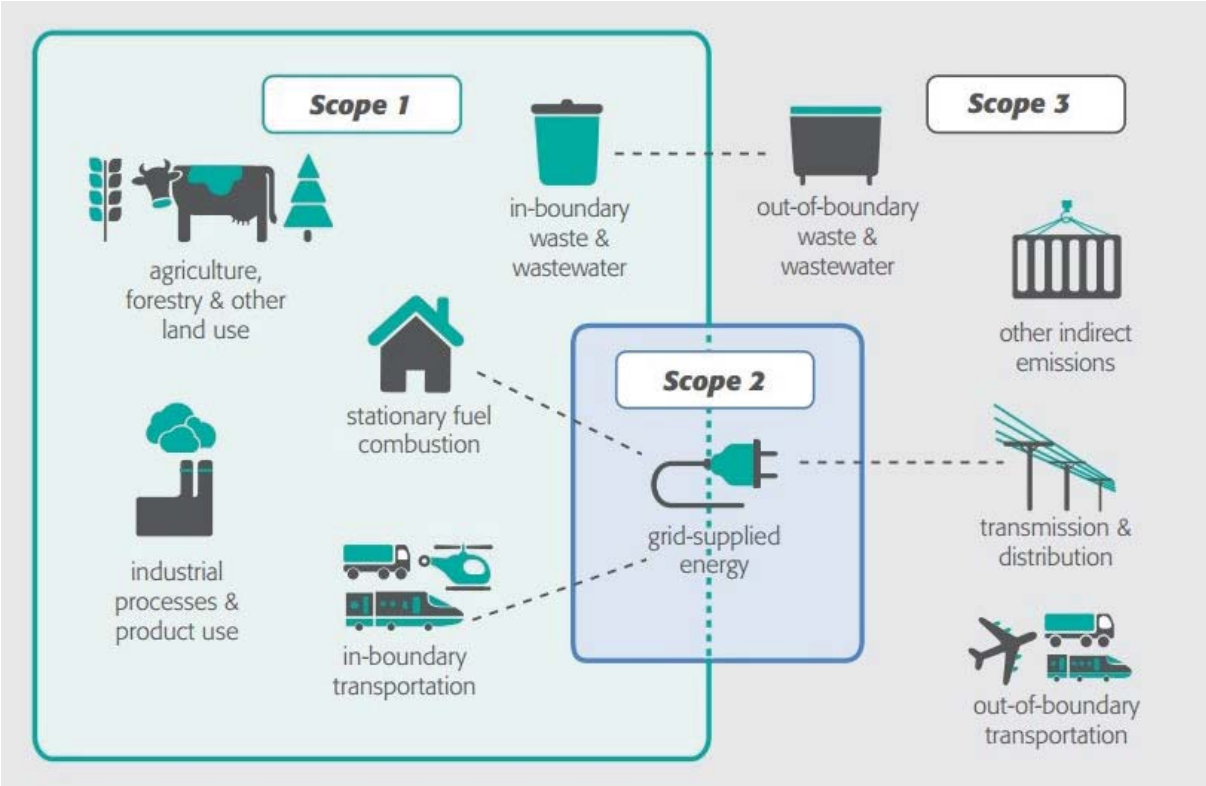
[7] California Air Resources Board. 2008. Climate Change Scoping Plan. Accessed at: https://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf. Accessed on: June 20, 2019

[8] California Air Resources Board. California's 2017 Climate Change Scoping Plan. Accessed at: https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf. Accessed on: June 20, 2019

[9] ICLEI. 2010. Local Government Operations Protocol *For the quantification and reporting of greenhouse gas emissions inventories*, Version 1.1

Emissions were calculated using the principles and methods from the Local Government Protocol[10] and 2017 Scoping Plan Update.[11] Emissions from nitrous oxide (N_2O), methane (CH_4), and carbon dioxide (CO_2) are included in this assessment. Each GHG has a different capability of trapping heat in the atmosphere, known as its GWP, which is normalized relative to CO_2 and expressed as carbon dioxide equivalent, or CO_2e. The CO_2e values for these gases are derived from the Second Assessment of the Intergovernmental Panel on Climate Change GWP values for consistency with the yearly GHG inventory reported to TCR by Metropolitan, as shown in Figure 4.[12]

Figure 4 Example Emissions by Scope[13]



[10] ICLEI. 2010. Local Government Operations Protocol *For the quantification and reporting of greenhouse gas emissions inventories*, Version 1.1

[11] California Air Resources Board. 2017. California's Climate Change Scoping Plan.

[12] Intergovernmental Panel on Climate Change. 1995. Second Assessment Report: Climate Change. Direct Global Warming Potentials.

[13] Figure obtained from the Cambridge Community Development Department website: https://www.cambridgema.gov/CDD/climateandenergy/greenhousegasemissions. This figure is provided for illustrative purposes only and may not directly correspond to operations at Metropolitan.

Table 4 Global Warming Potentials of Greenhouse Gases

Greenhouse Gas	Molecular Formula	Global Warming Potential (CO_2e)
Carbon Dioxide	CO_2	1
Methane	CH_4	21
Nitrous Oxide	N_2O	310
Sulfuric hexafluoride	SF_6	23,900
Hydrofluorocarbons (HFCs)	R-134a	1,300
Hydrofluorocarbons (HFCs)	R-1410a	1,725

CO_2e: carbon dioxide equivalent

1.4 Excluded Emissions

The following emissions are excluded from the inventory and emissions forecast.

Consumption-based Emissions

Currently, no widely accepted standard methodology for reporting consumption-based inventories exists. Therefore, GHG emissions from consumed goods used by Metropolitan facilities are excluded from the inventory and forecast of Metropolitan emissions.

Natural and Working Lands

GHG emissions from carbon sinks and sources in natural and working lands are not included in this inventory and forecast due to the lack of granular data and standardized methodology. Forestry and other land emissions potentially associated with Metropolitan's properties were also excluded, due to limited availability of appropriate data and lack of standardized methods for quantifying such emissions. The sequestration potential of Metropolitan lands may be evaluated during the GHG reduction measure development process.

Agricultural Emissions

Emissions from agricultural activities are not relevant to Metropolitan operations and therefore, are not included in the inventory.

State Water Project Emissions

The State Water Project (SWP) is a water storage and delivery system that extends more than 705 miles from northern to southern California. This system is owned and operated by the Department of Water Resources (DWR) and provides water to urban and industrial water users In the San Francisco Bay Area and Southern California, and agricultural users in the Central Valley. As a State Water Contractor, Metropolitan has a set maximum allocation of this water that can be distributed to its member agencies. However actual annual deliveries could be reduced based on a number of factors including regulatory restrictions, water supply imbalances, monthly snowpack and runoff, water quality, and health and safety issues. Metropolitan has no control or direct influence over DWR operations or the SWP.

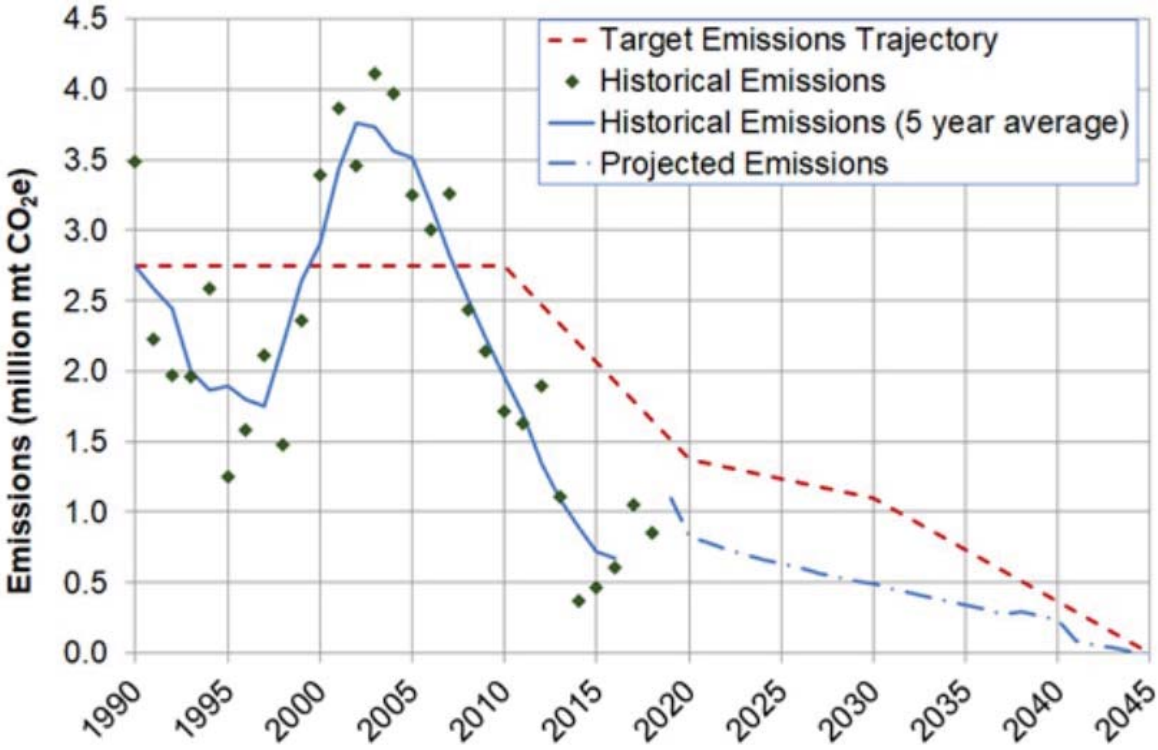
Pursuant to the Climate Registry General Reporting Protocol (2019), Metropolitan used Operational Control to define the boundaries of the GHG Inventory. TCR defines Operational Control as:

Operational Control: Reflects the activities where the organization or its subsidiaries has the full authority to introduce and implement operating policies. The organization that holds the operating license for an activity typically has operational control.[14]

Metropolitan's GHG inventory includes sources within each sector that are under its operational control, in accordance with established GHG accounting protocols and state guidance. SWP water, and its associated emissions, were assumed to remain outside of Metropolitan's operational boundary until the water enters Metropolitan-controlled facilities. Thus, upstream emissions associated with the SWP are not included in the Metropolitan CAP.

Upstream emissions associated with the SWP are covered in the DWR's own CAP. Since 2005 the SWP emissions have decreased significantly, exceeding the GHG emissions reduction targets set by DWR as shown in Figure 5. The DWR CAP GHG reduction targets align with Metropolitan's CAP and both seek to achieve carbon neutrality by 2045. Therefore, while not addressed in Metropolitan's CAP, SWP emissions are actively being managed and reduced in accordance with State targets. Through continued collaboration, Metropolitan and DWR will work to decarbonize a significant portion of California's water infrastructure.

Figure 5 State Water Project Historic Emissions and Targets



[14] General Reporting Protocol V3, The Climate Registry, May 2019.

1.5 Target Years

The emissions forecast is based upon the latest available operational data from Metropolitan including Scope 1 and 2 emissions reported annual to TCR and the average annual Scope 3 emissions estimated as described in this appendix. This forecast uses benchmark years of 2025, 2030, 2035, 2040, and 2045, consistent with currently codified GHG reduction targets or executive orders which are expected to be codified in future, and a target of carbon neutrality on or before 2045.

The forecast years align with the following targets:

- 2030 (SB 32)
- 2045 (EO B-55-18)

The 2030 target is required for consistency with SB 32, while the remainder of the targets (i.e., 2025, 2035, 2040) identify a clear path and milestones of progress toward the long-term State reduction goals.

2 Previous GHG Inventories

Metropolitan has reported operational GHG emissions to TCR annually for the years 2005-2017. Emissions reported to the TCR were calculated by Metropolitan using operational activity data and only include Scope 1 and Scope 2 emissions.[15] Scope 1 emissions include direct fuel combustion within Metropolitan's operational control including emissions from propane, natural gas, and welding gasses. Mobile combustion of gasoline and diesel from Metropolitan fleet vehicles and fugitive emissions were also included in Scope 1. Scope 2 emissions include the indirect GHG emissions associated with the purchase and consumption of electricity as well as transmission and distribution (T&D) losses associated with transmission lines.

Metropolitan provided Rincon with operational data and the internal emission calculations that were reported to TCR for all years between 2005 and 2020. Additionally, Metropolitan provided estimations for 1990 emissions. A summary of previous GHG emissions inventories reported to TCR for these years can be found in Table 5. Metropolitan methodologies used to calculate Scope 1 and Scope 2 emissions are summarized in the following sections.

Table 5 Metropolitan GHG Inventories Summary

Year	Scope 1 & 2 (MT CO_2e)	Scope 3 (MT CO_2e)	Scope 3 Construction (MT CO_2e)	Total Emissions (MT CO_2e)
1990	748,326	11,106	12,081	771,514
2005	300,036	11,106	12,081	323,224
2006	196,167	11,106	12,081	219,355
2007	149,580	11,106	12,081	172,768
2008	234,724	11,614	12,081	258,419
2009	337,269	11,106	12,081	360,457
2010	559,764	11,106	12,081	582,952
2011	179,187	11,106	12,081	202,374
2012	132,449	11,106	12,081	155,637
2013	244,164	11,106	12,081	267,352
2014	522,643	11,106	12,081	545,830
2015	417,213	11,106	12,081	440,400
2016	240,233	11,106	12,081	263,420
2017	203,356	10,599	12,081	226,036
2018	335,099	11,106	12,081	358,287
2019	136,012	11,106	12,081	159,200
2020	211,141	11,106	12,081	234,329

Numbers may not sum due to rounding

MT = metric tons

CO_2e = carbon dioxide equivalent

[15] 2017 was the most recent GHG inventory available at time of this report.

2.1 1990 Baseline

The State of California uses 1990 as a reference year to remain consistent with AB 32 and SB 32, which codified the State's 2020 and 2030 GHG emissions targets by directing CARB to reduce statewide emissions to 1990 levels by 2020 and 40 percent below 1990 levels by 2030.

Metropolitan has reported estimated emissions for 1990 to TCR that include Scope 1 and Scope 2 emissions. The 1990 emissions were calculated using available 1990 activity data; when 1990 activity data was not available, activity data from 2006 was used as a proxy for operational activity in 1990. Energy consumption data, including electricity, natural gas and propane usage from 1990 was only available for the Treatment and Pumping plant facilities which represent over 90% of annual electricity consumption. Energy consumption data for all other facilities from 2006 was used as a proxy for 1990 energy related emissions.

Electricity emissions account for a vast majority of Metropolitan's overall emissions. Electricity emission factors from 2004 were used to estimate 1990 emission levels due to 1990 emission factors for electricity not being available. This is assumed to be a conservative estimate since estimated emission factors for 1990 have been calculated to be higher than the emission factors used in this study. For example, *Estimating Carbon Dioxide Emissions Factors for the California Electric Power Sector* (August 2002) conducted by Lawrence Berkeley Labs calculated an emission factor of 0.488 MT CO_2e per megawatt hour (MWh) for Southern California Edison power[16] while the 2004 emission factor used for the 1990 baseline is 0.333 MT CO_2e per MWh. Using a lower emission factor in 1990 is considered more conservative since it increases the reduction required to be consistent with State targets in 2030. A portion of Metropolitan's GHG emissions were also due to direct purchases from the Salt River Project Navajo Generating Station[17], a coal fired power plant. Metropolitan utilized an estimated emission factor of 1.04 MT CO_2e per MWh for electricity from this source. The remaining electricity was hydro power generated by Hoover and Parker Dams, which is assumed to be carbon free.

Mobile emissions were estimated based on mobile fuel consumption in 2006. Emission factors for gasoline use in vehicles of model year 1994-1999 was applied to mobile fuel consumption of gasoline to estimate 1990 mobile emissions. Metropolitan estimated emissions from Scope 1 and Scope 2 sources in 1990 to total 748,326 MT CO_2e.

In order to improve consistency and allow for comparison between 1990 and current inventories, historical Scope 3 emissions from waste, water use at Metropolitan facilities, and employee commute were estimated based on the average Scope 3 emissions for 2008 and 2017. Construction emissions for 1990 were assumed to be 12,081 MT CO_2e (annual average applied to all inventory years). This is assumed to be a conservative estimate of actual construction activities based on CIP budgets analyzed as part of the project. For more information see Section 3.2.

[16] This emission factor was calculated based on data in Table 25 of *Estimating carbon dioxide emissions factors for the California electric power sector.* SCE emissions were calculated as 0.132 kg C/kWh. To convert between kg C and kg CO_2e the following equation was used. 0.133 kg C/kWh * (44.0g CO2 / 12.0g C) = 0.488 kg CO2/kWh = 0.488 metric tons CO_2e/MWh.

[17] https://www.srpnet.com/about/stations/ngs/default.aspx

Table 6 1990 Emissions Summary

Source	Total Emissions (MT of CO_2e)
Scope 1	**8,482**
Mobile Emissions	7,400
Stationary Emissions	1,082
Scope 2	**739,845**
Electricity	739,845
Scope 3	**23,187**
Water Use	99
Waste	2,760
Employee Commute	8,247
Construction	12,081
Total	**771,514**

*Numbers may not sum due to rounding

2.2 2005-2017 Inventory Methodology

Metropolitan is a regional water district that operates an aqueduct, pumping plants, treatment plants, a 230kV transmission line system, and a distribution system that includes reservoirs, hydroelectric power plants, pressure control structures, and valve structures. Metropolitan reports GHG emissions data to the CARB under the Mandatory Reporting of Greenhouse Gas Emissions as an Electric Power Entity-Marketer. The data used by the Cap-and-Trade Program is included in California's Greenhouse Gas Inventory.

In addition to reporting GHG emissions for the Cap-and-Trade Program, Metropolitan has voluntarily reported GHG emissions through the California Climate Action Registry starting in 2007 (which included 2005 and 2006 calendar year data) and then through TCR starting in 2010.[18] Metropolitan reports annual emissions of carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluorides. Data is obtained from a mix of sources including utilities and applicable Metropolitan organizational units. Emission factors obtained from TCR, CARB or the United States Environmental Protection Agency (EPA) are applied to operational activity data to calculated annual GHG emissions in a Metropolitan Excel workbook. Data from the workbooks are reviewed and verified prior to entry into the CARB and TCR online reporting tools. Reports are verified by approved third-party verification bodies. The following sections summarize activity data sources and methodology used by Metropolitan for emission calculations. It should be noted that GHG emissions reported to TCR and discussed below do not include Scope 3 emissions, which were calculated for the first time as part of this project.

Electricity

Metropolitan electricity use includes both wholesale power purchases and retail energy. Wholesale power used for pumping requirements of the CRA are mainly provided by the Hoover and Parker Hydroelectric Power Plants, though this is often supplemented by grid mix from the CAMX or AZNM

[18] California Climate Action Registry transitioned all emissions reporting to the TCR in 2010.

electricity grids[19]. Monthly transaction data from wholesale power sources is compiled into monthly reports by an internal working group (Power Resources Unit). Metropolitan calculates its own blended emission factor for wholesale electricity based on all the power sources acquired for the CRA. Retail electricity is based on actual consumption data provided by individual utilities and utilities bills. Emission factors for retail electricity is obtained from TCR public reports or eGRID data and is based on the specific entity's power mix.

Fuel Use

Metropolitan uses propane, welding gas, natural gas and various transportation fuels for its fleet. Annual consumption of propane is provided by individual facilities and is tracked by the Metropolitan Fleet Unit. Welding gas is purchased by the Metropolitan Manufacturing Services Unit. Natural gas usage at facilities is obtained through utility billing from Southern California Gas company. Metropolitan's fleet uses gasoline, diesel, compressed natural gas, and aviation fuel. Fuel use is recorded internally by the Fleet Unit and reported quarterly using the WARD System. TCR's "Default Emission Factors" published each year are used to calculate emission for each fuel type.

Non-CO_2 Emissions

Sulfur hexafluoride (SF6) usage is tracked and accounted for through Maximo and is based on changes in inventory, purchases, disbursements, and changes in nameplate capacity of equipment. The EPA mass balance method is used to estimate sulfur hexafluoride emissions from circuit breakers.

Hydrofluorocarbons (HFCs) used in Metropolitan's cooling system are accounted for using TCR's recommended methodology for estimating emissions from refrigeration and air conditioning equipment.

2.3 Inventory GHG Data Sources

The data used to complete this inventory and forecast came from multiple sources, as summarized in Table 7. As previously discussed, Scope 1 and 2 data and calculations were provided by Metropolitan and reported to TCR. Scope 3 emissions were calculated using data supplied by Metropolitan.

[19] CAMX and AZNM are subregions of the electricity grid that cover California and Arizona/New Mexico respectively (with some overlap). https://www.epa.gov/sites/production/files/2015-10/documents/egrid2012_summarytables_0.pdf

Table 7 Inventory and Forecast Data Sources

Sector	Activity Data	Unit	Source
Scope 1 and Scope 2			
Energy	Electricity Usage	MWh	Metropolitan TCR Reports
	T&D Losses	MWh	Metropolitan TCR Reports
	Stationary Combustion (fuel)	MMBtu	Metropolitan TCR Reports
Mobile Combustion	Annual fuel consumption (gasoline, diesel, jet fuel, aviation gasoline, CNG)	gallons	Metropolitan TCR Reports
Fugitive Emissions	SF6 use HFCs use	pounds	Metropolitan TCR Reports
Scope 3			
Employee Commute	VMT by Transport Mode	VMT	Metropolitan Employee Commute Survey/VanPool Ridership
Water/Wastewater	Water Usage	HCF	Utility invoices
Solid Waste	Waste Generated	Cubic Yards	Utility invoices
Construction	Construction	N/A	CEQA documentation/CalEEMod/CIP
Forecast Growth Indicators			
Operational Growth	Water Deliveries	Acre Feet	2015 Urban Water Management Plan
Electricity Emissions	Renewable Portfolio Standard	Percent	Renewable Portfolio Standard; Senate Bill 100

Numbers may not sum due to rounding

MWh: megawatt hours; T&D: transmission and distribution; MMBtu: one million British thermal unit; VMT: vehicle miles traveled; HCF: hundred cubic feet; CIP: Capital Investment Plan; CEQA: California Environmental Quality Act

3 Inventory

Metropolitan used operational activity data to calculate Scope 1 and Scope 2 emissions for years 2005 through 2017, as summarized in Section 2. However, no Scope 3 data was collected for these reports. Therefore, to bring Metropolitan's GHG inventories into consistency with applicable CAP guidelines, Scope 3 data for 2008 and 2017 was calculated and used to estimate Scope 3 emissions in all other interim years including 1990. The average of the Scope 3 emissions from 2008 and 2017 was then applied to all interim years for consistency. Though Scope 1 and 2 data was available for 2005, 2008 was used because it was the earliest year for which complete Scope 3 emissions data was available. Each of the in-depth inventory years were chosen for specific reasons. The 2008 data year was chosen due to the availability of Scope 3 data as well as its consistency with state protocols for baseline years which can be backcast. The 2017 data year was chosen because, at the time of the inventory preparation, it was the most recent year for which all data was available while also providing a clear picture of current Metropolitan emissions.

3.1 Scope 1 and 2

The methodologies, data sources, calculations, and results associated with the 2008 and 2017 GHG inventory update are included in this section. Information regarding data sources used by Metropolitan to calculate Scope 1 and Scope 2 emissions for the 2008 and 2017 inventories are located in Section 2.2 of this technical appendix. The following sections summarize the activity data, emission factors, and absolute emissions reported by Metropolitan for 2008 and 2017. This includes emissions from direct fuel combustion at Metropolitan facilities, mobile combustion of gasoline and diesel from Metropolitan fleet vehicles, non-CO_2 fugitive emissions, and indirect GHG emissions associated with the purchase and consumption of electricity. Table 8 and Table 9 summarize the activity data, emission factors and total emissions reported by Metropolitan for Scope 1 and 2 emissions in 2008 and 2017, respectively.

Table 8 Scope 1 and 2 Emissions by Category for Year 2008

Source	Activity Data	Emission Factor	Total Emissions (MT of CO_2e)
Energy			**227,544**
Electricity	1,835,580 MWh	0.1221 MT CO_2e/MWh	224,105
Electricity T&D Loss	26,593 MWh	0.0957 MT CO_2e/MWh	2,546
Natural Gas	16,308 MMBtu	0.0532 MT CO_2e/MMBtu	868
Propane	401 MMBtu	0.0631 MT CO_2e/MMBtu	25
Mobile			**7,180**
Gasoline (unleaded)	663,738 gallons	0.0092 MT CO_2e/gallon	6,076
Diesel	108,644 gallons	0.0017 MT CO_2e/gallon	1,104
Non-CO_2 Fugitive Emissions			**0**
SF6	0 lbs	N/A	0
Total			**234,724**

MWh: megawatt hours; MMBtu: one million British Thermal Units; MT CO_2e: metric tons of carbon dioxide equivalent; SF6: sulfur hexafluoride; lbs: pounds; N/A: not applicable

Numbers may not sum due to rounding

Table 9 Scope 1 and 2 Emissions by Category for Year 2017

Source	Activity Data	Emission Factor	Total Emissions (MT of CO_2e)
Energy			**196,398**
Electricity	1,381,602 MWh	0.1393 MT CO_2e/MWh[2]	192,511
Electricity T&D Loss	14,687 MWh	0.1341 MT CO_2e/MWh	1,969
Natural Gas	21,360 MMBtu	0.0532 MT CO_2e/MMBtu	1,136
Propane	317 MMBtu	0.0621 MT CO_2e/MMBtu	20
Diesel	10,244 MMBtu	0.0744 MT CO_2e/MMBtu	762
Mobile			**6,886**
Gasoline (unleaded)	637,079 gallons	0.0089 MT CO_2e/gallon	5,673
Diesel	89,866 gallons	0.0104 MT CO_2e/gallon	931
Aviation Gasoline	10,237 gallons	0.0085 MT CO_2e/gallon	87
Jet Fuel	16,171 gallons	0.0098 MT CO_2e/gallon	159
CNG	5,525 gallons	0.0066 MT CO_2e/gallon	36
Non-CO_2 Fugitive Emissions[1]			**72**
SF6	2 pounds	N/A	24
HFC	66 pounds	N/A	47
Total			**203,356**

Numbers may not sum due to rounding

MWh: megawatt hours; MMBtu: one million British Thermal Units; MT CO_2e: metric tons of carbon dioxide equivalent; CNG: compressed natural gas; SF6: sulfur hexafluoride; HFC: Hydrofluorocarbons; N/A: not applicable

[1] Fugitive emissions are estimated using a mass balance approach and are directly converted from the mass of gaseous emissions to CO_2e using the appropriate GWP factor.

[2] This emission factor represents a weighted average of multiple emission factors specific to each source of electricity used by Metropolitan including but not limited to SCE, LADWP, CAMX, AZNM, and Hoover and Parker Hydroelectric Plants

Energy

The energy sector includes GHG emissions resulting from the consumption of electricity, natural gas, propane, and welding gases at Metropolitan facilities. The following subsections describe the data sources, emission factors and calculation methodologies associated with energy sources.

Electricity

Emissions resulting from electricity consumption were estimated by multiplying annual electricity consumption by an electricity emission factor representing the average emissions associated with generation of 1 MWh of electricity. Metropolitan receives wholesale and retail electricity from numerous providers. In 2008, Metropolitan used electricity provider specific emission factors obtained from TCR public reports or 2007 eGRID data when provider specific emission factors were not available. Metropolitan developed a blended emission factor that is weighted based on the amount of electricity received by the power source for wholesale electricity used for CRA pumping. In 2017 Metropolitan applied the WECC California average emission factor from the EPA's 2016 eGRid data for electricity purchased from retail providers. To calculate emissions from electricity, the total electricity use reported by Metropolitan was multiplied by the carbon intensity factor to determine MT CO_2e. Metropolitan reports and calculates emissions for electricity use at Metropolitan facilities and for T&D losses associated with Metropolitan transmission lines.

Electricity associated with water use and wastewater generation by employees at Metropolitan facilities is not included under this section and is discussed in the water and wastewater section. As shown in Table 8 and Table 9, a total of 226,652 MT CO_2eand 194,481 MT CO_2e were generated due to electricity use, including T&D losses by Metropolitan facilities in 2008 and 2017, respectively.

Stationary Fuel Combustion

In order to calculate emissions from stationary sources at Metropolitan facilities, the total fuel consumption in MMBtus was multiplied by the fuel specific default emission factors provided by TCR. Fuel consumption reported by Metropolitan for 2008 and 2017 is provided in Table 8 and Table 9 along with the associated fuel specific emission factors. A total of 893 MT CO_2e and 1,918 MT CO_2e were generated due to combustion of fuel by stationary sources at Metropolitan facilities in 2008 and 2017, respectively.

Mobile Sources

Transportation emissions are generated by Metropolitan through on-road transportation, including passenger, commercial, and heavy machinery, and through aviation. Metropolitan records fleet fuel use by gallon by fuel type including unleaded gasoline, diesel, compressed natural gas, aviation gasoline, and jet fuel. Metropolitan applies TCR default emission factors for mobile fuel combustion to the annual fuel use. As shown in Table 8 and Table 9, a total of 7,180 MT CO_2e and 6,886 MT CO_2e were generated due to combustion of fuel by mobile sources at Metropolitan facilities in 2008 and 2017, respectively.

Non-CO_2 Fugitive Emissions

Metropolitan tracks sulfur hexafluoride (SF6) usage based on changes in inventory, purchases, disbursements, and changes in nameplate capacity of equipment. The EPA mass balance method is used to estimated sulfur hexafluoride emissions from circuit breakers and other equipment used by utilities. Sulfur hexafluoride in pounds is converted to metric tons then multiplied by the GWP for sulfur hexafluoride to estimate CO_2e emissions. There were no sulfur hexafluoride emissions reported for 2008, however 24 MT CO_2e was generated from sulfur hexafluoride use in 2017 (Table 9)

Hydrofluorocarbons (HFCs) used in Metropolitan's cooling system are accounted for using TCR's recommended methodology for estimating emissions from refrigeration and air conditioning equipment. Metropolitan tracks various hydrofluorocarbons (e.g., R-410a, R-134a) through HVAC team field reports. Quantity per year of hydrofluorocarbons is estimated using the simplified mass balance approach as described by the EPA and TCR.[20] Each hydrofluorocarbon (e.g., R-410a, R-134a) is converted from pounds to metric tons and multiplied by the appropriate GWP from the IPCC's Second Assessment[12]. Hydrofluorocarbons were not tracked in 2008, however 47 MT CO_2e was generated due to use of 39 pounds of R-134a for fleet AC and 8 pounds of R-404a for HVAC systems.

[20] https://www.theclimateregistry.org/protocols/GRP-V3-Quantification-Methods.pdf

3.2 Scope 3

Scope 3 includes all other indirect GHG emissions including those resulting from employee commute, waste generation, water consumption (in Metropolitan-owned buildings), and construction related emissions. Scope 3 data collection and emissions calculations followed the methodologies outlined in the ICLEI-Local Government Operations Protocol.[21] Because Scope 3 data requires significant data collection efforts, Scope 3 emissions for employee commute, waste disposal, and water service were calculated for 2008 and 2017 only. These years represent the most recent and most historical years for which complete data was available. Scope 3 emissions were then averaged and applied to all other years to allow for a comparable estimate and accurate tracking via the carbon budget approach. The following sections summarize activity data sources and methodology used for emission calculations for each of the identified Scope 3 emission sources.

Employee Commute

Emissions associated with employees commuting to work by their own personal vehicles, local transit, or company owned vehicles are classified as Scope 3 emissions. Based on an employee list provided by Metropolitan, there were 1,975 employees in 2008 and 1,796 employees in 2017. Rincon used a geographic information system (GIS) mapping exercise to estimate vehicle miles traveled for each employee based on the zip code and regular office location of each employee. It was assumed that all employees listed were full-time. Employee commute data was derived from the existing Metropolitan Employee Commute Survey and employee VanPool ridership data. The survey included the employee's mode of transport and the number of miles traveled one way to work. The commute survey results were used to scale the total VMT calculated using the zip code of each employee. Annual employee vehicle miles traveled (VMT) was calculated using the number of employees, workdays, and round-trip mileage traveled per day per employee. The number of workdays, 250, was estimated assuming full-time employees did not work on federal holidays and that full-time employees would take two weeks of vacation. Emissions factors from personal vehicle commutes, including those that drive alone and carpool, were derived from the EMFAC2017 model for Los Angeles County and were weighted based on the percent of fuel type used per class of vehicle. The Los Angeles County Metropolitan Transportation Authority emission factors were used to calculate emissions from alternative trips including bus and rail. [22,23] Emission factors are shown by passenger mile which take into account the shared emissions on mass transit or carpool and vanpooling scenarios.

Table 10 and Table 11 include the activity data, derived annual VMT, emission factors by passenger mile, and total emissions from employee commutes in 2008 and 2017, respectively. Employee commutes resulted in emissions of 9,237 MT CO_2e and 7,257 MT CO_2e in 2008 and 2017, respectively.

[21] ICLEI. 2010. ICELI- Local Government Operations Protocol. http://icleiusa.org/ghg-protocols/

[22] California Air Resources Board, https://www.arb.ca.gov/emfac/

[23] Metro's 2016 Energy and Resource Report, Metro (https://media.metro.net/projects_studies/sustainability/images/report_sustainability_energyandresource_2016.pdf)

Table 10 Employee Commute Emissions for Year 2008

Source	Number of Employees	Activity Data (annual VMT)[1]	Emission Factor (MT CO_2e/passenger mile)	Total Emissions (MT CO_2e)
Bike	1	11,500	0	0
Bus	46	477,300	1.81E-3	87
Carpool	8	109,200	2.01E-3	22
Drive Alone	1,435	20,579,700	4.02E-3	8,264
Train	300	4,565,150	1.18E-3	538
Vanpool	185	3,126,950	1.04E-3	326
Total	**1,975**	**28,869,800**	**3.20E-3**	**9,237**

VMT: vehicle miles traveled; MT: metric tons; CO_2e: carbon dioxide equivalent

[1] Annual VMT calculated by scaling total VMT by the survey results

Numbers may not sum due to rounding

Table 11 Employee Commute Emissions for Year 2017

Source	Number of Employees	Activity Data (annual VMT)	Emission Factor (MT CO_2e/passenger mile)	Total Emissions (MT CO_2e)
Bike	1	4,800	0	0
Bus	58	604,250	1.81E-3	110
Carpool	4	48,200	1.70E-3	8
Drive Alone	1,143	17,681,750	3.40E-3	6,018
Train	332	5,418,300	1.18E-3	639
Vanpool	258	4,621,360	1.04E-3	482
Total	**1,796**	**28,378,660**	**2.56E-3**	**7,257**

VMT: vehicle miles traveled; MT: metric tons; CO_2e: carbon dioxide equivalent

Numbers may not sum due to rounding

Water and Wastewater Service

Metropolitan received water from 14 water providers in 2008 and 2017. Water usage data by facility was provided by Metropolitan and was derived from utility provider invoices. Water supplied to Metropolitan facilities contributes emissions through the use of energy to extract, convey, treat, and deliver water. The amount of energy required for facility water usage was calculated following Community Protocol Method WW.14[24], where the total emissions are equal to the energy used in each of the four phases above.

The wastewater generated by Metropolitan facilities also creates GHG emissions during the treatment processes, including process, stationary, and fugitive emissions. The sources and magnitude of emissions depend on the type of wastewater treatment plant and the treatment processes utilized. Wastewater generated by Metropolitan facilities is collected in local sewer lines and discharged to various regional wastewater treatment plants. Because Metropolitan does not have operational control over the wastewater treatment plants and the wastewater generated at Metropolitan facilities is distributed to numerous treatments plants, fugitive emissions were not

[24] U.S Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Version 1.1, July 2013, https://static1.squarespace.com/static/5d1e51dd2a98da000183bc20/t/5db5c0f84f74010ee4dac41a/1572192509182/Appendix+F+-+Wastewater+and+Water+Emission+Activities+and+Sources+-+U.S.+Community+Protocol.pdf

calculated. In the absence of wastewater generated at Metropolitan facilities it was assumed wastewater volume was equivalent to water use volume. This is a conservative estimate because it assumes all water used in the building was then treated at the wastewater treatment facility, when any outdoor/irrigation water would not be treated.

The energy required for each segment of the water cycle, including wastewater treatment, was calculated using standardized energy intensity factors (kWh/million gallons) for a typical urban system in Southern California.[25] For recycled water use, the statewide average energy intensity factor was applied.[26] As previously described in Section 2.2 of this technical appendix, Metropolitan receives electricity from a number of retail and wholesale providers. Therefore, a blended electricity emission factor from Metropolitan's annual operations was used to calculate emissions associated with electricity embedded in water consumption. Metropolitan's energy emission factor of 269.16 pounds CO_2e/MWh and 307.19 pounds CO_2e/MWh was applied to the calculated electricity used for water and wastewater services in 2008 and 2017, respectively. Table 12 and Table 13 include the activity data, emission factors, and total emissions from water use and wastewater generation in 2008 and 2017, respectively. Energy consumption related to water use and wastewater generation by Metropolitan facilities resulted in the generation of approximately 13 MT CO_2e in 2008 and 184 MT CO_2e in 2017, respectively.

Table 12 Water and Wastewater Emissions for Year 2008

Source	Activity Data (MWh)	Emission Factor (MT CO_2e/MWh)	Total Emissions (MT CO_2e)
Water Use	**93**	**0.12209**	**11**
Supply, Conveyance, Distribution	81	0.12209	10
Treatment	1	0.12209	0.1
Distribution	11	0.12209	1
Recycled Water Distribution	0	0.12209	0
Wastewater Generation	**16**	**0.12209**	**2**
Treatment	16	0.12209	2
Total	**109**	**0.12209**	**13**

MWh: megawatt hours; MT: metric tons; CO_2e: carbon dioxide equivalent

Numbers may not sum due to rounding

[25] Per ICLEI guidance, CalEEMod 2016.3.2 energy intensity (EI) factors were used and are based on electricity use in typical urban water systems in Southern California (CEC 2006).

[26] California Energy Commission (CEC). 2006. *Refining Estimates of Water-Related Energy Uses in California*. https://calisphere.org/item/ark:/86086/n2hq3xr1/

Table 13 Water and Wastewater Emissions for Year 2017

Source	Activity Data (MWh)	Emission Factor (MT CO_2e/MWh)	Total Emissions (MT CO_2e)
Water Use	**1,126**	**0.13934**	**157**
Supply, Conveyance, Distribution	983	0.13934	137
Treatment	11	0.13934	2
Distribution	129	0.13934	18
Recycled Water Distribution	3	0.13934	0.4
Wastewater Generation	**193**	**0.13934**	**27**
Treatment	193	0.13934	27
Total	**1,319**	**0.13934**	**184**

MWh: megawatt hours; MT: metric tons; CO_2e: carbon dioxide equivalent

Numbers may not sum due to rounding

Solid Waste

GHG emissions result from management and decay of organic material solid waste. ICLEI guidance provides multiple accounting methods to address emissions arising from solid waste generated (regardless of where it is disposed of) as well as emissions arising from solid waste disposed of inside a community's boundaries (regardless of where it was generated). Because Metropolitan does not have operational control of any landfill, GHG emissions associated with solid waste are based solely on the amount of waste generated by Metropolitan facilities. ICLEI guidance for local entities recommends using the EPA's Waste Reduction Model (WARM) model. The WARM emissions factors account for the lifecycle of waste generation, including the collection and transport, processing, landfilling, and potential carbon reduction associated with the type of waste.

Waste data was derived from service provider invoices and utility providers. Metropolitan estimated waste generation based on bin size, pick up schedule of bins, and the conservative assumption that bins were completely full when emptied. Three types of waste bins were categorized as mixed municipal solid waste (MSW), mixed recyclables, and mixed organics. Cubic yards of waste reported by Metropolitan was converted to tons based on the type of waste.[27] Mixed organic waste was considered to include food, yard and other green waste and assumed to all be sent to a landfill. It was assumed that 11 percent of mixed MSW was combusted, while the remaining 89 percent was sent to a landfill.[28] Recycled waste included mixed paper, cardboard, mixed plastics, glass, aluminum and steel cans. It was assumed that all material within this category was recycled. Emissions factors from EPA's WARM version 14 were applied to the three categories of waste generated.[29] Offset or negative emissions calculated by the WARM model associated with recycling material were not included in the total solid waste emissions to provide a conservative estimate.

A summary of the emissions associated with solid waste generated during Metropolitan operations in 2008 and 2017 is provided in Table 14 and Table 15, respectively. Process emissions and energy consumption related to waste generation and disposal by Metropolitan facilities resulted in the generation of approximately 2,363 MT CO_2e in 2008 and 3,157 MT CO_2e in 2017, respectively.

[27] National Recycling Coalition Measurement Standards and Reporting Guidelines; EPA; FEECO and CIWMB 2006

[28] https://archive.epa.gov/epawaste/nonhaz/municipal/web/pdf/2012_msw_fs.pdf

[29] Per ICLEI guidance, emission factors for solid waste generation were obtained from U.S. EPA's Waste Reduction Model (WARM) version 14 (https://www.epa.gov/warm/versions-waste-reduction-model-warm#WARM Tool V14).

Table 14 Summary of Solid Waste Emissions for Year 2008

Source	Activity Data (tons)	Emission Factor (MT CO_2e/ton)	Total Emissions (MT CO_2e)
Mixed Organic Waste	11,817	0.204	2,363
Recycled Waste	3,125	-2.825	-8,813
Mixed MSW	–	–	–
Total Waste Emissions	**14,942**	**0.158**	**2,363**

MSW: municipal solid waste; MT CO_2e: metric tons of carbon dioxide equivalent

Numbers may not sum due to rounding

Table 15 Summary of Solid Waste Emissions for Year 2017

Source	Activity Data (tons)	Emission Factor (MT CO_2e/ton)	Total Emissions (MT CO_2e)
Mixed Organic Waste	14,759	0.204	2,952
Recycled Waste	3,153	-2.825	-8,892
Mixed MSW	644	0.288	206
Total Waste Emissions	**18,557**	**0.170**	**3,157**

MSW: municipal solid waste; MT CO_2e: metric tons of carbon dioxide equivalent

Numbers may not sum due to rounding

Construction

Construction emissions were estimated using the Capital Investment Plan (CIP) projections for 2019 through 2024. To estimate the annual emissions associated with construction, the GHG emissions associated with all CIP projects between 2019 and 2024 were calculated and then divided by six to gain an annual emission rate which was then applied to all previous years including 1990. A complete list of every project analyzed and the associated GHG emissions can be found in Attachment 1 of Appendix B. Emissions associated with construction of the RRWP were not included in the inventory. Because construction of the RRWP is a future program, it is not representative of past construction projects and therefore would not be appropriate to apply such emissions to previous years.[30]

Construction emissions data is based on Metropolitan's CIP which provides information on capital programs and projects scheduled to begin in fiscal year (FY) 2018/19 through FY 2023/24. Projects without emissions include feasibility studies, computer system development and other planning initiatives. The CIP program includes projects at varying levels of design and specificity. Because of this variability in available project specifics, emissions for planned projects were estimated using the following three methodologies:

(1) GHG emissions estimates were derived for specific projects from previously prepared GHG studies used in environmental documentation (CEQA)

(2) GHG emissions were estimated for projects using project-specific details from design and engineering documents and emissions factors from the EPA, CalEEMod and EMFAC2011

[30] Construction and operational estimates for the RRWP are included in the GHG Emissions forecast.

(3) GHG emissions were developed for an example project within specific categories (e.g., pipeline repair, valve repair, minor construction) and then applying the calculated GHG emissions to similar projects of equal or smaller size

GHG emissions were calculated using conservative assumptions and were scaled based on project size, duration, or activity level. The sum of the FY 2018/19 through FY 2023/24 CIP emissions estimates was then averaged to produce an annual construction emissions rate. Emissions from the Prestressed Concrete Cylinder Pipe Rehabilitation (PCCP) program, which is a 20-year program, were calculated for the entire 20-year program, then divided by 20 years and added to Metropolitan's construction emissions to create an annual total. As previously discussed, construction emissions from the RRWP are included in the forecast, but not the inventory. When analyzing the Annual Capital Expenditures for Metropolitan, Rincon determined construction activities during the period analyzed represents an average or less than average level of construction activity when compared to historical annual capital expenditures adjusted to current dollars. Therefore, the GHG inventory provides a conservative estimate of past emissions.[31] Table 16 provides a summary of construction emissions determined by construction category.

Table 16 Capital Investment Program Construction Emissions Estimate 2019-2024

Construction Category	GHG Emission MT CO_2e (2019-2024)
Pipelines	3,026
Paving	1,255
Equipment Replacement	9,061
CRA Domestic Water Systems	959
Building Construction	1,419
Utility Upgrades	2,070
Pump Rehab	742
Power Plant Rehab	495
Reservoir Cover Replacement	4,943
Treatment Plant Reliability	4,796
Pipeline Repairs/Refurbishment	1,538
CIP Emissions (6-year total)[1]	**30,305**
CIP Emissions Annual Estimate	5,051
PCCP Program (20-year total)[1]	**140,609**
Annual PCCP Emissions	7,030
Total Annual Construction Emissions Estimate	**12,081**

[1] CIP and PCCP emissions are annualized based on program length.

MT = metric tons; CO_2e = carbon dioxide equivalent; CRA = Colorado River Aqueduct; CIP = Capital Improvement Plan; PCCP = Prestressed Cylinder Concrete Pipeline

[31] A lower historical GHG estimate for construction means an overall lower 1990 emission level and more stringent GHG reduction targets.

Capital Investment Plan (CIP)

CIP projects occurring annually include pipeline additions and improvements, paving projects, equipment replacement, improvements to CRA domestic water systems, building construction, utility upgrades, pump rehabilitation, power plant rehabilitation, reservoirs cover replacements, treatment plant reliability projects, and pipeline repairs/refurbishments. Construction emissions include emissions from construction activity as well as emissions associated with worker and haul trips. The following subsections provide additional detail on methodology specific to the construction project type.

PIPELINES

GHG emissions factors for the RRWP were utilized to estimate emissions associated with these pipelines. To be conservative, the most carbon intensive type of pipeline construction methodology was utilized. Emissions were estimated for each project based on the miles of pipeline installed.

PAVING

CalEEMod was used to estimate the GHG emissions associated with the demolition and replacement of 1 acre of paving. This emission factor (23 MT CO_2e/ acre) was then applied to the total acreage for each project to estimate GHG emissions.

EQUIPMENT REPLACEMENT

These projects utilized similar equipment as modeled for the "New Valve/Meter Valve Structure" activity quantified in the Program Environmental Impact Report (PEIR) for the PCCP program. The New Valve/Meter Valve Structure activity was estimated to generate 407 MT CO_2e and was applied to equipment replacement projects that involved excavation. For equipment replacement projects that did not involve excavation activities but did involve construction or installation of new equipment, the project generated 247 MT CO_2e

CRA DOMESTIC WATER SYSTEMS

CalEEMod was used to estimate the emissions associated with the wastewater system replacement projects using a 500 by 500-foot grading scenario. A trenching machine was also added to the analysis. This modeled scenario generated 107 MT CO_2e per project.

BUILDING CONSTRUCTION

CalEEMod was used to estimate the emissions associated with each building construction project and was specific to the building dimensions (i.e., square footage) and land use type as specified by Metropolitan.

UTILITY UPGRADE

These projects utilized similar equipment as modeled for the "New Valve/Meter Valve Structure" activity quantified in the PEIR for the PCCP program except for the need for excavation. The removal of activities involving excavation, shoring, dewatering, and backfilling from the "New Valve/Meter Valve Structure" emission estimates result in 247 MT CO_2e per project. If the upgrade project did not involve the construction of a new structure, then new construction emissions were further removed from the PCCP PEIR estimations for the "New Valve/Meter Valve Structure" activity

resulting in approximately 108 MT CO_2e per project that only involved restoration and replacement of utilities.

PUMP REHABILITATION

These projects utilized similar equipment as modeled for the "New Valve/Meter Valve Structure" activity quantified in the PEIR for the PCCP program except for the need for excavation. The removal of activities involving excavation, shoring, dewatering, and backfilling from the "New Valve/Meter Valve Structure" emission estimates result in 247 MT CO_2e per project

POWER PLANT REHABILITATION

These projects utilized similar equipment as modeled for the "New Valve/Meter Valve Structure" activity quantified in the PEIR for the PCCP program except for the need for excavation. The removal of activities involving excavation, shoring, dewatering, and backfilling from the "New Valve/Meter Valve Structure" emission estimates result in 247 MT CO_2e per project per year. These projects were further scaled by the length of the project.

RESERVOIR COVER REPLACEMENT

These projects were considered similar as the modeled project in the Palos Verdes Reservoir Initial Study-Mitigated Negative Declaration.[32] Therefore, the estimated emissions of 2,321 MT CO_2e were applied per project. This estimation is considered conservative because the Palos Verdes Reservoir project consists of other improvements not included in the reservoir cover replacement projects.

TREATMENT PLANT RELIABILITY

Various project and construction activities ranging in size and duration are associated with the treatment plant reliability program. Emissions were estimated using CalEEMod based on the specific activities involved in each project.

TRAVEL EMISSIONS ESTIMATES

Worker truck trips and associated emissions were estimated using data from the Weymouth Basin Refurbishment Program.[33] The program is considered a conservative estimate of the worker truck trips occurring for projects involving new construction (95 MT CO_2e). For projects identified to be upgrades, worker trip data from the Weymouth Administration and Control Buildings Seismic Upgrades Project (150 miles round trip and 1402 workdays) were applied (143 MT CO_2e).

Prestressed Concrete Cylinder Pipe Rehabilitation (PPCP)

The PPCP encompasses specific construction work related to the PCCP program that will span 20-years. Metropolitan prepared a Program Environmental Impact Report (PEIR) for the project which quantified the GHG emissions associated with the construction activities conducted for this program.[34] For the purpose of this inventory and forecast, the total construction emissions reported for this program were divided by 20 years to obtain an annual average of construction emissions related to the PCCP program.

[32] http://mwdh2o.granicus.com/MetaViewer.php?view_id=21&clip_id=4988&meta_id=112355

[33] https://ceqanet.opr.ca.gov/2013121074/3

[34] The Metropolitan Water District of Southern California. 2016. *Programmatic Environmental Impact Report for the Prestressed Concrete Cylinder Pipe Rehabilitation Program.*

SCOPE 3 SUMMARY

The average annual Scope 3 emissions were calculated using the annual Scope 3 emissions for 2008 and 2017. Because Scope 3 emissions are related to standard Metropolitan operations, they do not change substantially over time unlike Scope 1 and 2 emissions which can fluctuate annually. As such, the annual average Scope 3 emissions were applied to each year's inventory to provide a complete estimate of overall operational emissions. Furthermore, Scope 3 emissions represent a small portion (9 percent to 10 percent annually) of all Metropolitan emissions.

Table 17 summarizes the annual average Scope 3 emissions by sector that were included in the completed inventory.

Table 17 Average Scope 3 Emissions

Sector	Activity Data	Emission Factor	Emissions (MT CO_2e)
Employee Commute (passenger VMT)	28,624,230	0.000288 MT CO_2e/passenger VMT	8,247
Waste (tons)	16,749	0.1673 MT CO_2e/tons	2,760
Water (mgy)	55	1.5238 MT CO_2e/tons	84
Wastewater (mgy)	55	0.2615 MT CO_2e/tons	14
CIP Construction (year)	6	5,051 MT CO_2e/year	12,081
PCCP Construction (years)	20	7,030 MT CO_2e/year	
Annual Total			**23,188**

VMT: vehicle miles travelled; mgy: million gallons per year; MT CO_2e: metric tons of carbon dioxide equivalent; CIP: Capital Investment Plan; PCCP: Prestressed Concrete Cylinder Pipe Rehabilitation

3.3 Completed Inventory

The ICLEI Community Protocol recommends local governments examine their emissions in the context of the sector responsible for those emissions. Many local governments or entities like Metropolitan will find a sector-based analysis more directly relevant to policy making and project management, as it assists in formulating sector-specific reduction measures for climate action planning. The reporting sectors are made up of multiple subsectors to allow for easier identification of sources and targeting of reduction policies.

With the addition of the Scope 3 emissions, the updated 2008 and 2017 inventory reports all Basic Emissions Generating Activities[35] required by the Community Protocol[36] by the following main sectors:

- Energy (electricity and natural gas)
- Transportation
- Water and Wastewater
- Solid Waste

[35] Required emissions generating activities include: use of electricity by the community, use of fuel in residential and commercial stationary combustion equipment, on-road passenger and freight motor vehicle travel, use of energy in potable water and wastewater treatment and distribution, and generation of solid waste by the community.

[36] ICLEI. 2012. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions. Section 2.2.

Given the extensive construction and associated emissions generated, construction emissions have also been included as a Scope 3 emission source.

Table 18 and Table 19 include all of the activity data, emission factors, and total emissions available for the 2008 inventory and the 2017 inventory, respectively. The inventories include Scope 1 and Scope 2 data provided by Metropolitan as well as Scope 3 data used to bring Metropolitan's GHG inventories into consistency with applicable CAP guidelines. Figure 6 presents a summary of the 2008 and 2017 Metropolitan emissions by Scope.

Table 18 Updated 2008 GHG Inventory

Source	Activity Data	Emission Factor	Total Emissions (MT of CO_2e)
Scope 1			**8,073**
Natural Gas (Stationary)	16,308 MMBtu	0.0532 MT CO_2e/MMBtu	868
Propane (Stationary)	401 MMBtu	0.0631 MT CO_2e/MMBtu	25
Gasoline (Mobile)	663,738 gallons	0.0092 MT CO_2e/gallon	6,076
Diesel (Mobile)	108,644 gallons	0.0017 MT CO_2e/gallon	1,104
SF6 Fugitive Emissions[1]	0 pounds	N/A	0
Scope 2			**226,651**
Electricity	1,835,580 MWh	0.122 MT CO_2e/MWh	224,105
Electricity T&D Losses	26,593 MWh	0.0957 MT CO_2e/MWh	2,546
Scope 3			**23,681**
Employee Commute	28,869,800 passenger VMT	0.00032 MT CO_2e/passenger VMT	9,237
Water/Wastewater[2]	109 MWh	0.12209 MT CO_2e/MWh	13
Solid Waste	14,942 tons	0.158 MT CO_2e/ton	2,363
Construction (2019-2024)	1 year	12,081 MT CO_2e/year	12,081
Total			**258,419**

Numbers may not sum due to rounding

MWh: megawatt hours; MMBtu: one million British Thermal Units; MT CO_2e: metric tons of carbon dioxide equivalent; N/A: not applicable; VMT: vehicle miles traveled

[1] Fugitive emissions are estimated using a mass balance approach and are directly converted from estimated quantify to CO_2e using the appropriate GWP factor.

[2] Includes the sum of water and wastewater generation.

Table 19 Updated 2017 GHG Inventory

Source	Activity Data	Emission Factor	Total Emissions (MT of CO_2e)
Scope 1			**8,876**
Natural Gas (Stationary)	21,360 MMBtu	0.0532 MT CO_2e/MMBtu	1,136
Propane (Stationary)	317 MMBtu	0.0621 MT CO_2e/MMBtu	20
Diesel (Stationary)	10,244 MMBtu	0.0744 MT CO_2e/MMBtu	762
Gasoline (Mobile)	637,079 gallons	0.0089 MT CO_2e/gallon	5,673
Diesel (Mobile)	89,866 gallons	0.0104 MT CO_2e/gallon	931
Aviation Gasoline (Mobile)	10,237 gallons	0.0085 MT CO_2e/gallon	87
Jet Fuel (Mobile)	16,171 gallons	0.0098 MT CO_2e/gallon	159
CNG (Mobile)	5,525 gallons	0.0066 MT CO_2e/gallon	36
SF6 Fugitive Emissions[1]	2 pounds	N/A	24
HFC Fugitive Emissions[1]	66 pounds	N/A	47
Scope 2			**194,480**
Electricity	1,381,602 MWh	0.1393 MT CO_2e/MWh	192,511
Electricity T&D Losses	14,687 MWh	0.1341 MT CO_2e/MWh	1,969
Scope 3			**22,666**
Employee Commute	28,378,660 passenger VMT	0.000256 MT CO_2e/passenger VMT	7,257
Water/Wastewater[2]	1,319 MWh	0.13934 MT CO_2e/MWh	184
Solid Waste	18,557	0.170 MT CO_2e/ton	3,157
Construction (2019-2024)	1 year	12,067 MT CO_2e/year	12,081
Total			**226,036**

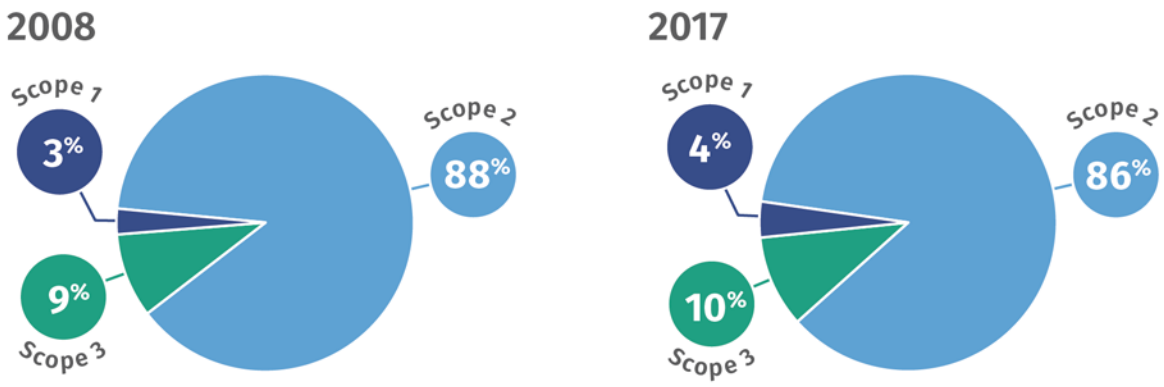
Numbers may not sum due to rounding

MWh: megawatt hours; MMBtu: one million British Thermal Units; MT CO_2e: metric tons of carbon dioxide equivalent; N/A: not applicable

[1] Fugitive emissions are estimated using a mass balance approach and are directly converted from estimated quantify to CO_2e using the appropriate GWP factor.

[2] Includes the sum of water and wastewater generation.

Figure 6 Metropolitan Emissions by Scope



As shown in Figure 6, a majority (86 to 88 percent) of Metropolitan's emissions in 2008 and 2017 are from Scope 2 emissions (electricity). Scope 1 (combustion) emissions comprise about 3 to 4 percent of total emissions and Scope 3 emissions (other and construction) comprise approximately 10 percent of Metropolitan's overall emissions. The following subsections discuss the emission trends by Scope.

Scope 1

Scope 1 emissions comprise approximately four percent of total emissions. The largest Scope 1 emission source was mobile combustion of fuel for Metropolitan's vehicle fleet. In 2008, gasoline and diesel were used to fuel the vehicle fleet. In 2017, Metropolitan's vehicle fleet also used compressed natural gas as well as jet and aviation fuel. The second largest Scope 1 emission source is from stationary combustion of fuel at Metropolitan's facilities including natural gas and diesel usage.

Scope 1 emissions increased from 2008 to 2017, primarily because of the use of diesel fuel for generators. Fugitive emissions make up a small percentage of Scope 1 emissions and include sulfur hexafluoride emissions leakage from electrical equipment, emissions associated with additional electricity generation to offset T&D, hydrofluorocarbon emissions from refrigerants and fleet air conditioning, and welding gas fugitive emissions. Fugitive emissions were measured directly by Metropolitan.

Scope 2

Over 86 percent of Metropolitan emissions are from the generation of electricity used at Metropolitan's facilities. Direct electricity consumption makes up 99 percent of Scope 2 emissions while T&D losses consistently make up about one percent of Scope 2 emissions. Emissions associated with electricity consumption are expected to decrease due to State regulations requiring electricity providers to increase procurement of eligible renewable energy resources to 100 percent by 2045.[37] The level of pumping on the CRA is the primary driver of Metropolitan's electricity demand and, therefore, GHG emissions. Availability of hydropower from Hoover Dam and Parker Dam are also significant contributors to emissions variability since hydropower contributes electricity with zero GHG emissions when it is available.

Scope 3

Scope 3 emissions included in the GHG inventories are from water consumption and wastewater generation at Metropolitan facilities, construction activities, solid waste generation, and mobile emissions from employee commutes. The largest portion of Scope 3 emissions was due to construction activities which contributed 51 to 53 percent of total Scope 3 emissions annually. The second largest Scope 3 emissions source was from employee commute. Employee commuting generated 39 percent of inventoried Scope 3 emissions in 2008, but by 2017 had decreased to 32 percent. Solid waste associated emissions contributed between 10 in 2008 and 14 percent in 2017 of Scope 3 emissions while water-related emissions contribute about one percent.

Water Conservation

Water conservation reduces GHG emissions. The emissions savings from conservation projects conducted by Metropolitan since 1990 were responsible for a portion of the GHG emissions

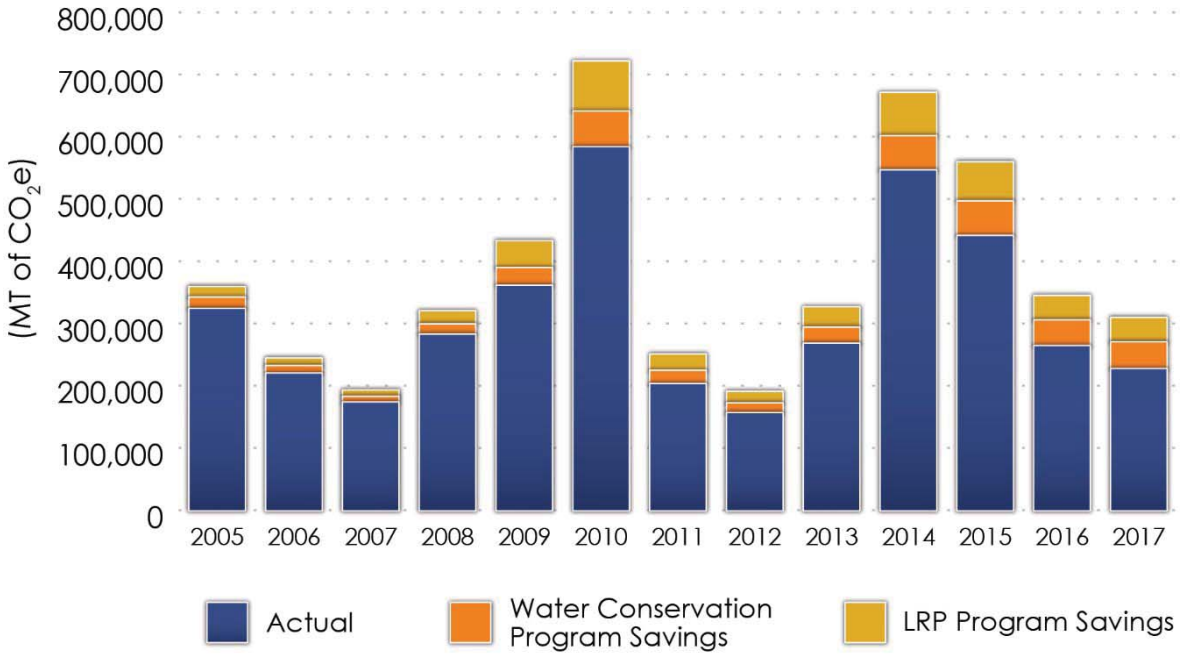
[37] Senate Bill 100 was signed into law in 2018.

reductions seen over time. The impact of these projects is already accounted for in the activity data, which is the basis for the GHG inventory. By applying the annual emissions factor per acre-foot of deliveries, estimates were developed to show what emissions would have been without these measures. Figure 7 shows annual GHG emissions both with (actual) and without (estimated) the implementation of conservation programs.

To calculate savings from conservation programs, Rincon analyzed water savings data by program by year. Programs included in the analysis included the Local Resources Program (LRP) and other conservation programs including turf removal, fixture replacement, weather controllers, and a variety of other projects. For the LRP, total water savings per project per year were calculated and summed for each individual year. For the other conservation measures, it was assumed water saved through each program would continue over time. This means that if 100-acre feet were saved in 2005 and another 50-acre feet were saved in 2006, the total savings in 2006 would be 150 acre feet.[38] This assumption was made because when those fixtures need to be replaced at the end of their useful life, it is unlikely that a less efficient model would be installed that would increase water use. Instead, it is likely that the same or more efficient fixture will be available for replacement.

After calculating the total acre feet saved per year, the annual total was then multiplied by the emission factor (MT of CO_2e per acre-foot delivered) calculated for that year. The resulting emissions were then added to the inventory emissions to show an emissions scenario in which the conservation efforts did not occur. The amount of emissions saved varies between years even if total acre feet conserved is consistent. This is due to annual variations in the emissions factor per acre-foot.

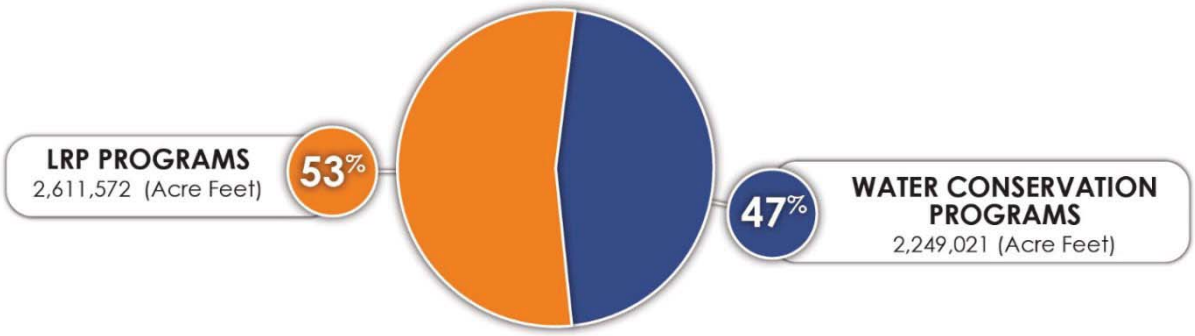
Figure 7 Emissions Avoided through Conservation Efforts



[38] Per Senate Bill 60, Metropolitan has filed annual progress reports with the California Legislature detailing water conservation achievements and progress.

As shown in Figure 7, emissions offsets from conservation efforts have grown from 9.8 percent (35,093 MT of CO_2e) in 2005 to 25 percent (74,714 MT of CO_2e) in 2017. Figure 8 shows the total acre feet of water conserved by the LRP and other water conservation programs between 2005 and 2017.

Figure 8 Acre Feet Saved by Conservation Programs (2005-2017)



4 Forecast

The GHG inventory provides accurate reference points for emissions levels in past years. However, annual emissions change over time due to external factors such as hydrology, climate, population growth, operational changes, and construction projects. An emissions forecast accounts for these projected changes and presents an estimate of GHG emissions in a future year. Calculating the difference between the forecasted GHG emissions and the reduction targets set by Metropolitan determines the gap to be closed through Metropolitan's CAP policies.

GHG emissions associated with Metropolitan operations are influenced by where water is sourced. Metropolitan has two sources of imported water supply: the Colorado River through the CRA and the SWP. Water pumped from the Colorado River results in substantially higher electrical usage as it requires additional pumping to bring the water to Lake Mathews. In contrast, SWP water does not require significant additional pumping. Because of the variability in electricity usage, and therefore, GHG emissions, three scenarios were modeled for each forecast: Dry-year SWP with high CRA pumping (high emissions); average-year SWP with average CRA pumping (average emissions); and wet-year SWP with low CRA pumping (low emissions). The three scenarios capture the full range of possible future emissions. In reality, Metropolitan's GHG emissions will continue to oscillate around the average emissions trend as they have in the past.

4.1 Forecast Results Summary

California has enacted several regulations which will assist in reducing Metropolitan's emissions over time. The impact of these regulations was quantified and incorporated into an adjusted forecast to provide a more accurate estimate of Metropolitan's future emissions. These projections include emissions associated with the construction and operation of the proposed RRWP as well as expected annual construction emissions associated with other CIP construction projects. Figure 9 presents the projected emissions for Metropolitan through 2045 associated with the three different GHG reduction scenarios (high, average, low). Table 20 includes a comparison of the projected emissions for each scenario in each target year (2030 and 2045) compared to the 1990 emissions baseline.

Figure 9 Adjusted Emissions Forecast 1990-2045

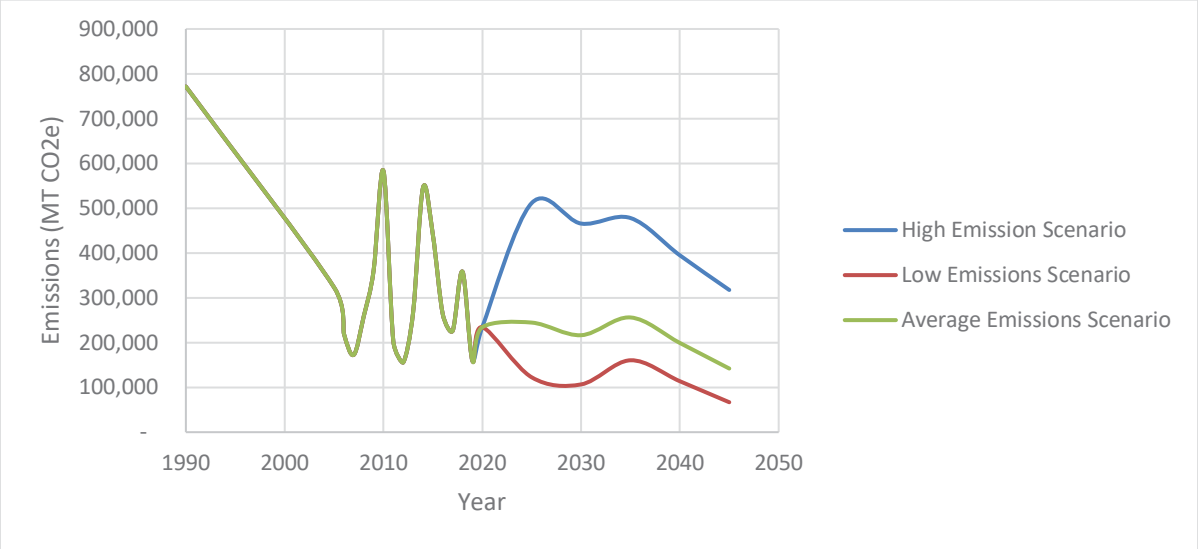


Table 20 Anticipated Changes to Mass GHG Emissions between 1990 and 2045 (MT CO2e)

Emissions Scenario	1990 Emissions	2030 Forecast Emissions	Percent Reduction	2045 Forecast Emissions	Percent Reduction
High	771,514	465,664	40%	317,441	59%
Average	771,514	216,460	72%	142,059	82%
Low	771,514	106,615	86%	66,812	91%

In addition to the mass emissions inventory and forecast, Rincon also conducted a per capita GHG emissions analysis on both historical and forecasted emissions. This analysis considers the substantial population growth occurring in Metropolitan's service area and the past and ongoing water conservation efforts made by Metropolitan. Since 1990, population in the Metropolitan service area has increased by nearly 3.95 million people.[39] Table 21 presents the historical service population of Metropolitan and the projected population from 2020 through 2045. Additionally, Table 21 presents emissions per capita for historical data and the projected emissions per capita based on the three forecasted scenarios.

[39] 2020 UWMP

Table 21 Absolute and Per Capita Emissions Forecast

Year	Population	Absolute Emissions (MT CO_2e)	Per Capita (MT CO_2e)
Historical			
1990	14,961,310	771,514	0.05157
2005	17,617,613	323,224	0.01835
2006	17,676,282	219,355	0.01241
2007	17,757,684	172,768	0.00973
2008	17,862,613	258,419	0.01447
2009	17,936,649	360,457	0.02010
2010	18,042,021	582,952	0.03231
2011	18,186,668	202,374	0.01113
2012	18,347,771	155,637	0.00848
2013	18,499,407	267,352	0.01445
2014	18,623,266	545,830	0.02931
2015	18,732,068	440,400	0.02351
2016	18,808,234	263,420	0.01401
2017	18,906,970	226,036	0.01196
2018	18,962,475	358,287	0.01889
2019	18,998,737	159,200	0.00838
2020	19,035,000	234,329	0.01231
Projected		**Emission Range (Low - High)**	**Emission per Capita Range**
2025	20,089,000	122,519 – 511,428	0.00610 - 0.01218
2030	20,634,000	106,615 – 465,664	0.00517 - 0.02257
2035	21,145,000	160,515 – 478,049	0.00759 - 0.02261
2040	21,610,000	113,728 – 394,783	0.00526 - 0.01827
2045	22,026,000	66,812 – 317,441	0.00303 - 0.01441

MT CO_2e: metric tons of carbon dioxide equivalent

As shown in Figure 10 and Table 22, emissions per capita have decreased substantially and are expected to continue to decline. When comparing emissions reductions from Table 20 (mass emissions only) with Table 22 (per capita emissions), the effect of increased water conservation is clear. For example, under the average emissions scenario, total emissions are expected to decrease by 72% compared to 1990 by 2030. However, on a per capita basis (which captures the increase in conservation efforts) reductions are expected to be 80%.

Figure 10 Historical and Forecasted Per Capita Emissions

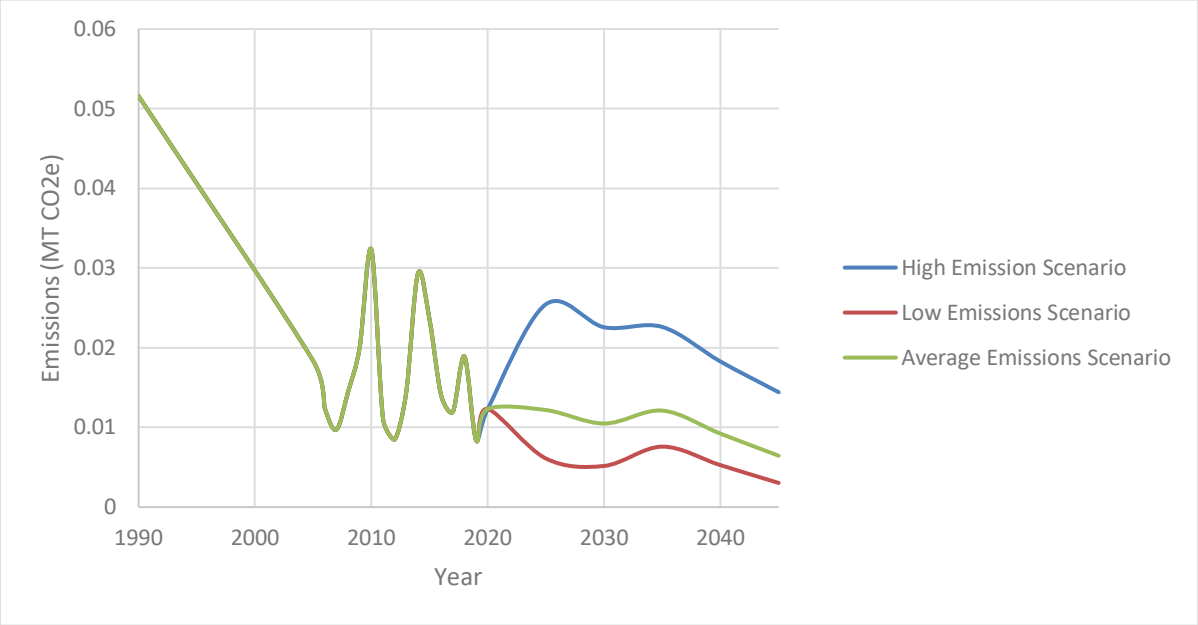


Table 22 Per Capita Emissions Reductions Over Time

Emission Scenario	1990 Emissions (MT/person/year)	2030 Forecast (MT/person/year)	Percent Reduction	2045 Forecast (MT/person/year)	Percent Reduction
High	0.0516	0.0226	56%	0.0144	72%
Average	0.0516	0.0105	80%	0.0064	87%
Low	0.0516	0.0052	90%	0.0030	94%

Population assumptions for the Metropolitan service area are as follows: 1990 population = 14,961,310; 2030 population = 20,634,000; 2045 population = 22,026,000

4.2 State Legislation

The forecast presented here estimates future Metropolitan emissions under codified GHG reduction strategies currently being implemented at the State and federal level. The 2017 Scoping Plan Update identified several existing State programs and targets, or known commitments required by statute which can be assumed to achieve GHG reductions without Metropolitan action. However, since State regulations such as clean car standards may or may not impact Metropolitan directly, many of these reductions were not quantified as part of the forecast. The one exception is SB 100 which has had and will continue to have a significant impact on Metropolitans GHG emissions into the future.

Renewables Portfolio Standard & Senate Bill 100

Established in 2002 under SB 1078, California's Renewables Portfolio Standard (RPS) was accelerated in 2006 under SB 107 by requiring 20 percent of electricity retail sales be served by renewable energy resources by 2010. Subsequent recommendations in California energy policy reports advocated a goal of 33 percent by 2020, and on November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08 setting the goal that "...[a]ll retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020." Senate Bill X1-2 was signed by Governor Edmund G. Brown, Jr. in April 2011 setting the RPS target at 33 percent by 2020.

This new RPS applied to all electricity retailers in the State including publicly-owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All retail power providers were required to adopt the new RPS goals of 20 percent of retail sales from renewables by the end of 2013, 25 percent by the end of 2016, and 33 percent by the end of 2020. The State is currently on track to meet these goals.

Most recently, Governor Edmund G. Brown, Jr. signed into law SB 100 in September 2018, which requires retail sellers and publicly-owned utilities to procure 60 percent of their electricity from eligible renewable energy resources by 2030 and 100 percent of their electricity from eligible renewable energy by 2045.[40]

Because SB 100 requirements are only applicable to California utilities, wholesale purchases made by Metropolitan from out-of-state electricity suppliers would not be affected. However, many other states also have their own RPS standards. To incorporate these emissions reductions, Rincon conducted a complete contribution analysis of the RPS standards for each state contributing power to the AZNM eGrid region and applied those reductions to the portion of power purchased from out-of-state providers. AZNM is the eGrid factor which is used in Metropolitan's TCR reporting methodology for out-of-state electricity purchases. The percent carbon free electricity assumed for this analysis is shown in Table 23. No additional GHG reductions beyond those levels were assumed. Texas for example has already surpassed 10 percent renewables. Therefore, no adjustment was made to that emission factor into the future.

Table 23 State Level Renewable Commitments Included in the Metropolitan Forecast

State	Percent Carbon Free	Target Year
Arizona	15%	2025
California	100%	2045
Colorado	30%	2020
New Mexico	100%	2045
Nevada	25%	2025
Texas	10%	2025
Utah	20%	2025
Wyoming	None	N/A

The ratio of electricity Metropolitan purchases changes year to year. The forecast applied a different ratio of out-of-state versus in-state electricity purchases for each of the three emissions scenarios (high, average, and low). This ratio was calculated by analyzing historical energy purchases. For the high emissions scenario, year 2010 was used since it represents a year of high out of state electricity purchases and therefore, emissions. For the average emissions scenario, year 2017 was used, and for the low emissions scenario the 2011 data year was used. The ratio of electricity used for each year only included electricity sources with GHG emissions (i.e., hydropower was excluded).

Overall, both retail and wholesale electricity and water/wastewater sectors all experience a strong downward trend, approaching near-zero GHG emissions in 2045 due to extremely stringent RPS from SB 100.

40 SB 100 full text. September 2018. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100

4.3 Forecast Scenario Methodology

Because a majority of Metropolitan emissions are associated with electricity for importing water, Metropolitan emissions are highly dependent on where water is sourced. Metropolitan's 2020 Urban Water Management Plan (UWMP) provided historical data on water delivery from 1990 to 2020, which was used as a proxy to develop an emission factor for future deliveries.[41] Emissions factors for water delivery were calculated for years spanning 2005 to 2020 based on the historical water deliveries and the developed inventory discussed in Section 3, which included Metropolitan Scope 1 and 2 emissions and Rincon calculated Scope 3 emissions. Table 24 summarizes the historical water delivery emission factors.

Table 24 Historical Water Delivery Emissions

Year	Water Deliveries (AF)	Absolute Emissions (MT CO_2e)	Emission Factor (MT CO_2e/AF)
2005	2,044,000	323,224	0.15813
2006	2,202,000	219,355	0.09962
2007	2,415,000	172,768	0.07154
2008	2,094,000	258,419	0.12341
2009	1,860,000	360,457	0.19379
2010	1,642,000	582,952	0.35503
2011	1,618,000	202,374	0.12508
2012	1,756,000	155,637	0.08863
2013	1,956,000	267,352	0.13668
2014	2,018,000	545,830	0.27048
2015	1,740,000	440,400	0.25310
2016	1,660,000	263,420	0.15869
2017	1,450,000	226,036	0.15589
2018	1,558,000	358,287	0.22997
2019	1,327,000	159,200	0.11997
2020	1,374,000	234,329	0.17054
Average	**1,794,625**	N/A	**0.16941**

AF: acre-foot; MT CO_2e: metric tons of carbon dioxide equivalent

Forecasted emissions are based on the 2020 UWMP projected deliveries for 2025, 2030, 2035, and 2040. Although not included in the 2020 UWMP, to forecast for 2045, it was assumed that deliveries in 2045 would remain consistent with those projected for 2040. Deliveries were projected in the 2015 UWMP for three hydrological conditions: a single dry year, multiple dry years, and an average year. In the Section 4.3.1, the emission factors and forecasted emissions for each of the three scenarios are discussed and results are summarized. Emission factors applied to forecasted years were further adjusted to account for anticipated reductions associated with electricity use due to SB 100 and other states' carbon-free electricity goals. GHG reductions from these electricity targets were calculated based on the electricity consumption in the representative years (2010, 2011, and 2017) and the percent emissions attributed to electricity consumption in those years. The percent

[41] The Metropolitan Water District of Southern California (2021). 2020 Urban Water Management Plan.

GHG emissions from electricity was then adjusted based on the forecasted reduction in GHG emissions from electricity. In addition to forecasting the GHG emissions from current operations and construction projects, the expected construction and operational emissions from the proposed RRWP were also modeled and included in the forecast. The section below discusses and summarizes the methodology related to the inclusion of RRWP related emissions in the forecast.

Forecasting Scenarios

Dry-year SWP with High CRA Pumping (High Emissions)

Under the high emissions scenario, the water delivery demands for multiple dry years as defined in Metropolitan's 2020 UWMP were used.[42] The high emissions factor (0.3550 MT CO_2e/AF) was derived by calculating the MT of CO_2e per acre-foot of delivered water from the highest emissions year from 2005 to 2020 (calendar year 2010). This emission factor was further adjusted based on the forecasted year, where approximately 85 percent of the operational emission factor will be reduced due to SB 100. Table 25 summarizes the forecasted water deliveries, associated emission factors, and total emissions anticipated for a high emissions scenario. This scenario provides the highest potential GHG emissions.

Table 25 Forecasted Emissions for Dry-Year SWP with High CRA Pumping

Year	Water Deliveries (AF)	Emission Factor (MT CO_2e/AF)	Absolute Emissions (MT CO_2e)
2025	1,629,000	0.314	511,428
2030	1,610,000	0.289	465,664
2035	1,575,000	0.304	478,049
2040	1,568,000	0.252	394,783
2045	1,591,000	0.200	317,441

Numbers may not sum due to rounding

AF: acre-foot; MT CO_2e: metric tons of carbon dioxide equivalent

Average-year SWP with Average CRA Pumping (Average Emissions)

Under the average emissions scenario, the water delivery demands of a single dry year as defined in the 2020 UWMP were used. The average emissions factor (0.1694 MT CO_2e/AF) was calculated by averaging the MT of CO_2e per acre-foot delivered during the period of 2005 to 2020. Similar to the above discussed scenario, the emission factor was further adjusted to account for SB 100 impacts on emissions associated with electricity. Table 26 summarizes the forecasted water deliveries, associated emission factors, and total emissions anticipated for an average emissions scenario.

[42] The Metropolitan Water District of Southern California (2021). 2020 Urban Water Management Plan.

Table 26 Forecasted Emissions for Average-Year SWP with Average CRA Pumping

Year	Water Deliveries (AF)	Emission Factor (MT CO_2e/AF)	Absolute Emissions (MT CO_2e)
2025	1,597,000	0.1532	244,645
2030	1,548,000	0.1398	216,460
2035	1,505,000	0.1702	256,089
2040	1,524,000	0.1307	199,141
2045	1,551,000	0.0916	142,059

Numbers may not sum due to rounding

AF: acre foot; MT CO_2e: metric tons of carbon dioxide equivalent

Wet-year SWP with Low CRA Pumping (Low Emissions)

Under the low emissions scenario, the water delivery demands for the average year as defined in the 2020 UWMP were used. The emissions factor (0.0886 MT CO_2e/AF) was derived by calculating the MT of CO_2e per acre-foot delivered water from the lowest emissions year between 2005 and 2020 (calendar year 2012). Similar to the other scenarios, the emission factor was further adjusted to account for SB 100 impacts on emissions associated with electricity. Table 27 summarizes the forecasted water deliveries, associated emission factors, and total emissions anticipated for a low emissions scenario. This scenario provides the lowest expected emissions forecast.

Table 27 Forecasted Emissions for Wet-Year SWP with Low CRA Pumping

Year	Water Deliveries (AF)	Emission Factor (MT CO_2e/AF)	Absolute Emissions (MT CO_2e)
2025	1,469,000	0.08340	122,520
2030	1,420,000	0.07508	106,615
2035	1,379,000	0.11640	160,515
2040	1,394,000	0.08158	113,728
2045	1,418,000	0.04712	66,812

Numbers may not sum due to rounding

AF: acre foot; MT CO_2e: metric tons of carbon dioxide equivalent

Forecasting Regional Recycled Water Program

Construction of the RRWP is a future program and therefore has been included in the emissions forecast, but not the inventory. The methodology calculating RRWP construction and operation emissions is discussed below along with the results.

RRWP Construction

A conservative estimate of construction emissions associated with the construction of the advanced water treatment plant (AWTP), pipelines, pump stations, and groundwater injection wells were all included in the analysis. Estimates include emissions from projected construction equipment fuel consumption, labor travel, material travel, and temporary electric power usage.

Emissions from pipeline construction were estimated by calculating the emissions from eight different pipeline/trenching methods on a linear foot basis to develop an emissions factor for each construction method. The total linear feet of each pipeline construction type was then multiplied by

the corresponding emissions factor to calculate the total GHG emissions from pipeline construction. All estimates were based on industry standards and/or data provided by Metropolitan.

Regardless of the duration of construction or start date of construction, the same total amount of emissions will be generated. To approximate annual construction emissions, total construction emissions were divided by an assumed 6-year construction schedule which is modelled to begin in 2025 and with completion during 2030 (Table 28). Operational emissions were assumed to begin in 2031 (Table 29). This construction schedule assumes the fastest feasible start to the project. However, as previously mentioned, if a shift in the project start date or overall construction duration does occur, the total impacts of construction and operation will remain unchanged. The emissions would simply shift to a later date while overall volume of emissions would remain constant.

Table 28 Total Construction Emissions for RRWP

System	Absolute Emissions (MT CO_2e)
Advanced Water Treatment	10,895
Pipelines	70,506
Pump Stations	633
Well Facilities	383
Total	**82,417**
6 Year Annual	13,736

RRWP Operations

Operational emissions included an analysis of both electricity use and process emissions due to consumption of MicroC2000® and N_2O generation as shown in Table 29. Emissions associated with electricity were modeled assuming 100 percent of electricity purchased would be from the retail market. With the implementation of SB 100, GHG emissions from electricity consumed at the AWTP would be reduced to zero MT of CO_2e by 2045. Operational electricity demand was estimated to be 264,988 MWh per year for operations at the AWTP and an additional 329,687 MWh per year to operate the pump stations which will move water from the AWTP to the spreading grounds and injection wells. This value represents a worst-case scenario for pump electricity use based on pumping all 150 MGD to Weymouth and may not represent actual final design. Changes to projected annual electricity emissions are shown in Table 30.

Table 29 Process Operational Emissions for RRWP

System	Process Emissions (MT CO_2e)	
Process N_2O	5,340	(non-biogenic)
MicroC2000®	22,271	(biogenic)

MT CO_2e = metric tons of carbon dioxide equivalent; N_2O = nitrous oxide

Table 30 Electricity Emissions Over Time for RRWP Operation

Year	Emissions (MT CO_2e)
2031	84,090
2035	60,064
2040	30,032
2045	–

MT CO_2e = metric tons of carbon dioxide equivalent

Overall emissions for the RRWP for each milestone year are included in Table 31. In 2025 construction is underway so the annual construction estimate of 13,736 MT of CO_2e was applied. By 2031 the plant is assumed to be fully operational (150 MGD) which is reflected in the larger emissions total. These dates do not reflect actual construction and operational start dates. Since, a shift in these dates would not affect the GHG emissions in the target years of 2030 and 2045 and a modelling an earlier start date provides a more conservative emissions forecast, the earlier timeline was used. Over time, GHG emissions associated with electricity use will decrease due to SB 100 while process emissions at the AWTP will remain constant.

Table 31 Overall Estimated RRWP Emissions

Year	Emissions (MT CO_2e)
2025 (construction)	13,736
2030 (construction)	13,736
2035 (operational)	87,675
2040 (operational)	57,643
2045 (operational)	27,611

MT = metric tons

CO_2e = carbon dioxide equivalent

The forecasted emissions for the RRWP were included in each of the Metropolitan emissions forecast scenarios and therefore, are mitigated by the overall CAP which charts a clear pathway for Metropolitan to reach its GHG reduction targets consistent with State goals.

5 Targets and Carbon Budget

5.1 GHG Reduction Targets

As noted in Section 1.2, CARB has issued several guidance documents concerning the establishment of GHG emission reduction targets for CAPs to comply with legislated GHG emissions reductions targets and California Environmental Quality Act Guidelines (CEQA) § 15183.5(b). In the first California *Climate Change Scoping Plan,*[43] the CARB encouraged local governments to adopt a reduction target for community emissions that parallels the State commitment to reduce GHG emissions. In 2016, the State adopted SB 32 mandating a reduction of GHG emissions by 40 percent below 1990 levels by 2030 and in 2017 the CARB published the SB 32 Scoping Plan Update.[44] With the release of the *2017 Climate Change Scoping Plan Update*, the CARB recognized the need to balance population growth with emissions reductions and in doing so, provided a new methodology for proving consistency with State GHG reduction goals through the use of per capita efficiency targets. These targets are generated by dividing a jurisdiction's GHG emissions for each horizon year by the jurisdiction's total population for that target year.

In addition to SB32, Metropolitan has also set a long term goal of achieving carbon neutrality consistent with EO B-55-18. Table 32 shows Metropolitan's GHG reduction targets for the milestone years of 2030 and 2045 as well as several interim years. In order to better prepare for the goal of carbon neutrality, Metropolitan has set a GHG reduction target more aggressive than the SB32 by reducing its emissions along a linear trajectory from 2017 emission levels to carbon neutrality in 2045.

Table 32 Metropolitan's GHG Reduction Targets

Target	Per Capita Emissions (MT CO_2e)	Associated Mass Emissions[2] (MT CO_2e)	Percent Reduction (Below 1990)
Metropolitan's 1990 Per Capita Emissions	0.0516	771,514	N/A
Minimum Per Capita Reduction Target for SB 32 Consistency (40% below 1990 levels)	0.0309	638,423	40%
Metropolitan's Per Capita 2030 GHG Emissions Target[2]	0.0141	290,192	73%
Metropolitan's 2045 Per Capita Goal	0.0000	0	100%
California's EO B-55-18 Per Capita Goal	0.0000	0	100%

MT CO_2e = metric tons of carbon dioxide equivalent

[1] Pending final population numbers

[2] Associated Mass Emissions are calculated by multiplying the per capita emissions target by the projected population in that year. Final mass emission values will be updated based on actual population data.

[43] 2008 Climate Change Scoping Plan https://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf

[44] CARB. November 2017. California's 2017 Climate Change Scoping Plan. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf

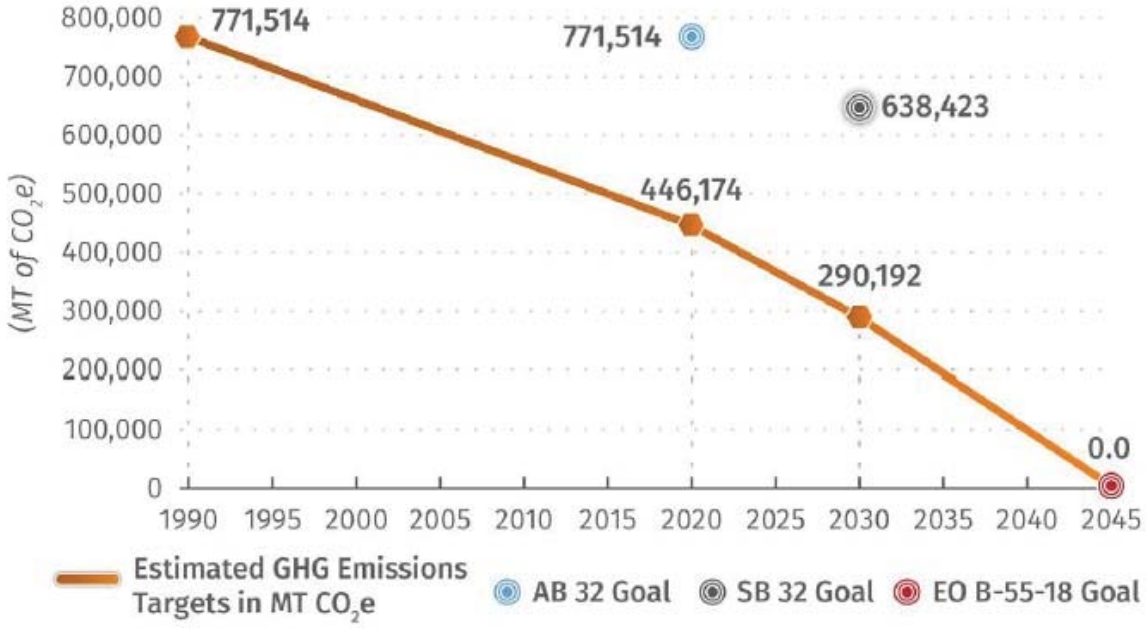
Figure 11 describes the complete reduction pathway. The figure shows Metropolitan's targets meet the per capita emissions target for all three California goals described by AB 32, SB 32, and EO B-55-18. Metropolitan exceeds all per capita emissions (in MT CO_2e) at all targets and meets the EO B-55-18 goal of zero per capita emissions by year 2045. The use of per capita reduction targets to show progress towards GHG reduction goals was established and promoted by the State in the 2017 Scoping Plan Update.[45]

Figure 11 Metropolitan's GHG Reduction Targets

Figure 12 illustrates the per capita reduction pathway translated into mass emissions. Per capita emissions are translated to mass emissions by multiplying by the population in each year. As shown in Figure 12, Metropolitan's target pathway exceeds the State's emissions reduction goal in 2020 and 2030 before ultimately reaching carbon neutrality in line with the State's long-term goal in 2045. The current population values are projected and will need to be updated over time as final population numbers are established. This will change the allowable emissions (MT CO_2e) in each year by effectively including a variable that considers the actual service population in determining the emission reductions. Normalizing the emissions by removing population as a variable allows Metropolitan to focus on deep decarbonization over time. Furthermore, achieving the 2045 target of carbon neutrality will be an iterative process and require revisions between now and 2045, with changes to policy or new statewide GHG emissions targets established by the California legislature.

[45] https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf

Figure 12 Metropolitan's GHG Emissions Targets Translated to MT CO_2e



Metropolitan's estimated emissions in 2030 are well below the State's 2030 target. However, due to the variability associated with Metropolitan's GHG emissions (as shown in Section 3.0), using any individual year to gain an understanding of Metropolitan's GHG emissions reduction progress would not provide a clear picture of overall emissions reduction trends. Therefore, Metropolitan intends to implement a carbon budget approach to determine GHG emissions reduction progress.

5.2 Carbon Budget Methodology

In order to calculate Metropolitan's carbon budget (really a greenhouse gas budget since it incorporates all greenhouse gases normalized to CO_2e), the sum of the area underneath Metropolitan's target trajectory is summed. Table 33 shows the target emissions for each individual year between 2005 and 2045 (the years for which the carbon budget was calculated). The 2005 target was calculated based on a linear reduction in per capita emissions to carbon neutrality in 2045 from the 1990 per capita number. The start year for the carbon budget is 2005 because it is the first year for which Metropolitan has annual GHG inventories, which are required to track the carbon budget accurately. As shown in Table 33, Metropolitan was below its milestone budget for the period of 2005-2020. During this period, it had a total of 8,924,539 MT CO_2e which could be emitted, but it only emitted 4,770,038 MT CO_2e. This means that Metropolitan has a remaining budget of 4,154,596 MT CO_2e from that period and a total budget remaining of 9,890,437 MT CO_2e which can be emitted between 2021 and 2045. Metropolitan plans to be carbon neutral by 2045 regardless of the remaining carbon budget.

Table 33 Data Used for Calculating Metropolitan's Carbon Budget

Year	Annual GHG Emissions Targets	Actual GHG Emissions	Remaining Budget
2005	660,722	323,224	337,498
2006	646,349	219,355	426,994
2007	632,676	172,768	459,908
2008	619,667	258,419	361,247
2009	605,418	360,457	244,961
2010	592,059	582,952	9,107
2011	579,754	202,374	377,379
2012	567,687	155,637	412,050
2013	555,034	267,352	287,682
2014	541,289	545,830	(4,541)
2015	526,888	440,400	86,488
2016	511,396	263,420	247,976
2017	496,354	226,036	270,318
2018	480,032	358,287	121,746
2019	463,137	159,200	303,937
2020	446,174	234,329	211,846
Subtotal (Carbon Budget 2005-2020)	**8,924,634**	**4,770,038**	**4,154,596**
2021	433,071		
2022	419,572		
2023	405,678		
2024	391,388		
2025	376,704		
2026	359,810		
2027	342,712		
2028	325,410		
2029	307,904		
2030	290,192		
Subtotal (Carbon Budget 2005-2030)	**12,577,075**	**N/A[1]**	**7,807,037[2]**
2031	272,188		
2032	253,992		
2033	235,604		
2034	217,024		
2035	198,253		
2036	179,212		
2037	159,997		
2038	140,608		
2039	121,044		
2040	101,306		

Year	Annual GHG Emissions Targets	Actual GHG Emissions	Remaining Budget
2041	81,357		
2042	61,252		
2043	40,991		
2044	20,573		
2045			
Total Carbon Budget (2005-2045)	**14,660,475**	**N/A[1]**	**9,890,437[2]**

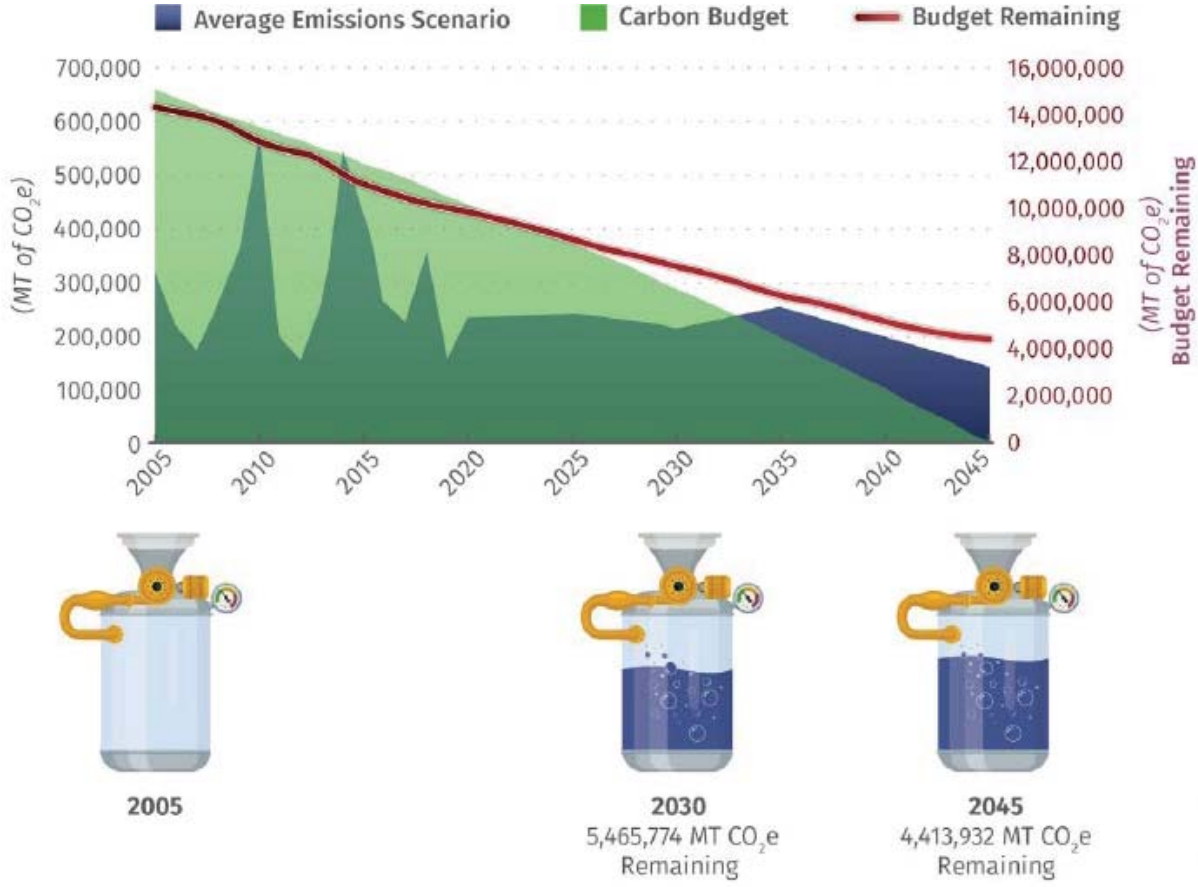
Numbers may not sum due to rounding

[1] The total carbon budget used and budget remaining will be calculated by Metropolitan as GHG inventories for each year are completed.

[2] This number represents the total carbon budget left in the corresponding milestone year on current carbon usage. These totals will be reduced as Metropolitan completes GHG inventories over time. The goal in each milestone year will be considered complete as long as the carbon budget does not reach zero.

Figure 13 shows the carbon budget for Metropolitan's per capita targets based on the average emissions forecast. Under this scenario Metropolitan never exceeds the carbon budget (through 2045). This is only one of the scenarios that Metropolitan may experience. Metropolitan has developed a CAP that provides a pathway to stay within the carbon budget through 2030 under even the highest emission scenario. However, as noted above, emissions would need to fall to carbon neutral by 2045 in order to meet the intent of EO B-55-18 and Metropolitan's stated GHG emissions goal. Metropolitan will need to continue to update its GHG reduction strategy over time to respond to and incorporate the newest science, technologies, and legislation.

Figure 13 Metropolitan's Carbon Budget Using Mass Emissions Methodology and a Straight Line to Carbon Neutrality by 2045 Target (Average Emissions Forecast)



Based on the data presented in the inventory and forecast Metropolitan has developed a suite of GHG reduction measures to stay within the carbon budget through 2030 and establish substantial progress towards the 2045 goal of carbon neutrality. A full description of the GHG reduction measures can be found in the CAP and Appendix C.

Table 34 Complete List of Metropolitan CIP Projects and Associated GHG Emissions

	Policy Changes and Other Projects Without Emissions		
Program	**Program Name**	**Project Name**	**Emissions**
Cost Efficiency & Productivity	Business Operations Improvement	Budget System Replacement System	
Cost Efficiency & Productivity	Enterprise Content Management	Enterprise Content Management Phase II	
CRA Reliability	CRA - Reliability for FY2018/19 through FY2023/24	CRA Desert Region Security Improvements	
CRA Reliability	CRA Main Pump Reliability	CRA Main Pump Rehabilitation (Stage 1) - Design Phase for Demonstration Project	
PCCP Reliability	PCCP Rehabilitation and Replacement	PCCP Rehabilitation - Program Management	
PCCP Reliability	Second Lower Feeder PCCP Rehab	Chief Administrative Officer Group Labor Adjustment	
PCCP Reliability	Second Lower Feeder PCCP Rehab	ESG Labor Adjustment	
PCCP Reliability	Second Lower Feeder PCCP Rehab	General Manager's Group Labor Adjustment	
PCCP Reliability	Second Lower Feeder PCCP Rehab	Second Lower Feeder PCCP Rehabilitation - Phase I: Pipe Procurement	
PCCP Reliability	Second Lower Feeder PCCP Rehab	WSO Labor Adjustment	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Programmatic Environmental Documentation for the Los Angeles Co. Operating Region	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Programmatic Environmental Documentation for the Orange County Operating Region	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Programmatic Environmental Documentation for the Riverside/San Diego Co. Operating Region	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Programmatic Environmental Documentation for the Western San Bernardino County Operating Region	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Real Property Group Labor Adjustment	
System Reliability	Enterprise Data Analytics	Enterprise Data Analytics Project	
System Reliability	Information Technology System - Security	Cyber Security Remediation Phase 2	

Policy Changes and Other Projects Without Emissions			
Program	**Program Name**	**Project Name**	**Emissions**
System Reliability	Infrastructure Reliability Information System	Asset Monitoring and Management System	
System Reliability	Infrastructure Reliability Information System	Maximo Mobile Computing Upgrade	
System Reliability	IT Infrastructure Reliability	Headquarters and Field Facilities WiFi Upgrade	
System Reliability	IT Infrastructure Reliability	MWD Headquarters Boardroom Technology Upgrade	
System Reliability	Water Operations Control	Control System Upgrade Phase 3 Proof-of-Concept	
System Reliability	Water Operations Control	Control System Upgrade Phase 4 and 5, Preliminary Design and Selection	
System Reliability	Water Operations Control	IT Group Labor Adjustment	
System Reliability	Water Operations Control	Water System Control Master Plan	
Treatment Plant Reliability	Mills Water Treatment Plant - Improvements for FY2018/19 through FY2023/24	Mills Ozone PLC Control and Communication Equipment Upgrade	
Treatment Plant Reliability	Mills Water Treatment Plant - Improvements FY2006/07 through FY2011/12	Mills Modules 3 & 4 Flash Mix Chemical Containment Upgrades	
Treatment Plant Reliability	Skinner Water Treatment Plant - Improvements for FY2018/19 through FY2023/24	Skinner Ozone Generator PLC Control & Communication Equipment Upgrade	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Los Angeles County Region Environmental Mitigation Monitoring	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Orange County Region Environmental Mitigation Monitoring	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Riverside/San Diego County Environmental Mitigation Monitoring	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Western San Bernardino County Region Environmental Mitigation Monitoring	
PCCP Reliability	PCCP Rehabilitation and Replacement	PCCP Rehabilitation - Program Management	
PCCP Reliability	Second Lower Feeder PCCP Rehab	Chief Administrative Officer Group Labor Adjustment	
PCCP Reliability	Second Lower Feeder PCCP Rehab	ESG Labor Adjustment	
PCCP Reliability	Second Lower Feeder PCCP Rehab	General Manager's Group Labor Adjustment	

Policy Changes and Other Projects Without Emissions			
Program	**Program Name**	**Project Name**	**Emissions**
PCCP Reliability	Second Lower Feeder PCCP Rehab	WSO Labor Adjustment	
Distribution System Reliability	Dam Rehabilitation & Safety Improvements	Diamond Valley Lake Dam Monitoring System Upgrades	
Distribution System Reliability	Dam Rehabilitation & Safety Improvements	Dam Monitoring System Upgrades - Lake Mathews	
Distribution System Reliability	Dam Rehabilitation & Safety Improvements	Dam Monitoring System Upgrades - Lake Skinner	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Riverside/San Diego County Environmental Mitigation Monitoring	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Western San Bernardino County Region Environmental Mitigation Monitoring	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Right of Way Infrastructure Protection Program - Los Angeles County Region	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Right of Way Infrastructure Protection Program - O. C. Region	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Right of Way Infrastructure Protection Program - Riverside and San Diego County Region	
Right of Way & Infr. Protection	Right of Way & Infrastructure Protection	Right of Way Infrastructure Protection Program - Western San Bernardino County Region	
CRA Reliability	CRA - Electrical/Power Systems Reliability	Iron Mountain Auxiliary Power System Rehabilitation (Part of Auxiliary Power System Upgrades)	
Distribution System Reliability	Reservoir Cover Replacement	Mills Finished Water Reservoir Rehabilitation (Only Operational Change)	
Treatment Plant Reliability	Jensen Water Treatment Plant - Improvements for FY2012/13 through FY2017/18	Jensen Filter Backwash Biological Control System (No emissions)	
Treatment Plant Reliability	Mills Water Treatment Plant - Improvements FY2006/07 through FY2011/12	Mills Modules 3 & 4 Flash Mix Chemical Containment Upgrades	
Treatment Plant Reliability	Weymouth Water Treatment Plant - Improvements	Weymouth Administration Building Seismic Upgrades and Building Improvements	

	Policy Changes and Other Projects Without Emissions		
Program	**Program Name**	**Project Name**	**Emissions**
Pipelines			
Supply Reliability/System Flexibility	Hayfield and Lake Perris Groundwater Recovery	Lake Perris Seepage Water Conveyance Pipeline	1,261
Supply Reliability/System Flexibility	Perris Valley Pipeline	Perris Valley Pipeline - Tunnels	1,765
Subtotal			**3,026**
Paving			
System Reliability	System-Wide Paving & Roof Replacements	CRA Pumping Plants Asphalt Replacement	690
System Reliability	System-Wide Paving & Roof Replacements	Skinner Facility Area Paving	23
System Reliability	System-Wide Paving & Roof Replacements	System-wide Asphalt Replacement	197
CRA Reliability	CRA - Reliability for FY2012/13 through FY2017/18	CRA Water Distribution System Replacement and CRA Roadway Asphalt Replacement - All PP	345
Subtotal			**1,255**
Equipment Replacement			
CRA Reliability	CRA - Reliability for FY2006/07 through FY2011/12	2.4 kV Standby Diesel Engine Generator Replacement - Gene	247
CRA Reliability	CRA - Reliability for FY2006/07 through FY2011/12	2.4 kV Standby Diesel Engine Generator Replacement - Intake	247
CRA Reliability	CRA - Reliability for FY2006/07 through FY2011/12	2.4 kV Standby Diesel Engine Generator Replacement - Iron	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	San Dimas and Red Mountain Power Plants Standby Diesel Engine Generator Replacements	407
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	Olinda Pressure Control Structure and Santiago Tower Emergency Generators	407
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	Lake Skinner Area Distribution System Valve Replacement	247

Policy Changes and Other Projects Without Emissions			
Program	Program Name	Project Name	Emissions
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	Orange County Area Distribution System Valve Replacement	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	Lake Mathews Outlet Tower No. 2 Valve Rehabilitation	95
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	Olinda PCS Valve Replacement	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	Palos Verdes Feeder - Long Beach Lateral Turnout Structures Sta. 1442+15 Valve Replacements	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	Sepulveda-West Basin Interconnection Valve Replacement	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	Appian Way Valve Replacement	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	Flow Meter Replacement Project	342
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	Foothill Feeder - Castaic Valley Blow-off Valves Replacement	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	Lake Mathews Aboveground Storage Tank Replacement	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	Lake Mathews Sodium Hypochlorite Tank Replacement	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	Rio Hondo Pressure Control Structure Valve Replacements	247

Policy Changes and Other Projects Without Emissions			
Program	**Program Name**	**Project Name**	**Emissions**
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	West Orange County Feeder Valve Replacement	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	108th Street Pressure Control Structure Valve Replacement	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	Service Connections CB-12 & CB-16 Turnout Valve Replacement & Electrical Upgrade	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	San Diego Canal Radial Gate (V0-6) Rehabilitation	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2018/19 through FY2023/24	San Jacinto Diversion Structure Slide Gate V-03 Replacement	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	San Diego Canal Radial Gate (VO-8) Rehabilitation	247
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	Hollywood Tunnel North Portal Equipment Upgrades	247
CRA Reliability	CRA - Conveyance Reliability	Copper Basin and Gene Wash Reservoirs Discharge Valve Rehabilitation	407
CRA Reliability	CRA - Reliability for FY2006/07 through FY2011/12	CRA Pump Plant Sump System Rehabilitation	1,236
Water Delivery System Improvements	Greg Avenue PCS - Pump Modifications (See building construction for new control building portion of estimate)		407
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation	West Valley Feeder No. 1 Access Roads and Structure Improvements (Stage 3)	407
CRA Reliability	CRA - Electrical/Power Systems Reliability	CRA Main Transformer Replacement /Rehabilitation	407
Subtotal			**9,061**

Policy Changes and Other Projects Without Emissions			
Program	**Program Name**	**Project Name**	**Emissions**
CRA Domestic Water			
CRA Reliability	CRA - Reliability for FY2012/13 through FY2017/18	CRA Pumping Plants Water Treatment Systems Replacement	95
CRA Reliability	CRA - Reliability for FY2012/13 through FY2017/18	CRA Water Distribution System & Wastewater System Replacement - Gene & Iron Mtn Construction	108
CRA Reliability	CRA - Reliability for FY2012/13 through FY2017/18	CRA Water Distribution System & Wastewater System Replacement - Intake Construction	108
CRA Reliability	CRA - Reliability for FY2012/13 through FY2017/18	CRA Water Distribution System Replacement - Hinds & Eagle Mountain	108
CRA Reliability	CRA - Reliability for FY2012/13 through FY2017/18	CRA Water Distribution System Replacement - Intake	108
CRA Reliability	CRA - Reliability for FY2012/13 through FY2017/18	CRA Water Distribution System Replacement - Iron Mountain & Gene	108
Distribution System Reliability	Reservoir Cover Replacement	PVR Facility Sewer Connection	108
System Reliability	Operations Support Facilities Improvement	Lake Mathews Wastewater System Replacement	108
Regulatory Compliance	CRA - Discharge Containment	Wastewater System Rehabilitation - Gene/Iron Mtn	108
Subtotal			**959**
Building Construction			
CRA Reliability	CRA - Reliability for FY2012/13 through FY2017/18	CRA Pumping Plant Storage Buildings at Hinds, Eagle Mountain, and Iron Mountain	80
Water Delivery System Improvements	Greg Avenue PCS - New Control Building		311
System Reliability	Operations Support Facilities Improvement	CRA Housing Improvements - Renovation of Short-Term Accommodations at Eagle Mountain and Iron Mountain Pumping Plants	1,028
Subtotal			**1,419**

	Policy Changes and Other Projects Without Emissions		
Program	**Program Name**	**Project Name**	**Emissions**
Utility Upgrades			
Cost Efficiency & Productivity	DVL Recreation Facilities	Diamond Valley Lake (DVL) East Marina Utilities	158
CRA Reliability	CRA - Electrical/Power Systems Reliability	Auxiliary Power System Rehabilitation/Upgrades	324
CRA Reliability	CRA - Electrical/Power Systems Reliability	CRA 6.9 kV Power Cables Replacement	541
CRA Reliability	CRA - Reliability for FY2012/13 through FY2017/18	CRA Pump Plants 2.3kV and 480V Switch Rack Rehabilitation	95
CRA Reliability	CRA - Reliability for FY2018/19 through FY2023/24	CRA 230 kV Transmission System Regulatory and Operational Flexibility Upgrades	342
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	Conveyance and Distribution System Electrical Structures Rehabilitation	203
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	Electrical Upgrades at 15 Structures in the OC Region	203
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	Lake Mathews Electrical Reliability	203
Subtotal			**2,070**
Utility Upgrades			
CRA Reliability	CRA Main Pump Reliability	CRA Main Pump and Motor Refurbishment	247
CRA Reliability	CRA Main Pump Reliability	CRA Main Pump Discharge Valve Refurbishment	247
CRA Reliability	CRA Main Pump Reliability	CRA Main Pumping Plants Discharge Line Isolation Bulhead Couplings	247
Subtotal			**742**
Power Plant Upgrades			
Distribution System Reliability	Hydroelectric Power Plant Improvements	Red Mountain Power Plant Rehabilitation	247
Distribution System Reliability	Hydroelectric Power Plant Improvements	Yorba Linda Power Plant Reliability Upgrades	247
Subtotal			**495**

Policy Changes and Other Projects Without Emissions			
Program	**Program Name**	**Project Name**	**Emissions**
Reservoir Cover Replacement			
Distribution System Reliability	Reservoir Cover Replacement	Garvey Reservoir Cover and Liner Replacement Project	2,321
Distribution System Reliability	Reservoir Cover Replacement	Jensen Finished Water Reservoir No. 1 Cover Rehabilitation	301
Distribution System Reliability	Reservoir Cover Replacement	Jensen FWR # 2 Floating Cover Replacement	2,321
Subtotal			**4,943**
Treatment Plant Reliability			
Treatment Plant Reliability	Diemer Water Treatment Plant - Improvements	Diemer Basin Rehabilitation	95
Treatment Plant Reliability	Diemer Water Treatment Plant - Improvements	Diemer Plant Washwater Reclamation Facilities Reliability Improvement	486
Treatment Plant Reliability	Diemer Water Treatment Plant - Improvements for FY2006/07 through FY2011/12	Chemical Feed System Improvements	95
Treatment Plant Reliability	Diemer Water Treatment Plant - Improvements for FY2006/07 through FY2011/12	Diemer Filter Building Seismic Upgrades	274
Treatment Plant Reliability	Diemer Water Treatment Plant - Improvements for FY2012/13 through FY2017/18	Diemer Slope Erosion Remediation	108
Treatment Plant Reliability	Diemer Water Treatment Plant - Improvements for FY2018/19 through FY2023/24	Diemer Emergency Ozone Backup Disinfection	95
Treatment Plant Reliability	Jensen Water Treatment Plant - Improvements	Jensen Caustic Tank Farm Containment Upgrades	275
Treatment Plant Reliability	Jensen Water Treatment Plant - Improvements for FY2012/13 through FY2017/18	Jensen Caustic Metering and Control Facilities	247
Treatment Plant Reliability	Jensen Water Treatment Plant - Improvements for FY2012/13 through FY2017/18	Jensen Fluorosilicic Acid (Fluoride) Tank Replacement	95

Policy Changes and Other Projects Without Emissions			
Program	**Program Name**	**Project Name**	**Emissions**
Treatment Plant Reliability	Jensen Water Treatment Plant - Improvements for FY2012/13 through FY2017/18	Jensen Liquid Polymer Containment Upgrades	253
Treatment Plant Reliability	Jensen Water Treatment Plant - Improvements for FY2018/19 through FY2023/24	Jensen Ozone PSU and Critical Component Upgrades	95
Treatment Plant Reliability	Jensen Water Treatment Plant - Improvements for FY2018/19 through FY2023/24	Jensen Site Security Upgrade	48
Treatment Plant Reliability	Jensen Water Treatment Plant - Improvements for FY2018/19 through FY2023/24	Jensen Solids Lagoon Nos. 9 & 10	1,144
Treatment Plant Reliability	Jensen Water Treatment Plant - Improvements Program for FY2006/07 through FY2011/12	Jensen Modules 2 and 3 Flocculator Rehabilitation	95
Treatment Plant Reliability	Mills Water Treatment Plant - Improvements for FY2012/13 through FY2017/18	Mills Fluorosilicic Acid Tank Replacement	95
Treatment Plant Reliability	Mills Water Treatment Plant - Improvements for FY2012/13 through FY2017/18	Mills Plant Perimeter Security and Erosion Control Improvements	113
Treatment Plant Reliability	Mills Water Treatment Plant - Improvements for FY2018/19 through FY2023/24	Mills Ozone PLC Control and Communication Equipment Upgrade	95
Treatment Plant Reliability	Skinner Water Treatment Plant - Improvements for FY2018/19 through FY2023/24	Skinner Ozone Generator PLC Control & Communication Equipment Upgrade	48
Treatment Plant Reliability	Weymouth Water Treatment Plant - Improvements	Weymouth Administration and Control Buildings Seismic Upgrades Project	411
Treatment Plant Reliability	Weymouth Water Treatment Plant - Improvements	Weymouth Filter Valve Replacement	95
Treatment Plant Reliability	Weymouth Water Treatment Plant - Improvements	Wheeler Gate Security Improvements	95

Policy Changes and Other Projects Without Emissions			
Program	**Program Name**	**Project Name**	**Emissions**
Treatment Plant Reliability	Weymouth Water Treatment Plant - Improvements for FY2006/07 through FY2011/12	Weymouth Basins 5-8 Refurbishment	95
Treatment Plant Reliability	Weymouth Water Treatment Plant - Improvements for FY2006/07 through FY2011/12	Weymouth Dry Polymer System	74
Treatment Plant Reliability	Weymouth Water Treatment Plant - Improvements for FY2012/13 through FY2017/18	Weymouth Chlorine System Upgrades	95
Treatment Plant Reliability	Weymouth Water Treatment Plant - Improvements for FY2012/13 through FY2017/18	Weymouth Water Quality Instrumentation Improvements	95
Treatment Plant Reliability	Weymouth Water Treatment Plant - Improvements for FY2018/19 through FY2023/24	Weymouth Hazardous Waste Staging and Containment	74
Subtotal			**4,796**
Treatment Plant Reliability			
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	West Orange County Feeder OC-09 Rehabilitation	407
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation	Orange County Feeder Lining Repairs	377
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2006/07 through FY2011/12	Etiwanda Pipeline Lining Repairs	240
Distribution System Reliability	Conveyance and Distribution System - Rehabilitation for FY2012/13 through FY2017/18	Lakeview Pipeline Repair	350
CRA Reliability	CRA - Reliability for FY2018/19 through FY2023/24	CRA Pumping Plant Delivery Line Rehabilitation	165
Subtotal			**1,538**
Total CIP Projects			**30,305**

	Policy Changes and Other Projects Without Emissions		
Program	**Program Name**	**Project Name**	**Emissions**
PCCP Program			
PCCP Program	PCCP Program (Multiple Projects)	20 year total program	140,609
PCCP Program	PCCP Program (Multiple Projects)	Average Annual Emissions	7,030
Total Annual Construction Emissions Estimate			
Total Annual Construction Emissions (Total CIP emissions divided by 6 years plus annual PCCP Project emissions)			**12,081**

7 Attachment 2: Metropolitan Emission Factors for Department of Water Resources Water Deliveries

Metropolitan understands that many of its member agencies and stakeholders wish to better understand the GHG emissions associated with the water they receive. The water system in California is complex and can pass through the operational control of multiple agencies. Thus, varying emission factors are associated with each water source. To be able to assign an aggregated GHG emission factor per acre foot of water, it is important to understand the source of the water and the specific operational control that the water passed through to understand the total emissions associated with water.

Metropolitan developed this CAP to guide how it will reduce GHG emissions from its operations, projects, and activities over which it has authority (i.e., operational control). Metropolitan's historical absolute emissions and associated emissions factor is presented in Table 24 of this CAP. However, as described in the Excluded Emissions section of the CAP, these emission factors exclude DWR's SWP emissions as well as emissions from other agencies that maintain operational control over the water both upstream and downstream of Metropolitan. To gain a better understanding of the emissions associated with California water delivered in cooperation with other agencies, Metropolitan has combined Scope 2 (electricity) emissions from DWR operations with the emissions estimated by Metropolitan's Climate Action Plan (Scope 1, 2, and 3). Electricity emissions make up a majority of DWR's emissions profile[46] and have been calculated as part of the energy water nexus project being undertaken by Metropolitan and DWR. The information presented has been estimated using the available data and is intended to support member agencies and other stakeholders in better understanding their own GHG emissions. This information should be used for informational purposes only.

7.1 Estimating a Combined Metropolitan and SWP Emission Factor

Since DWR emissions are outside of the operational control of Metropolitan, detailed operational data is not available for SWP emissions. However, Metropolitan is working directly with DWR to better understand the energy embedded in the SWP deliveries which are received. As part of this work DWR has provided the total Scope 2 emissions associated with the SWP water Metropolitan received in 2019 and 2020. To estimate the combined emissions required to deliver an acre foot of water which includes both Metropolitan and upstream DWR emissions, the Scope 2 emissions from water received from DWR was combined with Metropolitan's operational emissions to calculate a new total. This total was then divided by the water deliveries for each year reported in the 2020 UWMP to provide a combined Metropolitan and SWP per acre foot estimate emissions factor (see Table 35).

[46] Between 2014 and 2018 electricity consumption made up 60% to 94% of DWR's emissions profile depending on the year. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/CAP-I-GGERP-Update-2020.pdf

Other initiatives such as the energy water nexus project with TCR[47] may use different metrics (such as water received) and include different emission scopes. The use of different water metrics does not change the total emissions but results in a different per acre foot average. It is important to note that the combined emission factor reported here will not align with information provided on TCR's water energy water nexus website because the number included here uses Metropolitan's total emissions (i.e., Metropolitan's Scope 1, 2 and 3 emissions) and the total water deliveries as reported in Metropolitan's 2020 UWMP[48] and used in the CAP while the water energy nexus reporting protocol uses only Scope 2 emissions and water delivered Though the total emissions factor is different than what is reported to TCR, it is consistent with the metrics within this planning context.

While these estimates may provide a clearer picture of total embodied GHG emissions for downstream water users, emissions associated distribution and delivery of water downstream of Metropolitan should also be considered when determining the total embedded energy associated with water.

[47] GHG Data and Water-Related Performance Metrics – The Climate Registry

[48] The Metropolitan Water District of Southern California (2021). 2020 Urban Water Management Plan.

Table 35 Estimation of Department of Water Resources Acre Foot Emission Factor

Year	Metropolitan Operational Emissions (MT CO_2e)	Metropolitan Deliveries (AF)	Metropolitan Operational Emission Factor (MT CO_2e per acre delivered)	SWP Scope 2 Emissions (MT CO_2e)	Metropolitan Emissions with Upstream SWP Emissions Included (MT CO_2e)	Updated Metropolitan Emission Factor with Upstream SWP Emissions Included (MT CO_2e/AF)
2019	159,200	1,327,000	0.1200	307,186	466,386	0.3515
2020	234,329	1,374,000	0.1705	146,594	380,923	0.2772

APPENDIX C:
MEASURE SUBSTANTIAL EVIDENCE AND REDUCTION QUANTIFICATION METHODOLOGY

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Tables

1 Introduction

Metropolitan Water District of Southern California (Metropolitan) has developed a Climate Action Plan (CAP) or greenhouse gas (GHG) reduction plan that meets the requirements of Section 15183.5 of the California Environmental Quality Act (CEQA) Guidelines, which provides the opportunity for tiering and streamlining CEQA review and mitigation of project-level GHG emissions. Thus, the CAP fulfills the regulatory obligation under CEQA to mitigate potential GHG impacts while also providing a pathway to streamline CEQA review of future projects included in the CAP. Metropolitan has developed a GHG emissions inventory[1] and established GHG emissions reduction targets consistent with the State's GHG reduction goals established by Senate Bill (SB) 32 and Executive Order (EO) B-55-18.[2] SB 32 establishes a statewide goal of reducing GHG emissions to 40 percent below 1990 levels by 2030, while EO-B-55-18 sets the long-term goal of statewide carbon neutrality by 2045. Metropolitan has established a more conservative target of a linear reduction to carbon neutrality by 2045, exceeding the SB 32 target.[3] The CAP also forecasts GHG emissions associated with Metropolitan operations and future projects out to 2045 and commits to implementing specific GHG reduction measures that contribute to reducing emissions and achieving Metropolitan's targets.[4,5] The CAP will be considered for adoption by Metropolitan's Board of Directors following completion of public review of the CAP and its associated CEQA document.[6]

With the release of the 2017 Scoping Plan,[7] the California Air Resources Board (CARB) recognized the need to balance population growth with emissions reductions and in doing so, provided a new methodology for proving consistency with State GHG reduction goals through the use of per capita efficiency targets. These targets are generated by dividing a jurisdiction's GHG emissions for each horizon year by the jurisdiction's total population for that target year. Metropolitan will pursue a linear per capita GHG emission reduction pathway to exceed the State's 2030 target of 40 percent below 1990 levels by 2030 (0.0309 metric tons of carbon dioxide equivalents [MT CO_2e] per person) and make significant progress towards the ultimate goal of achieving carbon neutrality by 2045 (0.0 MT CO_2e per person). Measuring progress towards meeting the established target using a per capita emissions approach is achieved by using Metropolitan's 1990 GHG emissions and then dividing by the population of Metropolitan's service area in that year to get a baseline per capita emissions rate of 0.0516 MT CO_2e per person in 1990. Using Metropolitan's long-term goal of carbon neutrality, a per capita emissions rate of 0.0 MT CO_2e per person was established for the year 2045, interim targets (between 1990 and 2045) were established by drawing a straight line between these two points. The straight line approach results in a per capita target that is 73 percent below 1990 levels by 2030, as shown in Table 1, which exceeds the State's 40 percent reduction goal.

[1] Consistent with CEQA Guidelines Section 15183.5(b)(1)(A) Quantify GHG emissions, existing and projected over a specified time period, resulting from activities within a defined geographic area.
[2] Consistent with CEQA Guidelines Section 15183.5(b)(1)(B) Establish a level of GHG emissions, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable.
[3] For a complete analysis of Metropolitan's GHG reduction targets, see the Climate Action Plan.
[4] Consistent with CEQA Guidelines Section 15183.5(b)(1)(C) Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated in the defined geographic area.
[5] Consistent with CEQA Guidelines Section 15183.5(b)(1)(D) Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates if implemented on a project-by-project basis, would collectively achieve the specified emissions level.
[6] Consistent with CEQA Guidelines Section 15183.5(b)(1)(F) Be adopted in a public process following environmental review.
[7] https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf

While the GHG reduction targets have been determined using a per capita approach, Metropolitan will measure progress towards these goals by calculating its total operational GHG emissions in MT CO_2e. To better understand the total emissions allowable in each year, the per capita target in MT CO_2e per person is translated to mass emissions by multiplying the per capita target by the expected service area population in each year. Table 1 shows Metropolitan's GHG reduction targets, both as per capita and mass emissions, for the milestone years of 2030 and 2045 as well as several interim years. The mass emissions targets that correspond with the per capita targets is presented in Table 1 in the "Associated Mass Emissions" column.

Table 1 Comparison of Metropolitan GHG Targets and California GHG Reduction Goals

Target	Per Capita Emissions and Targets (MT CO_2e)	Percent Reduction[2] (Below 1990)	Population[3]	Associated Mass Emissions* (MT CO_2e)
Metropolitan's 1990 Per Capita Emissions	0.0516	N/A	14,961,310	771,514
Minimum Per Capita Reduction Target for SB 32 Consistency	0.0309	40%	20,634,000	638,423+
Metropolitan's Per Capita 2030 GHG Emissions Target[1]	0.0141	73%	20,634,000	290,192+
California's EO B-55-18 Per Capita Goal	0.0	100%	22,026,000	0.0
Metropolitan's 2045 Per Capita Goal	0.0	100%	22,026,000	0.0

MT CO_2e - metric tons of carbon dioxide equivalent

[1] Metropolitan's per capita emissions targets for 2030 determined based on the linear trajectory between calculated 1990 per capita emission levels and carbon neutrality by 2045.

[2] Percent reduction from 1990 levels is based on the per capita approach.

[3] Service population obtained from the 2020 Urban Water Management Plan and utilized to translate the per capita emissions targets into mass emissions by multiplying the population by the per capita emissions target.

+ Pending final population numbers in 2030 and 2045

* Associated Mass Emissions are calculated by multiplying the per capita emissions target by the projected population in that year. Final mass emission values will be updated based on actual population data in 2030 and 2045.

While Metropolitan has made significant progress in reducing GHG emissions since 1990, achieving carbon neutrality by 2045 will require a focused action plan. The CAP includes specific strategies that, when implemented, can achieve carbon neutrality and provide co-benefits such as improved infrastructure reliability, increased energy reliability, and decreased costs associated with energy procurement and maintenance. Due to the variable nature of Metropolitan's annual operations and associated fluctuations in annual GHG emissions, progress towards Metropolitan's GHG reduction goals will be tracked using a carbon budget as described in the CAP. The carbon budget sets a total mass emission cap between 2005 and 2045, where Metropolitan is pursuing carbon neutrality by 2045. As long as Metropolitan reduces GHG emissions to remain below the overall carbon budget, the GHG reduction targets will be achieved regardless of the emissions achieved during any particular year.

CEQA Guidelines Section 15183.5(b)(1)(D) notes that a CEQA Guideline-consistent CAP must include, "measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level." This appendix details the evidence to demonstrate that the strategies included in the Metropolitan CAP have established a pathway to achieve carbon neutrality and satisfy the requirements of the CEQA Guidelines Section 15183.5(b)(1)(D) for a qualified GHG reduction plan.

Each strategy outlined in the CAP focuses on the GHG emissions over which Metropolitan has direct operational control and on sources (e.g., emissions from construction equipment or employee commute) that generate the highest current GHG emissions. The strategies are made up of measures (action items) that have a quantified GHG reduction potential and clear progress tracking metrics and performance standards. Rincon worked closely with Metropolitan staff to craft and refine comprehensive, realistic, and achievable strategies and measures that can meet or exceed the GHG reduction goals and remain under the carbon budget. The quantification in this report is intended to illustrate one of several viable paths to pursue as the strategies and measures of the CAP are implemented at full scale. The GHG reductions were calculated using published evidence provided through adequately controlled third party investigations, studies, and articles carried out by qualified experts that establish the effectiveness of the strategies and measures included in the CAP. Further, the strategies and measures were developed to achieve Metropolitan's 2030 target and make substantial progress towards the 2045 carbon neutrality target. The estimates and detailed methodology for GHG emission reduction potential, provided in this report, include the substantial evidence and a transparent approach to achieving Metropolitan's GHG emissions reduction target.

As required in CEQA Guidelines Section 15183.5, mechanisms to monitor the CAP's progress toward achieving the GHG emissions reduction targets have been established through the CAP development process. If, based on the annual tracking of Metropolitan GHG emissions, Metropolitan is found to be exceeding the GHG carbon budget such that it will not be able to achieve the respective targets, the CAP will be amended to include altered or additional strategies and measures, with evidence proving, that upon implementation, the CAP can achieve Metropolitan's GHG emissions targets.

1.1 Measure Quantification with a Carbon Budget

Metropolitan has a goal to achieve carbon neutrality by 2045 via a linear per capita emissions reduction methodology in combination with an established carbon budget. The use of per capita reduction targets to show progress towards GHG reduction goals was established and promoted by the State in the 2017 Scoping Plan Update.[8] To calculate the total carbon budget that corresponds to Metropolitan's per capita GHG emissions reduction targets, the emissions below the curve are summed, which equates to the carbon budget. Carbon budgets are most commonly used for the development of global-scale GHG emission targets and international climate policy.[9,10] Reliable data is not available for the years 1990 through 2004; therefore, the carbon budget begins in 2005, the year in which Metropolitan began submitting data to The Climate Registry. According to this methodology, between 2005 and 2045 Metropolitan's total carbon budget is 14,660,475 MT CO_2e. For additional detail regarding the carbon budget calculations, see Appendix B.

As discussed in Section 4.0, Regulatory Context and Targets, Table 2 details the carbon budget compared to Metropolitan's expected emissions between 2005 and 2030 under the low, average, and high emission scenarios developed from Metropolitan's 2020 Urban Water Management Plan water demand forecast. The three scenarios are intended to capture the full range of possible future emissions including a high emission scenario where there are multiple-dry years and high Colorado River Aqueduct (CRA) pumping levels, an average emission scenario that assumes a single dry year demand level and average emission factors, and a low emission scenario associated with an average demand year and a low emission factor. As seen in the Table 2, Metropolitan is expected to stay

[8] https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf
[9] https://essd.copernicus.org/articles/11/1783/2019/
[10] https://www.carbonbrief.org/analysis-why-the-ipcc-1-5c-report-expanded-the-carbon-budget

within the carbon budget in all three of the emissions forecasts. This is due in part to current Metropolitan efficiency measures, which are reducing emissions, as well as State legislation and programs that will reduce GHG emissions without Metropolitan's action. However, Metropolitan will still need to enact measures to achieve carbon neutrality by 2045. The modeled forecasts represent the likely best, worst, and average case for any particular year. The most likely scenario is an oscillation around the mean with some high emission years and some low emission years.

Table 2 Carbon Budget and Projected GHG Emissions Reduction Gap Through 2030 Without CAP Implementation

Scenario	Total Allowable Budget MT CO_2e (2005-2030)	Estimated Metropolitan Emissions MT CO_2e (2005-2030)	2030 Remaining Budget MT CO_2e
Low Emissions Scenario	12,577,075	6,171,139	6,405,936
Average Emissions Scenario	12,577,075	7,111,301	5,465,774
High Emissions Scenario	12,577,075	9,192,827	3,384,248

A parenthesis () denotes a negative number.

One of the primary differences between quantifying measures for a carbon budget compared to a threshold for one specific year is the need to track GHG emissions reductions in every year between the current year and the milestone year. With a single year threshold (ex: 40 percent reduction below 1990 in 2030) the only reduction that counts towards the target is the reduction occurring in 2030. Utilizing a carbon budget approach incentivizes Metropolitan to complete GHG reduction measures as soon as possible to reduce GHG emissions, "saving" for drought conditions and high energy requirements in the future. Therefore, the quantifications included in this section include the cumulative GHG reductions between 2022 and 2030. Table 3 summarizes the cumulative GHG reductions by scope and strategy expected from the implementation of Metropolitan's CAP by 2030.

Table 3 Metropolitan's GHG Emissions Reduction Strategy and Associated Emission Reductions

Scope	Strategy		GHG Emissions Reduction Contribution
Scope 1	1	Phase Out Natural Gas Combustion at Facilities	2030: 2,830 MT CO_2e 2045: 15,854 MT CO_2e
	2	Zero Emission Vehicle Fleet	2030: Supportive[1] 2045: Supportive[1]
	3	Use Alternative Fuels to Bridge the Technology Gap to Zero Emission Vehicles and Equipment	2030: 998 MT CO_2e 2045: 2,662 MT CO_2e
Scope 2	4	Utilize Low-Carbon and Carbon-Free Electricity[2]	2030: 1,986,390 MT CO_2e 2045: 4,126,183 MT CO_2e
	5	Improve Energy Efficiency	2030: 1,220 MT CO_2e 2045: 3,222 MT CO_2e
Scope 3	6	Incentivize More Sustainable Commutes	2030: 6,772 MT CO_2e 2045: 17,958 MT CO_2e
	7	Increase Waste Diversion to Achieve Zero Waste	2030: 4,517 MT CO_2e 2045: 34,923 MT CO_2e
	8	Increase Water Conservation and Local Water Supply	2030: 968 MT CO_2e 2045: 3,387 MT CO_2e
	9	Investigate and Implement Carbon Capture and Sequestration Opportunities	2030: Supportive[1] 2045: Supportive[1]
Total Phase 1 Reduction Under High Emission Scenario			2030: 2,003,695 MT CO_2e 2045: 4,204,189 MT CO_2e
Budget Remaining Under High GHG Emissions Scenario[3]			2030: 3,384,248 MT CO_2e 2045: (718,236) MT CO_2e
Budget Remaining After Phase 1 Measure Implementation[3]			2030: 5,387,943 MT CO_2e 2045: 3,485,953 MT CO_2e

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; ZEV/EV = zero emission vehicle/ electric vehicle; GHG = greenhouse gas

[1] Supportive measures are those that are not quantifiable as a standalone action but may support quantifiable actions through providing opportunities for studying technologies, establishing policies, etc. Additionally, some strategies are listed as supportive as they are in the early phase of implementation and the extent of quantifiable GHG reductions is dependent on the completion of the preceding actions (e.g., conduct feasibility study). Therefore, such strategies are conservatively listed as supportive to not overestimate GHG reduction potential.

[2] Strategy 4 includes estimates based on the worst-case emissions scenario, i.e., drought.

[3] A parenthesis () denotes a negative number. This indicates that the carbon budget has been exceeded under this scenario.

1.2 Metropolitan Greenhouse Gas Emission Reductions from Strategies and Measures

This section presents an analysis of the GHG emissions reduction pathway to achieve Metropolitan's fair share of GHG emissions reductions necessary to support the State's achievement of the SB 32 GHG reduction goal and provide substantial progress to achieve the 2045 goal of carbon neutrality. Metropolitan has organized its GHG reduction measures around the three emission scopes: either direct (Scope 1) or indirect (Scope 2 and Scope 3) emissions and, nine core strategies that will systematically reduce GHG emissions across all three emission scopes.[11] At this time, Metropolitan has developed two implementation phases for the GHG reduction measures considered in the CAP, Phase 1 and Phase 2. Phase 1 measures are ready for implementation over the next five to ten years based on their cost, available technology, and certainty about future conditions. Phase 2 projects show promise, but need more research, new technologies, or different financial conditions before they can be implemented. Therefore, this document presents GHG emission reductions from Phase 1 measures and discusses the potential of Phase 2 measures.

The GHG emissions reduction from the measures are calculated individually to identify which measures are most impactful for each strategy and then are combined to determine the total GHG emissions reduction that can be achieved by the strategy. Some strategies and measures provide minimal or non-quantifiable GHG emissions reduction; however, they support the implementation and sustainability of the strategy through internal education, funding, evaluating feasibility, and increasing resilience to the impacts of climate. These strategies and measures are considered "supportive," as they do not directly result in measurable GHG emissions reduction; however, they support the overall goals of the CAP. In addition, some strategies require a series of steps or actions to be implemented or completed prior to quantifiable GHG reductions being achieved. Other measures may require more study before implementation. These measures are thus characterized as a Phase 2 strategies and do not contribute to meeting the 2030 target. In other cases, where the quantifiable GHG reductions are dependent on the implementation of preceding measures or additional research (e.g., conduct a feasibility study), the strategy and measures are listed as supportive in this document to ensure GHG emissions reductions are not overestimated. Future CAP updates will include GHG emission reductions associated with completion of supportive measures. The following sections detail the methodology and assumptions used to quantify the GHG emissions reduction measures.

The analysis and emission reduction calculations for each of the strategies in the CAP are outlined in the following pages and include:

- Description of the basis for GHG emissions reduction behind the strategy
- Description of the methodology and assumptions for calculating GHG emissions reduction for applicable strategies and measures, including reference to data sources
- Calculation of the GHG emissions reduction
- Summary table of the impact that the specific strategy has on the overall 2030 GHG carbon budget

[11] The GHG Protocol, which is discussed in detail in *Section 3.0, GHG Emissions Inventory and Forecast,* segregates GHG emission sources into three scopes based on varying levels of control: **Scope 1 –Direct Emissions** from the activities that are directly under an organization's control, such as on-site fuel combustion from boilers, use of fleet vehicles and air-conditioning leaks; **Scope 2 – Indirect Emissions** from purchased electricity - emissions are created during the production of the electricity that is eventually used by the organization; and, **Scope 3 – All Other Indirect Emissions** from activities of the organization, occurring from sources that it does not own or control, including emissions associated with business travel, procurement, waste and water.

GHG emissions reduction calculations use conservative values to avoid over-representing the GHG emissions reduction potential for any individual strategy or measure. Special care has been taken to avoid double counting GHG emissions reduction for strategies and measures. Supportive measures are discussed qualitatively. A summary of the expected cumulative GHG emissions reduction from each of the quantifiable Phase 1 measures by 2030 and 2045 is provided in Table 4. The 2045 GHG emissions reductions quantified in this CAP are not yet enough to meet the long-term 2045 goal of carbon neutrality. However, as the current strategies and measures are implemented, Metropolitan will gain more information, new technologies will emerge, and current pilot projects and programs are anticipated to scale to the size needed to reach carbon neutrality. Furthermore, the State is expected to continue providing updated regulations and support once the 2030 target is achieved.

Table 4 Summary of GHG Emissions Reduction from CAP Strategies and Phase 1 Measures

Phase	Number	Measure	Cumulative Reduction by 2030 (MT CO_2e)	Cumulative Reduction by 2045 (MT CO_2e)
1	DC-1	Conduct a survey of all natural gas consuming devices in offices, control buildings, and residential structures and establish a schedule to replace natural gas equipment with electric by 2025.	Supportive	
1-2	DC-2	Reduce natural gas emissions by 50 percent by 2030 and 100 percent by 2045 through electrification.	2,830	15,854
1	DC-3	Update Metropolitan building standards to require all-electric construction for new buildings and retrofits.	Supportive	
1	FL-1	Conduct a ZEV/EV Feasibility Study to determine which fleet vehicles can be converted, what chargers/fueling stations are required, and where they should be located by the end of 2022.	Supportive	
1	FL-2	Adopt a ZEV/EV first policy for fleet vehicles to obtain ZEVs when technological, operational, or cost effectiveness parameters are met.	Supportive	
1	FL-3	Replace fossil fuel passenger fleet vehicles as identified in the ZEV/EV Feasibility Study (FL-1).	Supportive	
1	FL-4	Install electric vehicle charging and/or ZEV infrastructure at facilities pursuant to the findings of the ZEV/EV Feasibility Study (FL-1).	Supportive	
1	AF-1	Complete a pilot study on the use of renewable diesel rather than conventional diesel for all stationary equipment by 2025.	Supportive	
1	AF-2	Conduct a pilot study of renewable diesel use in on-road and off-road vehicles by providing at least one renewable diesel tank at Metropolitan-owned fueling depots in 2021.	Supportive	
1	AF-3	Based on the results of the study in AF-2, Metropolitan will begin using renewable diesel fuel in 100 percent of Metropolitan's diesel-consuming on-road and off-road vehicles by 2025.	998	2,662
1	E-1	Analyze marginal emissions rates and evaluate the feasibility of shifting energy use to lower emission periods.	Supportive	

Phase	Number	Measure	Cumulative Reduction by 2030 (MT CO_2e)	Cumulative Reduction by 2045 (MT CO_2e)
1	E-2	Connect the Yorba Linda Hydroelectric Power Plant (YLHEP) behind Metropolitan's Southern California Edison (SCE) electricity meter to directly utilize carbon-free electricity at Metropolitan's Diemer facility by 2025.	6,301	14,018
1	E-3	In markets where available, Metropolitan will switch its retail accounts to green tariff options offered by power providers by 2025 to reduce the Scope 2 GHG emissions associated with retail electricity use.	18,048	28,712
1	E-4	Install 3.5 Mega Watt (MW) battery storage systems at the Jensen, Skinner, and Weymouth treatment plants. Investigate the use of a software system to track and optimize GHG emissions reduction due to time-of-use strategies by 2025.	219	473
1	E-5	Manage Metropolitan's energy purchases to ensure cost-effective energy supply while achieving the required GHG emissions objective.	1,961,822 (high emissions scenario)	4,082,980 (high emissions scenario)
1	EE-1	Convert all interior and exterior lighting at 50 percent of Metropolitan facilities to light emitting diode (LED) technologies by 2030 and 100 percent by 2045.	1,220	3,222
1	EE-2	Continue programs to analyze Colorado River Aqueduct pump efficiency and replace or refurbish pumps when cost effective.	Supportive	
1	EC-1	Expand subsidized transit commute program to reduce employee commute miles.	Supportive	
1	EC-2	Expand employee use of carbon-free and low carbon transportation by providing education programs on the benefits of commute options including public transportation, EV/ ZEV options, and vanpools.	Supportive	
1	EC-3	Install zero emission and/or electric vehicle infrastructure as directed by the ZEV/EV Feasibility Study to support at least a 15 percent transition to ZEVs/EVs by 2025.	3,427	10,860
1	EC-4	Continue to offer benefits to employees who use alternative modes of transportation (e.g., public transportation, bikes).	Supportive	
1	EC-5	Allow 50 percent of employees located at Metropolitan's headquarters to telecommute or utilize flexible schedules through 2030 to reduce travel time, vehicle miles travelled, and GHG emissions.	3,345	7,098
1	WA-1	Develop and implement net zero waste policies and programs at all facilities to reduce landfilled waste by 30 percent by 2030 and achieve zero landfilled waste by 2045.	4,517	34,923

Phase	Number	Measure	Cumulative Reduction by 2030 (MT CO_2e)	Cumulative Reduction by 2045 (MT CO_2e)
1	WA-2	Implement a program to reduce organic waste at Metropolitan's Union Station building. Contract or team with local organizations and waste disposal companies to route organic waste to anaerobic digestion or composting facilities and edible food-to-food recovery centers.	Supportive	
1	WA-3	Develop and implement a sustainable procurement policy.	Supportive	
1	WC-1	Expand programs which educate customers on water conservation initiatives through workshops and speaking engagements.	Supportive	
1	WC-2	Continue to implement innovative water use efficiency programs.	Supportive	
1	WC-3	Continue Turf Removal Program to install an average of 1,500,000 square feet of water efficient landscapes per year through 2030 through the use of a rebate program.	968	3,387
1	WC-4	Provide funding for the development and monitoring of local stormwater recharge and use projects to evaluate the water supply benefit of stormwater.	Supportive	
1	WC-5	Continue to promote water efficiency technologies and innovative practices that can be adopted into future water conservation program updates.	Supportive	
1	CS-1	Study carbon capture protocols in the Sacramento-San Joaquin River Delta.	Supportive	
1	CS-2	Conduct a five-year research program to increase Metropolitan's knowledge of regenerative agriculture and carbon sequestration opportunities on Metropolitan properties in the Palo Verde Valley.	Supportive	
Total Phase 1 Reduction Under High Emission Scenario			**2,003,695**	**4,204,189**
Budget Remaining Under High GHG Emissions Scenario[1]			**3,384,248**	**(718,236)**
Budget Remaining After Phase 1 Measure Implementation[1]			**5,387,943**	**3,485,953**

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; ZEV/EV = zero emission vehicle/ electric vehicle

A parenthesis () denotes a negative number. This indicates that the carbon budget has been exceeded under this scenario.

To assess the magnitude of GHG emissions reduction needed to provide Metropolitan's fair share GHG emissions reduction and contribute to achieving the State's goal for 2030 (40 percent below 1990 levels) and 2045 (carbon neutrality), Metropolitan forecasted GHG emissions that encompassed the impact of service population growth, operational changes, hydrology, and climate on Metropolitan's GHG emissions. Because a majority of Metropolitan GHG emissions are associated with electricity used for importing water, Metropolitan's GHG emissions are highly dependent on where water is sourced and hydrological conditions. As such, forecasted GHG emissions for Metropolitan were based on three scenarios: Dry-year State Water Project (SWP) with High CRA Pumping (High Emissions Forecast), Average-year SWP with Average CRA Pumping (Average Emissions Forecast), and Wet-year SWP with Low CRA Pumping (Low Emissions Forecast). Forecasted emissions calculations and details can be found in Appendix B of this CAP. Many of the State's regulations may not directly impact Metropolitan, therefore, reductions from such

legislation were not quantified as part of the forecast scenarios. The one exception is SB 100, which has had and will continue to have a substantial impact on Metropolitan's GHG emissions into the future and was accounted for in the forecasted emissions scenarios. SB 100, adopted in 2018, requires that all retail energy sold in California be 100 percent carbon-free by 2045.

The combined operational reductions from the strategies and measures, if implemented entirely, have been calculated to result in a cumulative reduction of 2,003,695 MT CO_2e by 2030 and 4,204,189 MT CO_2e by 2045 based on the assumed implementation dates. Under the forecasted worst-case scenario, Metropolitan does not exceed the 2030 target. The reductions provided by the GHG reduction measures have the potential to further buffer the carbon budget which may be needed if demand exceeds the projections. While the strategies and measures identified in this CAP will lead to significant progress in reducing GHG emissions and provide a foundation for achieving net carbon neutrality by 2045; achieving carbon neutrality will require significant additional changes to the technology and systems currently in place at both the state and local level. Future CAP updates will outline new measures needed to reach the ultimate target of carbon neutrality.[12]

With implementation of the strategies and measures in the CAP, Metropolitan's 2030 goals can be reasonably achieved through operational actions and substantial progress towards reaching the long-term goal of carbon neutrality has been demonstrated. While the CAP does not provide the GHG emissions reductions to achieve carbon neutrality by 2045, it provides evidence-based actions Metropolitan can take towards eventually attaining this target. Table 3 and Table 4 demonstrate that the strategies developed in this CAP can achieve the 2030 target and show substantial progress towards the 2045 target. They also illustrate that reaching carbon neutrality will require significant additional effort by Metropolitan and support from the state and federal governments.

[12] Consistent with AEP Climate Change Committee recommendations, SB 32 is considered an interim target toward meeting the 2045 State goal. Consistency with SB 32 is considered to be contributing substantial progress toward meeting the State's long-term 2045 goals. Making substantial progress toward these long-term State targets is important as these targets have been set at levels that achieve California's fair share of international emissions reduction targets that will stabilize global climate change effects and avoid the adverse environmental consequences described under *Section 3.1.3, Potential Effects of Climate Change* (Executive Order B-55-18).

2 Greenhouse Gas Emissions Reduction

As mentioned above, the strategies and measures are summarized by Scope. This document is summarized using the same organization (Scope, Strategy, and Measure) and the substantial evidence for each quantifiable strategy and measure is detailed below.

2.1 Assumptions

Achievable GHG emissions reduction were quantified using a number of assumptions and developed emission factors. Emission factors, assumptions, and references used in the quantification of multiple measures are detailed here and referenced in each quantifiable measure as appropriate in the following sections.

2.1.1 Emission Factors

Electricity

Metropolitan acquires electricity from both retail and wholesale sources for operations. To calculate GHG emissions from electricity consumption, the sum total of kilowatt hours (kWh) derived from a specific source is totaled and multiplied by the corresponding annual GHG emissions factor. Two emissions factors were used when quantifying GHG emission reduction potential: United States Environmental Protection Agency's (U.S. EPA) Emissions and Generation Resource Integrated Database (eGRID) for the Southwest (WECC Southwest or AZNM) and U.S. EPA eGrid emissions factor for California (WECC California or CAMX). All electricity purchases from California retail markets utilized the WECC California (CAMX) emissions factor, while wholesale purchases from outside California utilized the WECC Southwest (AZNM) emissions factor. The eGrid emissions factors are updated annually based on the types of electricity procured for that year. Additionally, due to State renewable goals and associated legislation, electricity emission factors are anticipated to decrease over time. Emission factors for the 2017 reporting year are based on U.S. EPA reported eGRID emission factors reported for 2016.[13,14]

Emission factors were interpolated between the 2017 baseline year and future years based on the percent of renewable and carbon neutral sources reported for electricity by eGRID subregion and the anticipated percent of renewable or carbon neutral sources for future years based on state legislation. CAMX emission factors were assumed to achieve the Renewable Portfolio Standards (RPS) established by SB 100 such that in 2030, electricity will be 60 percent renewable and by 2045 electricity will be 100 percent carbon-neutral.[15] Based on the electricity mix that makes up the AZNM subregion, in 2017 approximately 33 percent of the electricity sources for AZNM were carbon neutral. Given the various states' contribution to AZNM electricity and California's and New Mexico's goals to reach carbon-neutral electricity by 2045, AZNM electricity was assumed to be made up of approximately 52 percent carbon-neutral sources by 2045. Assuming a linear trend, AZNM emission factors between 2017 and 2045 were interpolated based on the percent change in composition of the electricity that was carbon-neutral. Table 5 presents the CAMX and AZNM

[13] https://www.epa.gov/egrid/download-data

[14] eGRID emission factors and reports were not prepared for data year 2017.

[15] SB 100 established a landmark policy requiring renewable energy and zero-carbon resources supply 100% of electric retail sales to end-use customers by 2045. SB 100 also sets in interim target of 60% renewable or carbon-free electricity by 2030.

emission factors and percent of carbon-neutral electricity for 2017, 2030 and 2045 that were used to interpolate annual electricity emission factor for the interim years. Additionally, the retail emission factors under the Green Tariff Clean Power option are presented. Based on the amount of carbon-free electricity sources that make up retail electricity versus the clean power Green Tariff option, the emission factors for the Green Tariff Clean Power electricity were 42 percent lower than retail electricity in 2018 and anticipated to be 23 percent lower than retail electricity in 2030 while in 2045 the emission factors for both will be carbon-free.[16] These emission factors were used to quantify several of the strategy and measure GHG emissions reductions. Additionally, a weighted emission factor was developed for Metropolitan electricity use and was used in calculations where it was unclear whether power would be acquired from retail or wholesale power sources. The weighted emission factor is based on the current split in electricity received by Metropolitan and assumes it would remain consistent over time where 53 percent of power was from retail sources (CAMX) and 47 percent was from wholesale sources (AZNM). The weighted emission factor was further adjusted to account for implementation of Strategy 4 and avoid double counting of GHG emissions reduction, specifically the switch of retail accounts to the Clean Power Green Tariff option for retail electricity sources by 2025.

Table 5 Electricity Emission Factors

Electricity Source1	2017	2030	2045
CAMX (Retail)			
Percent Renewable Sources[2,3]	37%	60%	100%
Emission Factor (MT CO_2e/MWh)	0.229	0.145	0
AZNM (Wholesale)			
Percent Carbon-neutral Sources [2,4]	33%	43%	52%
Emission Factor (MT CO_2e/MWh)	0.476	0.405	0.341
Weighted Emission Factors5			
Emission Factor (MT CO_2e/MWh)	0.345	0.267	0.160
CAMX (Retail) with Implementation of Strategy 46			
Percent Renewable Sources	88%	93%	100%
Emission Factor (MT CO_2e/MWh)	0.129	0.112	0
Weighted Emission Factors with Implementation for Strategy 47			
Emission Factor (MT CO_2e/MWh)	0.288	0.250	0.160

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; MWh =-megawatt-hour; RPS = Renewable Portfolio Standard

[1] U.S. EPA. The Emissions & Generation Resource Integrated Database: Technical Support Document for eGRID with Year 2016 Data. https://www.epa.gov/egrid/download-data.

[2] Renewable sources are considered hydro, biomass, wind, solar and geo-thermal sources. Carbon-neutral includes the listed renewables as well as nuclear sources. Percent of 2017 electricity generation source is based on source by state within each sub region (i.e., CAMX and AZNM).

[3] CAMX forecasted emissions are based on RPS targets of 60% renewable sources by 2030 and carbon-neutral by 2045.

[4] AZNM forecasted emissions are based on the individual state targets within the AZNM subregion and the contribution to source mix by state where of the 8 states in the subregion only California and New Mexico have carbon-neutral targets for 2045. Because California only contributes 4% of the electricity for the AZNM while New Mexico contributes 15% of the electricity, the overall increase in carbon-neutral electricity sources is limited.

[5] Approximately 53% of Metropolitan's overall electricity comes from CAMX and 47% from AZNM. A weighted emission factor for Metropolitan was developed assuming this ratio remained consistent over time.

[6] The emission factors for the Green Tariff Clean Power electricity were 42 percent lower than retail electricity in 2018 and anticipated to be 23 percent lower than retail electricity in 2030 while in 2045 the emission factors will both be carbon-free.

[7] The weighted emission factor was further modified to account for the implementation of Strategy 4, specifically the switch of retail accounts to the Clean Power Green Tariff option for retail electricity sources by 2025.

[16] https://cleanpoweralliance.org/power-sources/

2.2 Scope 1: Direct Combustion

2.2.1 Strategy 1: Phase out Natural Gas Combustion at Facilities

Scope 1 emissions from stationary combustion of natural gas at Metropolitan's facilities comprised approximately one percent of total emissions of the 2017 baseline. While natural gas and other fossil fuels are not the most substantial source of GHG emissions, natural gas consuming equipment can be replaced with electric-powered equipment over time as current equipment reaches the end of its useful life. California adopted SB 100 in 2018, making electrification an important strategy for reducing GHG emissions. SB 100 requires that all retail energy sold in California be 100 percent carbon-free by 2045; therefore, electrifying a fossil fuel source means that piece of equipment will also be carbon-free by 2045. In addition to GHG emissions reduction, removing natural gas from facilities would also improve indoor and local outdoor air quality by reducing atmospheric particulate matter less than 2.5 micrograms in size (PM2.5).[17]

Methodology and Assumptions

Measure DC-1 – Phase 1: Conduct a survey of all natural gas consuming devices in offices, control buildings, and residential structures and establish a schedule to replace natural gas equipment with electric by 2025.

Measures DC-1 would incrementally support the strategy through ensuring that all natural gas consuming equipment is identified. Also, identifying cost-effective equipment replacements improves the feasibility of the strategy and allows for equipment replacements to be prioritized. Further, strategic planning such as the establishment of a replacement schedule and budget helps ensure successful implementation of Strategy 1.

Measure DC-2 – Phase 1: Reduce natural gas emissions by 50 percent by 2030 and 100 percent by 2045 through electrification.

Measure DC-2, the reduction of natural gas emissions through electrification, would result in emissions reduction associated with Strategy 1 by replacing natural gas and propane consuming equipment with electrically powered equivalents.

Direct GHG emissions reductions for this strategy are dependent on the active removal of natural gas combustion. Therefore, for the purposes of this calculation, it is assumed that through the adoption of the CAP, Metropolitan will commit to the reduction of 50 percent of natural gas use by 2030 and 100 percent by 2045 through electrification of current equipment. Since Metropolitan has full operational control of its facilities, it is assumed that these targets will be fully realized. Emission reduction calculations assume that equipment replacement will begin starting in 2022.

Natural gas combustion at Metropolitan facilities was forecasted to be approximately 21,360 million British Thermal Unit (MMBtu) annually. It was assumed for this calculation that annual natural gas consumption would remain constant over time. Natural gas consumption reduced annually between measure inception date, 2022, and the target date (i.e., 2030 and 2045) was calculated as annual natural gas consumption multiplied by the anticipated annual percent reduction. For this calculation, it was assumed the replacement of natural gas consuming equipment would occur in a linear trend starting in 2022 to the target year (i.e., 2030 and 2045) where 50 percent of natural gas consuming equipment would be replaced by 2030 and 100 percent by 2045. Total reductions of

[17] https://www.nrdc.org/experts/pierre-delforge/gas-appliances-pollute-indoor-and-outdoor-air-study-shows

natural gas consumption between 2022 and the target date are multiplied by the U.S. EPA emission factor of 0.0531 MT CO_2e/MMBtu to determine the natural gas emissions cumulatively avoided between 2022 and the target year, i.e., 2030 and 2045, respectively.

Space heating is the largest energy use in buildings and is dominated by non-electric fuels.[18] According to the United States Energy Information Administration (EIA) 2020 Annual Energy Outlook, electric heat pumps for commercial space heating and cooling are two to five times more efficient than natural gas fueled equipment.[19] Emission reductions account for this increased efficiency by conservatively assuming replacement of natural gas fueled equipment with electric equipment will be three times more efficient than natural gas fueled equipment. Since electric appliances are approximately three times more efficient over similar natural gas burning equipment and appliances,[20] the use of electric equipment instead of natural gas would result in improved energy efficiency and a reduction in overall energy consumption for replaced natural gas equipment. The electricity consumption would generate GHG emissions that would offset the reduction in natural gas emissions from electrification; however, these emissions would be minimized assuming full implementation of Strategy 4, specifically the switch of retail accounts to the Clean Power Green Tariff option for retail electricity sources by 2025. Therefore, it was assumed that natural gas sources would be replaced by heat pump water heaters that are 300 percent more efficient and that Strategy 4 would be implemented by 2025 further reducing electricity emissions post-2025.[21] The calculations and assumptions used to estimate emission reductions from Strategy 1 are provided in Table 6.

[18] Deason, Jeff, et al. 2018. Electrification of buildings and Industry in the United States. pp.10. https://pdfs.semanticscholar.org/27f0/d125d5316ee10565560545c0fc17d6c447a8.pdf?_ga=2.3238896.1101123906.1590438648-1004765093.1590438648. Accessed May 25th, 2020.

[19] EIA. 2020. Annual Energy Outlook. Table 22. Commercial Sector Energy Consumption, Floorspace, Equipment Efficiency, and Distributed Generation. https://www.eia.gov/outlooks/aeo/data/browser/#/?id=32-AEO2020&cases=ref2020&sourcekey=0. Accessed May 25th, 2020.

[20] Dennis, Keith. 2015. Environmentally Beneficial Electrification: Electricity as the End-Use Option. The Electricity Journal. 28(9). pp. 100-112. https://doi.org/10.1016/j.tej.2015.09.019

[21] https://www.eec.org.au/for-energy-users/technologies-2/heat-pumps#:~:text=So%20a%20leading%20edge%20(at,reductions%20in%20greenhouse%20gas%20emissions.

Table 6 Measure DC-2 GHG Emissions Reduction Calculations

Calculation Factor	2030	2045
Equipment Replacement Goal[1]	50%	100%
Cumulative NG Consumption since 2022 (MMBtu)[2]	192,240.00	512,640.00
Average % of Equipment Replacement since 2022[1]	27.78%	58.33%
Natural Gas Consumption Reductions since 2022 (MMBtu)[3]	53,404	299,023
Natural Gas Emission Factor (MT CO_2e/MMBtu)[4]	0.0531	0.0531
Cumulative Natural Gas GHG Emissions Avoided (MT CO_2e)	2,836	15,878
Cumulative Increase in Electricity Consumption since 2022 (kWh)[5,6]	52,158	292,047
Average Electricity Emission Factor Assuming Implementation of Strategy 4 (MT CO_2e/MWh)[7]	0.120	0.081
Additional Cumulative GHG Emission from Increased Electricity Consumption (MT CO_2e)	6	24
Cumulative GHG Emission Reductions since 2022 (MT CO_2e)[8]	2,830	15,854

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; MMBtu = one million British thermal units; kWh =kilowatt-hour; RPS = Renewable Portfolio Standard

Values have been rounded and may not add up exactly.

[1] It was assumed that the replacement of natural gas consuming equipment would occur in a linear trend starting in 2022 to the target year (i.e., 2030 and 2045) where 50% of natural gas consuming equipment would be replaced by 2030 and 100% by 2045.

[2] Annual natural gas consumption is based on Metropolitan data reported for the 2017 inventory, provided in Appendix B. For the purposes of this calculation, it was assumed that annual natural gas consumption would remain constant over time.

[3] Total natural gas reduction from 2022 to the target year (i.e., 2030 and 2045) is calculated as the annual natural gas consumption multiplied by the annual percent reduction described in note 1. This correlates with an average reduction of ~28% in natural gas consumption between 2022 and 2030 (i.e., 50% divided by 9 years of phase out), and an average reduction of ~58% in natural gas consumption between 2022 and 2045 (i.e., 100% divided by 24 years of phase out).

[4] Emission factors obtained from U.S. EPA Emission Factors for Greenhouse Gas Inventories, Table 1. https://www.epa.gov/sites/production/files/2015-07/documents/emission-factors_2014.pdf.

[5] Natural gas consumption converted to electricity using the conversions: 1 MMBtu = 0.10 therm; 1 Therm = 29.3001 kWh. https://dothemath.ucsd.edu/useful-energy-relations/

[6] The resulting increase in electricity consumption estimates a three times increase in efficiency due to the improved efficiency of electric heat pumps and other electrical equipment of natural gas. Dennis, Keith. 2015. Environmentally Beneficial Electrification: Electricity as the End-Use Option. The Electricity Journal. 28(9). pp. 100-112. https://doi.org/10.1016/j.tej.2015.09.019

[7] Due to RPS, retail electricity emission factors (i.e., CAMX), will reduce over time. As described in Section 2.1, Assumptions, annual electricity emission factors are interpolated based on the 2017 emission factor and percent of renewable sources and the 2030 emission factor that would result with the required 60% renewable sources. The presented emission factor is the weighted average retail electricity emission factors based on years 2022 to 2030, and 2022 to 2045 with implementation of Strategy 4 where retail electricity accounts would be switched to the Clean Power Green Tariff option for retail electricity sources by 2025.

[8] Cumulative Strategy 1 GHG Emission Reductions are calculated by subtracting the Additional Cumulative GHG Emissions from Increased Electricity Consumption from the Cumulative Natural Gas GHG Emissions Avoided.

Measure DC-3 – Phase 1: Update Metropolitan building standards to require all-electric construction for new buildings and retrofits.

Measures DC-3 would incrementally support the strategy through updated building standards that would require any new construction or retrofits to be all-electric. In addition to active replacement of stationary combustion equipment fueled by natural gas, this supporting measure would further the phasing out of natural gas use at Metropolitan facilities for future projects.

RESULTS

The measures associated with Strategy 1 would result in a cumulative reduction of 2,830 MT CO_2e between 2022 and 2030, and 15,854MT CO_2e between 2022 and 2045 as shown in Table 7.

Table 7 GHG Emissions Reduction Associated with Strategy 1

Measures	Cumulative Emission Reductions (MT CO_2e) 2030	Cumulative Emission Reductions (MT CO_2e) 2045
DC-1 Conduct a survey of natural gas consuming devices in offices, control buildings, and residential structures and establish a schedule to replace natural gas equipment with electric by 2025.	Supportive	
DC-2 Reduce natural gas emissions by 50 percent by 2030 and 100 percent by 2045 through electrification.	2,830	15,854
DC-3 Update Metropolitan building standards to require all-electric construction for new buildings and retrofits.	Supportive	
Total Cumulative Emissions Reduction	**2,830**	**15,854**

Notes: MT CO_2e = metric tons of carbon dioxide equivalent

2.2.2 Strategy 2: Zero Emission Vehicle Fleet

Metropolitan's vehicle fleet represents approximately two to three percent of total annual GHG emissions, however, electrifying the fleet is essential in the reduction of direct fossil fuel consumption by Metropolitan for operations and will be a key step towards achieving carbon neutrality. Electric passenger vehicles are quickly reaching cost parity with internal combustion vehicles and can even provide cost savings over the lifetime of the vehicle.[22,23] While heavy duty vehicles are not currently available for all commercial options, innovative technologies are being developed and additional options will likely become available in the near future.[24] Furthermore, zero emission vehicle (ZEV) adoption will continue to be driven at the State level in part by EO N-79-20, which directs the CARB to develop regulations to achieve 100 percent zero-emission car sales in California by 2035 and zero-emission medium- or heavy-duty vehicles by 2045. Currently the most promising ZEV are electric vehicles (EV); however, Metropolitan will continue to consider new technologies as they become available and may shift to alternative ZEV in the future.

The conversion to an electric fleet requires not just replacement of current fleet vehicles with EV or ZEV options, but also the development of supporting infrastructure. The measures making up Strategy 2 provide a roadmap for Metropolitan to develop a fleet replacement program and infrastructure development to support the EV fleet.

Methodology and Assumptions

Measure FL-1 – Phase 1: Conduct a ZEV/EV Feasibility Study to determine which fleet vehicles can be converted, what chargers/fueling stations are required, and where they should be located.

Measure FL-1, conducting a ZEV/EV Feasibility Study for fleet vehicles, provides the first step necessary to effectively plan and follow-through with fleet conversion to ZEV/EVs. The feasibility study will analyze the existing fleet, fleet vehicles operational purpose, and current available ZEV/EV technology allowing Metropolitan to establish a realistic and feasible vehicle replacement schedule that is aligned with available ZEV/EV technology and is cost effective. The feasibility study

[22] Raustad, R. *Electric Vehicle Life Cycle Cost Analysis,* Electric Vehicle Transportation Center. https://rosap.ntl.bts.gov
[23] http://energy.mit.edu/news/study-low-emissions-vehicles-less-expensive-overall/
[24] https://www.atlasevhub.com/resource/race-to-zero-how-manufacturers-are-positioned-for-zero-emission-commercial-trucks-and-buses-in-north-america/

conducted under Measure FL-1 will also evaluate the infrastructure needed to accommodate a ZEV/EV fleet and identify where charging or fueling stations would need to be installed to meet operational needs.

Measure FL-2 – Phase 1: Adopt an ZEV/EV first policy for fleet vehicles to obtain ZEVs when technological, operational, or cost effectiveness parameters are met.

Measure FL-2, adopt an ZEV/EV first policy for fleet vehicles, provides the policy change enforcing the implementation of fleet conversion based on the findings from the feasibility study conducted under Measure FL-1. The purpose of the policy is to prioritize the purchase of ZEVs/EVs at the time of replacement of existing vehicles, as feasible. This measure would also support infrastructure development to accommodate ZEV/EV fleet vehicles.

Measure FL-3 – Phase 1: Replace fossil fuel passenger fleet vehicles as identified in the ZEV/EV Feasibility Study (FL-1).

Measure FL-3, replacement of fossil fuel fleet vehicles, will be executed based on the findings from the feasibility study conducted under Measure FL-1. Measure FL-3 will be refined with tangible goals for fleet vehicle replacement. Because the timeline for fleet conversion and level of fleet conversion is dependent on the findings from the feasibility study conducted under Measure FL-1, GHG emissions reduction from Strategy 2 are not yet known and therefore, have not been quantified as part of this CAP. This measure is identified as supportive.

Measure FL-4 – Phase 1: Install EV charging and/or ZEV infrastructure at facilities pursuant to the findings of the ZEV/EV Feasibility Study (FL-1).

Measure FL-4, installation of EV charging and/or ZEV infrastructure at facilities, will also be executed based on the findings of the Measure FL-1 feasibility study. Measure FL-4 ensures that ZEV/EV fueling/charging station infrastructure exists to support the fleet conversion. Because the timeline for fleet conversion and level of fleet conversion is dependent on the findings from the feasibility study conducted under Measure FL-1, GHG emissions reduction from Strategy 2 are not yet known and therefore, have not been quantified as part of this CAP. This measure is identified as supportive.

RESULTS

The measures associated with Strategy 2 were not quantified since the actual implementation will not be known until the ZEV/EV Feasibility Study is completed, as shown in Table 8. However, implementation of all Strategy 2 measures would lay the groundwork for a seamless conversion to a ZEV fleet when the technology is available and feasible.

Table 8 GHG Emissions Reduction Associated with Strategy 2

Measures	Cumulative Emission Reductions (MT CO_2e) 2030	Cumulative Emission Reductions (MT CO_2e) 2045
FL-1 Conduct a ZEV/EV Feasibility Study to determine which fleet vehicles can be converted, what chargers/fueling stations are required, and where they should be located.	Supportive	
FL-2 Adopt an ZEV/EV first policy for fleet vehicles to obtain ZEVs when technological, operational, or cost effectiveness parameters are met.	Supportive	
FL-3 Replace fossil fuel passenger fleet vehicles as identified in the ZEV/EV Feasibility Study (FL-1).	Supportive	
FL-4 Install electric vehicle charging and/or zero emission vehicle infrastructure at facilities pursuant to the findings of the ZEV/EV Feasibility Study (FL-1).	Supportive	
Total Cumulative Emissions Reduction	**Supportive**	

Notes: MT CO_2e = metric tons of carbon dioxide equivalent

2.2.3 Strategy 3: Use Alternative Fuels to Bridge the Technology Gap to Zero Emission Vehicles and Equipment

While ZEV/EV options for passenger vehicles are commercially available, the technology and/or cost for heavy-duty vehicles may not yet be feasible. However, the technology is rapidly changing, and more ZEV options are becoming cost effective and readily available. Because much of Metropolitan's fleet is comprised of heavy-duty vehicles necessary for operations, Strategy 3 is designed to provide an interim opportunity to reduce GHG emissions from medium- and heavy-duty fleet vehicles until the transition to ZEV/EV technology for medium- and heavy-duty vehicles becomes feasible and cost effective. As a short-term strategy, build-out of significant infrastructure for transition fuels is not expected. As such, Strategy 3 focuses on the use of transition fuels in the existing fleet, while Strategy 2 will establish the path for replacement of the existing fleet and infrastructure.

Methodology and Assumptions

Measure AF-1 – Phase 1: Complete a pilot project on the use of renewable diesel rather than conventional diesel for all stationary equipment by 2025.

Metropolitan operates a variety of stationary equipment currently powered by diesel fuel. Replacing the existing diesel fuel with renewable diesel as a short-term measure would reduce emissions with no change in existing infrastructure.[25] Currently, large scale renewable diesel is utilized by the United States military and is also used by a variety of city, state, and private fleets.[26] Conducting a pilot study to evaluate the replacement of traditional diesel fuel with renewable diesel in stationary equipment through Measure AF-1 will incrementally support Strategy 3 by identifying existing stationary equipment that can feasibly use renewable diesel over traditional diesel until an electric option becomes available.

[25] https://www.government-fleet.com/156621/what-you-need-to-know-about-renewable-diesel
[26] https://www.caranddriver.com/research/a31883731/biodiesel-vs-diesel/

Measure AF-2 – Phase 1: Conduct a pilot project of renewable diesel use in on-road and off-road vehicles by providing at least one renewable diesel tank at Metropolitan-owned fueling depots in 2021.

Metropolitan vehicles generally fuel at Metropolitan-owned fueling depots. By contracting with fuel suppliers to replace diesel with biodiesel/renewable diesel at these facilities, Metropolitan can reduce GHG emissions and easily track the amount of low carbon fuels being utilized in the fleet. Conducting a pilot study to evaluate the replacement of traditional diesel fuel with renewable diesel in on-road vehicles through Measure AF-2 will incrementally support Strategy 3 by serving as a bridge until on-road equipment can be replaced with an EV or ZEV option. This measure will be implemented through new contracts for renewable fuels and a change in Metropolitan's policy to use only renewable diesel fuel following the results of the pilot study.

Measure AF-3 – Phase 1: Based on the results of the study in AF-2, Metropolitan will begin using renewable diesel fuel in 100 percent of Metropolitan's diesel-consuming on-road and off-road vehicles by 2025.

Measure AF-3, ensures that Metropolitan will convert all of its diesel use for on-road equipment to renewable diesel by 2025 by replacing carbon intense diesel fuel with a renewable substitute. Renewable diesel can be used interchangeably in a traditional diesel-powered engine and typically does not result in any negative operational impacts.[27] Because the carbon dioxide emissions associated with biodiesel/renewable diesel fuels are biogenic, those emissions do not contribute to climate change.[28] Only the nitrous oxide (N_2O) and methane (CH_4) emissions increase net GHG emissions in the atmosphere, leading to a significantly lower GHG emission factor for those fuels. Furthermore, renewable diesel fuel is operationally similar to regular diesel and is readily available.[29] It has been assumed that the renewable diesel would be domestically produced and that no modification would be necessary for the internal combustion engines of on-road vehicles.

Direct GHG emissions reduction for Strategy 3 are dependent on the full conversion of Metropolitan's diesel-fuel use in on-road vehicles to renewable diesel. With this measure, Metropolitan commits to convert its diesel fleet to 100 percent renewable diesel in 2025.

Based on Metropolitan 2019 fleet data and recorded miles travelled, approximately 184,467 miles were travelled by vehicles fueled by diesel. It was assumed that the mileage would remain relatively consistent for future operations. An average fuel economy for fleet vehicles of 17.25 miles per gallon was applied to annual mileage resulting in approximately 10,694 gallons of diesel consumed annually in diesel fueled on-road vehicles. Renewable diesel has a slightly lower energy density than traditional diesel, such that one gallon of renewable diesel has approximately 93 percent of the energy as one gallon of traditional diesel.[30] As such, 100 percent conversion of renewable diesel in fleet vehicles would result in a slightly higher fuel consumption of approximately 11,499 gallons of renewable diesel annually. GHG emission reductions were calculated as the emissions generated from combustion of 11,499 gallons of renewable diesel in on-road vehicles subtracted from the emissions that would be generated from the combustion of 10,694 gallons of diesel fuel in on-road vehicles. As previously mentioned, renewable diesel is a biogenic fuel where GHG emissions generated are limited to nitrous oxide and methane emissions. The calculations and assumptions used to estimate GHG emissions reduction from Strategy 3 are provided in Table 9.

[27] https://www.government-fleet.com/156621/what-you-need-to-know-about-renewable-diesel
[28] https://climatechange.ucdavis.edu/climate-change-definitions/biogenic-carbon/
[29] https://www.government-fleet.com/156621/what-you-need-to-know-about-renewable-diesel
[30] https://afdc.energy.gov/fuels/fuel_comparison_chart.pdf

Table 9 Measure AF-3 GHG Emissions Reduction Calculations

Calculation Factor	2030	2045
Cumulative Diesel-fueled VMT since 2022 (miles)[1]	1,660,203	4,427,208
Average Diesel Fuel Economy (mpg)[2]	17.25	17.25
Cumulative Diesel Fuel Consumption (gallons)	96,244	256,650
Diesel Fuel [mobile] Emission Factor (MT CO_2e/gallon)[3]	0.0104	0.0104
Cumulative Emissions from Diesel-fueled Fleet (MT CO_2e)	1,001	2,669
Average Biodiesel Fuel Economy (mpg)[2]	16	16
Cumulative Biodiesel Fuel Consumption (gallons)	103,763	276,701
Renewable Diesel Emission Factor (MT CO_2e/gallon)[3]	0.000027	0.000027
Renewable Diesel Fuel GHG Emissions (MT CO_2e)	3.0	7
Cumulative GHG Emissions Avoided since 2022 (MT CO_2e)[4]	998	2,662

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; mpg = miles per gallon; VMT = vehicle miles travelled

Values have been rounded and may not add up exactly.

[1] Annual vehicle miles travelled by Metropolitan diesel fueled on-road equipment was obtained from Metropolitan 2019 fleet data. It was assumed to remain consistent with future operations.

[2] Fuel consumption in gallons is based on an average fuel economy of 17.25 mpg for diesel fuel and 16 mpg for renewable diesel fuel.

[3] Emission factors obtained from United States Environmental Protection Agency Emission Factors for Greenhouse Gas Inventories, Table 2 and Table 4. https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf

[4] Cumulative Strategy 3 GHG emissions reduction are calculated by adding the avoided emissions that occurred each year between 2022 to 2030 (i.e., 9 years) and 2022 to 2045 (i.e., 24 years). Note that this strategy is meant to be short term before electric technologies are available for heavy duty and medium duty on-road vehicles, therefore cumulative emissions between 2022 and 2045 will likely be lower as ZEVs replace biodiesel fueled vehicles.

RESULTS

As shown in Table 9, the 100 percent conversion to renewable diesel in on-road diesel vehicles would result in a reduction of GHG emissions annually. As such, Strategy 3 would result in a cumulative reduction of approximately 998 MT CO_2e between 2022 and 2030, and approximately 2,662 MT CO_2e between 2022 and 2045 due to implementation of Measure AF-3. Table 10 summarizes the measures associated with Strategy 3 and overall GHG emissions reduction.

Table 10 GHG Emissions Reduction Associated with Strategy 3

Measures	Cumulative Emission Reductions (MT CO_2e) 2030	Cumulative Emission Reductions (MT CO_2e) 2045
AF-1 Complete a pilot project on the use of renewable diesel rather than conventional diesel for all stationary equipment by 2025.	Supportive	
AF-2 Conduct a pilot project of renewable diesel use in on-road and off-road vehicles by providing at least one renewable diesel tank at Metropolitan-owned fueling depots in 2021.	Supportive	
AF-3 Based on the results of the study in AF-2, Metropolitan will begin using renewable diesel fuel in 100 percent of Metropolitan's diesel-consuming on-road and off-road vehicles by 2022.	998	2,662
Total Cumulative Emissions Reduction	**998**	**2,662**

Notes: MT CO_2e = metric tons of carbon dioxide equivalent

2.3 Scope 2: Electricity

2.3.1 Strategy 4: Utilize Low-Carbon and Carbon-free Electricity

Over two thirds of Metropolitan's GHG emissions result from the use of electricity to power its pumps, treatment plants, and facilities.[31] As such, a majority of Metropolitan's GHG emissions could be reduced by switching to electricity that is generated from renewable or carbon-free sources. Metropolitan acquires electricity from both retail and wholesale sources for operations where currently 53 percent of electricity is retail power and 47 percent is wholesale.[32] With the adoption of SB 100 in 2018, all of California's retail power is required to be carbon-free by 2045. However, the fraction of wholesale power Metropolitan consumes is not subject to the requirements of SB 100. The GHG emissions associated with Metropolitan's wholesale power purchases can be offset through preferentially purchasing carbon-free power from the grid. Strategy 4 encompasses one of Metropolitan's most potent GHG emissions reduction actions (Measure E-6) in which Metropolitan will offset significant portions of GHG emissions by purchasing low-carbon electricity from the CAISO. Metropolitan will also investigate "time-of-use" strategies, which entails changing the time of day that pumps and other infrastructure consume electricity, by increasing usage during times of low grid emissions and reduce use during times of peak grid emissions. Metropolitan annually will track GHG emissions and ensure operational emissions remain within the carbon budget by adjusting the ratio of renewable power in its power purchases.

Methodology and Assumptions

Because electricity consumption is the largest source of emissions for Metropolitan operations, the strategy involves several different types of measures that support the planning phase of this process, implementation of operation-wide changes in electricity purchases and consumption, as well as execution of specific projects that would reduce GHG emissions associated with electricity usage. Measures that are supportive to the planning phase of this process such as Measure E-1 and

[31] The use of electricity generates emissions when it is generated by non-renewable sources such as natural gas.
[32] Wholesale power refers to electricity purchased directly from the electricity grid rather than through a utility like Southern California Edison. The actual ratio of retail to wholesale power changes year to year depending on pumping needs.

E-3, are not considered to result in quantifiable GHG emissions reduction, but support the efforts to achieve carbon-free electricity.

Measure E-1 – Phase 1: Analyze marginal emissions rates and evaluate the feasibility of shifting energy use to lower emissions periods.

Under Measure E-1, Metropolitan will investigate the technical and cost-related feasibility of time-of-use measures including the impact to pumps and other infrastructure, the current time-of-use trends, and the cost and GHG reduction implications. This supports the prioritization of operational changes where it may not be feasible to obtain carbon-free electricity and assists in future planning of projects.

Measure E-2 – Phase 1: Connect the Yorba Linda Hydroelectric Power Plant (YLHEP) behind Metropolitan's Southern California Edison (SCE) electricity meter to directly utilize carbon-free electricity at Metropolitan's Diemer facility by 2025.

To support the preparation of Metropolitan's Energy Sustainability Plan, a Technical Memorandum (TM-2) was prepared by Stantec Consulting Services Inc. (Stantec) to identify and assist in the selection of renewable and energy storage opportunities at select Metropolitan sites. Assumptions regarding energy use for specific projects is largely based on the data reported in TM-2.[33]

The YLHEP currently generates carbon-free electricity by harnessing the power of water as it flows through turbines on its way to the Robert B. Diemer Water Treatment Plant (Diemer Plant). GHG emissions generated from electricity consumption at the Diemer Plant are related to the use of retail electricity which has an emission factor greater than zero. By reconfiguring the YLHEP power source behind the meter, the electricity it generates would become directly available to the Diemer Plant, offsetting the need for retail power while the YLHEP is in operation. This reconfiguration would allow Metropolitan to power the Diemer Plant with carbon-free electricity and generate cost savings for Metropolitan by eliminating external electricity purchases.

GHG emissions reduction for this measure are calculated as the emissions avoided from the use of carbon-free electricity to power the Diemer Plant instead of retail electricity. The calculations and assumptions used to estimate emission reductions from Measure E-2 are provided in Table 11. Based on historical data of Diemer's hourly energy demand from year 2015 to year 2018, the Diemer Plant consumes approximately 8.9 GWh annually. As discussed in Section 2.1, Assumptions, annual retail emission factors are based on the eGRID CAMX subregional factors that reduce annually as the RPS target year is approached. The avoided emissions are calculated as the annual electricity consumption multiplied by the respective retail emission factor for that year. However, these emissions would be minimized assuming full implementation of Strategy 4, Measure E-3, specifically the switch of retail accounts to the Clean Power Green Tariff option for retail electricity sources by 2025. Therefore, it was assumed that Strategy 4, Measure E-3 would be implemented by 2025 further reducing electricity emissions post-2025. This results in a cumulative reduction of approximately 6,301 MT CO_2e by 2030 and 14,018 MT CO_2e by 2045 from implementation of Measure E-2 and incorporation of Measure E-3.

[33] Stantec Consulting Services Inc. 2019. Technical Memorandum No.2 Development of Renewable Energy Options.

Table 11 Measure E-2 GHG Emissions Reduction Calculations

Calculation Factor	2030	2045
Diemer Annual Energy Demand (GWh/year)[1]	8.9	8.9
Cumulative Diemer Energy Demand since 2025 (MWh)[2]	53,400	186,900
Average Electricity Emission Factor Assuming Implementation of Strategy 4 Measure E-3 (MT CO_2e/MWh)[3]	0.118	0.075
Cumulative GHG Emissions Avoided since 2025 (MT CO_2e)[4]	6,301	14,018

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; GWh = gigawatt-hour; MWh =-megawatt-hour

Values have been rounded and may not add up exactly.

[1] Based on historical data of Diemer's hourly energy demand from year 2015 to year 2018, the Diemer Plant consumes approximately 8.9 GWh annually (Stantec 2019).

[2] Based on 8.9GWh consumed annually from 2025 through 2030 (i.e., 6 years) and 2025 through 2045 (i.e., 21 years). 1GWh = 1,000 MWh

[3] As described in Section 2.1, Assumptions, annual electricity emission factors are interpolated based on the 2017 emission factor and percent of renewable sources and the 2030 emission factor that would result with the required 60% renewable sources. The presented emission factor is the weighted average retail electricity emission factors based on years 2025 to 2030, and 2025 to 2045 with implementation of Strategy 4, Measure E-3 where retail electricity accounts would be switched to the Clean Power Green Tariff option for retail electricity sources by 2025. Green Tariff Clean Power emission factor is on average 27% lower than the retail emission factor between 2025 through 2030 and on average 15% lower than the retail emission factor between 2025 through 2045 due to a greater amount of carbon-free sources.

[4] Cumulative GHG emissions reduction are calculated by adding the avoided emissions that occurred each year between 2025 to 2030 (i.e., 6 years) and 2025 to 2045 (i.e., 21 years) based on the annual electricity demand of 8.9 GWh and retail electricity factor as detailed in note 3.

Measure E-3 – Phase 1: In markets where available, Metropolitan will switch its retail accounts to green tariff options offered by power providers by 2025 to reduce the Scope 2 GHG emissions associated with retail electricity use.

Metropolitan can reduce its retail electricity emissions by purchasing low carbon electricity through green tariff options (lower carbon electricity options provided by the utility or CCA) and potentially reduce the cost of electricity simultaneously. Most retail providers offer a portfolio of green energy options, each with a guaranteed percentage of green energy.[34]

The emissions reduction impact of Measure E-3 results from the increased renewable and carbon-free electricity supplied to Metropolitan from switching its retail accounts to green tariff options offered by power providers by 2025. The calculations and assumptions used to estimate emission reductions from Measure E-3 are provided in Table 12. The avoided emissions are calculated as the difference between emissions generated from current annual retail electricity consumption versus that same electricity purchased using an example green tariff option for electricity. Based on the amount of carbon-free electricity sources that make up retail electricity versus the green tariff option, the emission factor for the green tariff electricity is anticipated to be an average of 27 percent lower than retail electricity between 2025 through 2030 and an average 15 percent lower than retail electricity between 2025 through 2045.[35] This results in a cumulative reduction of 18,868 MT CO_2e between 2025 and 2030, and 21,534 MT CO_2e between 2025 and 2045 due to implementation of Measure E-3. However, additional reductions could be achieved by switching to an even lower carbon option like 100% carbon free or 100% renewable options.

[34] Annual renewable electricity composition is based on composition of carbon-free sources for both the green tariff and SCE retail power that currently exist and an assumed linear trend to 100% carbon neutral by 2045. In 2018 the example green tariff which is provided by Clean Power Alliance was 87% carbon-free while SCE retail electricity was 46% carbon-free. The average difference in the percent of carbon-free sources between the CPA and SCE averaged across 2025-2030 is 27% and 15% across 2025-2045. https://cleanpoweralliance.org/power-sources/

[35] https://cleanpoweralliance.org/power-sources/

Table 12 Measure E-3 GHG Emissions Reduction Calculations

Calculation Factor	2030	2045
Cumulative Retail Power Purchased since 2025 (kWh)[1,2]	410,172,996	1,435,605,486
Cumulative Retail Power Purchased (MWh)	410,173	1,435,605
Average Retail GHG Emission Factor (MT CO_2e/MWh)[3]	0.162	0.095
Cumulative GHG Emissions Generated using Retail Electricity (MT CO_2e)[5]	66,448	136,382
Average CPA Clean Power Electricity Emission Factor (MT CO_2e/MWh)[4]	0.118	0.075
Cumulative Electricity Emissions w CPA Clean Power (MT CO_2e)[5]	48,400	107,670
Cumulative GHG Emissions Avoided between since 2025 (MT CO_2e)[6]	18,048	28,712

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; kWh =-kilowatt-hour; MWh = megawatt-hour

Values have been rounded and may not add up exactly.

[1] Based on Metropolitan operational data for calendar year 2017 and power purchases for retail power. For the purposes of this calculation it is assumed that this value stays constant over time.

[2] Cumulative retail power purchased is based on the sum of annual retail power purchased between 2025 through 2030 (i.e., 6 years) and between 2025 through 2045 (i.e., 21 years). 1,000 kWh = 1 MWh

[3] Due to RPS, retail electricity emission factors (i.e., CAMX), will reduce over time. As described in Section 2.1, Assumptions, annual electricity emission factors are interpolated based on the 2017 emission factor and percent of renewable sources and the 2030 emission factor that would result with the required 60% renewable sources. The presented emission factor is the average retail electricity emission factors based on years 2025 through 2030 and years 2025 through 2045.

[4] Annual renewable electricity composition is based on composition of carbon-free sources for both the Green Tariff and SCE retail power that currently exist and an assumed linear trend to 100% carbon neutral by 2045. In 2018 Green Tariff clean power mix was 87% carbon-free while SCE retail electricity was 46% carbon-free. The CPA emission factor averaged across 2025-2030 is 27% lower than SCE and averaged across 2025-2045 is 15% lower than SCE. https://cleanpoweralliance.org/power-sources/

[5] Cumulative GHG emissions generated using either retail or green tariff power is calculated by multiplying the average emission factor by the cumulative amount of retail power that is anticipated to be purchased between 2025 through 2030 and 2025 through 2045.

[6] Cumulative E-4 GHG emissions reduction are calculated as the difference between the cumulative emissions generated using retail power versus cumulative emissions generated using Green Tariff Clean Power.

Measure E-4 – Phase 1: Install 3.5 MW battery storage systems at the Jensen, Skinner, and Weymouth treatment plants. Investigate the use of a software system to track and optimize GHG emissions reduction due to time-of-use strategies by 2025.

TM-2 prepared by Stantec identified several opportunities for distinct battery storage systems to be incorporated into Metropolitan's operations. By storing renewable energy, Metropolitan will reduce GHG emissions by charging the battery system periods during times of low grid emissions and discharging them during periods of high emission electricity.

For this GHG emissions reduction calculation, the battery capacity was assumed to be 3.5 MW based on the scenarios identified in TM-2 and it was assumed the battery storage systems would be installed by 2025. The relationship between battery capacity and potential annual renewable energy use was evaluated with linear regression ($R^2 = 0.9382$). The potential renewable energy to be used in place of grid energy is related to battery power using the following equation:

$y = 342.35x - 125.91$

x= battery capacity (MW)

y= energy storage (MWh)

This results in approximately 1,072 MWh of energy storage per year. Avoided GHG emissions annually is based on the difference in emission factors between the low grid times, when the battery would be loaded, and grid times when the battery discharge would occur. The electricity emission factor at low grid times was found to be approximately 28 percent lower than the daily

average emission factor.[36] These emissions would be minimized assuming full implementation of Strategy 4, Measure E-3, specifically the switch of retail accounts to the Clean Power Green Tariff option for retail electricity sources by 2025. Therefore, it was assumed that Strategy 4, Measure E-3 would be implemented by 2025 further reducing electricity emissions post-2025. This results in a cumulative reduction of approximately 219 MT CO_2e by 2030 and 473 MT CO_2e by 2045 due to implementation of Measure E-4 and incorporation of Measure E-3.

The potential GHG emissions avoided from this measure are conservative since each of the proposed sites for battery storage have photo voltaic (PV) solar power arrays associated with them. To be conservative, grid mix was assumed to feed the battery storage systems rather than power generated from the PV systems. Additional GHG emissions reductions would be achieved with the displacement of wholesale power rather than retail power as assumed in this calculation.

Table 13 Measure E-4 GHG Emissions Reduction Calculations

Calculation Factor	2030	2045
Battery Capacity (MW)[1]	3.5	3.5
Annual Energy Storage (MWh)[2]	1,072	1,072
Cumulative Energy Storage (MWh)[3]	6,434	22,519
Average Electricity Emission Factor Assuming Implementation of Strategy 4 Measure E-3 (MT CO_2e/MWh)[4]	0.118	0.075
Cumulative Electricity Emissions at Average Times (MT CO_2e)	759	1,689
Deviation between Low and Average Electricity Emission Factor[5]	28%	28%
Average Low Retail Electricity Emission Factor w/ Strategy 4 (MT CO_2e/Mwh)[6]	0.084	0.054
Cumulative Electricity Emissions at Low Times (MT CO_2e)[7]	540	1,216
Cumulative GHG Emissions Avoided since 2025 (MT CO_2e)[7,8]	219	473

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; MWh = megawatt-hour; kWh =-kilowatt-hour; RPS = Renewable Portfolio Standard

Values have been rounded and may not add up exactly.

[1] Battery capacity was assumed based on scenarios presented in TM-2 (Stantec 2019).

[2] The relationship between battery capacity and potential annual renewable energy use reported in TM-2 was evaluated with linear regression resulting in the following equation: y = 342.35x - 125.91, where x is the battery capacity and y the energy storage. The relationship had an R^2 of 0.9382, indicating a strong linear relationship.

[3] Based on 1,072 MWh of energy storage annually from 2025 through 2030 (i.e., 6 years) and 2025 through 2030 (i.e., 21 years).

[4] Due to RPS, retail electricity emission factors (i.e., CAMX), will reduce over time. As described in Section 2.1, Assumptions, annual electricity emission factors are interpolated based on the 2017 emission factor and percent of renewable sources and the 2030 emission factor that would result with the required 60% renewable sources. The presented emission factor is the weighted average retail electricity emission factors based on years 2025 to 2030, and 2025 to 2045 with implementation of Strategy 4, Measure E-3 where retail electricity accounts would be switched to the Clean Power Green Tariff option for retail electricity sources by 2025. Green Tariff Clean Power emission factor in on average 27% lower than the retail emission factor between 2025 through 2030 and on average 15% lower than the retail emission factor between 2025 through 2045 due to a greater amount of carbon-free sources.

[5] CAISO tracks demand and emissions data in 5 min increments throughout the day for every day of the year. The lowest emission factor during the day due to high renewables on the grid was found to be approximately 28% lower than the average electricity grid emission factor.

[6] Based on note 5, on average emissions would be reduced by approximately 28% for the energy discharged from the battery loaded at peak time. The difference in emission factors between average grid electricity and the emission factor for batteries charged at low-emissions times and discharged at higher-emissions time.

[7] Cumulative GHG emissions avoided between 2025 through 2030 is calculated as the cumulative energy that could be stored and discharged multiplied by the emission factor difference between average grid electricity and the emission factor for batteries charged at low-emissions times, as described in note 6.

[8] GHG emissions avoided could be increased if the battery were charged from on-site renewables rather than the grid.

[36] Variation in daily electricity emission factors due to incorporation of renewable energy during the day is based on CAISO daily emissions and electricity tracking. (Source: http://www.caiso.com/TodaysOutlook/Pages/emissions.aspx)

Measure E-5 – Phase 1: Manage Metropolitan's energy purchases to ensure cost-effective energy supply while achieving the required GHG emissions objective.

The single largest source of GHG emissions associated with Metropolitan's operations is related to electricity consumption. Most of Metropolitan's Scope 2 GHG emissions are tied to the consumption of electricity needed for pumping water along the CRA, which is directly tied to public water demand. Metropolitan's demand is met through its imported water supplies, which vary year-to-year and largely depend on supply availability. When Metropolitan is required to meet its demand through increased pumping on the CRA, higher GHG emissions may result. Electricity used to power the pumps along the CRA comes from three distinct sources: Hoover and Parker Dam hydroelectric power which has an emission factor of zero, California grid energy which had an emission factor of approximately 0.239 MT CO_2e per MWh in 2017, and out-of-state electricity which is delivered through the AZNM regional grid which receives power from multiple states outside California and had an emission factor of 0.480 MT CO_2e in 2017.[37] The amount of electricity purchased from each source varies year-to-year depending on multiple factors and in general, AZNM makes up a higher percentage of Metropolitan's electricity in high pumping years, adding to the higher GHG emissions in those years.

This measure would change electricity procurement policies to reduce reliance on AZNM electricity and increase the use of energy from the CAMX grid or specific lower GHG emission generation resources. Not only will this action reduce a significant amount of GHG emissions in the short term, but emissions will likely continue to decrease over time due to SB 100. Energy sales in both markets will likely continue to transition to carbon-free sources, further reducing GHG emissions. However, it is difficult to predict the future market energy mix or the cost of lower emission energy. Since the emissions reduction associated with this measure will change depending on the actual amount of electricity purchased and the source of purchased energy, Metropolitan has committed to ensuring that it will meet any shortfall in its carbon budget through low or no carbon energy purchases and other measures that most cost-effectively achieve the carbon budget objective. To quantify this measure's ability to meet Metropolitan's GHG reduction goal in the High Emissions Scenario, the estimated electricity consumption from the AZNM gird was estimated based on historical high pumping years.

[37] https://www.epa.gov/sites/production/files/2020-01/documents/egrid2018_summary_tables.pdf

Table 14 Measure E-5 GHG Emissions Reduction Calculations

Calculation Factor	2030	2045
Electricity Usage for Water Deliveries under High Pumping Scenario (kWh/Acre Foot)[1]	458.85	458.85
Annual Average Forecasted Water Deliveries under High Pumping Scenario (Acre Foot)[2]	2,170,334	2,170,334
Cumulative Wholesale Power Purchased for Pumping (kWh)[3]	9,958,489,001	24,896,222,502
Cumulative Wholesale Power Purchased for Pumping (MWh)	9,958,489	24,896,223
Annual Average AZNM Emission Factor between 2021 and target year (MT CO_2e/MWh)[4]	0.426	0.393
Cumulative High Emission Scenario Forecasted Emissions from AZNM Electricity since 2021 (MT CO_2e)	4,242,316	9,784,215
CAMX Emission Factor between 2021 and target year (MT CO_2e/MWh)[5]	0.229	0.229
Cumulative High Emissions Scenario Forecasted Emissions with CAMX Electricity (MT CO_2e)	2,280,494	5,701,235
Cumulative GHG Emissions Avoided since 2021 (MT CO_2e)[6]	1,961,822	4,082,980

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; kWh =-kilowatt-hour, MWh = Megawatt hour; RPS = Renewable Portfolio Standard

Values have been rounded and may not add up exactly.

[1] Electricity usage for water deliveries during high pumping scenarios corresponding with drought years is based on historical data for water deliveries and electricity usage obtained from the Urban Water Management Plan and Metropolitan electricity data for year 2010. Calculations are detailed in Appendix B.

[2] Based on forecasted water deliveries under the high pumping scenario detailed further in Appendix B.

[3] Total electricity purchases for the high pumping scenario are calculated as the annual average forecasted water deliveries under the high pumping scenario multiplied by the electricity usage per acre foot. Cumulative electricity purchased for pumping is calculated as the annual grid purchases multiplied by the number of years between 2021 through 2030 (i.e., 10 years), and between 2021 through 2045 (i.e., 25 years). Total electricity consumption is converted using 1,000 kWh = 1 MWh

[4] Majority of electricity for pumping is purchased through wholesale providers (i.e., AZNM). As described in Section 2.1, Assumptions, annual AZNM emission factors between 2017 and 2045 were interpolated based on the percent change in composition of the electricity that was carbon-neutral and assuming a linear trend. The presented emission factor is the average wholesale electricity emission factors based on years 2021 through 2030 and years 2021 through 2045.

[5] CAMX grid emission factor assumed to be equivalent to the 2017 CAMX emission factor. As wholesale power, CAMX not subject to RPS therefore conservatively assumed emission factor says constant over time. This is considered conservative as the CAMX grid mix will likely decrease along with retail due to SB100.

[6] Cumulative E-5 GHG emissions reduction are calculated as the difference between the cumulative emissions generated using AZNM wholesale power for pumping and cumulative emissions generated from switching to CAMX power for pumping.

RESULTS

Table 15 summarizes the measures associated with Strategy 4 and potential GHG emissions reduction. Because this electricity consumption is the largest source of emissions for Metropolitan operations, Strategy 4 involves several different types of measures that support the planning phase of this process, including implementation of operation-wide changes in electricity purchases and consumption, as well as execution of specific projects. Measures E-2, E-3, and E-4 would result in a cumulative reduction of approximately 24,568 MT CO_2e by 2030 and 43,203 MT CO_2e by 2045. Measure E-5 has the potential to result in a cumulative GHG emission reduction under the worst-case drought scenario (i.e., High Pumping Scenario) of approximately 1,961,822 MT CO_2e between 2021 and 2030, and approximately 4,126,183 MT CO_2e between 2021 and 2045.

Table 15 GHG Emissions Reduction Associated with Strategy 4

Measure	Cumulative Emission Reductions (MT CO_2e) 2030	Cumulative Emission Reductions (MT CO_2e) 2045
E-1 (Phase 1) Analyze marginal emissions rates and evaluate the feasibility of shifting energy use to lower emission periods.	Supportive	
E-2 (Phase 1) Connect the Yorba Linda Hydroelectric Power Plant (YLHEP) behind Metropolitan's Southern California Edison (SCE) electricity meter to directly utilize carbon-free electricity at Metropolitan's Diemer facility by 2025.	6,301	14,018
E-3 (Phase 1) In markets where available, Metropolitan will switch its retail accounts to green tariff options offered by power providers by 2025 to reduce the Scope 2 GHG emissions associated with retail electricity use.	18,048	28,712
E-4 (Phase 1) Install 3.5 MW battery storage systems at the Jensen, Skinner, and Weymouth treatment plants. Investigate the use of a software system to track and optimize GHG emissions reduction due to time-of-use strategies by 2025.	219	473
E-5 (Phase 1) Manage Metropolitan's energy purchases to ensure cost-effective energy supply while achieving the required GHG emissions objective.[1]	1,961,822	4,082,980
Total Cumulative Emissions Reduction	1,986,390	4,126,183

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; PPA = Power Purchase Agreement

[1] Potential GHG emission reductions due to implementation of measure E-6 are based on the high pumping scenario or the scenario that has the highest emissions generated due to increased energy use.

2.3.2 Strategy 5: Improve Energy Efficiency

In addition to Strategy 4, reduction of carbon intensity of the electricity used, Metropolitan can further reduce GHG emissions associated with electricity use by improving energy efficiency and thereby reducing electricity demand for operations. There are several opportunities for increased energy efficiency that can be employed at various points throughout Metropolitan's operations. While some of the specific measures discussed below have quantifiable GHG emission reductions, some are presented here as supportive measures and have not been quantified to avoid double counting of GHG emissions reduction. Additionally, several of the measures supporting Strategy 5 will be implemented during Phase 2 of the CAP. Since Phase 2 measures are dependent on Phase 1 implementation, the anticipated GHG reductions may vary depending on the outcome of Phase 1 implementation.

Methodology and Assumptions

The measures making up Strategy 5 include specific energy efficiency actions that can be completed now, such as Measure EE-1, upgrading the lighting system, while other measures require further investigation to determine the course of implementation. Continued efforts to reduce electricity consumption by identifying opportunities to improve energy efficiency are supportive to Strategy 5. Measures that are considered quantifiable if implemented now due to adequate data availability, are discussed in detail below.

Measure EE-1 – Phase 1: Convert all interior and exterior lighting at 50 percent of Metropolitan facilities to light emitting diode (LED) technologies by 2030 and 100 percent by 2045

Conversion of interior and exterior lighting to more energy efficiency light bulbs throughout Metropolitan's facilities has the potential to reduce cost and reduce GHG emissions generated from electricity use. According to the United States Department of Energy, ENERGY STAR-qualified LEDs use only 20 to 25 percent of the energy of traditional incandescent bulbs while high-efficiency incandescent bulbs could use between 80 and 30 percent of the energy of the traditional incandescent bulbs they replace.[38] For the purposes of this calculation, it is estimated approximately 10 percent of Metropolitan's electricity use is due to lighting, that this electricity use for lighting would remain constant over time, and that lighting improvements are on average 50 percent more efficient than previous lighting.[39] It is assumed that for lighting a majority of the electricity supplied is from retail sources.

The emission reduction impact of Measure EE-1 is based on 50 percent of lighting electricity being improved by 50 percent by 2030, and by 100 percent by 2045. Avoided emissions are calculated as the amount of annually reduced electricity multiplied by the annual retail emission factor. The calculations and assumptions used to estimate emission reductions from Measure EE-1 are provided in Table 16. Emissions reductions are based on Metropolitan achieving a 50 percent implementation (50% of buildings have been retrofit with LEDs) of Measure EE-1 by 2030 and achieving a 100 percent implementation by 2045. Metropolitan has already begun this process and therefore, the phase in of this measure was assumed to start in 2020. This results in a cumulative reduction of approximately 1,220 MT CO_2e between 2020 and 2030, and approximately 3,222 MT CO_2e between 2020 and 2045 due to implementation of Measure EE-1.

[38] https://www.energy.gov/energysaver/save-electricity-and-fuel/lighting-choices-save-you-money/how-energy-efficient-light

[39] Lighting conservatively assumed to make up 10% of total energy use based on CalEEMod defaults for warehouses, where lighting makes up 6-50% of total electricity use (CalEEMod). Additionally, U.S. EPA suggests that lighting makes up 35-45% of building energy use for water treatment systems (https://www.epa.gov/sites/production/files/2015-04/documents/epa816f13004.pdf), however because not all energy uses for Metropolitan are related to building energy use, the lighting demand of overall electricity demand is likely lower.

Table 16 Measure EE-1 GHG Emissions Reduction Calculations

Calculation Factor	2030	2045
Annual Electricity Consumption (MWh)[1]	68,362	68,362
Annual Lighting Electricity Consumption (MWh)[2]	6,836	6,836
Cumulative Electricity for Lighting since 2020 (MWh)	75,198.00	177,742.00
Annualized Average % of Facility Upgraded[3]	27.27%	55.77%
Efficiency Improvement (%)[4]	50%	50%
Cumulative Reduced Electricity since 2020 (MWh)[5]	10,253	49,563
Average Retail GHG Emission Factor (MT CO_2e/MWh)[6]	0.119	0.065
Cumulative GHG Emissions Avoided since 2020 (MT CO_2e)[7]	1,220	3,222

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; kWh =-kilowatt-hour; MWh = megawatt-hour

Values have been rounded and may not add up exactly.

[1] Based on Metropolitan operational data for calendar year 2017 and total electricity consumed. For the purposes of this calculation, it is assumed that this value stays consistent over time.

[2] Lighting conservatively assumed to make up 10% of total energy use based on CalEEMod defaults for warehouses, where lighting makes up 6-50% of total electricity use (CalEEMod).

[3] Annualized average based on a linear increase in retrofit buildings of 50% in 2030 and 100% in 2045.

[4] Assumed that lighting improvements are half LED and half high efficiency bulbs resulting in approximately 50 percent reduction in energy usage (https://www.energy.gov/energysaver/save-electricity-and-fuel/lighting-choices-save-you-money/how-energy-efficient-light).

[5] Avoided electricity is based on 50 percent of current electricity usage for lighting being improved by 50 percent by 2030 and 100 percent of current electricity usage for lighting being improved by 50 percent starting in 2030 through 2045. Cumulatively avoided electricity is based on consumption starting in 2020 through 2030 (i.e., 11 years). Cumulative avoided electricity in 2045 is based on the assumption of full implementation of measure at 50 percent of facilities from 2020 through 2030 (i.e., 10 years) and 100 percent of the facilities from 2030 through 2045 (i.e., 15 years).

[6] As described in Section 2.1, Assumptions, annual electricity emission factors are interpolated based on the 2017 emission factor and percent of renewable sources and the 2030 emission factor that would result with the required 60% renewable sources. The presented emission factor is the average retail electricity emission factors based on years 2020 through 2030 and average retail emission factor based on years 2020 through 2045 with implementation of Strategy 4, Measure E-3 where retail electricity accounts would be switched to the Clean Power Green Tariff option for retail electricity sources by 2025. Green Tariff Clean Power emission factor in on average 27% lower than the retail emission factor between 2020 through 2030 and on average 15% lower than the retail emission factor between 2020 through 2045 due to a greater amount of carbon-free sources.

[7] Cumulative EE-1 GHG emissions reduction are calculated as the cumulatively avoided electricity multiplied by the Green Tariff Clean Power retail emission factor averaged across 2020 to 2030 and 2020 to 2045.

Measure EE-2 – Phase 1: Continue programs to analyze CRA pump efficiency and replace or refurbish pumps when cost effective.

Measure EE-2 supports energy efficiency in the pumping process – one of the primary sources of energy consumption for Metropolitan operations. Metropolitan pumps a significant amount of water from CRA, which further fluctuates depending on the amount of water pumped each year. Improving CRA pump efficiency would maximize cost savings and GHG emissions through reduced energy usage. Measure EE-2 provides the study necessary to determine which pumps can be refurbished or replaced.

Measure EE-3 – Phase 2: Investigate feasibility of a large scale (100 MW) battery storage system for the CRA.

Measure EE-3, complete a feasibility study of large-scale battery storage system for CRA, would be implemented during Phase 2 of the CAP. Establishing a system to store large amounts of energy would increase resilience and further reduce GHG emissions as a large-scale battery system could be

charged during periods of high renewable energy and discharged when electricity has a higher emission factor. A 100 MW battery storage array has the potential to reduce GHG emissions by 20,000 MT CO_2e annually. However, evaluation to determine the actual GHG emissions reduction upon implementation is required. Therefore, Measure EE-3 is considered supportive.

Measure EE-4a-d – Phase 2: Implement findings of the CRA pump assessment (from Measure EE-2) to either refurbish or replace pumps at Eagle Mountain, Iron Mountain or Hinds pumping plants.

Based on the findings of Measure EE-2, Metropolitan would refurbish or replace some CRA pumps in Phase 2 of the CAP implementation. Potential GHG emission reductions are based on the improved efficiency of the pumps at Eagle Mountain, Iron Mountain, and Hinds Pump Plants. The actual efficiency gain for refurbishment/replacement of these pumps will be identified by the pump assessment. With marginal efficiency improvements, such as an efficiency gain of 2 percent for replacements and 0.5 percent for repairs, Metropolitan could substantially reduce GHG emissions over time. However, because the actual efficiency gain will be based on the pump assessment and the implementation would not occur until Phase 2 of the CAP, emission reduction estimates for this measure are not yet quantifiable. Therefore, Measure EE-4A-D and is considered supportive.

Measure EE-5 – Phase 2: If the proposed Regional Recycled Water Plant (RRWP) is ultimately constructed, install an inter-stage pumping system on the reverse osmosis brine stream to reduce energy use.

Metropolitan is currently investigating the feasibility of constructing a Regional Recycled Water Plant (RRWP). If it were to be constructed, installation of an inter-stage pumping system has the potential to decrease energy demand by 6% by improving the balance throughout the Reverse Osmosis (RO) system.[40] The RO system would have the largest energy demand at the RRWP, so improving energy efficiency would significantly decrease electricity demand. Because the RRWP has not yet been approved and the actual efficiency gain is not yet known, this measure is not considered quantifiable for the purposes of this assessment. If this project is approved, the implementation would not occur until Phase 2 of the CAP, therefore emission reduction estimates for this measure are not included in the overall quantified emission reductions discussed herein.

RESULTS

As shown below in Table 17, total GHG emissions reduction from this strategy are considered supportive to avoid double counting. However, reducing electricity demand has the potential to reduce costs and need for carbon-free electricity.

[40] https://membranes.com/wp-content/uploads/Documents/Technical-Papers/Application/Waste/Operational-Performance-and-Optimization-of-RO-Wastewater-Treatment-Plants-1.pdf

Table 17 GHG Emissions Reduction Associated with Strategy 5

Move	Cumulative Emission Reductions (MT CO_2e) 2030	Cumulative Emission Reductions (MT CO_2e) 2045
EE-1 (Phase 1) Convert all interior and exterior lighting at 50 percent of Metropolitan facilities to light emitting diode (LED) technologies by 2030 and 100 percent by 2045.	1,220	3,222
EE-2 (Phase 1) Continue programs to analyze CRA pump efficiency and replace or refurbish pumps when cost effective.	Supportive	
EE-3 (Phase 2) Investigate feasibility of a large scale (100 MW) battery storage system for the CRA.	Supportive[1]	
EE-4a-d (Phase 2) Implement findings of the CRA pump assessment (from Measure EE-2) to either refurbish or replace pumps at Eagle Mountain, Iron Mountain or Hinds pumping plants.	Supportive[1]	
EE-5 (Phase 2) If the proposed Regional Recycled Water Plant (RRWP) is ultimately constructed, install an inter-stage pumping system on the reverse osmosis brine stream to reduce energy use.	Supportive[1]	
Total Cumulative Emissions Reduction	1,220	3,222

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; CRA = Colorado River Aqueduct

[1] Measures to be implemented in Phase 2 require more data gathering and evaluation to quantify GHG emissions reduction and therefore are not included herein.

2.4 Scope 3: Indirect Emissions and Sequestration

2.4.1 Strategy 6: Incentivize More Sustainable Commutes

Metropolitan does not have direct control over how its employees travel to and from their jobs. Strategy 6 focuses on initiatives that promote and facilitate alternative commute strategies including use of active and shared/subsidized transit, as well as ZEVs. GHG emissions reduction quantification was based on measures that improve infrastructure, facilitate ZEV commuting, and operational policy changes that would reduce employee vehicle miles travelled (VMT) on an annual basis.

Methodology and Assumptions

The quantified emissions reductions associated with Strategy 6 are either from the replacement of traditional passenger vehicles for employee commute to ZEVs (e.g., Measure EC-3 and EC-6) or the reduction in employee commute VMT (e.g., EC-5). Measures EC-1, EC-2, and EC-3 incrementally support Strategy 6 through focusing efforts on promoting employee use of alternative modes of transportation for commuting that would reduce employee commute miles. Examples include the use of mass transit, active transportation, or reducing emissions through the use of carbon-free or low-carbon transportation options. The following section details the measures relating to Strategy 6 as well as the methodologies and assumptions used for the GHG emission reduction calculations associated with the quantifiable measures which include Measure EC-3 and EC-5.

Measure EC-1 – Phase 1: Expand subsidized transit commute program to reduce employee commute miles.

Measure EC-1 focuses on expanding the subsidized transit commute program to incentivize employees to use mass transit over single occupancy vehicles. Incentivizing employees to use transit programs for commuting versus single occupancy vehicles reduces the emissions generated per person when commuting. Because it is unclear to what extent expanding transit commute programs and employee commuter incentive programs will decrease employee commuter GHG emissions, Measure EC-1 was not quantified, and the measure is considered supportive.

Measure EC-2 – Phase 1: Expand employee use of carbon-free and low-carbon transportation by providing education programs on the benefits of commute options including public transportation, ZEV/EV options, and vanpools.

Providing education to staff on the use of new programs and policies is a fundamental component of achieving significant and impactful change. Metropolitan has established an employee-commute education program that provides clear information on the various commute options available to Metropolitan employees including public transportation, ZEV/EV options, and vanpools. Measure EC-2 supports this current effort and Strategy 6 by providing education to motivate commuters to utilize less GHG emitting commuter options. However, the impacts of education on employee's commuter behavior is not quantifiable, therefore potential GHG reductions from Measure EC-2 was not quantified and the measure is considered supportive.

Measure EC-3 – Phase 1: Install ZEV and/or EV infrastructure as directed by the ZEV/EV Feasibility Study to support at least a 15 percent employee transition to ZEVs/EVs by 2025.

Metropolitan does not have direct control over how its employees travel to and from their jobs. However, by providing EV charging infrastructure, Metropolitan can encourage employees to drive personal EVs, and shift how some individuals commute to work. One recognized hurdle for the use of EVs is range. By allowing employees to charge their vehicles during work, Metropolitan encourages the use of EVs. Estimates indicate that approximately 98 percent of EV charging occurs either at home or at work with 40 percent of charging events happening at work.[41] The number of chargers that would be needed to support the transition of 15 percent of employees currently commuting using internal combustion vehicles to EV's was calculated based on the number of car-commuting employees, number of connections per EV charger, and average number of charging hours per connection per day. The number of employees commuting to work by car is tracked in Metropolitan's 2017 commuter survey. According to the 2017 survey there were approximately 1,143 single occupancy vehicle (SOV) commuters and 4 recorded carpoolers. For the purposes of this calculation, it was assumed that installed EV chargers would have two connections per charger and that employees would rotate vehicles throughout the day so that each charger plug could charge 3 vehicles, for 3 hours each, per day. As such, it was estimated that 26 chargers would need to be installed to support a transition of 15 percent of employees (172 vehicles) to electric vehicles.

GHG emissions reduction from this measure are calculated as the difference in emissions generated from those employees commuting via an internal combustion engine (ICE) vehicle fueled by fossil fuels and the emissions generated indirectly from electricity use to charge the EVs. Electricity use for EV charging was calculated assuming an average of 3 hours of charging per day per connection and

[41] https://avt.inl.gov/sites/default/files/pdf/arra/PluggedInSummaryReport.pdf

that charging only occurred during workdays, assumed to be 260 days per year.[42] Electricity consumption was based on approximately 10 kWh of electricity needed per hour of charge.[43] Emissions generated from annual electricity assumption were calculated as the annual electricity consumption for all chargers multiplied by the annual weighted electricity emission factor, presented in Table 5. The weighted electricity emission factor was further adjusted to account for full implementation of Strategy 4, Measure E-3, specifically the switch of retail accounts to a green tariff option for retail electricity sources by 2025. Therefore, it was assumed that Strategy 4, Measure E-3 would be implemented by 2025 further reducing electricity emissions post-2025. This results in a cumulative generation of approximately 626 MT CO_2e between 2025 and 2030 and approximately 1,874 MT CO_2e between 2025 and 2045 due to electricity use from EV charging associated with the implementation of Measure EC-3.

The GHG emissions that would be avoided by the commuter population transitioning to EVs is based on the assumption that approximately 15 percent of VMT generated annually from traditional ICE vehicles would be avoided. Annual commuter VMT is based on Metropolitan's 2017 commuter survey. As shown in Table 18, it was estimated that approximately 2,659,493 miles (i.e., 15 percent of 17,729,950 annual commuter VMT) travelled by ICE-vehicles would be replaced by EV-vehicles if 15 percent of commuters transitioned to EVs. GHG emissions generated from ICE-vehicles traveling 2,659,493 miles annually was calculated as the annual VMT multiplied by the annual running emission factor for ICE-vehicles obtained from EMFAC2017.[44] Emission factors are weighted based on the percent of fuel type used per category of vehicle class (i.e., passenger vehicle). Because vehicle emissions are improving overtime, the annual emission factor applied to the annual vehicle miles travelled was interpolated between average vehicle emission factors in 2017 and anticipated in 2030 using EMFAC2017 data.[45] The calculations and assumptions used to estimate emissions reduction from Measure EC-3 are provided in Table 18. As shown, with the implementation of Measure EC-3 and the transition of 15 percent of commuting from ICE-vehicles to EV, the cumulative GHG emissions avoided between 2025 and 2030 would be approximately 3,427MT CO_2e and 10,860 MT CO_2e between 2030 and 2045.

[42] Limits to charging time would be set by Metropolitan Policy to ensure maximum use of charging infrastructure.
[43] https://www.clippercreek.com/wp-content/uploads/2017/12/SMUD_Charge-Times-Chart-20171208_Final_Low-Res.pdf
[44] https://arb.ca.gov/emfac/2017/
[45] Annual emission factors were interpolated between 0.00034 MT CO_2e/mile in 2017 and 0.00023 MT CO_2e/mile in 2030 and 0.00020 MT CO_2e/mile in 2045.

Table 18 Measure EC-3 GHG Emissions Reduction Calculations

Calculation Factor	2030	2045
Number of SOV and carpool commuters[1]	1,143	1,143
Commuter VMT[1]	17,729,950	17,729,950
% of Commuters that Switch to EV Use [2]	15%	15%
Number of Anticipated Commuters with EVs	172	172
Number of Chargers[3]	26	26
Number of Charging Hours for All Chargers Annually (hours)[4]	40,560	40,560
Annual Electricity Demand (kWh/year)[5]	405,600	405,600
Cumulative Electricity Demand since 2025 (MWh)[6]	2,434	8,518
Average Weighted Electricity Emission Factor Assuming Implementation of Strategy 4 (MT CO_2e/MWh)[7]	0.257	0.220
Cumulative Emissions from EV Charging since 2025 (MT CO_2e)[8]	626	1,874
Cumulative ICE-vehicle VMT Replaced with EVs since 2025 (VMT)[9]	15,956,955	55,849,343
Average Weighted ICE Emission Factor (MT CO_2e/mile)[10]	0.00025	0.00023
Cumulative Emissions from ICE-vehicle VMT if not replace with EVs (MT CO_2e)	4,053	12,734
Cumulative GHG Emissions Avoided since 2025 (MT CO_2e)[11]	3,427	10,860

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; VMT = vehicle miles travelled; MWh = megawatt-hour; kWh =-kilowatt-hour

Values have been rounded and may not add up exactly.

[1] SOV and carpool commuter number and total miles travelled by car is based on Metropolitan 2017 commuter survey.

[2] Assumed 15% of total commuter VMT would be replaced with EVs with implementation of EC-3 by 2025. Measure EC-[3] does not include a 2045 target therefore it is assumed the percent change in commuters to EV use remains constant.

[3] Number of chargers necessary to accommodate 172 employee EV vehicles was calculated assuming that on a given day employees with EVs would connect to a charger for 3 hours per day before switching out (to allow 3 cars to charge per connection) and that each charger has 2 connections.

[4] Number of hours of charge per workday for all chargers was calculated assuming that each charger had two connections and on average each connection would charge for 3 hours per day. Annual number of hours of charging for all chargers is based on 260 workdays annually.

[5] It is assumed that per one hour of charge approximately 10 kWh of electricity is consumed.

[6] Cumulative Electricity Demand since 2025 is calculated as the annual electricity demand multiplied by the number of years between full measure implementation in year 2025 and the target year. Implementation by 2025 through 2030 equates to 6 years and 2025 through 2045 equates to 21 years.

[7] The presented emission factor is the weighted average retail and wholesale electricity emission factor presented in Table 5 based on years 2025 through 2030 (i.e., 6 years), and 2025 through 2045 (i.e., 21 years) with implementation of Strategy 4, Measure E-3, specifically the switch of retail accounts to the green tariff option for retail electricity sources by 2025.

[8] Cumulative emissions associated with charging of EV chargers is calculated as the cumulative electricity demand since 2025 to the target year multiplied by the average weighted electricity emission factor assuming implementation of Strategy 4.

[9] Assumed 15% of total commuter VMT would be replaced with EVs with implementation of EC-3.

[10] Annual emission factors were obtained from EMFAC2017 and interpolated between 2017 and 2030 and 2045. Emission factors were weighted based on fuel type per vehicle class (i.e., passenger vehicles). The presented emission factor is the weighted average mobile combustion emission factor based on years 2025 through 2030 (i.e., 6 years), and 2025 through 2045 (i.e., 21 years).

[11] Cumulative avoided emissions are calculated by subtracting the Cumulative Emissions from EV charging from the Cumulative Emissions from internal combustion engine-vehicle VMT.

Measure EC-4 – Phase 1: Continue to offer benefits to employees who use alternative modes of transportation (e.g., public transportation, bikes).

Measure EC-4 focuses on the expansion of other benefits or incentive program to encourage employees to use alternative modes of transportation for commuting. This supports Strategy 6 by providing education and incentive to motivate commuters to utilize less GHG emitting commuter options. However, it is unclear to what extent expanding employee commuter incentive programs will decrease employee commuter GHG emissions, therefore Measure EC-4 is not quantified herein and is considered supportive.

Measure EC-5 – Phase 1: Allow 50 percent of employees located at Metropolitan's headquarters to telecommute or utilize flexible schedules through 2030 to reduce travel time, vehicle miles travelled (VMT), and GHG emissions.

GHG emissions reduction associated with implementation of Measure EC-5 are calculated as the emissions avoided from the reduction in commuter VMT. Metropolitan's 2017 commuter survey included data on the number of one-way miles travelled for each employee and by which mode of transport. Daily commuter VMT was calculated as the sum of all miles travelled by employees in a single day for a particular mode of transport. Annual commuter VMT was then calculated as the miles travelled per day multiplied by the number of workdays in a year including a two week vacation, assumed to be 250. In 2017 there was an estimated 28,378,660 miles travelled by commuters. To avoid double counting, commuter VMT from SOV and carpooling estimated to switch to EVs with implementation of Measure EC-3 have been excluded from commuter miles used in the calculation for Measure EC-5. Based on the data in Table 18, implementation of Measure EC-3 is anticipated to reduce annual vehicle VMT by 2,659,493. As such, Measure EC-5 can apply to approximately 25,719,168 VMT by commuters annually.

Remote work practiced during COVID-19 pandemic has demonstrated that a majority of employees can feasibly work from home via telecommuting. However, to provide a conservative assumption for the purposes of this calculation it was assumed that 50 percent of all staff would telecommute on average 1.5 times per week starting in 2020 and continuing through 2030. Studies have found that the percent reduction in VMT associated with flexible work schedules is based on the type of flexible work schedule and employee participation.[46] For telecommuting an average of 1.5 days a week, the adjustment factor, or slope of the linear trend between employee participation and corresponding reduction in VMT is 0.22. As such, with 50 percent employee participation, VMT could be reduced by 11 percent, which equates to a reduction in VMT of approximately 1,414,554 miles annually. For the purposes of this calculation, the total VMT reported in the 2017 commuter survey was used as the baseline and assumed to be consistent over time. Annual avoided emissions were calculated by multiplying the annually reduced VMT by the annual commuter emission factor. The annual commuter emission factor was calculated as the total estimated emissions from commuting divided by the total commuter miles travelled. Emissions factors derived from the EMFAC2017 model were used to estimate GHG emissions from personal vehicle commutes and the Los Angeles County Metropolitan Transportation Authority emission factors were used to calculate emissions from alternative trips including bus and rail.[47,48] Annual emission factors were interpolated between 2017 and the forecasted commuter emissions in 2030 and 2045, where the emission factor

[46] CAPCOA TRT-6 http://www.aqmd.gov/docs/default-source/ceqa/handbook/capcoa-quantifying-greenhouse-gas-mitigation-measures.pdf
[47] California Air Resources Board, https://arb.ca.gov/emfac/
[48] Metro's 2016 Energy and Resource Report, Metro (https://media.metro.net/projects_studies/sustainability/images/report_sustainability_energyandresource_2016.pdf)

was 0.000256 MT CO_2e/commuter mile in 2017, 0.00019 MT CO_2e/commuter mile in 2030, and 0.00017 MT CO_2e/commuter mile in 2045. Emission factors decrease due to improved vehicle emissions. Total emissions from employee commute in 2017 and forecasted in 2030 and 2045 were calculated using annual mileage travelled by mode multiplied by the associated emission factor.[49]

The calculations and assumptions used to estimate emissions reduction from Measure EC-5 are provided in Table 19. The avoided emissions are calculated as the annual avoided VMT multiplied by the annual commuter emission factor. This results in a cumulative reduction of reduction of 3,345 MT CO_2e between 2020 and 2030 and 7,098 MT CO_2e between 2020 and 2045 due to implementation of Measure EC-5.

Table 19 Measure EC-5 GHG Emissions Reduction Calculations

Calculation Factor	2030	2045
Annual Commuter VMT[1]	25,719,168	25,719,168
Participation (%)	50%	50%
Annual Participating Commuter VMT	12,859,584	12,859,584
% VMT Reduced[2]	11%	11%
Annual Commuter VMT Reduced	1,414,554	1,414,554
Cumulative Commuter VMT Reduced since 2020[3]	15,560,094	36,778,404
Average Commuter GHG Emission Factor (MT CO_2e/commuter mile)[4]	0.000215	0.000193
Cumulative GHG Emissions Avoided since 2020 (MT CO_2e)	3,345	7,098

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; VMT = vehicle miles travelled; SOV = single occupancy vehicles

Values have been rounded and may not add up exactly.

[1] Metropolitan 2017 commuter survey provided the number of one-way miles each employee travelled and by which mode. Annual commuter VMT is estimated as the sum of miles travelled daily multiplied by the number of annual workdays including a two week vacation (i.e., 250). To avoid double counting, commuter VMT from SOV and carpooling estimated to switch to EVs with implementation of Measure EC-3 have been excluded from this total.

[2] Percent VMT reduction is based on the linear trend between employee participation and % reduction in commuter VMT for telecommuting 1.5 times a week (CAPCOA TRT-6). As a 2045 target was not set in the measure, it is assumed that the trends stay constant post 2030. http://www.aqmd.gov/docs/default-source/ceqa/handbook/capcoa-quantifying-greenhouse-gas-mitigation-measures.pdf

[3] Cumulative commuter VMT reduced is calculated as the annual reduced commuter VMT multiplied by the number of years since implementation (i.e., 2020) through the target year (i.e., 2030 and 2045).

[4] A commuter emission factor (MT CO_2e/commuter mile) was developed based on the total emissions from commuting and total commuter miles travelled. This commuter emission factor was calculated for Metropolitan's 2017 inventory and forecasted out for 2030 and 2045 to account for changes in emission factors by mode (i.e., single occupancy vehicles, vans, rail, and buses). Annual commuter emission factors were interpolated between 2017 and 2030 and 2045, where the emission factor was 0.000256 MT CO_2e/commuter mile in 2017, 0.00019 MT CO_2e/commuter mile in 2030, and 0.00017 MT CO_2e/commuter mile in 2045. Average commuter emission factor for this measure is based on implementation starting in 2020 through 2030 (i.e., 11 years) and 2020 through 2045 (i.e., 26 years).

Measure EC-6 – Phase 2: Replace all Metropolitan vanpool vehicles with electric vehicles. Start with a pilot study (Measure FL-1) to evaluate the best approach.

This measure builds off of Measure FL-1, where based on the ZEV/EV feasibility study on fleet vehicles, Metropolitan will replace conventional fossil fuel operated vans with electric vans. Although new technologies for passenger vans are already being developed and some electric options for commercial vans are already available, this measure is part of Phase 2 as it would be implemented based on the results of the feasibility study. Because more data and evaluation are

[49] Detailed methodology describing the calculation for employee commute emissions and emission factors by mode can be found in Appendix B – Inventory and Forecast Methodology, of Metropolitan Water District of Southern California Climate Action Plan.

needed for this measure to be implemented, the true magnitude of GHG emissions reduction has not been quantified herein and is considered supportive.

RESULTS

Table 20 summarizes the measures associated with Strategy 6 and potential GHG emissions reduction. Measures EC-3 and EC-5 would result in a cumulative reduction of approximately 6,772 MT CO_2e by 2030 and 17,958 MT CO_2e by 2045.

Table 20 GHG Emissions Reduction Associated with Strategy 6

Measure	Cumulative Emission Reductions (MT CO_2e) 2030	Cumulative Emission Reductions (MT CO_2e) 2045
EC-1 (Phase 1) Expand subsidized transit commute program to reduce employee commute miles.	Supportive	
EC-2 (Phase 1) Expand employee use of carbon-free and low carbon transportation by providing education programs on the benefits of commute options including public transportation, EV/ZEV options, and vanpools.	Supportive	
EC-3 (Phase 1) Install zero emission and/or electric vehicle infrastructure as directed by the ZEV/EV Feasibility Study to support at least a 15 percent transition to ZEVs/EVs by 2025.	3,427	10,860
EC-4 (Phase 1) Continue to offer benefits to employees who use alternative modes of transportation (e.g., public transportation, bikes).	Supportive	
EC-5 (Phase 1) Allow 50 percent of employees located at Metropolitan's headquarters to telecommute or utilize flexible schedules through 2030 to reduce travel time, vehicle miles travelled (VMT), and GHG emissions.	3,345	7,098
EC-6 (Phase 2) Replace all Metropolitan vanpool vehicles with electric vehicles. Start with a pilot study (Measure FL-1) to evaluate the best approach.	Supportive[1]	
Total Cumulative Emissions Reduction	**6,772**	**17,958**

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; ZEV = zero emission vehicle; EV = electric vehicle

[1] Measures to be implemented in Phase 2 require more data gathering and evaluation to quantify GHG emissions reduction and therefore are not included herein.

2.4.2 Strategy 7: Increase Waste Diversion to Achieve Zero Waste

Organic materials are the focus of the recent California legislation SB 1383 (Short-Lived Climate Pollutants: Organic Waste Reductions). Now in the final rulemaking stage, this state law has the immediate goal of reducing organic waste sent to landfill and the ultimate objective of reducing statewide methane emissions. Specifically, it sets a statewide goal for the reduction in organic waste to landfills – 50 percent by 2020 and 75 percent by 2025 – in addition to the recovery of 20 percent of edible food waste for human consumption. SB 1383 will require local governments to provide organics collection to all generators and require all generators to subscribe. It also has specific mandates for container systems, education and outreach programs, monitoring and contamination reporting, and enforcement of regulations. Full SB 1383 implementation will begin in 2022, allowing

some time for jurisdictions to plan and prepare for achieving compliance.[50] While SB 1383 does require this reduction from Metropolitan, SB 1383 was not included in the Metropolitan GHG emissions forecast. Therefore, this plan includes measures that will allow Metropolitan to support this goal and reduce its own GHG emissions in alignment with SB 1383.

Waste generation at Metropolitan facilities accounts for approximately one percent of total GHG emissions in the 2017 baseline. A majority of the GHG emissions resulting from Metropolitan generated waste are caused by decomposition of organic material under anaerobic conditions. The remainder of the emissions come from inorganic wastes, such as plastic, which have both upstream and downstream emissions. Therefore, increasing the diversion of organic and inorganic waste streams is a primary measure to reduce waste related GHG emissions under Strategy 7. The execution of the policies established under this strategy are supported by measures that promote the development of programs and partnerships that help divert waste. Because most of Metropolitan's waste stream is organics and organics diversion is a major driver of State regulations, including SB 1383, Strategy 7 prioritizes organic waste stream reduction first.[51]

Methodology and Assumptions

Measure WA-1 – Phase 1: Develop and implement net zero waste policies and programs at all facilities to reduce landfilled waste by 30 percent by 2030 and achieve zero landfilled waste by 2045

Measure WA-1, the implementation of net zero waste policies and programs at all Metropolitan facilities, generates all the emissions reduction associated with Strategy 7 by reducing landfilled waste by 30 percent by 2030 and to zero landfilled waste by 2045.

Direct GHG emissions reductions from this strategy are dependent on the active diversion of waste from the landfill. Therefore, for the purposes of this calculation, it is assumed that through the adoption of the CAP, Metropolitan is committed to the reduction of 30 percent of waste by 2030. Since Metropolitan has full operational control of its facilities, it is assumed that these targets will be fully realized through the development of policies, programs and contracts as detailed in Measures WA-2, WA-3, and WA-4. Implementation of this measure will be tracked and adjustment will be made as necessary to achieve this target. Based on the prepared inventory and forecast, it is estimated that the 14,759 tons of waste generated by Metropolitan in 2017 will continue through 2045. For the purposes of this calculation it is assumed that this will remain consistent over time. Emission reduction calculations assume a linear reduction of waste starting in 2022 with 30 percent reduction achieve by 2030. Linear interpolation between 2022 and 2030 shows that this correlates with an additional 3.3 percent waste reduction annually. Annual emissions reductions were calculated by multiplying the percent of waste reduction by the total tonnage of waste by a mixed organic emission factor obtained from the Waste Reduction Model (WARM).[52] Cumulative avoided emissions by 2030 and 2045 are calculated by summing annual avoided emissions between the year of inception, 2022, and the target year, i.e., 2030 or 2045, respectively. The calculations and assumptions used to estimate emissions reduction from Strategy 7 are provided in Table 21.

[50] California Air Resources Board. 2017. Short-Lived Climate Pollution Reduction Strategy.
[51] https://www.calrecycle.ca.gov/climate/slcp
[52] The WARM model is a waste reduction model created by U.S. EPA to help solid waste planners and organizations track and report GHG reductions from several different waste management practices. https://www.epa.gov/sites/production/files/2019-06/documents/warm_v15_organics.pdf

Table 21 Measure WA-1 GHG Emissions Reduction Calculations

Calculation Factor	2030	2045
Annual Waste (tons)[1]	14,759	14,759
Cumulative Waste Generated since 2022 (tons)	132,831	354,216
Average % Waste Annual Reduced[2]	16.67%	48.33%
Cumulative Waste Reduced since 2022 (tons)[4]	22,143	171,193
Waste Emission Factor (MT CO_2e/ton)[3]	0.204	0.204
Cumulative GHG Emissions Avoided since 2022 (MT CO_2e)[4]	4,517	34,923

Notes: MT CO_2e = metric tons of carbon dioxide equivalent

Values have been rounded and may not add up exactly.

[1] 2017 annual waste generation based on Metropolitan data for the inventory and forecast.

[2] Based on the linear interpolation of waste reduction from 0 percent in 2021 to 30 percent by 2030 and 100 percent by 2045. The average annual percent reduction in waste annually is based on the number of years between measure implementation and the target year. 2022 through 2030 equates to 9 years, and 2022 through 2045 equates to 24 years.

[3] Majority of Metropolitan waste is organic therefore the emission factor is for mixed organics obtained from WARM.

[4] Cumulative GHG emission avoided is the sum of annual emissions avoided from waste diversion from landfill from 2022 through 2030, and from 2022 through 2045.

Measure WA-2 – Phase 1: Implement a program to reduce organic waste at Metropolitan's Union Station building. Contract or team with local organizations and waste disposal companies to route organic waste to anaerobic digestion or composting facilities and edible food-to-food recovery centers.

Measure WA-2 would incrementally support Strategy 7 through the implementation of a targeted organic waste reduction program at Metropolitan's Union Station building and the development of partnerships to implement the program. Measure WA-2 would involve a combination of efforts such as the implementation of composting at Union Station food services areas and the development of contracts with local facilities for organic waste pickup. This measure is considered supportive.

Measure WA-3 – Phase 1: Develop and implement a sustainable procurement policy.

Strategy 7 is further supported with Measure WA-3, development and implementation of a sustainable procurement policy, as the measure targets upstream emissions of the inorganic waste stream. By setting guidelines on materials Metropolitan regularly purchases, Measure WA-3 prioritizes products with a lower waste generating lifecycle and helps reduce Metropolitan's waste generation. Because the estimated waste that could be diverted from implementation of a sustainable procurement policy is not known at this time, this measure is considered supportive.

Measure WA-4 – Phase 2: Partner with municipal agencies, like the City of Los Angeles, to create programs that will allow Metropolitan to provide its fair share of diversion and help local jurisdictions meet the goals of SB 1383 for organics diversion, including food waste and composting.

Measure WA-4, partnering with municipal agencies to develop organic diversion programs, allows Metropolitan to provide its fair share of diversion and helps local jurisdictions to meet SB 1383 goals. Programs developed under this measure may include composting at Metropolitan facilities and investigating opportunities to utilize the compost on Metropolitan-owned lands. Compost application would have added benefits such as carbon sequestration, promotion of plant growth

and soil health, as well as enhancing water retention in some soils.[53,54] This measure supports the CAP's long-term planning efforts, as well as developing partnerships that will allow Metropolitan to reach a zero waste goal by 2045 while supporting local communities. This measure is considered supportive.

RESULTS

Table 22 summarizes the measures associated with Strategy 7 and potential GHG emissions reduction. Measures WA-1 would result in a cumulative reduction of approximately 4,517 MT CO_2e by 2030 and approximately 34,923 MT CO_2e by 2045.

Table 22 GHG Emissions Reduction Associated with Strategy 7

Measures	Cumulative Emission Reductions (MT CO_2e) 2030	Cumulative Emission Reductions (MT CO_2e) 2045
WA-1 (Phase 1) Develop and implement net zero waste policies and programs at all facilities to reduce landfilled waste by 30 percent by 2030 and achieve zero landfilled waste by 2045.	4,517	34,923
WA-2 (Phase 1) Implement a program to reduce organic waste at Metropolitan's Union Station building. Contract or team with local organizations and waste disposal companies to route organic waste to anaerobic digestion or composting facilities and edible food-to-food recovery centers.	Supportive	
WA-3 (Phase 1) Develop and implement a sustainable procurement policy.	Supportive	
WA-4 (Phase 2) Partner with municipal agencies, like the City of Los Angeles, to create programs that will allow Metropolitan to provide its fair share of diversion and help local jurisdictions meet the goals of SB 1383 for organics diversion, including food waste and composting.	Supportive	
Total Cumulative Emissions Reduction	**4,517**	**34,923**

Notes: MT CO_2e = metric tons of carbon dioxide equivalent

2.4.3 Strategy 8: Increase Water Conservation and Local Water Supply

As discussed, most of Metropolitan's emissions are a result of pumping, treatment, and delivery of water to its member agencies. Water conservation strategies that reduce per capita water consumption indirectly reduce energy emissions used to supply water and provide a co-benefit of protecting one of California's scarcest resources, water.

Through the implementation of water conservation programs, per capita water consumption in the Metropolitan service area has decreased from 0.14 acre-feet of deliveries per person in 1990 to 0.09 acre-feet of deliveries per person in 2017, an approximate 35 percent reduction in per capita water use. This increase in water efficiency is a result of a variety of actions by the State, Metropolitan, and the community. Metropolitan has invested millions of dollars to support actions that reduce

[53] https://www.ioes.ucla.edu/project/carbon-sequestration-through-compost/
[54] https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=16800#:~:text=In%20sandy%20soils%20with%20poor,structure%20ie.%2C%20aggregate%20stability.&text=Adding%20compost%20as%20a%20thin,garden%20and%20farm%20raised%20plants.

water use, including educational programs and incentives for water efficient appliances and turf removal. Metropolitan will continue and potentially expand its water conservation efforts into the future by incentivizing conservation and through construction of the proposed RRWP which, if completed, will provide a substantial source of local water to the Los Angeles Basin.

Methodology and Assumptions

Strategy 8 involves several different types of measures for water conservation including supportive measures that promote water conservation by consumers, implementation of water conservation programs and initiatives, and implementation of water efficient practices and technologies. The quantified emissions reductions associated with Strategy 8 result from the implementation of programs that reduce water use (e.g., WC-3) and reduce energy use associated with importing water due to replacing a fraction of currently imported water with local recycled water (e.g., WC-6).

Measure WC-1 – Phase 1: Expand programs which educate customers on water conservation initiatives through workshops and speaking engagements.

Measure WC-1 incrementally supports Strategy 8 by providing educational programs throughout Metropolitan's service area to educate customers on water conservation initiatives and strategies. Such educational programs can encourage end user behavioral changes that promote water conservation. However, the impacts of education on customers' behavior is not quantifiable, therefore, the measure is considered supportive.

Measure WC-2 – Phase 1: Continue to implement innovative water use efficiency programs.

Measure WC-2, continue implementation of innovative water use efficiency programs, supports Metropolitan's water conservation initiatives and future program expansion. Through reviewing current water reduction programs under Measure WC-2, Metropolitan can gain an understanding of the successes and identify new opportunities not currently employed allowing for a more informed expansion of the program. Because it is unclear to the extent that evaluating existing programs and initiatives or piloting new programs will improve water conservation, Measures WC-2 is not quantified and is considered supportive.

Measure WC-3 – Phase 1: Continue Turf Removal Program to install an average of 1,500,000 square feet (sq. ft) of water efficient landscapes per year through 2030 through the use of a rebate program.

Metropolitan already implements landscape water reduction programs for residents and businesses by offering rebates through its BeWaterWise program.[55] To further encourage the transition from high-water use landscapes throughout the Metropolitan service area, Measure WC-3 will continue implementation of the Turf Removal Program to install 1,500,000 square feet of water efficient landscapes per year through 2030. The measure will be implemented using incentives via rebates and supported with provided education. Given Metropolitan's existing success with landscape water conversion programs, it is reasonable to assume that the targets of this program will be achieved.

GHG emissions reduction associated with implementation of Measures WC-3 are calculated based on the amount of water saved due to turf conversion and the associated reduction in energy needed for supplying that amount of water. It is assumed that the conversion of conventional

[55] http://www.bewaterwise.com/

landscapes or turf to a drought tolerant landscape would save approximately 35 gallons of water per square foot annually.[56] As such, replacement of 1,500,000 square feet of turf would save approximately 52.5 million gallons, or 161 acre feet, of water annually.[57] Because the measure would involve 1,500,000 square feet of new turf converted through 2030, each year after 2020 would have a greater amount of converted turf than the year before. Annual water savings can be interpolated between 2020, at the beginning of measure implementation with only 1,500,000 square feet converted, and 2030, at full implementation of 16,500,000 square feet of total converted turf. The amount of annual water savings was calculated based on the amount of converted turf existing in the year. Based on historical water and emissions data from between 2005 to 2017, the average emission factor per acre-foot of imported water is 0.091 MT CO_2e.[58] Annual emissions reduction was calculated by multiplying the annual amount of water saved by the imported water emission factor. Since the total square feet of turf will increase every year (and continue saving water) the average annualized amount of turf was used to calculate the total savings since 2020. Average annualized turf replacement was approximately 9,000,000 sq. ft. and total savings were found to be 10,634 AF of water over 11 years based on the 35 gallons per sq. ft. reduction factor. Though the measure does not have a 2045 goal, 16.5 million square feet of converted turf achieved by 2030 will continue to save water through 2045. Cumulative avoided emissions by 2030 are calculated by multiplying the cumulative amount of water due to turf conversion saved between 2020 and 2030 and from 2020 through 2045 by the imported water emissions factor. The calculations and assumptions used to estimate emission reductions from Measure WC-3 are provided in Table 23.

[56] Based on historic Metropolitan conservation programs.
[57] http://mwdh2o.com/PDF_Newsroom/Turf_Removal_Program.pdf
[58] Calculated based on Metropolitan's GHG emissions inventory's and delivered acre feet 2005-2017.

Table 23 Measure WC-3 GHG Emissions Reduction Calculations

Calculation Factor	2030	2045
Annual Turf Converted (sf)	1,500,000	1,500,000
Total Turf Converted by target year (sf)[1]	16,500,000	16,500,000
Averaged Annual Existing Converted Turf Based on Target Year (sf)[2]	9,000,000	13,326,923
Water Savings Conversion Factor (gallons/sf turf)[3]	35	35
Average Annual Water Savings since 2020 (gallons)[4]	315,000,000	466,442,305
Cumulative Water Savings since 2020 (gallons)	3,465,000,000	12,127,499,930
Conversion Factor (gallons water/AF)	325,851.427	325,851.427
Total Water Savings by target year (AF)[5]	10,634	37,218
Water Emission Factor (MT CO_2e/AF)[6]	0.091	0.091
Cumulative GHG Emissions Avoided since 2020 (MT CO_2e)	968	3,387

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; sf = square feet; AF = acre-feet

Values have been rounded and may not add up exactly.

[1] The Turf Removal Program is already in existence; therefore, it is assumed that the conversion goal would be achieved each year starting in 2020 through 2030 (i.e., 11 years). The measure does not have a 2045 goal therefore the total turf converted by 2045 is the same as for 2030.

[2] Measure implementation is based on an annual goal therefore each year there is an increase in the amount of converted turf compared with the previous year. Based on the increase of converted turf from 1,500,000 sf in 2020 to 16,500,000 sf in 2030, the average existing converted turf on an annual basis between 2020 through 2030 (i.e., 11 years) and between 2020 through 2045 (i.e., 26 years) is presented.

[3] It is assumed that conversion from conventional turf to drought tolerant landscapes would save approximately 35 gallons of water per square foot based on past Metropolitan experience.

[4] Annual average gallons of water saved based on the average annual existing converted turf between 2020 and 2030 and 2020 and 2045 is calculated as averaged annual existing converted turf multiplied by the water savings conversion factor. Gallons is converted to acre-feet where 325,851 gallons = 1 AF.

[5] Cumulative water saved is calculated as the annual average water savings multiplied by the years since measure implementation and target year where 2020 through 2030 is 11 years of savings from converted turf and 2020 through 2045 results in 26 years of water savings from converted turf.

[6] Average emission factor for imported water pumped is based on historical imported water pumped and the associated GHG emissions from between 2005 and 2017. With reduced electricity emission factors this water emission factor is anticipated to decrease.

Measure WC-4 – Phase 1: Provide funding for the development and monitoring of local stormwater recharge and use projects to evaluate the water supply benefit of stormwater.

Measure WC-4, provide funding for the development and monitoring of local stormwater recharge and use projects, supports water conservation efforts by allowing Metropolitan to evaluate the potential water supply benefit of stormwater. There are currently three pilot programs focused on these types of projects: Stormwater Pilot Program, Recharge Pilot Program, and Direct Use Pilot Program. These studies provide a basis for Metropolitan to evaluate how stormwater can benefit the regional water supply or stormwater use in offsetting non-potable demands. Increasing regional water supply could reduce GHG emissions associated with the energy used to import water when there is not enough local water supply available. Because it is unclear to the extent that evaluating existing programs and initiatives or piloting new programs will improve water conservation, Measures WC-4 is not quantified and is considered supportive.

Measure WC-5 – Phase 1: Continue to promote water efficiency technologies and innovative practices that can be adopted into future water conservation program updates.

Measure WC-5, continue to promote water efficiency technologies and innovative practices that can be adopted into future water conservation programs or updates, will be implemented through various Metropolitan programs that either provide funding or financial incentives for water efficiency projects or provide a venue for new technologies to be evaluated. This measure ensures that water conservation efforts will continue to evolve and improve. Improvements in water conservation programs or technologies can indirectly reduce GHG emissions associated with water management. Because it is unclear to the extent that evaluating existing programs and initiatives or piloting new programs will improve water conservation, Measures WC-5 is not quantified and is considered supportive.

Measure WC-6 – Phase 2: Implement advanced technology systems to increase Metropolitan-owned recycled and groundwater recovery systems to maintain local water supply (e.g., proposed Regional Recycled Water Plant [RRWP]).

Metropolitan is in the process of investigating the feasibility of a RRWP that would treat wastewater to potable water standards and then inject potable water into wells to increase groundwater supplies within the Los Angeles area. Measure WC-6, the implementation of this proposed RRWP, would substantially increase the amount of local water available and reduce the amount of imported water which, in turn, would reduce the GHG emissions associated with the energy needed for to import water. Direct GHG emission reductions from Measure WC-6 would be based on the estimated reduction in imported water pumped. Because the RRWP has not yet been approved and the actual efficiency gain is not yet known, this measure is not considered quantifiable for the purposes of this assessment. If this project is approved, implementation would not occur until Phase 2 of the CAP, therefore emission reduction estimates for this measure are not included in the overall quantified emission reductions discussed herein and the measure is considered supportive.

RESULTS

Table 24 summarizes the measures associated with Strategy 8 and potential GHG emissions reduction. Measure WC-3 would result in a cumulative reduction of approximately 968 MT CO_2e between 2020 and 2030 and 3,387 MT CO_2e between 2020 and 2045.

Table 24 GHG Emissions Reduction Associated with Strategy 8

Measures	Cumulative Emission Reductions (MT CO_2e) 2030	Cumulative Emission Reductions (MT CO_2e) 2045
WC-1 (Phase 1) Expand programs which educate customers on water conservation initiatives through workshops and speaking engagements.	Supportive	
WC-2 (Phase 1) Continue to implement innovative water use efficiency programs.	Supportive	
WC-3 (Phase 1) Continue Turf Removal Program to install an average of 1,500,000 square feet (sq. ft.) of water efficient landscapes per year through 2030 through the use of a rebate program.	968	3,387
WC-4 (Phase 1) Provide funding for the development and monitoring of local stormwater recharge and use projects to evaluate the water supply benefit of stormwater.	Supportive	
WC-5 (Phase 1) Continue to promote water efficiency technologies and innovative practices that can be adopted into future water conservation program updates.	Supportive	
WC-6 (Phase 2) Implement advanced technology systems to increase Metropolitan-owned recycled and groundwater recovery systems to maintain local water supply (e.g., proposed RRWP).[1]	Supportive	
Total Cumulative Emissions Reduction	**968**	**3,387**

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; RRWP = Regional Recycled Water Plant

[1] The RRWP is not yet operational and would be implemented in phase 2 of the CAP.

2.4.4 Strategy 9: Investigate and Implement Carbon Capture and Sequestration Opportunities

While GHG emissions reduction through electrification, purchase of carbon-free electricity, and efficiency will drive a significant portion of the GHG reduction that Metropolitan needs, sequestering and storing carbon from the atmosphere will likely play a critical role in achieving and maintaining carbon neutrality for both Metropolitan and California.[59] Carbon capture technology is largely an emerging technology for large scale operations, however, Metropolitan will continue to track such technology and opportunities as they progress. With the extensive amount of land under Metropolitan's operational control, there may be opportunities for carbon sequestration projects potentially providing Metropolitan a "negative" source of GHG emissions. Such opportunities need to be evaluated further in conjunction with existing programs that regulate carbon sequestration projects and associated carbon markets.[60]

Methodology and Assumptions

Direct GHG emissions reduction for this strategy are dependent on the carbon capture or sequestration opportunities available and the extent to which these opportunities actively remove CO_2e from the atmosphere. As such, the measures making up Strategy 9 focus on conducting research to understand opportunities and conducting pilot studies to evaluate the benefit.

[59] https://www-gs.llnl.gov/content/assets/docs/energy/Getting_to_Neutral.pdf

[60] The CARB adopted a "Carbon Capture and Sequestration Protocol" in 2018. Other carbon sequestration opportunities will be vetted through the "Restoration of California Deltaic and Coastal Wetlands" protocol adopted in 2017 by the American Carbon Registry, which operates in the voluntary and regulated carbon markets until the time CARB adopts the protocol into the compliance market.

Measure CS-1 – Phase 1: Study carbon capture protocols in the Sacramento-San Joaquin River Delta.

Measure CS-1, study carbon capture protocols in the Sacramento-San Joaquin River Delta, establishes the first step in identifying opportunities for Metropolitan to pursue carbon capture or sequestration opportunities in the future. Metropolitan plans on conducting an assessment that will investigate opportunities within Metropolitan's Delta property boundaries. As such, this measure is not quantifiable at this time and is considered supportive.

Measure CS-2 – Phase 1: Conduct a five-year research program to increase Metropolitan's knowledge of regenerative agriculture and carbon sequestration opportunities on Metropolitan properties in the Palo Verde Valley.

Measure CS-2, conduct a five-year research program to increase Metropolitan's knowledge of regenerative agriculture and carbon sequestration opportunities on Metropolitan properties in the Palo Verde Valley, further expands Metropolitan's potential opportunities for carbon sequestration. The development of a smaller scale study through a partnering agreement with the California State University, Chico Center for Regenerative Agriculture and Resilient Systems, will help inform the scalability of these types of programs. This measure is considered supportive.

Measure CS-3 – Phase 2: Establish baseline science approaches through pilot projects and implement carbon sequestration projects as deemed feasible.

Based on the assessments in Measure CS-1 and outcomes of the study conducted under Measure CS-2, Measure CS-3 would establish pilot projects and a carbon sequestration feasibility study on Metropolitan-owned lands. The potential GHG emissions that could be reduced through such carbon sequestration projects is estimated to be between 100,000 MT CO_2e to 300,000 MT CO_2e annually on Metropolitan owned lands based on research completed by the University California, Davis. However, the size and scope of the actual future carbon sequestration projects will dictate the actual reductions gained from carbon sequestration. This measure is considered supportive.

RESULTS

Table 25 summarizes the measures associated with Strategy 9 and potential GHG emissions reduction. The measures are collectively supportive and are aimed at increasing carbon sequestration on Metropolitan owned lands. Measure CS-3 has the potential to result in an annual reduction of approximately 100,000 to 300,000 MT CO_2e, however, more data and evaluation is needed to accurately estimate GHG emissions reductions from the measure.

Table 25 GHG Emissions Reduction Associated with Strategy 9

Measures	Cumulative Emission Reductions ($MT CO_2e$) 2030	Cumulative Emission Reductions ($MT CO_2e$) 2045
CS-1 (Phase 1) Study carbon capture protocols in the Sacramento-San Joaquin River Delta.	Supportive	
CS-2 (Phase 1) Conduct a five-year research program to increase Metropolitan's knowledge of regenerative agriculture and carbon sequestration opportunities on Metropolitan properties in the Palo Verde Valley.	Supportive	
CS-3 (Phase 2) Establish baseline science approaches through pilot projects and implement carbon sequestration projects as deemed feasible.	Supportive	
Total Cumulative Emissions Reduction	**Supportive**	

3 Conclusion

The strategies and measures identified in this CAP will lead to a significant reduction in GHG emissions and provide a foundation for Metropolitan to achieve net carbon neutrality. The strategies and measures developed to achieve a reduction target that is consistent with State's 2030 goal established by SB 32 provide the foundation and establish the trajectory for this long-term transformation. However, the 2045 GHG emissions reductions quantified in this CAP are not yet enough to meet the long-term 2045 goal of carbon neutrality. As the current strategies and measures are implemented, Metropolitan will gain more information, new technologies will emerge, and current pilot projects and programs are anticipated to scale to the size needed to reach carbon neutrality. Furthermore, the State is expected to continue to update regulations and provide support once the 2030 target is achieved. To monitor progress over time, Metropolitan will conduct annual implementation monitoring of the GHG emission reduction measures and report on progress. Metropolitan will also conduct an annual GHG inventory of its operations in order to maintain the accuracy of the carbon budget. The process for monitoring and quantifying measure implementation status relies on key target metrics identified for each of the strategies and measures. By committing to annual monitoring of CAP implementation progress and adjusting where necessary, and completing updates to the CAP every five years, Metropolitan will rise to meet the local and global imperative of reducing GHG emissions.

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THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

The Metropolitan Water District of Southern California

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Los Angeles, CA 90012-2944

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Engineering & Operations Committee

Certify Final Program EIR and Adopt CAP

Item #7-2

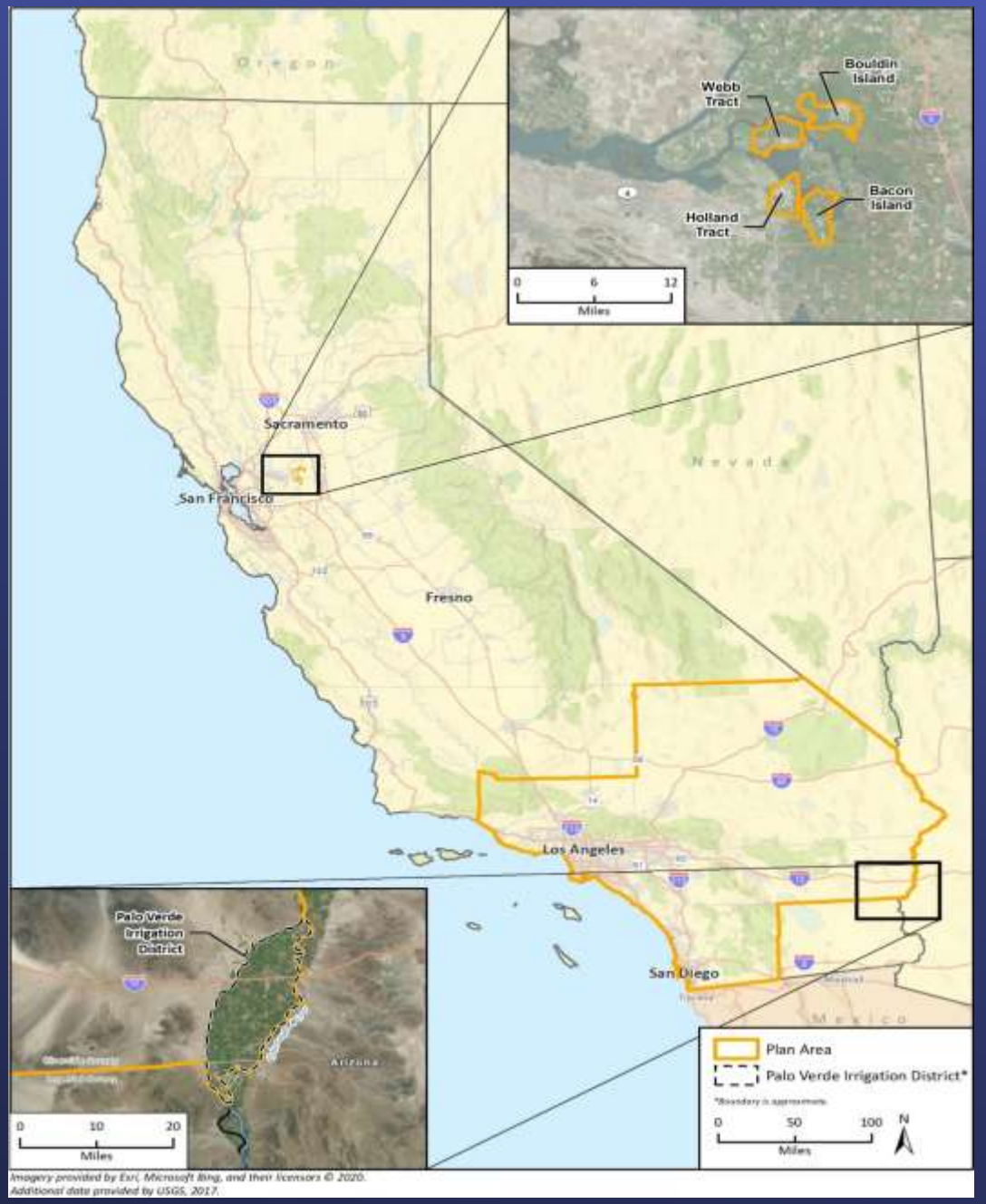
May 10, 2022

Current Action

- Certify Final Program Environmental Impact Report for the Climate Action Plan (CAP) and take related CEQA actions
- Adopt CAP
- Authorize $1.2 million over 5 years for CAP implementation under the existing agreement with Rincon Consultants, Inc. for a new not-to-exceed total of $2.2 million

Climate Action Plan Area

- Encompasses Metropolitan's operational areas and rights-of-way
  - Los Angeles County
  - Orange County
  - Riverside County
  - San Bernardino County
  - San Diego County
  - Ventura County
  - Delta Islands
  - Palo Verde Valley



Climate Imperative

- Climate change is linked to increased drought, escalation of wildfire, coastal erosion, more severe storms, disruption of water supply, groundwater over-drafting, threats to agriculture and the state's economy – California Air Resources Board
  - There's one issue that will define the contours of this century more dramatically than any other, and that is the urgent threat of a changing climate. - *Barack Obama*
  - I have long understood that climate change is not only an environmental issue – it is a humanitarian, economic, health, and justice issue as well. - *Frances Beinecke*
  - Climate change has become inevitable, and we're going to lose a substantial amount of snow by mid-century. But our choices matter. By the end of the century there will be stark differences in how much snowfall remains, depending on whether we begin to mitigate greenhouse gas emissions. - *Alex Hall, Director, UCLA Center for Climate Science*

Past and Current Board-Supported Climate Initiatives

- Hired Chief Sustainability, Resiliency, and Innovation Officer
- Approved more than $840 million in conservation and local resource programs
- Funded over $351 million in turf-removal program rebates
- Approved solar facilities at Jensen, Skinner, and Weymouth Water Treatment Plants
- Approved battery energy storage systems (BESS) at Jensen and Skinner Water Treatment Plants
- June 2022 – Award construction of the Weymouth BESS

Program Objectives

- Reduce greenhouse gas (GHG) emissions from Metropolitan's operations and future construction projects
- Increase resiliency and energy independence
- Support California's GHG reduction goals
- Complements other Metropolitan planning efforts:
  - Integrated Resources Plan
  - Capital Investment Plan
  - Energy Sustainability Plan


Roy Shipley Reserve

Program Overview

- Qualified GHG Reduction Plan – meets requirements of CEQA Guidelines Section 15183.5(b)
  - Quantify existing and projected GHG emissions
  - Establish a GHG reduction target consistent with state targets
  - Identify policies and actions to achieve specified target
  - Establish a transparent monitoring and reporting protocol and process for updating the CAP
  - Certify the CEQA document and adopt the CAP in a public process

CAP Highlights

- October 2018 –Authorized preparation of a CAP to reduce GHG emissions and streamline CEQA for future projects
- November 2019 –Board presentation on emissions inventory and forecast of future emissions
- March 2020 –Updated Board on GHG tracking methodology and proposed GHG reduction target
- June 2020 – Updated Board on proposed GHG reduction measures
- September 2021 – Peer review of CAP
- December 2021 – Public engagement webinar and General Manager Environmental Listening Session

Certify Final Program EIR

Certification of Program EIR includes:

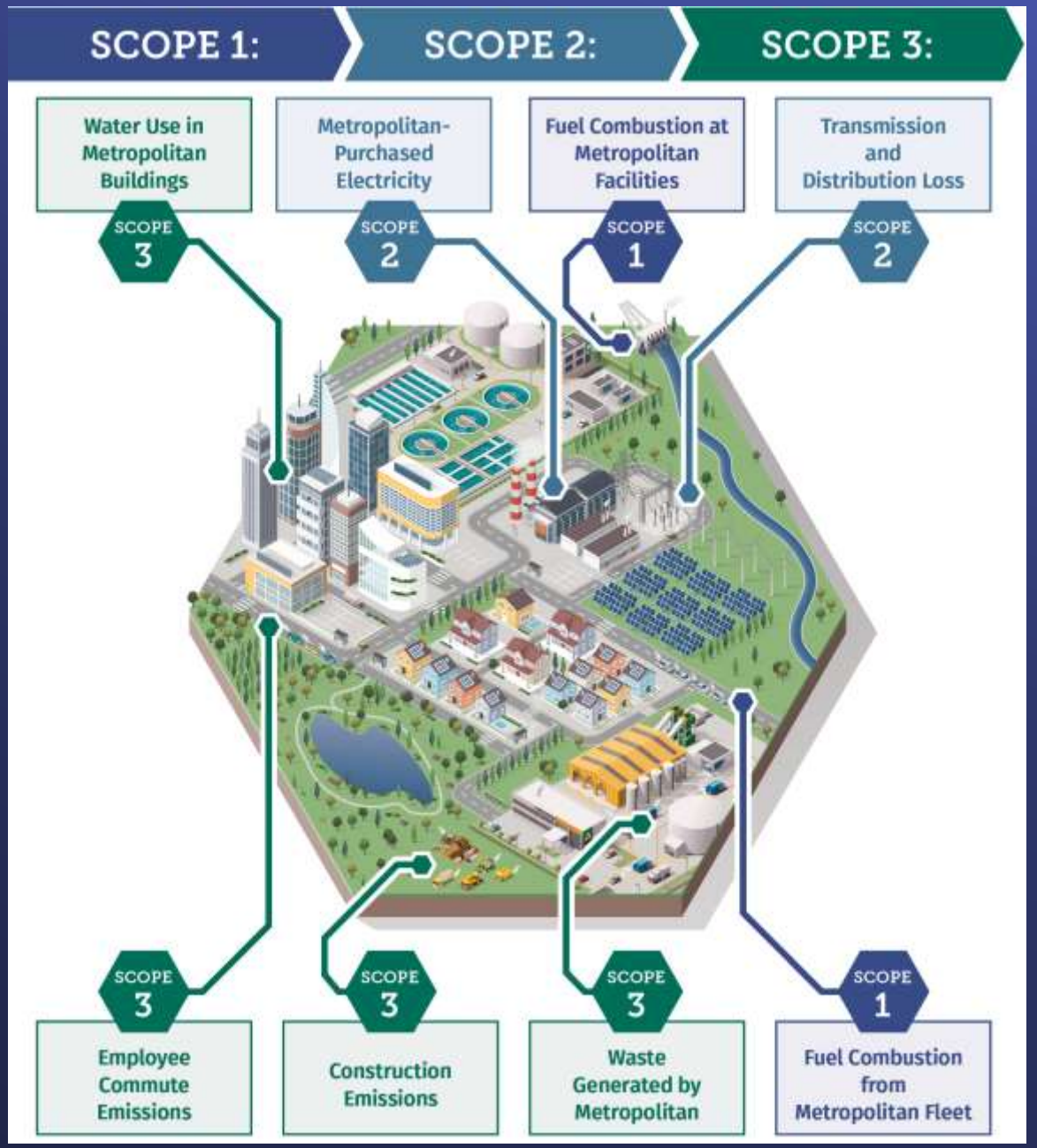
- Mitigation Monitoring and Reporting Program
  - Air Quality
  - Biological Resources
  - Cultural Resources
  - Noise
- Findings of Fact
- Statement of Overriding Considerations
  - Air Quality
  - Cultural Resources
  - Noise

Adopt Climate Action Plan

GHG Reduction Target

- Consistent with Senate Bill 32 and Executive Order B-55-18
  - 40 percent below 1990 levels by 2030
  - Carbon neutrality by 2045

Metropolitan's GHG Emissions



Emissions Reduction Measures

Scope 1

- Phase out natural gas combustion at facilities
- Transition to zero-emissions fleet

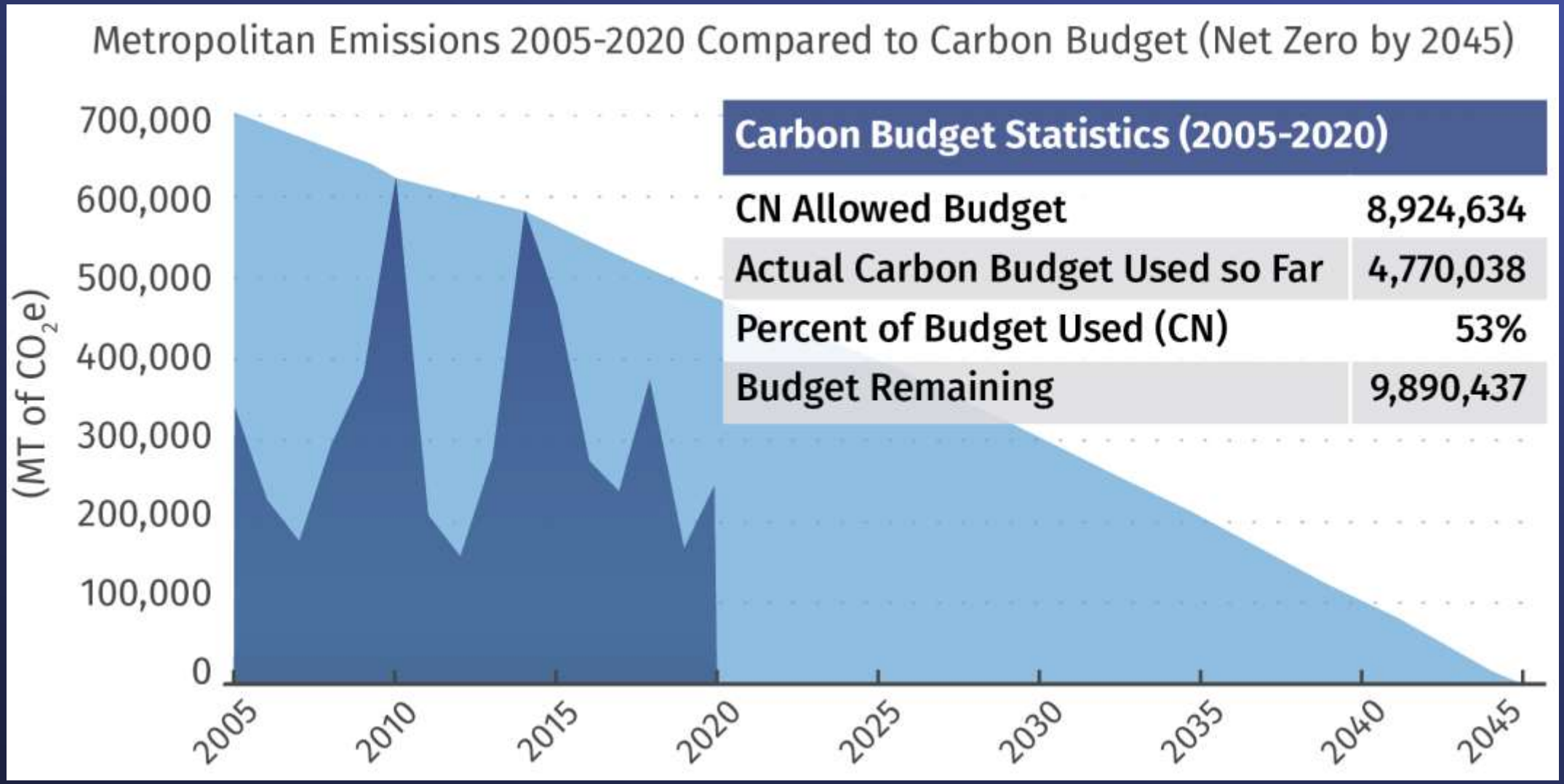
Scope 2

- Utilize low-carbon and carbon-free electricity
- Improve energy efficiency

Scope 3

- Incentivize more sustainable commutes
- Increase waste diversion to achieve zero waste
- Increase water conservation and local water supply
- Investigate and implement carbon capture and sequestration

GHG Tracking Protocol



Public Review Process

- Thirteen comment letters received
  - Include an aggregated emissions factor including State Water Project (SWP)
  - Increase investments in conservation, vegetated nature-based solutions, and stormwater recharge projects
  - Include climate resilience and adaptation in the planning process
  - Ensure broader outreach to underserved communities
  - Include additional GHG reduction measures such as solar panels on all Metropolitan facilities

Authorize an Increase to an Existing Agreement

- Authorize an increase of $1.2 million to an agreement with Rincon Consultants, Inc for a new not-to-exceed amount of $2.2 million
- Scope of Work
  - Annual GHG emission inventory and progress reports
  - Public reporting dashboard
  - Community engagement strategy
  - CAP – Five-year update
  - CEQA documentation, as required
- SBE participation level – 15 percent

Board Options

- Option #1
  - Certify the Final Program Environmental Impact Report for the Climate Action Plan and take related CEQA actions; adopt the Climate Action Plan; and authorize an increase of $1.2 million to an agreement with Rincon Consultants, Inc for a new not-to-exceed amount of $2.2 million for Climate Action Plan implementation support.
- Option #2
  - Do not certify the Final Program Environmental Impact Report; do not adopt the Climate Action Plan; and do not authorize an increase to the agreement with Rincon Associates, Inc. at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

- Board of Directors
  Engineering and Operations Committee

5/10/2022 Board Meeting

7-3

Subject

Adopt the CEQA determination that the proposed action was previously addressed in the certified Program Environmental Impact Report and related CEQA actions and (1) award an $18,930,000 contract to Woodcliff Corporation for improvements to the La Verne Shops; and (2) authorize an agreement with Richard Brady & Associates for a not-to-exceed amount of $650,000

Executive Summary

The La Verne Shops enable Metropolitan to refurbish critical equipment, fabricate pipe, and provide assistance to member agencies and the California Department of Water Resources (DWR). To maintain Metropolitan's ability to rapidly respond in the event of an emergency, Metropolitan initiated a multi-stage effort to upgrade the aging La Verne Shops. The primary construction to expand the La Verne Shops was completed in 2014. The final stage of the upgrades, which are the subject of this action, includes the installation of previously procured equipment, installation of new contractor-furnished equipment, refurbishment of existing equipment, and completion of building and utility improvements for several shop buildings. This action awards a contract to Woodcliff Corporation to complete planned improvements and authorizes an agreement with Richard Brady & Associates for technical support during construction.

Details

Background

Metropolitan has maintained a specialized machine shop since the late 1940s on the grounds of the Weymouth plant in La Verne. The shops were expanded in the 1960s when larger facilities were constructed, and they were expanded again in the 1980s to support a major rehabilitation of the pumps along the Colorado River Aqueduct. Currently, the La Verne Shops enable Metropolitan to refurbish major mechanical equipment and fabricate large-diameter pipe to support ongoing maintenance activities, capital projects, and urgent repairs. The shops also provide support both to DWR and to Metropolitan's member agencies on a reimbursable basis. While most of the work performed by the shops is planned, they can also provide urgent support on short notice.

The La Verne Shops have the capability to fabricate critical components of pumps, valves, and piping within a rapid time frame to respond to emergencies and shutdowns in Metropolitan's water treatment plants and water conveyance and distributions systems. Since the 1980s, Metropolitan has also had a reimbursable agreement with DWR to provide shop services that support maintenance activities along the State Water Project. These services have typically included machining, fabrication, welding, coating, disassembly, and reassembly of turbomachinery, repair of bearings, diving services, equipment transportation, and shop engineering services.

The La Verne Shops Improvements were initiated in 2002 to maintain Metropolitan's ability to rapidly respond in the event of an emergency. The work has been executed in multiple stages. This sequential approach was adopted to enable the construction and modernization work to be completed without impacting the shops' ability to execute planned work and respond to emergencies. The key elements of work are as follows:

- Stage 1 included the refurbishment and replacement of 12 pieces of equipment in the existing machine and fabrication shops and was completed in 2006.

- Stage 2 included replacement of the existing machine shop roof, retrofit of the existing fabrication shop building to meet current seismic codes, and upgrade of the bridge cranes in the fabrication and machine shops to improve safety and handling of materials and equipment. This work was completed in 2011.
- Stage 3 included expansion of the existing coating shop buildings and was completed in 2013.
- Stage 4 included integration of the fabrication and machine shop functions within a single larger building and was completed in 2014.
- Stage 5, which is the subject of this board action, includes all remaining work which will be executed under a single contract. This work includes building and utility upgrades, refurbishment of existing equipment, and installation of new equipment.

Procurement contracts for several large pieces of equipment were awarded in January and August 2018. These items have been fabricated, delivered, and are currently in storage. The contractor will install these previously procured items. The contractor will also provide services to refurbish some existing equipment in the shops. The new and refurbished shop equipment will replace existing equipment that no longer functions or is at the end of its service life. Staff recommends proceeding with the final stage of the overall project at this time.

In accordance with the April 2020 action on the biennial budget for Fiscal Years 2020/21 and 2021/22, the General Manager will authorize staff to proceed with the La Verne Shops Improvements contract, pending board award of the contract described below. Based on the current CIP expenditure forecast, funds for the work to be performed pursuant to this action during the current biennium are available within the Capital Investment Plan Appropriation for Fiscal Years 2020/21 and 2021/22 (Appropriation No. 15517). Funds required for work to be performed pursuant to the subject contract after fiscal year 2021/22 are budgeted within the Capital Investment Plan appropriation for Fiscal Years 2022/23 and 2023/24.

La Verne Shops Building Completion (Stage 5) – Construction

The scope of construction includes conducting building and utility improvements, refurbishment of existing equipment, and installation of new equipment. The building and utility improvements consist of a new electrical circuit and unit power center for an uninterruptible power supply, gas lines, waterline extensions, compressors and air lines, new shop heaters, and safety upgrades to roof ladders and walkways. An existing medium-sized floor mill and blast booth will be refurbished. The work will also include installation of the following new Metropolitan-furnished equipment: water jet cutting system, vertical milling center, hydraulic shear, press brake, and horizontal band saw. Metropolitan forces will provide electrical tie-in support and integration to Metropolitan's supervisory control and data acquisition system.

A total of $24.7 million is required for this work. In addition to the amount of the contract described below, other funds to be allocated include $2,143,000 for construction management and inspection; $195,000 for Metropolitan force construction, as described above; $650,000 for technical support during construction by Richard Brady & Associates under a new agreement, as described below; $800,000 for in-house submittal review, technical support during construction, and preparation of record drawings for Metropolitan-furnished equipment by Metropolitan staff; $460,000 for contract administration and project management; and $1,522,000 for remaining budget.

Attachment 1 provides the allocation of the required funds. The total estimated cost of the La Verne Shops Improvement, Stage 5, including the amount allocated to date and funds allocated for the work described in this action, is approximately $27.9 million. Approximately $3.2 million has been expended on the La Verne Shops Improvement, Stage 5 to date. The total estimated cost to complete the La Verne Shops Improvements (all five stages) is $75 million.

Award of Construction Contract (Woodcliff Corporation)

Specification No. 1873A for the La Verne Shops Building Completion was advertised for bids on December 3, 2021. As shown in **Attachment 2**, seven bids were received and opened on March 15, 2022. The low bid from Woodcliff Corporation in the amount of $18,930,000 complies with the requirements of the specifications. The other bids ranged from approximately $19.3 to $21.9 million, while the engineer's estimate for this project was $21.9 million. For this contract, Metropolitan established a Small Business Enterprise

participation level of at least 15 percent of the bid amount. Woodcliff Corporation has committed to meet this level of participation. The subcontractors for this contract are listed in **Attachment 3**.

This action awards an $18,930,000 contract to Woodcliff Corporation for the La Verne Shops Improvements -Stage 5. As described above, Metropolitan staff will perform construction management and inspection. Engineering Services' performance metric target range for inspection of projects with construction greater than $3 million is 9 to 12 percent. For this project, the performance metric goal for construction management and inspection is 9.8 percent of the total construction cost. The total cost of construction for this project is $22,025,000, which includes the cost of the contract ($18,930,000), Metropolitan-furnished equipment ($2,900,000), and Metropolitan force construction ($195,000).

Alternatives Considered

During design, staff examined several alternatives for the La Verne Shops Improvements. Construction of a new shop building was considered. Sufficient space was not available at the Weymouth facility for a new shop building, and construction of a new off-site shop building was not cost-effective. Outsourcing of the shops' services was also considered. However, the shops play a vital role in Metropolitan's emergency response capabilities. Outsourcing of these capabilities was deemed not to be a viable alternative because it would have compromised Metropolitan's ability to rapidly respond in the event of an emergency. Expansion of the existing shops' buildings, refurbishment of selected equipment, and procurement of some new equipment was determined to be the most cost-effective alternative while still maintaining Metropolitan's ability to respond during emergencies.

Technical Support During Construction (Richard Brady & Associates) – New Agreement

As the engineer of record for the design of the Stage 5 work activities, Richard Brady & Associates is recommended to provide technical support during construction. Richard Brady & Associates performed the design of the Stage 5 project under an existing board-authorized professional services agreement. Richard Brady & Associates was prequalified under Request for Qualifications No. 1215. The planned activities include review of submittals, responding to requests for information from the contractors, advising staff on technical issues as they arise, and producing record drawings for the following work: new electrical circuit and unit power center, gas lines, waterline extensions, compressors and air lines, new shop heaters, safety upgrades to roof ladders and walkways, and refurbishment of an existing medium-sized floor mill and blast booth.

This action authorizes an agreement with Richard Brady & Associates for a not-to-exceed amount of $650,000 to provide technical support during construction of the improvements to the La Verne Shops. For this agreement, Metropolitan has established a Small Business Enterprise (SBE) participation level of 20 percent. Richard Brady & Associates has agreed to meet this level of participation. The planned subconsultants under this agreement are Aark Engineering, Fluor Corporation, GHD, Steven Andrews Engineering, Tobolski Watkins Engineering, P2S, and Platt/Whitelaw Architects.

Summary

This action awards an $18,930,000 contract to Woodcliff Corporation for the Stage 5 improvements to Metropolitan's La Verne shops. See **Attachment 1** for the Allocation of Funds. **Attachment 2** for the Abstract of Bids, **Attachment 3** for the listing of Subcontractors for Low Bidder, and **Attachment 4** for the Location Map. This action also authorizes an agreement with Richard Brady & Associates not to exceed $650,000 for technical support during construction.

Project Milestone

August 2024 – Complete construction of the improvements to the La Verne Shops

Policy

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

By Minute Item 50321, dated Dec 08, 2015, the Board authorized design and procurement to complete the La Verne Shops Upgrades.

By Minute Item 51963, dated April 13, 2020, the Board appropriated a total of $500 million for projects identified in the Capital Investment Plan for Fiscal Years 2020/21 and 2021/22.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The environmental effects from the La Verne Shops Building Improvements were evaluated in the F. E. Weymouth Filtration Plant Ozonation Facilities and Site Improvements Program Final Environmental Impact Report (Final EIR), which was certified by the Board on April 12, 2005. The Board also approved the Findings of Fact (Findings), the Statement of Overriding Considerations (SOC), the Mitigation Monitoring and Reporting Program (MMRP), and the project itself. The current board action is solely based on authorizing award of construction for the La Verne Shops Building Completion Project, and not on any changes to the approved project itself. Hence, the previous environmental documentation acted on by the Board in conjunction with the proposed action fully complies with CEQA and the State CEQA Guidelines. Accordingly, no further CEQA documentation is necessary for the Board to act on the proposed action.

CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determination that the proposed action was previously addressed in the certified Program Environmental Impact Report and related CEQA actions, and

a. Award $18,930,000 contract to Woodcliff Corporation for the La Verne Shops Improvements, Stage 5.
b. Authorize an agreement with Richard Brady & Associates for a not-to-exceed amount of $650,000.

Fiscal Impact: Expenditure of $24.7 million in capital funds. Approximately $200,000 will be incurred in the current biennium and have been previously authorized. The remaining funds from this action are accounted for in the next biennial budget and were authorized in April 2022.
Business Analysis: This option will enhance Metropolitan's ability to perform urgent repairs and routine maintenance within Metropolitan's distribution system. This option will complete the long-term project to upgrade the La Verne Shops.

Option #2

Do not proceed with the project at this time.
Fiscal Impact: None
Business Analysis: This option would forgo an opportunity to complete the upgrade of the La Verne Shops, and it would not improve Metropolitan's capability for equipment refurbishment and pipe fabrication services.

Staff Recommendation

Option #1

4/21/2022

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

4/25/2022

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Abstract of Bids

Attachment 3 – List of Subcontractors

Attachment 4 – Location Map

Ref# es12686602

Allocation of Funds for the La Verne Shops Building Improvements

	Current Board Action (May 2022)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	460,000
Submittals Review & Record Drwgs.	800,000
Construction Inspection & Support	2,143,000
Metropolitan Force Construction	195,000
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	
Richard Brady & Associates	650,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Woodcliff Corporation	18,930,000
Remaining Budget	1,522,000
Total	**$ 24,700,000**

The total amount expended to date on the La Verne Shops Improvements, Stage 5 is approximately $3.2 million. The total estimated cost to complete the La Verne Shops Improvements, Stage 5 including the amount appropriated to date and funds for the work described in this action, is $27.9 million.

The Metropolitan Water District of Southern California

Abstract of Bids Received on March 15, 2022 at 2:00 P.M.

Specifications No. 1873A

La Verne Shops Building Completion

The work consists of upgrades to a unit substation for uninterruptible power supply, ductbank, cable, fiber optic cable; furnishing and installing maintenance shop equipment; installing Metropolitan-furnished equipment; rehabilitation of a blast booth; refurbishment of a vertical turning lathe; and asbestos and lead abatement.

Engineer's estimate: $21,932,700

Bidder and Location	Total	SBE $	SBE %	Met SBE[1]
Woodcliff Corporation Los Angeles, CA	**$18,930,000**	**$2,840,000**	**15%**	**Yes**
J.F. Shea Construction, Inc. Walnut, CA	$19,253,000	-	-	-
Shimmick Construction Co., Inc. Irvine, CA	$19,582,000	-	-	-
MMC, Inc. La Palma, CA	$19,844,000	-	-	-
AMG & Associates, Inc. Santa Clarita, CA	$20,892,000	-	-	-
Morillo Construction, Inc. Pasadena, CA	$21,316,000	-	-	-
Environmental Construction, Inc. Woodland Hills, CA	$21,911,078	-	-	-

[1] Small Business Enterprise (SBE) participation level established at 15% for this contract.

The Metropolitan Water District of Southern California

Subcontractors for Low Bidder

Specifications No. 1873A
La Verne Shops Building Completion

Low bidder: Woodcliff Corporation

Subcontractor and Location
CABD Construction, Inc. Sun Valley, CA
Circle City Electric Riverside, CA
Condon Johnson & Associates Oakland, CA
Fives Machining Systems Hebron, CA
Integrated Demolition and Remediation, Inc. Anaheim, CA
PCI Corp Temecula, CA
San Luis Concrete Corp Muscoy, CA
Techno Coatings, Inc. Anaheim, CA
Walker Brothers Anaheim, CA
West-Tech Mechanical Montclair, CA


Distribution System
N
CASTAIC LAKE
Foothill Feeder
Weymouth Water Treatment Plant
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
SILVERWOOD LAKE
VENTURA COUNTY
LOS ANGELES COUNTY
Upper Feeder
LIVE OAK RESERVOIR
Rialto Pipeline
GARVEY RESERVOIR
Middle Feeder
Upper Feeder
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
Lower Feeder
Colorado River Aqueduct
LAKE PERRIS
LAKE MATHEWS
PALOS VERDES RESERVOIR
PACIFIC OCEAN
DIAMOND VALLEY LAKE
ORANGE COUNTY
RIVERSIDE COUNTY
LAKE SKINNER
RIVERSIDE COUNTY
SAN DIEGO COUNTY

Engineering & Operations Committee

La Verne Shops Building Improvements

Item #7-3

May 10, 2022

La Verne Shops Building Improvements

Current Action

- Award $18,930,000 contract to Woodcliff Corporation for improvements to the La Verne Shops
- Authorize an agreement with Richard Brady & Associates for a not-to-exceed amount of $650,000

Distribution System

Location Map

Background

- La Verne Shops enable Metropolitan to refurbish major mechanical equipment and fabricate large diameter pipe to support
  - Capital projects
  - Maintenance activities
  - Reimbursable support to member agencies & DWR
  - 24/7 Urgent repairs
  - Reverse engineering of components

Pipe "Rolling" Fabrication

Ball Valve Refurbishment

La Verne Shops Improvements

- Multi-Stage Program
  - Stage 1 & 2 - Existing building & equipment upgrades
  - Stage 3 - Coating Shop extension
  - Stage 4 - Integration of the fabrication & machine shop functions within a single larger building
  - Stage 5 – Subject action
    - Building & utility upgrades
    - Refurbishment of existing equipment
    - Installation of new equipment

La Verne Shops Building Improvements

Alternatives Considered

- Construct new shop buildings
  - At the Weymouth facility – not enough space
  - New off-site shop building – not cost effective
- Outsource the shops' services
  - Would not meet normal or emergency operational turnaround time scenarios
  - Cost of water service delays
- Selected Alternative – Expand and modify the existing shops buildings
  - Cost effective while still maintaining Metropolitan's ability to respond during emergency or normal operational scenarios

Contractor Scope

- Construct building & utility improvements: building ladders-walkways, shop heaters, gas-water-airlines, & compressors
- Install new electrical UPC
- Refurbish existing blast booth & floor mill
- Replace press brake, shear, & band saw
- Install new water jet cutting system & large vertical milling center

Metropolitan Scope

- Provide equipment to contractor
  - Water jet cutting system & vertical machining center
  - Hydraulic shear, press brake & band saw
- Inspection and construction management
- Submittal review, record drawings & technical support
  - Equipment foundations & installation support
- Force Construction
  - Equipment - electrical & SCADA tie-in
  - Tie-in UPC to substation electrical

New Agreement – Richard Brady & Associates

- Engineer of Record
- Scope of work
  - Respond to Requests for Information from contractors & submittal review
  - Technical support & record drawings
- SBE participation level: 20%
- NTE amount: $650,000

Bid Results
Specifications No. 1873A

Bids Received	March 15, 2022
No. of Bidders	7
Low Bidder	Woodcliff Corporation
Low Bid	$18,930,000
Range of Higher Bids	$19.3 M to $21.9 M
Engineer's Estimate	$21.9 M
SBE Participation*	15%

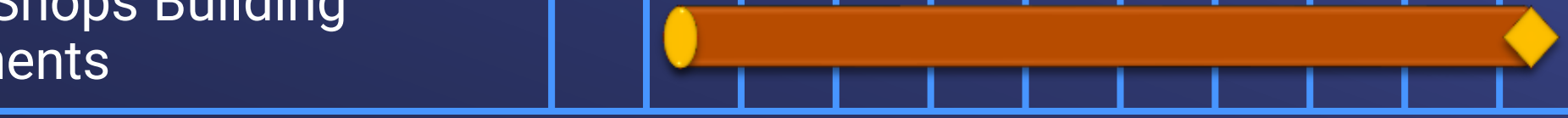
*SBE (Small Business Enterprise) participation level set at 15%

Allocation of Funds

Contract	
Woodcliff Corporation	$18,930,000
Metropolitan Labor	
Program Mgmt. & Contract Admin.	460,000
Force Construction	195,000
Construction Management/Inspection	2,143,000
Submittal Review, Technical Support & Record Drwgs	800,000
Professional Services	
Richard Brady & Associates	650,000
Remaining Budget	1,522,000
Total	$24,700,000

Project Schedule

Project	2022	2023	2024
La Verne Shops Building Improvements			



Board Action

Construction

Completion of Construction

Board Options

- Option #1

  Adopt the CEQA determination that the proposed action was previously addressed in the certified Program Environmental Impact Report and related CEQA actions, and

  a) Award $18,930,000 contract to Woodcliff Corporation for the La Verne Shops Improvements, Stage 5.

  b) Authorize an agreement with Richard Brady & Associates for a not-to-exceed amount of $650,000.

- Option #2

  Do not proceed with the project at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA

Subject

Award a $3,143,592 contract to Blois Construction, Inc. for upgrades at three Sepulveda Feeder structures; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

The Sepulveda Feeder has three underground structures that allow delivery of treated water from the Joseph Jensen Water Treatment Plant to member agencies along the East Valley Feeder and the West Valley Feeder No. 1. These underground structures contain venturi flow meters, valves, sump pumps, and ventilation fans. After more than 50 years of continuous service, electrical equipment in these structures is deteriorating. Further deterioration of the electrical system in these structures may affect the reliability of meter readings and valve operation. The action awards a construction contract to replace deteriorated electrical components and make other upgrades at three Sepulveda Feeder underground structures.

Details

Background

The Sepulveda Feeder has three underground structures near the intersection of Rinaldi Street and Havenhurst Avenue in the community of Granada Hills. The three structures are the Sepulveda Feeder/East Valley Feeder interconnection structure, which delivers water from the Sepulveda Feeder to the East Valley Feeder; the Sepulveda Feeder/West Valley Feeder No. 1, which delivers water from the Sepulveda Feeder to the West Valley Feeder No. 1; and a third structure, which houses the master meter that measures the flow from the Jensen plant to the Sepulveda Feeder. The structures were constructed between 1962 to 1968 and contain piping, venturi flow meters, valves, sump pumps, ventilation fans, and electrical equipment to monitor and control flows.

Recent inspections showed that after more than 50 years of service, the structures' electrical systems are deteriorating and need to be replaced. The conduits and electrical equipment inside the structures have begun to corrode, which may affect the reliability of meter readings and valve operation. Power from the Sepulveda Feeder/East Valley Feeder interconnection structure is distributed to the other two nearby structures. This project will provide a new electrical service from the Los Angeles Department of Water and Power (LADWP) to each of the three structures so that a power shutdown at one structure (caused by maintenance or an electrical fault) will not affect operations of the other structures.

In addition to the electrical upgrades, piping modifications are needed at the Sepulveda Feeder/West Valley Feeder No. 1 interconnection structure. The West Valley Feeder No. 1 is an 8.3-mile-long prestressed concrete cylinder pipeline whose diameter varies from 48 inches to 57 inches. A 5.5-mile reach of West Valley Feeder No. 1, extending from the Sepulveda Feeder to the De Soto sectionalizing valve, has been leased to LADWP since 1977; and the Sepulveda Feeder/West Valley Feeder interconnection structure shutoff valve has been closed during the lease period. To prevent the Sepulveda Feeder/West Valley Feeder No. 1 interconnection structure valve from accidentally being opened and exposing the LADWP delivery system to high-pressure Sepulveda Feeder water, removal of a pipe spool and installation of 30-inch blind flanges is recommended.

The construction of the electrical upgrades and the piping modification will be executed under one construction contract to avoid multiple construction activities at the same structure within a short period. This approach

reduces the coordination effort for traffic control plans and construction permits from the city of Los Angeles. Final design for this work is complete, and staff recommends award of a contract at this time.

In accordance with the April 2020 action on the biennial budget for fiscal years 2020/21 and 2021/22, the General Manager will authorize staff to proceed with upgrades at the Sepulveda, East Valley, and West Valley Feeder Interconnection structures, pending the Board's award of the construction contract, as described below. Based on the current Capital Investment Plan (CIP) expenditure forecast, funds for the work to be performed pursuant to this action during the current biennium are available within the CIP Appropriation for Fiscal Years 2020/2021 and 2021/22 (Appropriation No. 15517). Funds required for work to be performed pursuant to the subject contract after fiscal year 2021/22 are budgeted within the Capital Investment Plan Appropriation for Fiscal Years 2022/23 and 2023/24. This project has been reviewed in accordance with Metropolitan's CIP prioritization criteria and was approved by Metropolitan's CIP Evaluation Team to be included in the Distribution System Reliability Program.

Upgrades at Three Sepulveda Feeder Structures – Construction

The scope of the upgrades at three Sepulveda Feeder structures includes replacement of existing service panels, control panels, transformers, panelboards, conduits, wiring, lighting, and receptacles; and installation of new grounding systems and electrical and telephone service connections. Work at the Sepulveda Feeder/West Valley Feeder No. 1 interconnection structure includes excavation, removal, and replacement of the structure's roof, replacement of spool pieces with blind flanges, surface restoration, and traffic control. Metropolitan force activities will include Supervisory Control and Data Acquisition system integration, equipment start-up and testing, installation of temporary electrical systems, and electrical system shutdowns and switchovers. In addition, Metropolitan will furnish pipe blind flanges for installation by the construction contractor.

A total of $4.7 million is required for this work. In addition to the contract amount, other allocated funds include: $225,000 for control system integration and shutdown-related activities by Metropolitan staff as described above; $400,000 for construction management and inspection; $237,000 for submittal review and record drawings preparation by Metropolitan staff, including technical support for Metropolitan furnished equipment and installation; $200,000 for technical support during construction by Kennedy/Jenks Consultants, as described below; $195,000 for permitting, hazardous material compliance monitoring, contract administration, environmental monitoring, and project management; and $299,408 for the remaining budget.

Attachment 1 provides the allocation of the required funds. The total estimated cost to complete the Sepulveda Feeder upgrades at three structures, including the amount allocated to date and funds allocated for the work described in this action, is approximately $5.7 million. Approximately $1 million has been expended on this project to date.

Award of Construction Contract (Blois Construction, Inc.)

Specification No. 1966 for Sepulveda Feeder Electrical Upgrades at Three Structures was advertised for bids on January 27, 2022. As shown in **Attachment 2**, four bids were received and opened on March 10, 2022. The low bid from Blois Construction, Inc. in the amount of $3,143,592 complies with the requirements of the specifications. The other bids ranged from $3,150,313 to $4,937,969, while the engineer's estimate for this project was $2,123,120. Staff investigated the difference between the engineer's estimate and the low bid. Key differences are attributed to increased costs for electrical equipment and the greater-than-expected contractor staffing level required to complete construction within the duration of the approved traffic control plan. For this contract, Metropolitan established a Small Business Enterprise (SBE) participation level of at least 25 percent of the bid amount. Blois Construction, Inc. is an SBE firm, and thus achieves 100 percent participation. The subcontractors for this contract are listed in **Attachment 3**.

This action awards a $3,143,592 contract to Blois Construction, Inc. for the electrical upgrades at three structures along the Sepulveda Feeder.

As described above, construction management and inspection will be performed by Metropolitan staff. Engineering Services' performance metric target range for construction management and inspection of projects with construction costs greater than $3 million is 9 to 12 percent. For this project, the performance metric goal for construction management and inspection is approximately 11.9 percent of the total construction cost. The

total cost of construction for this project is $3,368,592, which includes the amount of the contract ($3,143,592) and Metropolitan force activities ($225,000).

Technical Support During Construction (Kennedy/Jenks Consultants, Inc.) – No Action Required

Kennedy/Jenks Consultants, Inc. performed final design under a board-authorized agreement. As the engineer of record, Kennedy/Jenks Consultants, Inc., is recommended to provide technical support during construction. Planned activities include responding to requests for information from the contractor, advising staff on technical issues which may arise, as well as assisting with start-up and testing. A new agreement with Kennedy/Jenks is planned to be executed under the General Manager's Administrative Code authority to award contracts of $250,000 or less. The estimated cost for these services is $200,000.

For this agreement, Metropolitan established an SBE participation level of 25 percent. Kennedy/Jenks Consultants, Inc. has agreed to meet this level of participation. The sole subconsultant planned for this agreement is Terrazas Group.

Alternatives Considered

Staff considered issuing a construction contract for the electrical upgrades of the structures and a separate contract for the piping modifications of the Sepulveda Feeder/West Valley Feeder No. 1 interconnection structure, but this would require multiple permits and traffic control plans and would not have been the most efficient way to get this work done. Staff recommends completing the required piping modifications, that were part of a separate CIP project, as part of the Sepulveda Feeder electrical upgrades project. This approach will allow for efficient execution of the overall infrastructure needs at these three structures, in addition to minimizing disruption to the community.

Summary

This action awards a $3,143,592 construction contract to Blois Construction, Inc. for the Sepulveda, East Valley, and West Valley Feeder Interconnection upgrades. See **Attachment 1** for the Allocation of Funds; **Attachment 2** for the Abstract of Bids; **Attachment 3** for the listing of Subcontractors for Low Bidder; and **Attachment 4** for the Location Map

Project Milestone

July 2023 – Completion of construction of upgrades at three structures along the Sepulveda Feeder

Policy

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

By Minutes Item 51283, dated August 2018, the Board authorized final design of Stage 3 Improvements for West Valley Feeder No. 1.

By Minutes Item 51351, dated October 2018, the Board authorized design of Sepulveda Feeder/East Valley Feeder Interconnection Electrical Upgrades.

By Minute Item 51963, dated April 14, 2020, the Board appropriated a total of $500 million for projects identified in the Capital Investment Plan for Fiscal Years 2020/21 and 2021/22.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed project is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed project involves operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of existing or former use and no possibility of significantly impacting the physical environment. In addition, the proposed project includes the replacement and reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have the

same purpose and capacity as the structure replaced. The proposed project also action includes minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry or agricultural purposes. Accordingly, the proposed action qualifies under Class 1, Class 2, and Class 4 Categorical Exemptions (Sections 15301, 15302, and 15304 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

Award a $3,143,592 contract to Blois Construction, Inc. for electrical upgrades at three Sepulveda Feeder underground structures

Fiscal Impact: Expenditure of $4.7 million in capital funds. Approximately $50,000 will be incurred in the current biennium and has been previously authorized. The remaining funds from this action are accounted for in the next biennial budget and were authorized in April 2022.
Business Analysis: This option will protect Metropolitan's assets, enhance delivery reliability to member agencies, and reduce the risk of costly urgent repairs.

Option #2

Do not proceed with the project at this time.
Fiscal Impact: None
Business Analysis: This option would forego an opportunity to enhance operational and delivery reliability and reduce the risk of costly urgent repairs.

Staff Recommendation

Option #1

4/21/2022
John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

4/25/2022
Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Abstract of Bids

Attachment 3 – Subcontractors for Low Bidder

Attachment 4 – Location Map

Ref# es12685186

Allocation of Funds for Sepulveda Feeder Upgrades at Three Structures

	Current Board Action (May 2022)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	195,000
Support during construction & testing	60,000
Submittals Review & Record Drwgs.	177,000
Construction Inspection & Support	400,000
Metropolitan Force Construction	185,000
Materials & Supplies	32,000
Incidental Expenses	8,000
Professional/Technical Services	
Kennedy/Jenks Consultants	200,000
Right-of-Way	-
Equipment Use	-
Contracts	
Blois Construction, Inc.	3,143,592
Remaining Budget	299,408
Total	**$ 4,700,000**

The total amount expended to date on the electrical upgrades of three structures along the Sepulveda Feeder is approximately $1,042,000. The total estimated cost to complete this project, including the amount appropriated to date and funds allocated for the work described in this action, is $5.7 million.

The Metropolitan Water District of Southern California

Abstract of Bids Received on March 10, 2022 at 2:00 P.M.

Specifications No. 1966
Sepulveda Feeder Upgrades at Three Structures

The work consists of replacing an existing service panel, control panels, transformers, panelboards, conduits, wiring, lighting, receptacles; installing new grounding systems, electrical and telephone service connections at three structures along the Sepulveda Feeder; and replacing 30-inch diameter pipe fittings at the Sepulveda Feeder/West Valley Feeder No. 1 interconnection structure.

Engineer's estimate: $2,123,120

Bidder and Location	Total	SBE Amount	SBE %	Met SBE[1]
Blois Construction, Inc. Oxnard, CA	**$3,143,592**	**$3,143,592**	**100%**	**Yes**
Environmental Construction, Inc. Woodland Hills, CA	$3,150,313	-	-	-
Reyes Electrical Contractor, Inc. Glendale, CA	$3,620,000	-	-	-
Mike Bubalo Construction Co., Inc. Baldwin Park, CA	$4,937,969	-	-	-

[1] SBE (Small Business Enterprise) participation level established at 25 percent for this contract bid.

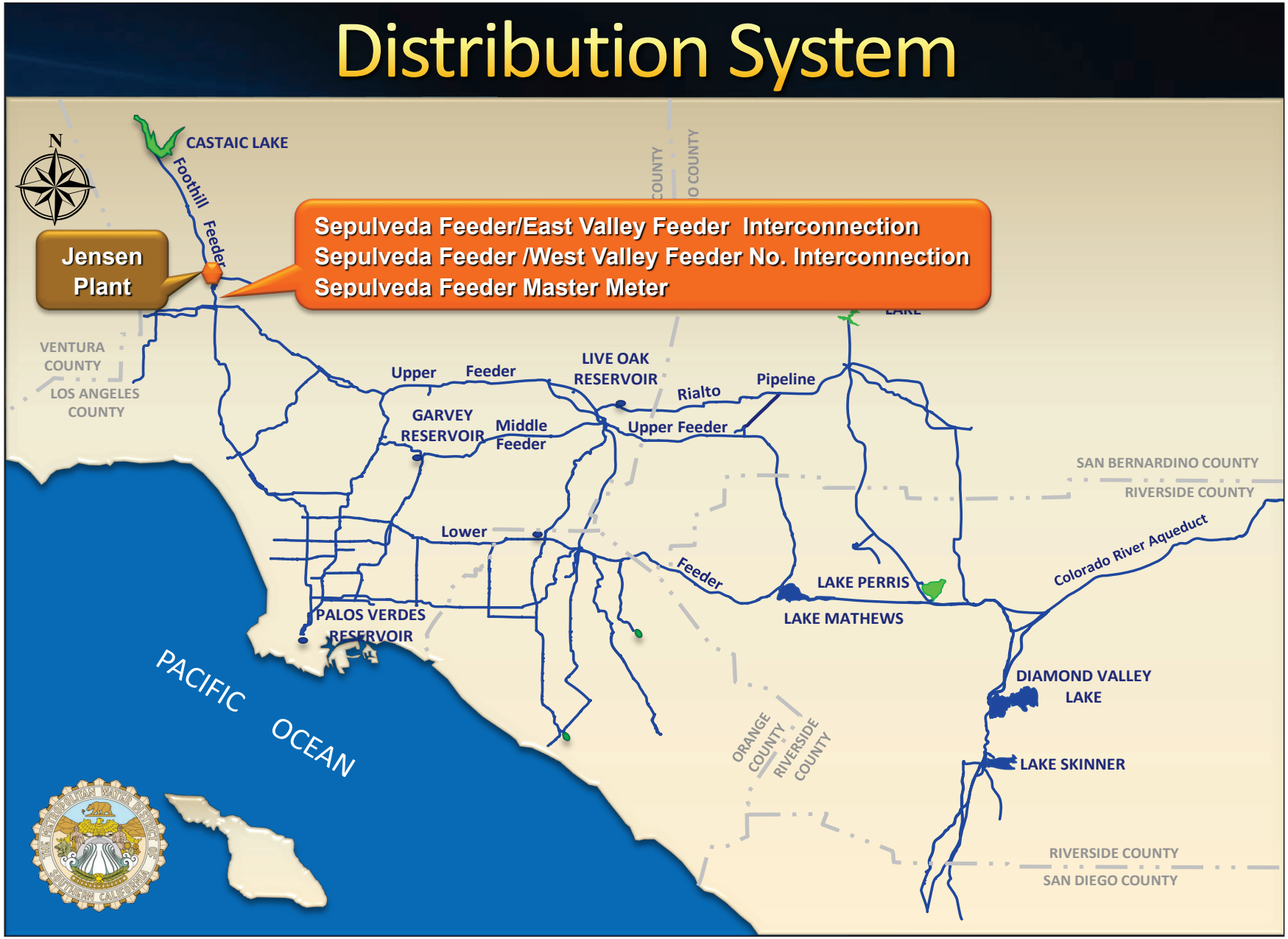
The Metropolitan Water District of Southern California

Subcontractors for Low Bidder

Specifications No. 1966
Sepulveda Feeder Upgrades at Three Structures

Low bidder: Blois Construction, Inc.

Subcontractor and Location
Zamborelli Enterprises Laguna Beach, CA
National Coatings & Lining Murrietta, CA
Castlerock Environmental Santa Fe Springs, CA
Synergy Traffic Control Walnut, CA
ASC Electrical Irvine, CA


Distribution System
N
CASTAIC LAKE
Foothill Feeder
Jensen Plant
Sepulveda Feeder/East Valley Feeder Interconnection
Sepulveda Feeder /West Valley Feeder No. Interconnection
Sepulveda Feeder Master Meter
VENTURA COUNTY
LOS ANGELES COUNTY
Upper Feeder
LIVE OAK RESERVOIR
Rialto Pipeline
GARVEY RESERVOIR
Middle Feeder
Upper Feeder
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
Lower Feeder
Colorado River Aqueduct
LAKE PERRIS
LAKE MATHEWS
PALOS VERDES RESERVOIR
PACIFIC OCEAN
DIAMOND VALLEY LAKE
ORANGE COUNTY
RIVERSIDE COUNTY
LAKE SKINNER
RIVERSIDE COUNTY
SAN DIEGO COUNTY

Engineering & Operations Committee

Sepulveda Feeder Upgrades at Three Structures

Item #7-4

May 10, 2022

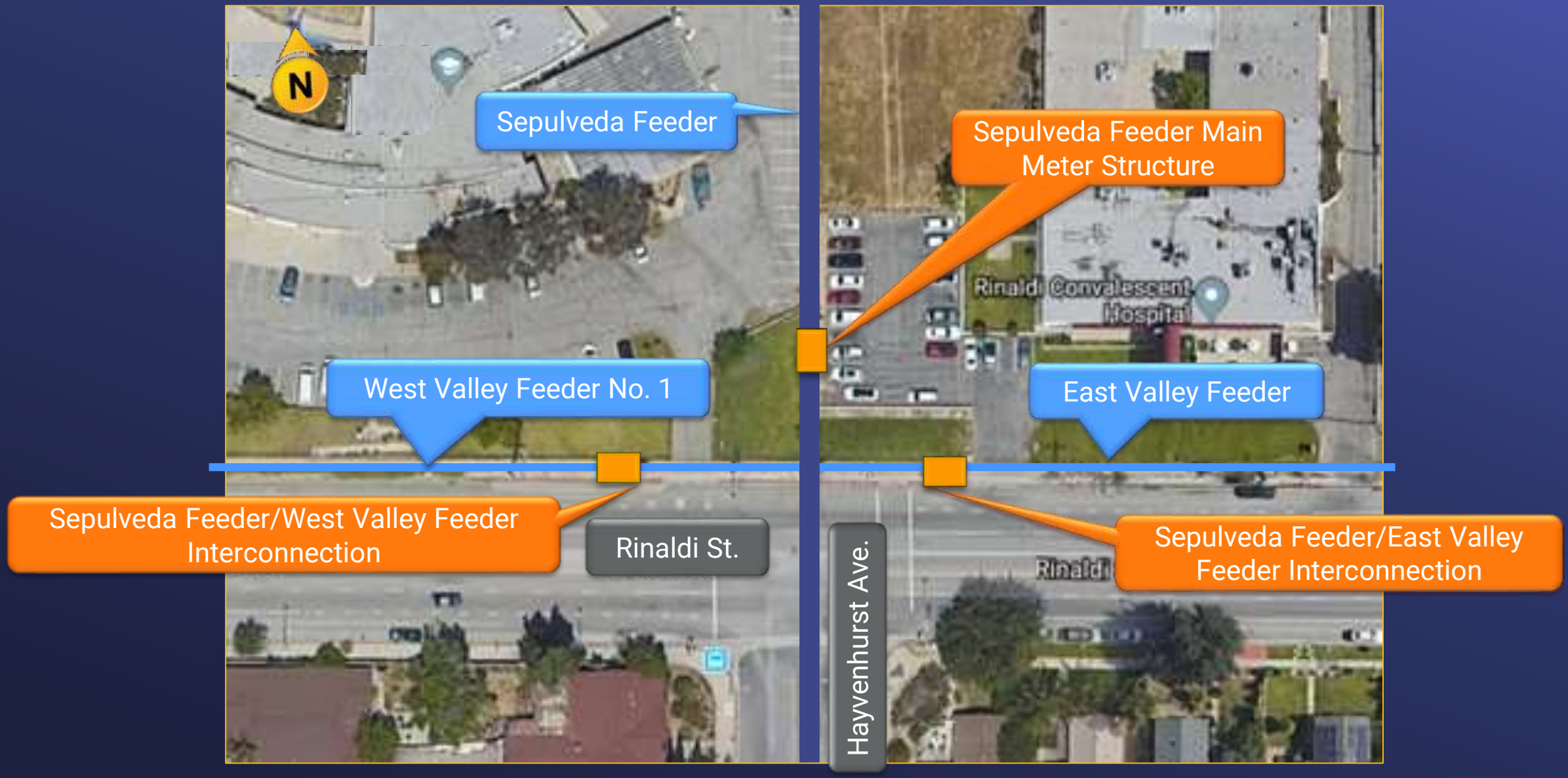
Sepulveda Feeder Upgrades at Three Structures

Current Action

- Award a $3,143,592 contract to Blois Construction, Inc. for upgrades at three Sepulveda Feeder structures

Distribution System

Sepulveda Feeder Upgrades at Three Structures



Background

- Structures constructed in 1968
- Equipment is corroded with diminished reliability
  - Potential impacts to meter & valve operation
  - Potential safety hazards if not addressed
- Inadvertent opening of valve may expose LADWP delivery system to high-pressure conditions of Sepulveda Feeder

Sepulveda Feeder Upgrades at Three Structures

Alternatives Considered

- Separate construction contracts for:
  - Electrical upgrades of the structures
  - Piping modification of the Sepulveda Feeder/West Valley Feeder No. 1 interconnection structure
- Selected Alternative – One construction contract for electrical upgrades & piping modifications
  - The most efficient way to get this work done
  - Minimize disruption to the community
  - Reduce coordination effort for traffic control plans & permitting

Contractor Scope

- Replace deteriorated equipment & electrical system
- Add new electrical & telephone service connections
- Replace the Sepulveda Feeder/West Valley interconnection structure's roof & spool pieces with blind flanges
- Perform traffic control & surface restoration

Blind Flange

Pipe Spool Removal

Metropolitan Scope

- Force Construction
  - Furnish pipe blind flanges for installation by the contractor
  - Coordinate shutdown & utility power outages
  - De-energize equipment for shutdowns, testing & switchover
  - Install temporary electrical systems
  - Perform SCADA system integration
- Field inspection & construction management
- Submittal review & technical support
- Respond to request for information
- Environmental monitoring, project management & contract administration

Bid Results
Specifications No. 1966

Bids Received	March 10, 2022
No. of Bidders	4
Low Bidder	Blois Construction, Inc.
Low Bid	$3,143,592
Range of Higher Bids	$3.15 M to $4.94 M
Engineer's estimate	$2.12 M
SBE Participation*	100%

*SBE (Small Business Enterprise) participation level set at 25%

New Agreement – Kennedy/Jenks Consultants

- Engineer of Record
- Scope of work
  - Respond to RFI's for information from contractors & submittal review
  - Technical support & record drawings
- SBE participation level: 25%
- NTE amount: $200,000

Allocation of Funds

Contract	
Blois Construction, Inc.	$3,143,592
Metropolitan Labor	
Program mgmt. & envir. monitoring	195,000
Support during construction & testing	60,000
Submittal review, technical support & record drwgs	177,000
Construction Management/Inspection	400,000
Force construction	185,000
Materials & Incidentals	40,000
Professional Services	
Kennedy/Jenks Consultants	200,000
Remaining Budget	299,408
Total	$4,700,000

Project Schedule

Project	2022	2023
Sepulveda Feeder Upgrades At Three Structures		

Board Action

Construction

Completion of Construction

Board Options

- Option #1

  Award $3,143,592 contract to Blois Construction, Inc. for electrical upgrades at three Sepulveda Feeder underground structures.

- Option #2

  Do not proceed with the project at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

- **Board of Directors**
  Engineering and Operations Committee

5/10/2022 Board Meeting

7-5

Subject

Review and consider Addendum No. 1 to the certified 2015 Final Environmental Impact Report for the Weymouth Plant Improvements; award a $93,840,000 contract to J. F. Shea Construction, Inc. for rehabilitation of Basins Nos. 5-8 and Filter Building No. 2 at the F. E. Weymouth Water Treatment Plant; and authorize an agreement with Carollo Engineers, Inc., for an amount not to exceed $495,000 for engineering support during construction

Executive Summary

Reliable operation of the flocculation, sedimentation, and filtration processes is essential for a surface water treatment plant to comply with its operating permit and produce water that meets federal and state drinking water regulations. The mechanical components of the flocculation/sedimentation basins and the valves that operate the filters at the F. E. Weymouth Water Treatment Plant (Weymouth plant) have reached the end of their service life and need to be replaced. In addition, the basin inlet channels need structural reinforcement to reduce the risk of damage following a major seismic event. This action awards a construction contract to rehabilitate the east side of the Weymouth plant (Basins Nos. 5-8 and Filter Building No. 2). This action also authorizes a consulting agreement to provide engineering support during construction.

Details

Background

The Weymouth plant was placed into service in 1941 with an initial capacity of 100 million gallons per day (mgd), and was expanded twice to its current treatment capacity of 520 mgd. The plant delivers a blend of waters from the Colorado River Aqueduct and State Water Project to Metropolitan's Central Pool portion of the distribution system, and to an exclusive service area. The Weymouth plant is located in the city of La Verne, approximately 1.5 miles from the Sierra Madre-Cucamonga Fault, which can generate a 7.0 magnitude earthquake.

Flocculation, sedimentation, and filtration are important unit processes within a conventional surface water treatment plant. The Weymouth plant has eight flocculation/sedimentation basins and two filter buildings. Basins Nos. 1-4 are located on the west side of the plant, adjacent to Filter Building No. 1. Basins Nos. 1-2 were constructed in 1940 as part of the original plant construction, and Basins Nos. 3-4 were added in 1949 during the first plant expansion. Basins Nos. 5-8 and Filter Building No. 2 were added on the east side of the plant in 1962 during the second plant expansion.

The mechanical, electrical, and structural components of the treatment basins and filters have deteriorated after 60 to 80 years of continuous service. Metropolitan staff has prioritized and staged their rehabilitation to minimize impacts to plant operations and enhance construction efficiency. Basins Nos. 3-4 were refurbished in 2005 and are presently in good operating conditions. Rehabilitation of Basins Nos. 5-8, which is the subject of this letter, will be synchronized with the installation of Metropolitan-furnished filter valves and actuators in Filter Building No. 2. Valve replacement in Filter Building No. 1 and rehabilitation of Basins Nos. 1-2 on the west side of the plant will proceed upon completion of Basins Nos. 5-8.

Basins Nos. 5-8 each contain rotating flocculation equipment, baffle boards, solids collection equipment, and settled water launder troughs. Basin isolation capability is provided by 32 manually operated gates that distribute

flows into the eight basins. Each filter building contains 24 filter units and houses valves ranging in diameter from 16 to 48 inches, piping, and process control equipment. The steel valve bodies and basin gates are corroded, and the embedded filter valve seals are also degraded. This degradation has led to leaking gates and valves, which have the potential to impact regular plant operation and impede routine maintenance activities when the gates and valves are relied upon to ensure dry conditions in the work areas.

Additionally, the basin inlet channels were evaluated under Metropolitan's seismic stability assessment program in 2012. These assessments identified the need to strengthen portions of the channel concrete walls. These retrofits are included in this project and will reduce the risk of damage following a major seismic event.

In November 2017, the Board authorized procurement contracts for 236 replacement butterfly valves with actuators. All Filter Building No. 2 valves have been delivered to a warehouse near the plant. Filter Building No. 1 valves are scheduled to be delivered by December 2022. Final design for the rehabilitation of Basins Nos. 5-8 and replacement of valves in Filter Building No. 2 is now complete, and staff recommends proceeding with award of a construction contract. Staff will return to the Board at a later date to award the construction contracts for valve replacement in Filter Building No. 1, and rehabilitation for Basins Nos. 1-2 on the west side of the plant.

The 2005 Final Environmental Impact Report (EIR) for the F. E. Weymouth Filtration Plant Ozonation Facilities and Site Improvements Program included the replacement of valve/actuators in Filter Building No. 2. In April 2015, Metropolitan's Board certified the Final EIR for the Weymouth Plant Improvements, which included the rehabilitation of Basins Nos. 5-8. Addendum No. 1 to the 2015 EIR, which is the subject of this action, addresses the potential environmental impacts associated with the proposed modifications identified after the original certification, including the remaining critical project components, such as Basins Nos. 1-4 inlet gates, motor control centers, local control panels, and electrical equipment.

In accordance with the April 2020 action on the biennial budget for Fiscal Years 2020/21 and 2021/22, the General Manager will authorize staff to proceed with Weymouth Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation, pending the Board award of the construction contract and authorization of the engineering services agreement described below. Based on the current Capital Investment Plan (CIP) expenditure forecast, funds for the work to be performed pursuant to this action during the current biennium are available within the CIP Appropriation for Fiscal Years 2020/2021 and 2021/22 (Appropriation No. 15517). Funds required for work to be performed pursuant to the subject contract after Fiscal Year 2021/22 are budgeted within the Capital Investment Plan Appropriation for Fiscal Years 2022/23 and 2023/24. This project has been reviewed in accordance with Metropolitan's CIP prioritization criteria and was approved by Metropolitan's CIP evaluation team to be included in the Treatment Plant Reliability Program.

Weymouth Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation – Construction

The scope of the construction contract includes: (1) replacement of treatment basin equipment; (2) replacement and modification of electrical and control equipment; (3) replacement of 127 filter valves and actuators with Metropolitan-furnished integrated valve/actuator units; (4) seismic strengthening of the treatment basin and inlet channel walls; (5) replacement of basin inlet gates; and (6) hazardous material abatement.

The basin rehabilitation work includes the removal and replacement of the existing flexible joint sealant and its adjacent concrete within the basins. Similar to the rehabilitation work that was recently completed on the Diemer plant's basins, Metropolitan has established protocols for abatement of these substances to ensure a safe working environment and to comply with the federal Toxic Substances Control Act. Approval for this abatement was obtained from the U. S. Environmental Protection Agency in March 2022. Since the basin equipment and baffle walls must be removed in order to gain access to the joints, the abatement work has been integrated into the overall scope of the subject contract. This abatement work will be completed with O&M funds in accordance with Metropolitan's current business practices as described below.

Metropolitan force construction includes preparation for sequential shutdowns and return of the basins and filters to service; electrical system shutdowns and switchovers; integration of the new equipment with the plant's supervisory control and data acquisition system; and relocation of instrumentation systems, equipment start-up, and testing.

A total of $114 million in capital funds is required for this work. In addition to the amount of the contract described below (which includes $90,840,000 in capital funds and $3 million in O&M funds), other capital funds include the following service agreements: $495,000 for technical support during construction by Carollo Engineers under a new agreement for filter building-related tasks; $100,000 for environmental support services during construction by Psomas, as described below; and $75,000 for specialized inspection services. The material sampling, environmental support, and specialized inspection services will be performed by specialty firms under contracts planned to be executed under the General Manager's Administrative Code authority to award contracts of $250,000 or less. Other allocated funds for Metropolitan staff include: $3,403,000 for Metropolitan force activities described above (which includes $2,478,000 for labor and $925,000 for materials and supplies); $9,638,000 for construction management and inspection; $2,655,000 for submittals review, responding to requests for information, and preparation of record drawings for basin related tasks; $2,047,000 for permitting, hazardous material compliance monitoring, contract administration, environmental monitoring, and project management; and $4,747,000 for remaining budget.

In accordance with provisions of the Governmental Accounting Standards Board, Metropolitan's work associated with environmental remediation must be conducted with O&M funds instead of a capital appropriation. $3.2 million has been budgeted in O&M funds in fiscal years 2022/23 and 2023/24 for environmental remediation associated with rehabilitation of the Weymouth plant's Basins Nos. 5-8. This amount includes $3 million for work to be performed by the contractor; and $200,000 for specialized materials sampling and environmental monitoring by Ramboll Consultants, Inc, as discussed below.

Attachment 1 provides the allocation of the required capital funds. The total estimated cost to complete the rehabilitation of the Weymouth plant's Basins Nos. 5-8 and Filter Building No. 2, including the amount allocated to date and funds allocated for the work described in this action, is approximately $123.2 million in capital funds and $3.2 million in O&M funds. Approximately $9.2 million has been expended on this project to date.

Award of Construction Contract (J. F. Shea Construction, Inc.)

Specification No. 1982 for Weymouth Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation was advertised for bids on January 28, 2022. As shown in **Attachment 2**, three bids were received and opened on April 7, 2022. The apparent low bidder requested to be released from its bid in accordance with the California Public Contract Code due to an inadvertent clerical error made during the bid process, which materially changed its bid. Upon review of the request, the apparent low bidder was released from its bid. The second low bid from J. F. Shea Construction in the amount of $93.84 million complies with the requirements of the specifications. The other bid was approximately $95.2 million, while the engineer's estimate was $107.4 million. For this contract, Metropolitan established a Small Business Enterprise (SBE) participation level of at least 20 percent of the bid amount. J. F. Shea Construction, Inc. has committed to meet this level of participation. The subcontractors for this contract are listed in **Attachment 3**.

This action awards a $93,840,000 contract to J. F. Shea Construction, Inc. to rehabilitate Basins Nos. 5-8 and Filter Building No. 2 at the Weymouth plant.

Metropolitan staff will perform construction management and inspection. The total cost of construction for this project is $100,543,000, which includes the amount of the contract, Metropolitan force activities ($3,403,000), and previously procured Metropolitan-furnished equipment ($3,300,000). Engineering Services' performance metric target range for construction management and inspection of projects with construction costs greater than $3 million is 9 to 12 percent. For this project, the performance metric goal for inspection is approximately 9.6 percent of the total construction cost.

Engineering Support During Construction (Carollo Engineers, Inc.) – New Agreement

Carollo Engineers, Inc. performed final design for the filter valve installation under a board-authorized agreement. As the engineer of record, Carollo Engineers is recommended to provide engineering support during construction for filter building-related tasks. Planned activities include responding to requests for information from the contractor, reviewing construction submittals, and preparing as-built record drawings.

This action authorizes an agreement with Carollo Engineers, Inc. for a not-to-exceed amount of $495,000 to provide engineering support during construction. The planned subconsultant for this agreement is LEE + RO, Inc.

Specialized Environmental Support (Ramboll Consultants, Inc.) – No Action Required

Ramboll Consultants, Inc. (Ramboll) conducted the PCB investigation at the Weymouth plant and prepared the Site-Specific PCB Remediation Waste Plan under a board-authorized agreement. Ramboll is recommended to provide remediation support during construction. Planned activities include monitoring and inspecting the contractor's remediation work, conducting confirmation field sampling, and preparing the final report for contractor oversight abatement.

A new agreement with Ramboll is planned to be executed under the General Manager's Administrative Code authority to award contracts of $250,000 or less. The estimated cost for these services is $200,000. For this agreement, Metropolitan established an SBE participation level of 25 percent. Ramboll has agreed to meet this level of participation.

Environmental Support During Construction (Psomas) – No Action Required

Psomas was prequalified through Request for Qualification No. 1265, based on the firm's extensive experience with CEQA compliance and environmental clearances, and its specific experience with facility environmental investigations and documentation. Psomas is recommended to provide environmental support services during construction. Planned activities include construction monitoring, performing nesting bird surveys, and preparing the project completion memorandum and Historic American Engineering Record report.

A new agreement with Psomas is planned to be executed under the General Manager's Administrative Code authority to award contracts of $250,000 or less. The estimated cost for these services is $100,000. For this agreement, Metropolitan established an SBE participation level of 25 percent. Psomas has agreed to meet this level of participation.

Alternatives Considered

During planning and design of this project, staff considered rehabilitating the treatment basins and replacing the filter valves under separate construction contracts. As each of the critical project elements (i.e., replacement of basin mechanical equipment, replacement of filter valves, and structural strengthening of inlet channels) would each require a partial plant shutdown, individual contracts would prolong the overall construction duration and cause numerous disruptions to plant operations. Synchronized construction of basin and filter rehabilitation on the same side of the plant would significantly reduce the number of plant shutdowns and outages. Since Basins Nos. 3-4 located on the west side of the plant were rehabilitated in 2005, staff prioritized rehabilitation of the facilities on the east side. The recommended approach of combining rehabilitation of Basins Nos. 5-8 and the adjacent Filter Building No. 2 under one single contract achieves construction efficiency by keeping plant shutdowns and outages to a minimum and reducing project costs related to contractor mobilization and construction contract administration. Rehabilitation of Basin Nos. 1-2 will take place in the future under a separate construction contract.

Summary

This action awards a contract to J. F. Shea Construction, Inc. for the rehabilitation of Basins Nos. 5-8 and Filter Building No. 2 at the Weymouth plant and authorizes an agreement for engineering support during construction. See **Attachment 1** for the Allocation of Funds; **Attachment 2** for the Abstract of Bids; **Attachment 3** for the listing of Subcontractors for Low Bidder; **Attachment 4** for the Location Map; and **Attachment 5** for Addendum No. 1 to the 2015 Final Environmental Impact Report for the Weymouth Plant Improvements.

Project Milestone

May 2025 – Completion of construction for the rehabilitation of Weymouth Basins Nos. 5-8 and Filter Building No. 2

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

By Minute Item 49121, dated July 10, 2012, the Board authorized preliminary design of treatment basin inlet gates rehabilitation and seismic upgrades to basin inlet channels at the Weymouth plant.

By Minute Item 49324, dated February 12, 2013, the Board authorized preliminary design to rehabilitate Basins Nos. 5-8 at the Weymouth plant.

By Minute Item 49764, dated May 13, 2014, the Board authorized final design to replace filter valves at the Weymouth plant.

By Minute Item 50092, dated April 14, 2015, the Board certified that the Final Environmental Impact Report for the Weymouth Plant Improvements has been completed in compliance with CEQA and the State CEQA deadlines.

By Minute Item 51014, dated November 14, 2017, the Board awarded two contracts to procure filter valves at the F. E. Weymouth Water Treatment Plant.

By Minute Item 51963, dated April 14, 2020, the Board appropriated a total of $500 million for projects identified in the Capital Investment Plan for Fiscal Years 2020/21 and 2021/22.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The Board certified the project's Final EIR on April 14, 2015. The Board also adopted at that time the Findings of Fact, the Statement of Overriding Considerations, the Mitigation Monitoring and Reporting Program, and the project itself. On November 16, 2021, Addendum No. 1 to the Final EIR was prepared to document the proposed minor modifications to the approved project as detailed in this board letter (see **Attachment 5**).

CEQA and the State CEQA Guidelines require the preparation of an addendum to a previously certified EIR if changes or additions to the project are necessary, but none of the conditions described in Section 15162 of the State CEQA Guidelines calling for the preparation of a subsequent EIR have occurred (Section 15164 of the State CEQA Guidelines). The proposed modifications to the previously approved project also do not meet any of the conditions requiring the preparation of a supplement to an EIR (State CEQA guidelines, Section 15163). Instead, the proposed modifications require only minor changes or additions to the evaluation in the certified Final EIR to make it adequate under CEQA. None of the proposed modifications would result in significant adverse impacts beyond those impacts already disclosed in the original Final EIR. Finally, the Board must certify that the addendum reflects Metropolitan's independent judgement and analysis.

CEQA determination for Option #2:

None required

Board Options

Option #1

a. Review and consider Addendum No. 1 to the certified 2015 Final Environmental Impact Report for the Weymouth Plant Improvements.
b. Award a $93,840,000 contract to J. F. Shea Construction, Inc. to rehabilitate Basins Nos. 5-8 and Filter Building No. 2 at the Weymouth plant.
c. Authorize an agreement with Carollo Engineers, Inc. for a new not-to-exceed total of $495,000 to provide engineering support.

Fiscal Impact: Expenditure of $114 million in capital funds and $3.2 million in O&M funds. Approximately $1.5 million in capital funds will be incurred in the current biennium and has been previously authorized. The remaining funds from this action are accounted for in the next biennial budget and were authorized in April 2022.
Business Analysis: This option will enhance the operational reliability of the Weymouth plant by replacing critical process components.

Option #2

Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: This option would forego an opportunity to enhance the operational reliability of the treatment systems, and may lead to costly urgent repairs and risk delivery interruptions following a major seismic event.

Staff Recommendation

Option #1

4/25/2022

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

4/25/2022

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Financial Statements

Attachment 2 – Abstract of Bids

Attachment 3 – Subcontractors for Low Bidder

Attachment 4 – Location Map

Attachment 5 – Addendum No. 1 to the 2015 Final EIR

Ref# es12681238

Allocation of Funds for Weymouth Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation

	Current Board Action (May 2022)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	2,047,000
Submittals Review & Record Drwgs.	2,655,000
Construction Inspection & Support	9,638,000
Metropolitan Force Construction	2,478,000
Materials & Supplies	925,000
Incidental Expenses	-
Professional/Technical Services	
Carollo Engineers, Inc.	495,000
Psomas	100,000
Consultant Inspection	75,000
Right-of-Way	-
Equipment Use	-
Contracts	-
J. F. Shea Construction [1]	90,840,000
Remaining Budget	4,747,000
Total	**$ 114,000,000**

The total amount expended to date for the Weymouth Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation is approximately $9.2 million. The total estimated cost to complete this project, including the amount appropriated to date, and funds allocated for the work described in this action is $123.2 million in capital funds and $3.2 million in O&M funds.

[1]The total contract amount is $93,840,000, of which $3 million will be paid from O&M funds.

The Metropolitan Water District of Southern California

Abstract of Bids Received on April 7, 2022, at 2:00 P.M.

Specifications No. 1982
Weymouth Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation

The work consists of replacing all flocculation/sedimentation equipment at the Weymouth plant's Basins Nos. 5-8; strengthening basin walls and basin inlet channels; replacing 127 butterfly valves and their actuators in Filter Building No. 2 with Metropolitan-furnished equipment; replacing and modifying electrical and control equipment; and performing hazardous material abatement.

Engineer's estimate: $107,420,000

Bidder and Location	Total	SBE $	SBE %	Met SBE[1]
Environmental Construction, Inc.[2] Woodland Hills, CA	$79,897,020.40	-	-	-
J. F. Shea Construction, Inc. **Walnut, CA**	**$93,840,000.00**	**$ 20,274,914**	**21%**	**Yes**
Steve P. Rados, Inc. Santa Ana, CA	$95,196,800.00	-	-	-

[1] Small Business Enterprise (SBE) participation level established at 20% for this contract.
[2] Environmental Construction, Inc. requested to be released from its bid in accordance with the Public Contract Code due to an inadvertent clerical error made during the bid process which materially changed its bid.

The Metropolitan Water District of Southern California

Subcontractors for Low Bidder

Specifications No. 1982
Weymouth Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation

Low bidder: J. F. Shea Construction, Inc.

Subcontractor and Location
Environmental Construction Group Signal Hill, CA
ATR Technologies, Inc. Pomona, CA
National Coating & Lining Murrieta, CA
GTE Metal Erectors, Inc. Canby, OR
CMC Rebar San Bernardino, CA
Helix Electric San Diego, CA


Distribution System
N
CASTAIC LAKE
Foothill Feeder
Weymouth Water Treatment Plant
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
SILVERWOOD LAKE
VENTURA COUNTY
LOS ANGELES COUNTY
Upper Feeder
LIVE OAK RESERVOIR
Rialto Pipeline
GARVEY RESERVOIR
Middle Feeder
Upper Feeder
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
Lower Feeder
Colorado River Aqueduct
LAKE PERRIS
LAKE MATHEWS
PALOS VERDES RESERVOIR
PACIFIC OCEAN
DIAMOND VALLEY LAKE
ORANGE COUNTY
RIVERSIDE COUNTY
LAKE SKINNER
RIVERSIDE COUNTY
SAN DIEGO COUNTY

Addendum No. 1 to the F.E. Weymouth Water Treatment Plant Improvements Program

Environmental Impact Report, SCH No. 2013121074

November 9, 2021

Prepared For:

The Metropolitan Water District of Southern California
Environmental Planning Section
700 North Alameda Street
Los Angeles, California 90012

Prepared By:

Rincon Consultants, Inc.
250 East 1st Street, Suite 1400
Los Angeles, California 90012

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THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

ADDENDUM NO. 1 TO THE F.E. WEYMOUTH WATER TREATMENT PLANT IMPROVEMENTS PROGRAM ENVIRONMENTAL IMPACT REPORT

(State Clearinghouse No. 2013121074)
Project Number 104931 Addendum No. 1

The Metropolitan Water District of Southern California
Environmental Planning Section
700 North Alameda Street
Los Angeles, CA 90012

Contact Information:
Ms. Brenda S. Marines
Environmental Specialist
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bmarines@mwdh2ocom

November 9, 2021

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Metropolitan Water District of Southern California F. E. Weymouth Water Treatment Plant Improvements Program

Addendum No. 1 to the Environmental Impact Report

1 Introduction

1.1 Purpose of Addendum No. 1

The purpose of this Addendum is to evaluate potential environmental effects associated with proposed minor modifications to the previously certified F. E. Weymouth Water Treatment Plant Improvements Program ("Weymouth Improvements Program" or "original Project"). The Final Environmental Impact Report (EIR) for the Project was prepared and certified by The Metropolitan Water District of Southern California (Metropolitan) Board on April 14, 2015 ("2015 EIR"). Subsequent to the certification of the EIR, minor modifications to the Project were identified.

This Addendum evaluates minor design modifications to the existing Project, which includes the Basins 5-8 Rehabilitation project evaluated in the 2015 EIR and the Filter Building 2 Valves Replacement project evaluated in the 2005 *Final Environmental Impact Report for the F. E. Weymouth Filtration Plant Ozonation Facilities and Site Improvements Program* ("2005 EIR"). During final design of the Basins 5-8 Rehabilitation and Filter Building 2 Valves Replacement projects, it was determined that the existing inlet gates located within Basins 1-4 were leaking and needed replacement. Additionally, the electrical equipment located at the Electrical Control Building (formerly called the Davey Shack) needed to be upgraded. The electrical equipment operates and controls the inlet gates, sedimentation clarifiers, flocculation system, and sludge removal system associated with Basin Nos. 5-8. These proposed modifications are described in detail in Section 2.0 of this Addendum and are summarized as follows:

- Basin Nos. 1-4. Replace eight inlet gates and associated actuators, and gate guides, motor control centers (MCCs), gate power panels, and local control panels as well as installation of a new remote input/output (I/O) device for extension of the remote terminal unit (RTU).

- Electrical Control Building. Install MCCs and air conditioning as well as replacement of the RTU, doors, access hatch, and windows.

To comply with the California Environmental Quality Act (CEQA) (Public Resources Code Sections 21000 et seq.) and *Guidelines for Implementation of the CEQA* (California Code of Regulations Sections 15000 et seq., hereinafter referred to as *State CEQA Guidelines*), this Addendum No. 1 has been prepared to evaluate the potential environmental impacts associated with the proposed modifications as described in detail in Section 2.0.

1.2 Regulatory Background

According to Section 15164(a) of the *State CEQA Guidelines*, the Lead Agency or Responsible Agency shall prepare an addendum to a previously certified EIR or adopted negative declaration if some changes or additions are necessary, but none of the changes call for preparation of a subsequent EIR or negative declaration (see *State CEQA Guidelines* Section 15162). Section 15162 of the *State CEQA Guidelines*

lists the conditions that would require the preparation of a subsequent EIR or negative declaration rather than an addendum. These include the following:

(1) Substantial changes are proposed in the Project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the Project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time of the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:

   (A) The Project will have one or more significant effects not discussed in the previous EIR or negative declaration;

   (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

   (C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the Project, but the Project proponents decline to adopt the mitigation measure or alternative; or

   (D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the Project proponents decline to adopt the mitigation measure or alternative.

Metropolitan has evaluated the potential environmental impacts of the proposed modifications as outlined in Section 3.0 of this Addendum. As noted in Section 6.0, *Conclusion*, of this Addendum, Metropolitan, acting as the Lead Agency, has determined that none of the conditions described in Section 15162 of the *State CEQA Guidelines* apply, and an addendum is the appropriate environmental documentation for the proposed modifications and fully complies with CEQA and the *State CEQA Guidelines*.

1.3 Summary of Environmental Effects

Section 3.0 of this Addendum presents an analysis of potential environmental impacts related to aesthetics, air quality, biological resources, cultural and historical resources, energy, greenhouse gas (GHG) emissions, hazards and hazardous materials, hydrology and water quality, noise and vibration, transportation and traffic, and wildfire associated with the proposed modifications. For all other resource categories identified in the CEQA Appendix G Checklist (e.g., agriculture and forestry resources, geology and soils, land use and planning, mineral resources, population and housing, public services, recreation, tribal cultural resources, and utilities and service systems), the 2015 EIR found that the Project would either have no impact or a less than significant impact. For these categories, the proposed modifications would not generate new significant environmental effects that were not previously addressed, nor would they substantially increase the severity of previously identified significant effects identified in the Project's original environmental documentation. Therefore, no further written analysis for these categories in this Addendum is required.

The 2015 EIR and Mitigation Monitoring and Reporting Program (MMRP) included mitigation measures for four resource areas – aesthetics, air quality, cultural and historical resources, and noise and vibration - to reduce significant environmental impacts associated with the approved Project to the maximum extent practicable. The currently proposed modifications would be subject to the same adopted mitigation measures, as applicable. Mitigation measures adopted in the 2015 EIR remain unchanged.

This Addendum concludes that the proposed minor design modifications would not change the significance determinations of the 2015 EIR regarding construction and operational impacts on the identified impact categories described above. Also, because analyses of energy and wildfire were not required when the original Project EIR was certified, brief discussions of impacts on these resource categories are included. The proposed modifications to the previously approved Project do not meet any of the conditions that would require the preparation of a subsequent EIR or negative declaration set forth in Section 15162 of the *State CEQA Guidelines* or any of the conditions requiring the preparation of a supplement to an EIR as set forth in Section 15163 of the *State CEQA Guidelines.*

1.4 Incorporation by Reference

The following documents were used in the preparation of this Addendum and are incorporated herein by reference, consistent with Section 15150 of the *State CEQA Guidelines*.

- *Draft Environmental Impact Report for the F. E. Weymouth Water Treatment Plant Improvements Program.* Metropolitan Water District of Southern California. (SCH No. 2013121074), October 2014.
- *Final Environmental Impact Report for the F. E. Weymouth Water Treatment Plant Improvements Program*. Metropolitan Water District of Southern California. (SCH No. 2013121074), April 2015.
- *Draft Environmental Impact Report* for the *F. E. Weymouth Filtration Plant Ozonation Facilities and Site Improvements Program.* Metropolitan Water District of Southern California. (SCH No. 2004071097), January 2005.
- *Final Environmental Impact Report for the F. E. Weymouth Filtration Plant Ozonation Facilities and Site Improvements Program.* Metropolitan Water District of Southern California. (SCH No. 2004071097), March 2005.

2 Description of the Proposed Modifications

2.1 Background/EIR

In December 2013, Metropolitan published a Notice of Preparation/Initial Study (NOP/IS) for the Project. Metropolitan then prepared an EIR pursuant to CEQA Guidelines Section 15080 et seq. The EIR was circulated from October 21, 2014 through December 4, 2014. As mentioned previously, the EIR was certified by Metropolitan on April 14, 2015. Since that time, Metropolitan has been implementing the Weymouth Improvements Program at the F. E. Weymouth Water Treatment Plant ("Weymouth Plant"). To date, the Solar Generation Facility, Chlorine Systems Upgrades, Domestic and Fire Water System Improvements, Stormwater Management Improvements, and Filter Building No. 1 Rehabilitation projects have been completed. The Basin Nos. 5-8 Rehabilitation, and Seismic Upgrades to the Water Quality Laboratory, Engineering Building, Wash Water Pump Station Improvements, Dry Polymer System Upgrades, Oxidation Demonstration Plant Rehabilitation, and Warehouse projects are the projects that are yet to be implemented.

2.2 Objectives of the Proposed Project Modifications

The objectives for the proposed modifications are the same as the objectives identified in the 2015 EIR. As described in the 2015 EIR, the approved Project has the following objectives:

- Upgrade aging infrastructure to ensure safe drinking water for years to come;
- Install new, more-efficient treatment technologies to meet more stringent drinking water standards;
- Increase and maintain operational flexibility;
- Enhance features of the treatment plant that protect public safety and the environment;
- Improvement stormwater management; and
- Reduce off-site energy demands and lower greenhouse gas emissions.

This Addendum will evaluate the potential impacts to aesthetics, air quality, biological resources, cultural and historical resources, energy, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise and vibration, transportation and traffic, and wildfire for the minor project modifications, as described in Section 2.3 (Project Location and Project Description). The proposed modifications would not result in changes to other Project components previously analyzed in the 2015 EIR; therefore, those Project components are not analyzed in this Addendum.

2.3 Project Location and Project Description

2.3.1 Project Location

The Project area is generally located within the northern portion of the Weymouth Plant. Basin Nos. 1-4 are located on the northwestern portion of the property just west of Basin Nos. 5-8 and south of Filter Building No. 1 and the associated 24 filter beds. The Electrical Control Building is located immediately south of Basin Nos. 5-8 towards the center of the Weymouth Plant. Other nearby components of the Weymouth Plant include the Oxidation Demonstration Project buildings, Washwater Tanks, Chemical Tank Farm, Washwater Reclamation Plant, and Solids Thickeners to the north; a solar photovoltaic generation facility to the east; and the Administration and Control Building, Chlorine Receiving and Storage Building, and Mechanical Maintenance Shop to the south. The Weymouth Plant is bound by Moreno Avenue to the west, residences to the north and south, and Wheeler Avenue to the east. The regional and local locations of the proposed modifications are depicted in Figure 1 and Figure 2. Figure 3 shows the existing site conditions of the Electrical Control Building and Basin Nos. 1-4.

2.3.2 Project Description

Rehabilitation of Basin Nos. 1-4 would include replacement of eight inlet gates, associated inlet gate actuators and gate guides; two motor control centers (MCCs); two gate power panels; and local control panels as well as installation of a new remote inlet/outlet (I/O) device for extension of the remote terminal

Figure 1 Regional Location

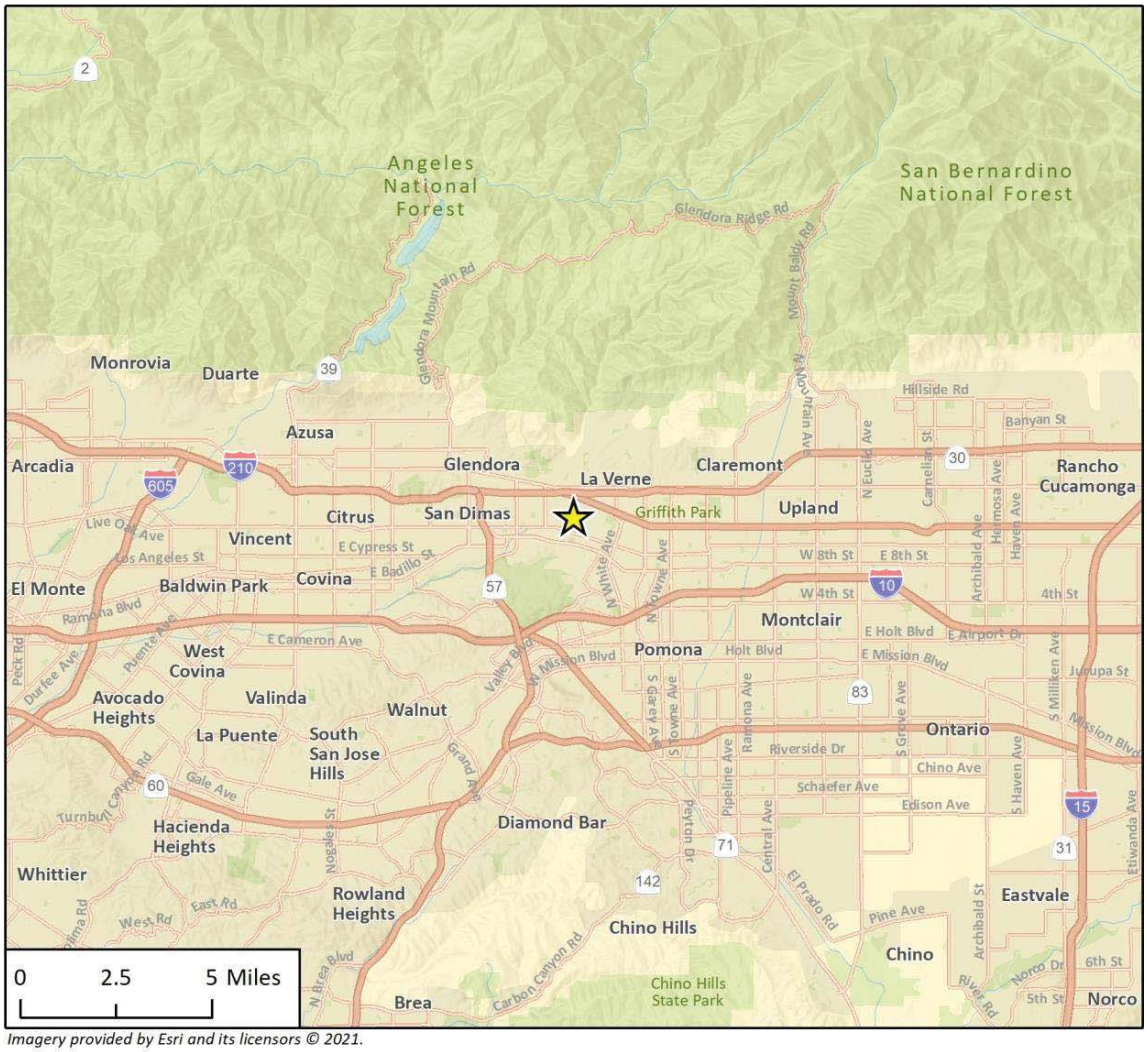


Figure 2 Project Location

Figure 3 Existing Site Conditions of the Electrical Control Building and Basins 1-4

Photo 1. Western and Southern Elevations of the Electrical Control Building.

Photo 2. Eastern and Northern Elevations of the Electrical Control Building.

Photo 3. Inlet Gates and Associated Actuators at Basin No.1 (Sedimentation Basin), Facing West.

Photo 4. Electrical Equipment at Basin No. 2 (Flocculation Basin), Facing East.

unit (RTU) to accommodate new gate signal and control functions.[1] The replacement inlet gates would be stainless steel. The MCCs and gate power panels would be replaced in the same locations. The replacement upgrades are planned for the first half-plant shutdown.

Electrical components inside the Electrical Control Building will be updated with more efficient technology to operate the upgraded equipment associated with Basins 5-8. The upgrades involve the installation of two MCCs, a wall-mounted air conditioning unit with ¾-inch refrigeration line, the replacement of an RTU, electrical panels, three exterior doors, and windows. The replacement of exterior doors and windows would look similar to the existing doors and windows. Electrical conduits would be installed along the exterior building walls to connect the upgraded RTUs and MCCs. The improvements would also include replacement of the roll-up door with double-swing doors, other railings, and resilient flooring inside the building and installation of removable guardrails for the loading dock.

2.3.3 Construction

Together, these projects and minor modifications are currently undergoing final design and would be constructed from spring 2022 through winter 2024 (an approximately 33-month construction period). The 2015 EIR originally assumed a 12-month construction period for the Basin Nos. 5-8 project; therefore, the proposed modifications would extend this construction schedule by approximately 21 months. The 2005 EIR estimated the Filter Building 2 Valves Replacement project would require approximately 12 months to complete. This project is now proposed to be combined with the Basin Nos 5-8 project and would be constructed during the overall 33-month construction period using similar types and numbers of construction equipment and similar numbers of construction workers as those required for the Basin Nos. 5-8 project.

Consistent with the assumptions of the 2015 EIR, it is anticipated that Project construction would not require the entire F. E. Weymouth Treatment Plant to be shut down for any period of time; however, localized shut-downs would be required and would occur during Project activities. The Project would require several half-plant shutdowns, quarter-plant shutdowns, and minor filter shutdowns. The improvements to the inlet gates and actuators associated with Basins 1-4 and the Electrical Control Building would be constructed during the plant shutdowns.

Construction activities for Basin Nos. 1-4 and the Electrical Control Building would involve the removal of existing infrastructure (e.g., existing inlet gates and associated actuators, electrical panels/components, doors and windows), mechanical work, welding, electrical connections, drilling through concrete walls, and minor concrete patching work. Construction activities would only occur during daytime hours, although the partial plant shutdowns required to implement the proposed modifications would occur on a 24-hour basis. The construction equipment and number of workers required for the minor modifications associated with Basin Nos. 1-4 and the Electrical Control Building would fall within the equipment and worker assumptions of the certified 2005 and 2015 EIRs for the Basin Nos. 5-8 Rehabilitation and the Filter Building 2 Valves Replacement projects, which are summarized in Table 2-1. No additional construction equipment or workers would be required to construct the proposed modifications. Approximately six roundtrip truck trips for hauling off existing infrastructure from the site and transporting new infrastructure to the site would be needed. No soil import or export would be required because no excavation is needed for the proposed modifications.

[1] A remote I/O device is an electronic device that sends and receives input and output signals using transmission technology.

Many of the projects described in the certified 2005 and 2015 EIR are complete, and the remaining projects envisioned by the certified 2005 and 2015 EIRs (e.g., Administration Building Seismic Upgrades, Seismic Upgrades to the Water Quality Laboratory, Engineering Building, Wash Water Pump Station Improvements, Dry Polymer System Upgrades, Oxidation Demonstration Plant Rehabilitation, and Warehouse projects) are in study and design phases and not likely to have an overlapping construction schedule.

Table 2-1. Construction Equipment List

Individual Project	Construction Equipment	Daily On-site Construction Workers
Basin Nos. 5-8 Rehabilitation[1]	Two man lifts, three dump trucks, two semi-truck flatbed trailers, two abrasive blasting equipment, six concrete trucks, four concrete pumps with boom, two concrete saws, TIG and MIG welding equipment, six air compressors, one rubber-tired loader, one excavator, one backhoe, two generators, two portable blowers capable of 50,000 CFM, three forklifts, three 300-ton cranes, and 12 0.5-ton pickup trucks	10
Actuator Valves Replacement[2]	One welder	6
Proposed Modifications (inlet gates, actuators, electrical components)	No new construction equipment. Utilize construction equipment from Basin Nos. 5-8 Rehabilitation and Filter Building 2 Valves Replacement projects	No additional construction workers. Utilize same workers from Basin Nos. 5-8 Rehabilitation and Filter Building 2 Valves Replacement projects

Notes: TIG (tungsten inert gas), MIG (metal inert gas), CFM (cubic feet per minute)
[1] Source: 2015 EIR
[2] Source: Certified 2005 EIR

During construction activities, best management practices (BMPs) from Metropolitan's standard construction specifications would be required to control erosion and limit any run-off discharge. The contractor would also be required to implement appropriate BMPs as part of the Stormwater Pollution Prevention Plan (SWPPP) for projects greater than one acre or implement a Water Pollution Control Plan (WPCP) for projects less than one acre. These would include, but would not be limited to, utilizing secondary containment for oils, paints, and other grease products; containing all trash and debris; installing fiber rolls and filter mesh for storm drains, and utilize sweeper trucks to control dust, during construction activities to prevent sediment transport off the site. The BMPs would be maintained to ensure construction-generated sediment would not leave the plant.

3 Environmental Setting and Analysis

This section presents an analysis of environmental impacts related to aesthetics, air quality, biological resources, cultural and historical resources, energy, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise and vibration, transportation and traffic, and wildfire associated with the proposed modifications to the Project.

3.1 Aesthetics

The 2015 EIR prepared for the original Project concluded potential environmental impacts to aesthetics would be less than significant with incorporation of Mitigation Measure AES-1, which requires the installation of vegetative barriers for screening adjacent to the solar photovoltaic generation facility. This section provides an analysis of the potential aesthetic impacts associated with the proposed modifications to the Project.

3.1.1 Setting

As described in the 2015 EIR, the Project site is largely visible from neighboring residences and adjacent streets, although certain existing features on site are partially or fully obscured by fencing, walls, and vegetation screening along the perimeters of the Weymouth Plant. The Electrical Control Building is located in the central portion of the Project site and is not visible from off-site vantage points. Basin Nos. 1-4 are located on the western portion of the Project site and are primarily obscured from off-site views by perimeter fencing along Moreno Avenue.

3.1.2 Significance Threshold Criteria

The following CEQA significance threshold criteria were used to evaluate impacts to aesthetics associated with the proposed modifications to the Project. Impacts would be potentially significant if the proposed modifications would introduce new significant impacts or substantially increase the severity of previously identified significant impacts associated with:

a) A substantial adverse effect on a scenic vista

b) Substantial damage to scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway

c) In an urbanized area, a conflict with applicable zoning and other regulations governing scenic quality

d) Creation of a new source of substantial light or glare which would adversely affect day or nighttime views in the area

The 2015 EIR focused on evaluating impacts related to visual character and quality and light and glare (questions [c, d] of the *State CEQA Guidelines* Appendix G checklist) because the NOP/IS determined that implementation of the original Project would not result in significant impacts to scenic vistas or damage scenic resources or historic buildings within a State scenic highway (questions [a, b]). Consequently, questions related to scenic vista or scenic resources will not be discussed in this Addendum.

3.1.3 Potential Impacts

Visual Character

The 2015 EIR concluded that the northern Solar Generation Project included in the original Project would result in significant impacts to the visual character and quality of the project site as viewed from Wheeler Avenue and Pelota Park. Therefore, implementation of Mitigation Measure AES-1 was required, which was determined to reduce impacts to a less-than-significant level.

AES-1 Prior to installation of the solar panels for the northern Solar Generation Project, Metropolitan shall verify that vegetative barriers installed along the perimeter fences of the Weymouth Plant adjacent to the solar facility shall be sufficient to screen views of the solar panel arrays from Wheeler Avenue and Pelota Park. Metropolitan shall replace and actively maintain any vegetation that has died or provide alternative screening options at a similar height.

The proposed modifications to the Project are located in the city of La Verne. Pursuant to California Government Code 53091(d) and (e), the original Project and the proposed modifications would not be subject to the design review policies contained in the City's zoning regulations. Local zoning and building ordinances do not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water. Furthermore, construction activities for the proposed modifications would require similar activities and equipment as those previously evaluated in the 2015 EIR and would therefore result in similar less-than-significant impacts to visual character and quality at the Project site. The Electrical Control Building is not visible from off-site vantage points; therefore, alterations to its appearance would not result in adverse impacts to visual character and quality. In addition, the appearance of the control gates in Basin Nos. 1-4 after implementation of the proposed modifications would remain largely the same as under existing conditions; therefore, no adverse impacts to visual character and quality would occur as a result of rehabilitation activities. As a result, the proposed modifications would not result in new or substantially more severe significant impacts related to visual character and scenic quality. This impact would be less than significant, consistent with the 2015 EIR. Implementation of Mitigation Measure AES-1, which is specifically relevant to the northern Solar Generation Project, which has already been constructed, would not be required for the proposed modifications.

Light and Glare

The 2015 EIR determined construction and operation of the original Project would not result in the creation of a new source of substantial light or glare that would adversely affect day or nighttime views in the area. Construction activities for the proposed modifications to the Project would not require nighttime lighting and would not include components that generate glare. Upon completion, the proposed modifications would not result in new sources of light or glare because they involve replacement and rehabilitation of existing infrastructure as well as minor additions of electrical and mechanical components. Therefore, the proposed modifications would not result in new or substantially more severe significant impacts related to light and glare. This impact would be less than significant, consistent with the 2015 EIR.

3.1.4 Conclusion

The proposed modifications to the Project would not result in new significant impacts to aesthetics or substantially increase the severity of impacts already identified in the 2015 EIR. Impacts would be similar

to those determined in the 2015 EIR. Therefore, impacts to aesthetics would be less than significant, and no further mitigation is required.

3.2 Air Quality

The 2015 EIR prepared for the original Project concluded potential environmental impacts to air quality would be significant and unavoidable after the incorporation of Mitigation Measure AQ-1, which requires the use of construction equipment equipped with certified Tier 4 engines, when feasible, Tier 3 equipment with the highest level available emission control equipment where Tier 4 equipment is not commercially available, and Tier 2 equipment with the highest level available emission control equipment where Tier 3 equipment is not available. This section provides an analysis of the potential air quality impacts associated with the proposed modifications to the Project.

3.2.1 Setting

As described in the 2015 EIR, the Project site is located in the South Coast Air Basin (Basin), which is within the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD monitors levels of ozone, carbon monoxide, nitrogen dioxide, sulfur oxide, suspended particulates, and lead in the Basin and compares the concentrations of those pollutants to State and federal standards.

The Basin is in non-attainment for the federal standards for ozone and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), as well as lead in Los Angeles County only. Also, the Basin is in non-attainment for the State standards for ozone, particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) (SCAQMD 2016). The nonattainment status is a result of several factors, the primary ones being the naturally adverse meteorological conditions that limit the dispersion and diffusion of pollutants, the limited capacity of the local airshed to eliminate pollutants from the air, and the number, type, and density of emission sources within the Basin.

The SCAQMD considers air quality sensitive receptors to be residences, hospitals, convalescent facilities, and other places where it is possible for an individual to remain for 24 hours. Commercial and industrial facilities are not considered sensitive (SCAQMD 2008a). The closest sensitive receptors to the locations of the proposed modifications are residences located immediately to the west across Moreno Avenue, approximately 140 feet west of Basin Nos. 1-4 and 770 feet west of the Electrical Control Building.

3.2.2 Significance Threshold Criteria

The following CEQA significance threshold criteria were used to evaluate impacts to air quality associated with the proposed modifications to the Project. Impacts would be potentially significant if the proposed modifications would introduce new significant impacts or substantially increase the severity of previously identified significant impacts associated with:

a) A conflict with or obstruction of implementation of the applicable air quality plan

b) A cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard

c) Exposure of sensitive receptors to substantial pollutant concentrations

d) Other emissions (such as those leading to odors) adversely affecting a substantial number of people

Metropolitan has not developed specific air quality thresholds for air quality impacts. However, as stated in Section 15064.7(c-d) as well as Appendix G of the *State CEQA Guidelines*, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. As such, because of the SCAQMD's regulatory role in the Basin, the significance thresholds and analysis methodologies in the SCAQMD's *CEQA Air Quality Handbook* (1993) and *Air Quality Analysis Handbook* (2021) are used to evaluate project impacts.

As shown in Table 3.2-1, the SCAQMD provides significance thresholds to determine the potential impacts of the proposed modifications under CEQA Appendix G significance thresholds b) and c). These thresholds are the same as those applied in the 2015 EIR.

Table 3.2-1. SCAQMD Regional Air Quality Significance Thresholds

Mass Daily Thresholds		
Pollutant	**Construction**	**Operation**
Nitrogen Oxides	100 lbs/day	55 lbs/day
Volatile Organic Compounds	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
Sulfur Oxides	150 lbs/day	150 lbs/day
Carbon Monoxide	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants and Odor Thresholds		
Toxic Air Contaminants (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden >0.5 excess cancer cases (in areas ≥ 1 in 1 million) Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Greenhouse Gases	10,000 MT/yr CO_2e for industrial facilities	
Ambient Air Quality for Criteria Pollutants		
Nitrogen Dioxide 1-hour Average Annual Arithmetic Mean	SCAQMD is in attainment; the project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM_{10} 24-hour Average Annual Average	 10.4 μg/m^3 (recommended for construction) and 2.5 μg/m^3 (operation) 1.0 μg/m^3	
$PM_{2.5}$	10.4 μg/m^3 (construction) and 2.5 μg/m^3 (operation)	
Sulfur Dioxide 1-hr Average 24-hr Average	 0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour Average	 25 ug/m^3 (state)	
Carbon Monoxide 1-hour Average 8-hour Average	SCAQMD is in attainment; the project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead		

Table 3.2-1. SCAQMD Regional Air Quality Significance Thresholds

30-day Average	1.5 ug/m^3 (state)
Rolling 3-month Average	0.15 ug/m^3 (federal)

Notes: SCAQMD (South Coast Air Quality Management District), lbs (pounds), PM_{10} (particulate matter measuring 10 microns or less in diameter), $PM_{2.5}$ (particulate matter measuring 2.5 microns or less in diameter), ≥ (greater than or equal to), MT = metric tons), yr (year), CO_2e (carbon dioxide equivalents), hr (hour), ppm (parts per million), ug/m^3 (micrograms per cubic meter).

Source: SCAQMD 2019

3.2.3 Potential Impacts

Conflict with Air Quality Plan

Generally, to be consistent with an Air Quality Management Plan (AQMP), a project must not result in or contribute to an exceedance of the growth forecasts in the applicable plan(s). The 2015 EIR determined the original Project was consistent with SCAQMD's 2012 AQMP because it involved upgrades to existing facilities and construction of new facilities at the Weymouth Plant to improve the plant's water treatment process that would not directly or indirectly induce population growth. Since that time, the SCAQMD has adopted the 2016 AQMP, which incorporates new scientific data and notable regulatory actions that have occurred since adoption of the 2012 AQMP, including the approval of the new federal eight-hour ozone standard of 0.070 parts per million that was finalized in 2015. The 2016 AQMP builds upon the approaches taken in the 2012 AQMP for the attainment of federal particulate matter and ozone standards and highlights the significant amount of reductions to be achieved. The 2016 AQMP also demonstrates strategies for attainment of the new federal eight-hour ozone standard and vehicle miles travelled emissions offsets from technology improvements and transportation strategies, pursuant to United States Environmental Protection Agency requirements (SCAQMD 2017).

The 2015 EIR determined the original Project would not conflict with the applicable AQMP, which at the time was the SCAQMD's 2012 AQMP. Similar to the original Project, the proposed modifications would involve the rehabilitation and replacement of components of existing facilities and the installation of new facilities that improve the operational efficiency of the Weymouth Plant. As such, the proposed modifications are not land use development projects with housing that would induce population growth and would not generate new employment opportunities at Metropolitan. In addition, construction workers for the proposed modifications would be a similar-sized workforce as that analyzed in the 2015 EIR. The proposed modifications are therefore consistent with the 2016 AQMP. Construction of the proposed modifications would not increase the population of the area and therefore would not conflict with the emissions forecasts contained in the 2016 AQMP. As a result, the proposed modifications would not conflict with the AQMP, and no impact would occur, consistent with the 2015 EIR.

Air Quality Standards and Cumulative Increase of Criteria Pollutants

The 2015 EIR concluded the original Project's construction-related emissions would exceed the SCAQMD regional significance threshold for nitrogen oxides. Therefore, implementation of Mitigation Measure AQ-1 was required. However, the 2015 EIR determined that incorporation of Mitigation Measure AQ-1 (below) would not reduce the original Project's air quality impacts to a less-than-significant level because construction-related emissions of nitrogen oxides would still exceed the SCAQMD regional significance threshold. As such, the 2015 EIR concluded that construction impacts related to air quality standards and the cumulative increase of criteria air pollutant emissions would be significant and unavoidable.

AQ-1 All construction equipment shall meet or exceed Environmental Protection Agency Tier 4 emission standards when feasible. The contractor shall be required to document efforts to utilize equipment meeting Tier 4 emission standards including providing justification when using Tier 4 certified or better equipment is not feasible. In the event Tier 4 equipment is not commercially available, contractor shall require Tier 3 equipment with the highest level available emission control equipment. In the event Tier 3 equipment is not available, contractor shall require Tier 2 equipment with the highest level available emission control equipment.

This mitigation measure was implemented during construction of the components of the original Project that have already been completed and will be implemented during construction of the remaining components of the original Project.

The proposed modifications, similar to the original Project activities analyzed under the 2015 EIR, would require construction activities that would generate temporary air pollutant emissions. Exhaust emissions such as particulate matter, carbon monoxide, nitrogen oxides, and volatile organic compounds associated with truck trips, haul trips, and diesel construction equipment would potentially degrade air quality. The air emissions modeling conducted for the original Project estimated the maximum daily air pollutant emissions associated with buildout of several Project components concurrently. Exceedances of the SCAQMD regional significance threshold for nitrogen oxide were estimated to occur during simultaneous construction of the Dry Polymer System Upgrades, Basin Nos. 5-8 Refurbishment, Stormwater Management Improvements, Solar Generation Project, Domestic and Fire Water System Improvements, and Seismic Upgrades as well as during simultaneous construction of the Dry Polymer System Upgrades, Basin Nos. 5-8 Refurbishment, Stormwater Management Improvements, Domestic and Fire Water System Improvements, Seismic Upgrades, Oxidation Demonstration Plant Rehabilitation, and Chlorine System Upgrades.

As discussed in Section 2.3.3, *Construction*, construction of the proposed modifications would require use of similar construction equipment and number of construction workers on a daily basis as anticipated by the certified 2005 and 2015 EIRs for the Basin Nos. 5-8 Rehabilitation project and the Filter Building 2 Valves Replacement project. Therefore, maximum daily air pollutant emissions associated with on-site construction equipment usage and construction worker trips would be the same as those estimated in the certified 2005 and 2015 EIRs for the Basin Nos. 5-8 Rehabilitation project and the Filter Building 2 Valves Replacement project, which are summarized in Table 3.2-2. The proposed modifications would also require six total additional roundtrip truck trips for removing existing infrastructure from the site and transporting new infrastructure to the site, which would equate to approximately one roundtrip truck trip per day for six days over the 18-month duration of construction activities. Emissions generated by one additional daily roundtrip truck trip would be *de minimis* and would not contribute substantially to overall daily emissions generated during construction activities. As shown in Table 3.2-2, maximum daily emissions would not exceed SCAQMD thresholds for criteria pollutants, and impacts would be less than significant because simultaneous construction activities for the Basin Nos. 5-8 Rehabilitation project, the Filter Building 2 Valves Replacement project, and the proposed modifications would be less intensive than those construction activities estimated to potentially occur concurrently in the 2015 EIR. Therefore, impacts related to air quality standards and the cumulative increase of criteria pollutants for the proposed modifications would be less than previously identified in the 2015 EIR and would be less than significant. Nevertheless, implementation of Mitigation Measure AQ-1 would continue to be required for the original Project and the proposed modifications, consistent with the 2015 EIR. Therefore, the proposed modifications would not result in new or substantially more severe significant impacts related to criteria air pollutant emissions generated by construction activities.

Table 3.2-2. Estimated Unmitigated Regional Daily Construction Emissions

Project Component	Emissions (pounds per day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Basin Nos. 5-8 Refurbishment[1, 2]	5	24	39	<1	2	2
Actuator Valves Replacement[2,3]	3	2	5	<1	6	6[4]
Maximum Daily Emissions	**8**	**26**	**44**	**<1**	**8**	**8**
SCAQMD Regional Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Threshold Exceeded?	No	No	No	No	No	No

Notes: VOC (volatile organic compounds), NO_X (nitrogen oxides), CO (carbon monoxide), SO_X (sulfur oxides), PM_{10} (particulate matter measuring 10 microns or less in diameter), $PM_{2.5}$ (particulate matter measuring 2.5 microns or less in diameter), SCAQMD (South Coast Air Quality Management District).

[1] Source: Table 3-5 of Appendix B of the 2015 EIR

[2] Includes emissions generated by operation of off-road construction equipment and construction worker, vendor, and haul truck trips.

[3] Source: Tables B-3 and B-4 in Appendix B of the certified 2005 EIR

[4] $PM_{2.5}$ emissions were assumed to be equivalent to PM_{10} emissions for the Filter Building 2 Valves Replacement project, which is conservative given that $PM_{2.5}$ is a subset of PM_{10}.

Upon completion, the proposed modifications would not require additional operations and maintenance activities beyond those currently occurring at the Weymouth Plant, similar to the projects contemplated in the 2015 EIR. Therefore, no new operational emissions of criteria air pollutants would be generated, and the proposed modifications would not result in new or substantially more severe significant operational impacts related to criteria air pollutant emissions. This impact would be less than significant, consistent with the 2015 EIR.

Exposure of Sensitive Receptors to Pollutant Concentrations

Carbon Monoxide Hotspots

A carbon monoxide hotspot is a localized concentration of carbon monoxide that is above a carbon monoxide ambient air quality standard. Localized carbon monoxide hotspots can occur at intersections with heavy peak hour traffic. Specifically, hotspots can be created at intersections where traffic levels are sufficiently high such that the local carbon monoxide concentration exceeds the federal one-hour standard of 35.0 parts per million or the federal and state eight-hour standard of 9.0 parts per million. As stated in the 2015 EIR, the SCAQMD recommends a carbon monoxide hotspot evaluation of potential localized carbon monoxide impacts when a project would increase the volume-to-capacity (V/C) ratios by two percent at intersections with a level of service (LOS) of D or worse. The SCAQMD also recommends a carbon monoxide hotspot evaluation when a project would decrease the LOS of an intersection by one level beginning when LOS changes from C to D. The 2015 EIR determined the original Project would not exceed the SCAQMD screening criteria at intersections in proximity to the Project site and therefore would not create carbon monoxide hotspots.

Similar to the original Project, the proposed modifications would not result in new vehicle trips to and from the project site during operational activities that would have the potential to increase the V/C ratio or decrease the LOS of nearby intersections. Accordingly, the proposed modifications would not result in an

exceedance of the SCAQMD screening criteria for carbon monoxide hotspots at the Project site. Therefore, the proposed modifications would not result in new or substantially more severe significant impacts related to carbon monoxide hotspots. This impact would be less than significant, consistent with the 2015 EIR.

Localized Construction Emissions – Criteria Air Pollutants

Localized construction emissions of criteria air pollutants include equipment exhaust and fugitive dust generated by on-site construction activities. The 2015 EIR determined the original Project would not generate substantial localized emissions of criteria air pollutants during construction activities in excess of SCAQMD thresholds. As discussed in Section 2.3.3, *Construction*, construction of the proposed modifications would require use of similar construction equipment and a similar number of construction workers as anticipated by the 2015 EIR. The proposed modifications would require six total additional roundtrip truck trips for removing existing infrastructure from the site and transporting new infrastructure to the site; however, emissions generated by the additional truck trips would be emitted off-site and therefore are not considered localized on-site emissions. Because the proposed modifications would not require the use of additional on-site construction equipment beyond that analyzed in the 2015 EIR, localized construction emissions of criteria air pollutants would be similar to or less than those estimated for the original Project, which the 2015 EIR determined would not exceed the SCAQMD thresholds. Therefore, the proposed modifications would not result in new or substantially more severe significant impacts related to localized emissions of criteria air pollutants. This impact would be less than significant, consistent with the 2015 EIR.

Localized Construction Emissions – Toxic Air Contaminants

The 2015 EIR determined the original Project would not generate substantial localized emissions of toxic air contaminants during construction activities. Construction of the proposed modifications would result in temporary emissions of diesel particulate matter (DPM) exhaust emissions, which are toxic air contaminant emissions, from off-road, heavy-duty diesel equipment. Generation of DPM from construction projects typically occurs in a single area for a short period. Construction of the proposed modifications would occur over approximately 18 months. The dose to which the receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the Maximally Exposed Individual. The risks estimated for a Maximally Exposed Individual are higher if a fixed exposure occurs over a longer period of time. According to the California Office of Environmental Health Hazard Assessment and SCAQMD methodology, health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project. Thus, the duration of proposed construction activities (i.e., 18 months) is approximately two percent of the total exposure period used for 70-year health risk calculations. As a result, similar to the original Project, the proposed modifications would not result in a long-term (i.e., 70 years) source of toxic air contaminant emissions. No residual emissions and corresponding individual cancer risk are anticipated after construction of the proposed modifications is completed. Therefore, the proposed modifications would not result in new or substantially more severe significant impacts related to toxic air contaminant emissions during construction activities. This impact would be less than significant, consistent with the 2015 EIR.

Localized Operational Emissions – Toxic Air Contaminants

The 2015 EIR determined the original Project would not generate substantial localized emissions of toxic air contaminants during operation. Upon completion, the proposed modifications would not require additional operations and maintenance activities beyond those currently occurring at the Weymouth Plant. Therefore, the proposed modifications would not result in new or substantially more severe significant impacts related to toxic air contaminant emissions generated during operational activities. This impact would be less than significant, consistent with the 2015 EIR.

Objectionable Odors

As discussed in the 2015 EIR, the existing Weymouth Plant does not emit adverse odors, and the original Project includes upgrades to existing facilities and construction of new facilities at the Weymouth Plant to improve the plant's water treatment process, which would not emit adverse odors. Construction activities associated with the proposed modifications may result in temporary odors, such as those associated with use of gasoline and diesel fuel used to power construction equipment and generators. These odor sources would be temporary in nature, generally confined to the immediate area surrounding the Project site, and typical of other construction projects using similar equipment in the region. The proposed modifications would not include any additional odor-generating sources during operation. Therefore, the proposed modifications would not introduce new odor impacts and would not result in a new or substantially more severe significant impact than what was previously analyzed in the 2015 EIR.

3.2.4 Conclusion

The proposed modifications to the Project would not result in new significant impacts to air quality or substantially increase the severity of impacts already identified in the 2015 EIR. Unlike the construction scenarios evaluated in the 2015 EIR for the original Project, maximum daily emissions associated with construction of the proposed modifications in conjunction with the Basin Nos. 5-8 Rehabilitation project and the Filter Building 2 Valves Replacement project would not exceed the SCAQMD regional significance thresholds. Therefore, impacts related to air quality standards and the cumulative increase of criteria pollutants for the proposed modifications would be less than previously identified in the 2015 EIR and would be less than significant. Implementation of Mitigation Measure AQ-1 would continue to be required for the original Project and would also be applied to the proposed modifications.

3.3 Biological Resources

The 2015 EIR prepared for the original Project concluded impacts to biological resources would be less than significant. This section provides an analysis of the potential biological resource impacts associated with the proposed modifications to the Project.

3.3.1 Setting

A site-specific biological survey of the entire Weymouth Plant was conducted in 2014. Plants observed consisted mainly of ornamental trees and shrubs and are generally located along the perimeter of the site. These were planted either to provide screening from the surrounding residential neighborhood or as part of the landscape design of the surrounding buildings. Trees observed within the Weymouth Plant include coast live oak (*Quercus agrifolia*), sycamore (*Platanus racemosa*), camphor (*Cinnamomum camphor*), bottlebrush (*Callistemon* sp.), palo verde (*Parkinsonia* sp.), cypress (*Cupressus* sp.), acacia (*Acacia* sp.), and olive trees (*Olea* sp.). Wildlife species observed during the survey included house finch (*Carpodacus mexicanus*), killdeer (*Charadrius vociferous*), northern flicker (*Colaptes auratus*), American crow

(*Corvus brachyrhynchos*), barn swallow (*Hirundo rustica*), California gull (*Larus californicus*), California towhee (*Melozone crissalis*), northern mockingbird (*Mimus polyglottos*), savannah sparrow (*Passerculus sandwichensis*), bushtit (*Psaltriparus minimus*), black phoebe (*Sayornis nigricans*), yellow-rumped warbler (*Setophaga coronata*), lesser goldfinch (*Spinus psaltria*), American goldfinch (*Spinus tristis*), mourning dove (*Zenaida macroura*) and white-crowned sparrow (*Zonotrichia leucophrys*). The entire plant was surveyed in 2014, and no special-status wildlife species were observed during the survey. Wildlife observed during the survey were generally localized to the perimeter of the plant where trees are present. The 2015 EIR determined that there is a low to no potential for special-status species to occur on the Project site based on the field survey, literature review, institutional knowledge of the water treatment facility and due to a lack of suitable habitat.

The proposed modifications are located on the northwestern portion of the Weymouth Plant. The Electrical Control Building is surrounded entirely by paved surfaces and facility infrastructure. Some low-lying ornamental vegetation and shrubs are located adjacent to Basin Nos. 1-4 to the west and south; however, the majority of Basin Nos. 1-4 is surrounded by paved surfaces and facility infrastructure.

3.3.2 Significance Threshold Criteria

The following CEQA significance threshold criteria were used to evaluate impacts to biological resources associated with the proposed modifications to the Project. Impacts would be potentially significant if the proposed modifications would introduce new significant impacts or substantially increase the severity of previously identified significant impacts associated with:

a) An adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS)

b) An adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS

c) An adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means

d) Interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impeding the use of native wildlife nursery sites

e) A conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

f) A conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans

The 2015 EIR focused on evaluating impacts related to special status species and conflicts with local policies or ordinances protecting biological resources (questions [a, e] of the *State CEQA Guidelines* Appendix G checklist) because the NOP/IS determined implementation of the original Project would not result in significant impacts to riparian habitat and other sensitive natural communities, protected wetlands, wildlife movements and corridors, and Habitat Conservation Plans and Natural Community Conservation Plans (questions [b, c, d, f]).Consequently, these questions will not be discussed further in this Addendum.

3.3.3 Potential Impacts

Special Status Species

As discussed in the 2015 EIR, the Weymouth Plant contains no native habitat with a few mature trees located on the perimeter of the facility. However, based on the field survey, literature review, and lack of suitable habitat, the 2015 EIR determined special-status species have a low to no potential to occur on the Project site. The proposed modifications would be constructed within the boundaries of the Weymouth Plant and would not result in direct impacts to special-status species. This impact would be less than significant, consistent with the 2015 EIR. Therefore, the proposed modifications would not result in new or substantially more severe significant impacts related to special-status species.

While not considered special-status species, common migratory birds and active bird nests (i.e., nests with eggs or young being attended by one or more adults), which are protected by the Migratory Bird Treaty Act and the California Fish and Game Code Sections 3503 and 3513, could occur in the mature trees or in suitable ground substrate on the Project site. Construction activities that result in the removal or destruction of an active bird nest would be a conflict with state and federal laws. Additionally, construction within proximity to active nests could potentially disrupt nesting activity due to disturbance and noise from heavy equipment and human presence. Disruption of nesting activity that results in the death of eggs or young would also be a conflict with state and federal laws. In compliance with the Migratory Bird Treaty Act and California Fish and Game Code Sections 3503 and 3513, if any construction work is to be initiated within the nesting period for migratory birds (generally from February 15 through September 15), a preconstruction survey of active nests for migratory birds would be conducted and avoidance buffers would be established around active nests pursuant to Metropolitan's standard environmental construction specification and practice. No potential impacts to nesting birds are anticipated during the construction of the proposed project due to the minimal amount of potential habitat present within the Project site. Additionally, upon completion, the proposed modifications would not require additional operations and maintenance activities beyond those currently occurring at the Weymouth Plant. Therefore, the impact would be less than significant, consistent with the 2015 EIR and the proposed modifications would not result in new or substantially more severe significant impacts related to migratory birds.

Local Policies

As discussed in the 2015 EIR, pursuant to California Government Code Sections 35091(d) and (e), the building and zoning ordinances of a county or city do not apply to the location or construction of facilities for the production, storage, or transmission of water, wastewater, or electrical energy by a local agency. Therefore, the original Project was determined to be exempt from the City of La Verne's tree preservation ordinance contained within the City of La Verne's zoning code in La Verne Municipal Code Chapter 18.78, Preservation. Similar to the original Project, the proposed modifications are also related to the production, storage, and transmission of water by Metropolitan and are therefore also exempt from compliance with the City of La Verne's tree preservation ordinance. Therefore, the proposed modifications would not result in new or substantially more severe significant impacts related to local policies and ordinances protecting biological resources. This impact would be less than significant, consistent with the 2015 EIR.

3.3.4 Conclusion

The proposed modifications to the Project would not result in new significant biological resource impacts or substantially increase the severity of impacts already identified in the 2015 EIR. Impacts would be

similar to those identified in the 2015 EIR. Therefore, impacts to biological resources would be considered less than significant, and no further mitigation is required.

3.4 Cultural and Historical Resources

The 2015 EIR prepared for the original Project concluded impacts to cultural resources would be less than significant with the incorporation of Mitigation Measures CUL-1 and CUL-2, which require photo-documentation to Historic American Engineering Record (HAER) standards and installation of an on-site exhibit or display to address historic resource impacts related to the Filter Rehabilitation project and Basin Nos. 5-8 Rehabilitation project. This section provides an analysis of the potential impacts to cultural resources associated with the proposed modifications to the Project.

3.4.1 Setting

As discussed in the 2015 EIR, the Project site is located in the city of La Verne within the San Gabriel Valley. The Project site is located in an area that has been extensively disturbed through construction of the Weymouth Plant. Initially developed in 1941, the Weymouth Plant contains the Weymouth Water Treatment Plant Historic District (historic district). Pursuant to the *Cultural Resource Treatment Plan for the Weymouth Water Treatment Plant Historic District (CRTP), City of La Verne, Los Angeles County, California* (2016) and the 2015 EIR, the historic district is eligible for listing in the National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) under Criteria A/1 for its association with the Colorado River Aqueduct; under Criteria B/2 for its association with the productive life of F.E. Weymouth, Chief Engineer for Metropolitan from 1920 to 1941; and under Criteria C/3 for its embodiment of the Spanish Colonial/Mission Revival style of architecture. As a property that is eligible for inclusion in the NRHP and CRHR, the historic district is considered a historical resource pursuant to Public Resources Code Section 21084.1.

3.4.2 Significance Threshold Criteria

The following CEQA significance threshold criteria were used to evaluate impacts to cultural resources associated with the proposed modifications to the Project. Impacts would be potentially significant if the proposed modifications would introduce new significant impacts or substantially increase the severity of previously identified significant impacts associated with:

a) A substantial adverse change in the significance of a historical resource pursuant to Section 15064.5 of the *State CEQA Guidelines*

b) A substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the *State CEQA Guidelines*

c) Disturbance of any human remains, including those interred outside of formal cemeteries

In addition to the thresholds described above, Section 3.4, *Cultural and Historical Resources*, of the 2015 EIR included an evaluation of impacts to paleontological resources under the following threshold:

d) Directly or indirectly destroying a unique paleontological resource or site or unique geologic feature

Updates to the *State CEQA Guidelines* that took effect on December 28, 2018 re-categorized evaluation of impacts to paleontological resources under the Geology and Soils resource. However, for consistency with the 2015 EIR, impacts to paleontological resources are also evaluated in this section.

The 2015 EIR focused on evaluating impacts related to historic resources, archaeological resources, and human remains (questions [a, b, c] of the *State CEQA Guidelines* Appendix G checklist) because the NOP/IS determined that implementation of the original Project would not result in significant impacts to paleontological resources (question [d]). Consequently, the question related to paleontology will not be discussed further in this Addendum.

3.4.3 Project Impacts

Historical Resources

The 2015 EIR concluded the Project would result in significant impacts to elements of the historic district due to changes to filter basin elements as part of the Filter Rehabilitation Project and changes to mechanical equipment in Basin Nos. 5-8 as part of the Basin Nos. 5-8 Rehabilitation Project. Therefore, implementation of Mitigation Measures CUL-1 and CUL-2 was required, which was determined to reduce impacts to a less-than-significant level.

CUL-1 Photo-documentation to HAER Standards

(a) Prior to construction, Metropolitan will document the history of the resource's technology at HAER Standards Level 2 (compilation of historical plans, as-built drawings, photographs, and contractor specifications; for further detail see https://www.nps.gov/hdp/standards/haerguidelines.htm).[2] Prior to the loss of original material (whether visible from the surface or representing character-defining engineered aspects of the Weymouth Plant) will be taken to depict their visual setting and existing condition, using large-format photography (4 x 5 inch or greater). Photo-documentation will be guided by a qualified architectural historian.

(b) During and after construction, photographs will be taken to depict the demolition, new construction, and completed work of the project components, using 35-mm photography or larger.

(c) After construction, the collected documentation will be combined into a HAER-like documentation package (using HAER documentation and formatting) and will be maintained at Metropolitan's Headquarters. This documentation effort will be guided by a qualified architectural historian and documentation will be available for research as appropriate, with consideration given to the security of Metropolitan's facilities.

CUL-2 On-site Exhibit or Display

(a) An on-site interpretative display will be prepared to illustrate the evolution of the design change in filter cells technology over time. The display will depict the original filter cell design, construction, and modifications made as technology changed between 1941 to present.

(b) An example of each distinct actuator type (those south of Filter Building No. 2 and south of Basins 5 to 8) of the period of significance will be retained for display on the grounds of the Weymouth Plant.

To evaluate potential impacts that could occur to historic resources as a result of the proposed modifications, Rincon Consultants, Inc. (Rincon) prepared a historical resources technical memorandum

[2] The weblink provided in the 2015 EIR is no longer active and has been updated here.

in August 2021, which is included as Appendix A. The following impacts analysis is based on the findings of this technical memorandum.

Basin Nos. 1-4

The proposed modifications include the replacement of eight inlet gates and associated actuators, and gate guides, two MCCs, two gate power panels, and local control panels as well as installation of a new remote I/O device. These modifications are consistent with Project elements proposed for the Basin Nos. 5-8 Rehabilitation project and analyzed in the 2015 EIR. Basin Nos. 1-4 were part of the original 1939 Plant construction. Basin Nos. 5-8 were part of the 1962 Plant Expansion No. 2 construction. As described in the CRTP, all eight basins are contributing elements to the historic district, and the analysis presented in the 2015 EIR concluded the following impacts would occur as a result of the replacement of the basin gates and gate guides for Basin Nos. 5-8:

> *The inlet gates are engineered elements critical to the operation of the filtration [treatment] process. While not visible from the surface, they are a significant design component. Removal and replacement of the inlet gates would result in the removal and replacement of original material, although the design and operation of the inlet gates will not change substantially. Nonetheless, the proposed improvements have the potential to cause an adverse change in the significance of the historic resource.*

To address these potential impacts to Basin Nos. 5-8, the 2015 EIR required implementation of Mitigation Measures CUL-1 and CUL-2 and determined implementation of these mitigation measures would reduce impacts to Basin Nos. 5-8 to a less-than-significant level.

Similar to Basin Nos. 5-8, the inlet gates gate guides, and associated control panels for Basin Nos. 1-4 are character-defining features. The inlet gates and gate guides are original to the Weymouth Plant's original design and construction and represent intact historic fabric. The replacement of these internal components would have the potential to result in a significant adverse change in the significance of a historical resource due to the replacement of engineered elements and loss of original material. Implementation of Mitigation Measure CUL-1 would be required for the proposed modifications to address this potentially significant impact through photo-documentation to HAER standards. However, because the associated actuators at Basin Nos. 1-4 were replaced in the 1970s and therefore fall outside of the period of significance of the historic district, the actuators are not considered character-defining features of Basin Nos. 1-4, and no historic impacts related to these components would occur. As such, implementation of Mitigation Measure CUL-1 is not recommended for these components. Furthermore, Mitigation Measure CUL-2 was only required to address impacts to filter cells and the "period actuators" of Basin Nos. 5-8 and would not be required for the proposed modifications because the inlet gate actuators associated with Basin Nos. 1-4 have been replaced and modified since the Plant's original construction in 1939.

The 2015 EIR concluded implementation of Mitigation Measure CUL-1 would reduce impacts associated with the replacement of the inlet gates and gate guides of Basin Nos. 5-8 to a less-than-significant level. Similarly, implementation of Mitigation Measure CUL-1 to Basin Nos. 1-4 would mitigate historic resource impacts to Basin Nos. 1-4 a less-than-significant level. Therefore, the proposed modifications related to Basin Nos. 1-4 would not result in new or substantially more severe significant impacts related to historic resources. This impact would be less than significant with mitigation incorporated, consistent with the 2015 EIR.

Electrical Control Building Improvements

Although the original Project did not propose alterations to the Electrical Control Building and internal equipment components, it is located within the boundaries of the Weymouth Plant and the proposed modifications to the original Project associated with this feature are generally consistent with the Project elements analyzed in the 2015 EIR. The proposed modifications include the installation of two MCCs; a wall-mounted air conditioning unit; railings; flooring; access hatch; removable guardrails on the loading dock and replacement of an RTU and electrical panels (interior alterations) as well as installation of electrical conduits; replacement of three exterior doors and windows and the replacement of the west elevation roll-up door with double-swing doors (exterior alterations).

As previously noted, the Electrical Control Building is identified in the CRTP as a most significant feature of the historic district. The CRTP discusses a range of potential project-related impacts and provides recommendations and treatment measures for projects involving most significant buildings and features. The CRTP provides the following examples of project activities that could pose a substantial adverse change to a feature ranked most significant, such as the Electrical Control Building:

- Demolition of key architectural features
- Replacement of the hipped roof with Spanish tile with dissimilar forms or materials
- Minor alterations to the Mission-style parapet
- Reconfiguration of certain spaces such as entry rotunda, arcaded walkways
- Removal of terrazzo flooring, period tile, or ox-eye windows
- Removal and replacement of window frames and openings that are dissimilar in style (patterns and configuration of lights), scale, or massing (Chasteen and Morrison 2016)

Many of the elements included in the Electrical Control Building Improvements project would occur on the interior of the Electrical Control Building. The interior of the Electrical Control Building is not considered historically significant and does not contain character-defining features. Therefore, improvements that would occur on the building's interior (i.e., installation of two MCCs, a wall-mounted air conditioning unit, railings, flooring and removable guardrails on the loading dock and replacement of an RTU and electrical panels) would comply with *The Secretary of the Interior's Standards for the Treatment of Historic Properties* ("Secretary's Standards") because they would not negatively alter any character-defining features. The installation of electrical conduits on the exterior of the Electrical Control Building would be considered a "minor alteration" as defined in the CRTP because it entails relatively diminutive features to the building and requires minimal intervention to attach. Because this alteration would not require the removal of original material or significantly alter the building's current appearance, it complies with the Secretary's Standards and is consistent with the guidance of the CRTP.

The project also includes the replacement of all the doors and windows on the Electrical Control Building. The windows are considered significant character-defining features while the period doors are considered less significant. The metal roll-up door, which is proposed to be replaced, is not original to the building and is not considered character-defining. Although the designs of the window and door replacements have not yet been finalized, Metropolitan has committed to replacing the doors and windows in kind (i.e., they will be constructed of a consistent material and feature a consistent number and configuration of windowpanes as the building's current windows and doors, which appear original) and installing the new windows and doors in a manner that would not require the widening of the existing openings.

The in-kind replacement of period windows and doors complies with the Secretary's Standards and would not pose a substantial adverse change to the character-defining features of the Electrical Control Building,

which is ranked as Significant or Most Significant. As such, the proposed replacement of the windows and doors of the Electrical Control Building would not require additional mitigation in accordance with the 2015 EIR, which states impacts are less than significant when project elements comply with the Secretary's Standards. Therefore, no further mitigation is required.

Archaeological Resources

A cultural resources field survey and archival research completed for the 2015 EIR did not identify or indicate the presence of archaeological resources within the Weymouth Plant boundaries. As detailed in that analysis, the Weymouth Plant has been highly disturbed and subject to ground disturbance to depths of approximately 18 feet below ground surface in the developed areas of the plant. This ground disturbance included the construction of foundations and installation of subsurface piping and conduits, which would have destroyed any potential archaeological resources in the immediate area.

The proposed modifications would be constructed within the boundaries of the Weymouth Plant and within those areas that have been previously disturbed. Furthermore, the proposed modifications would be limited to the alteration of buildings and structures and would not involve ground disturbance. Therefore, the proposed modifications would not result in new or substantially more severe significant impacts to archaeological resources. This impact would be less than significant, consistent with the 2015 EIR.

Human Remains

The 2015 EIR determined no human remains are known to occur within impact areas of the original project, and the potential for human remains is low due to extensive ground disturbance at the Weymouth Plant. The proposed modifications do not propose ground disturbance; however, if human remains are unearthed, Metropolitan would be required to comply with all applicable laws and regulations, including State of California Code Section 7050.5 for the proper notification of the County Coroner and the Native American Heritage Commission. Therefore, the proposed modifications would not result in new or substantially more severe significant impacts to human remains. This impact would be less than significant, consistent with the 2015 EIR.

3.4.4 Conclusion

The proposed modifications to the Project would not result in new significant impacts to cultural resources or substantially increase the severity of impacts already identified in the 2015 EIR. Impacts would be similar to those identified in the 2015 EIR. Therefore, impacts related to cultural and historical resources would be considered less than significant with mitigation incorporated, and no further mitigation is required.

3.5 Energy

The Project's energy impacts were evaluated in Section 5.3, *Significant Irreversible Environmental Changes*, of the 2015 EIR. Although a separate chapter evaluating energy impacts was not included in the 2015 EIR, a separate discussion of energy is included in this Addendum per the most recent version of the *State CEQA Guidelines* in which energy is included in the Appendix G checklist as a separate resource category.

3.5.1 Setting

As a state, California is one of the lowest per capita energy users in the United States, ranked 48th in the nation, due to its energy efficiency programs and mild climate (United States Energy Information Administration 2021). Electricity and natural gas are primarily consumed by the built environment for lighting, appliances, heating and cooling systems, fireplaces, and other uses such as industrial processes in addition to being consumed by alternative fuel vehicles. Approximately 32 percent of California's electricity supply comes from renewable energy sources, such as wind, solar photovoltaic, geothermal, and biomass (California Energy Commission [CEC] 2021). Petroleum fuels are primarily consumed by on-road and off-road equipment in addition to some industrial processes. Gasoline, which is used by light-duty cars, pickup trucks, and sport utility vehicles, is the most used transportation fuel in California with 15.4 billion gallons sold in 2019 (CEC 2020). Diesel, which is used primarily by heavy duty-trucks, delivery vehicles, buses, trains, ships, boats and barges, farm equipment, and heavy-duty construction and military vehicles, is the second most used fuel in California with 1.8 billion gallons sold in 2019 (CEC 2020).

Energy consumption is directly related to environmental quality in that the consumption of nonrenewable energy resources releases criteria air pollutant and GHG emissions into the atmosphere. The environmental impacts of air pollutant and GHG emissions associated with the energy consumption of the proposed modifications are discussed in detail in Section 3.2 (Air Quality) and Section 3.6 (Greenhouse Gas Emissions), respectively.

3.5.2 Significance Threshold Criteria

The following CEQA significance threshold criteria were used to evaluate impacts to energy associated with the proposed modifications to the Project. Impacts would be potentially significant if the proposed modifications would introduce new significant impacts or substantially increase the severity of previously identified significant impacts associated with:

a) Potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation

b) Conflicts with or obstruction of a state or local plan for renewable energy or energy efficiency

3.5.3 Potential Impacts

Consumption of Energy Resources

The 2015 EIR determined the original Project would result in the irretrievable and irreversible commitment of energy resources in the form of diesel fuel, gasoline and electricity during construction and operation. However, the 2015 EIR concluded these types of resources are anticipated to be in adequate supply into the foreseeable future; therefore, impacts due to these irretrievable and irreversible commitments of resources were not considered significant.

Although construction of the proposed modifications would use a similar quantity of construction equipment and a similar-sized workforce on a daily basis as that evaluated in the 2015 EIR, the overall construction duration for the Basin Nos. 5-8 project would be extended by approximately 21 months beyond that contemplated by the 2015 EIR to accommodate the proposed modifications. The extended construction schedule would therefore result in greater total energy consumption associated with construction activities. Energy use associated with the proposed modifications to the Project would be primarily in the form of fuel consumption to operate heavy equipment, worker vehicles, concrete trucks,

and haul trucks during construction activities for the proposed modifications. Energy consumption associated with the extended construction schedule associated with the proposed modifications was estimated using the project-specific details included in the GHG emissions modeling (see Section 3.6 [Greenhouse Gas Emissions] for further discussion) and fuel consumption factors published by the United States Environmental Protection Agency and United States Department of Transportation. Table 3.5-1 summarizes the anticipated energy consumption associated with construction of the proposed modifications for informational and disclosure purposes. As shown below, construction of the proposed modifications would consume approximately 11,037 gallons of gasoline fuel and approximately 344,001 gallons of diesel fuel.

Table 3.5-1. Estimated Fuel Consumption (gallons) for the Proposed Modifications

	Gasoline	Diesel
Heavy Off-road Equipment	--	341,425
Concrete Delivery and Haul Trips	--	2,576
Construction Worker Trips	11,037	--
Total Fuel Consumption	11,037	344,001

Note: Anticipated energy consumption during construction of the proposed modifications is provided for informational and disclosure purposes.
Source: Energy calculations in Appendix B

Energy use during construction of the proposed modifications would be temporary in nature, and heavy equipment used would be typical of Metropolitan's ongoing construction and maintenance projects throughout its service area. In addition, contractors would be required to comply with the provisions of 13 California Code of Regulations Sections 2449 and 2485, which prohibit diesel-fueled commercial motor vehicles and off-road diesel vehicles from idling for more than five minutes, which would minimize unnecessary fuel consumption. Heavy equipment would be subject to the United States Environmental Protection Agency Construction Equipment Fuel Efficiency Standard (40 Code of Federal Regulations Parts 1039, 1065, and 1068), which would minimize inefficient fuel consumption. Furthermore, in the interest of cost efficiency, contractors and staff would not utilize fuel in a manner that is wasteful or unnecessary. In addition, vehicles used by workers during construction activities would be subject to increasingly stringent federal and state fuel efficiency standards, which would minimize the potential for inefficient fuel usage.

Upon completion, the proposed modifications would not require additional operations and maintenance activities, such as staff vehicle trips, beyond those currently occurring at the Weymouth Plant. Furthermore, the proposed modifications would enable Metropolitan to continue operating its water treatment facilities in an energy-efficient manner. Nevertheless, similar to the original Project, the proposed modifications would result in the irretrievable and irreversible commitment of energy resources in the form of diesel fuel, gasoline and electricity during construction and operation. However, as discussed in the 2015 EIR, because these types of resources are anticipated to be in adequate supply into the foreseeable future, impacts due to these irretrievable and irreversible commitments of resources are not considered significant. Therefore, the proposed modifications would not result in a new or substantially more severe significant impact related to the wasteful, inefficient, or unnecessary consumption of energy resources. This impact would be less than significant, consistent with the 2015 EIR.

Renewable Energy and Energy Efficiency Plans

Policy 5.2 of the City of La Verne's General Plan (1998) is to "reduce energy consumption," which is followed by various implementation measures that require energy-saving designs and features in new and refurbished buildings and encourage public employees to follow energy conservation procedures. The proposed modifications to the Project would enable Metropolitan to continue operating its water treatment facilities in an energy-efficient manner using recent technology. Therefore, the proposed modifications would be consistent with Policy 5.2 of the City of La Verne's General Plan. As a result, no impacts related to consistency with renewable energy and energy efficiency plans would occur.

3.5.4 Conclusion

The proposed modifications to the Project would not result in significant impacts related to energy. Therefore, the proposed modifications would not result in new significant impacts or substantially increase the severity of impacts already identified in the 2015 EIR, and no further mitigation is required.

3.6 Greenhouse Gas Emissions

The 2015 EIR prepared for the original Project concluded potential environmental impacts related to GHG emission impacts would be less than significant. This section provides an analysis of the potential GHG emission impacts associated with the proposed modifications to the Project.

3.6.1 Setting

Overview of Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. Climate change is the result of numerous, cumulative sources of GHG emissions contributing to the "greenhouse effect," a natural occurrence that takes place in Earth's atmosphere and helps regulate the temperature of the planet. The majority of radiation from the sun hits Earth's surface and warms it. The surface, in turn, radiates heat back towards the atmosphere in the form of infrared radiation. Gases and clouds in the atmosphere trap and prevent some of this heat from escaping into space and re-radiate it in all directions.

GHG emissions occur both naturally and as a result of human activities, such as fossil fuel burning, decomposition of landfill wastes, raising livestock, deforestation, and some agricultural practices. GHGs produced by human activities include carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Different types of GHGs have varying global warming potentials. The global warming potential of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emitted, referred to as "carbon dioxide equivalent" (CO_2e), which is the amount of GHG emitted multiplied by its global warming potential. Carbon dioxide has a 100-year global warming potential of one. By contrast, methane has a global warming potential of 28, meaning its global warming effect is 28 times greater than CO_2 on a molecule per molecule basis (Intergovernmental Panel on Climate Change 2014).[3]

[3] The Intergovernmental Panel on Climate Change's (2014) *Fifth Assessment Report* determined that methane has a global warming potential of 28. However, the 2017 Climate Change Scoping Plan published by the California Air Resources Board uses a global warming potential of 25 for

3.6.2 Significance Threshold Criteria

The following CEQA significance threshold criteria were used to evaluate impacts to GHG emissions associated with the proposed modifications to the Project. Impacts would be potentially significant if the proposed modifications would introduce new significant impacts or substantially increase the severity of previously identified significant impacts associated with:

a) The generation of GHG emissions, either directly or indirectly, that may have a significant impact on the environment

b) A conflict with any applicable plan, policy, or regulation adopted to reduce the emissions of greenhouse gases

Consistent with the approach of the 2015 EIR, the SCAQMD's significance threshold of 10,000 metric tons (MT) of CO_2e per year is used in this analysis to evaluate the significance of the GHG emissions impacts of the proposed modifications. In addition, this analysis utilizes the SCAQMD guidance for the determination of the significance of construction-related GHG emissions that recommends total emissions from construction be amortized over a 30-year period and added to operational emissions, then compared to the threshold (SCAQMD 2008b).

3.6.3 Potential Impacts

Generation of GHG

The 2015 EIR determined the original Project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. Construction of the proposed modifications would generate temporary GHG emissions, primarily as a result of the operation of construction equipment on site as well as from vehicles transporting construction workers and material deliveries. Although construction of the proposed modifications would use the similar construction equipment and a similar-sized workforce on a daily basis as that evaluated in the 2015 EIR, the overall construction duration for the Basin Nos. 5-8 project would be extended by approximately 21 months beyond that contemplated by the 2015 EIR to accommodate the proposed modifications. The extended construction schedule would therefore result in greater total GHG emissions associated with construction activities.

GHG emissions associated with construction of the proposed modifications were estimated using CalEEMod version 2020.4.0 in accordance with the project details outlined in Section 2.3 (Project Location and Project Description) and the GHG emissions modeling of the 2015 EIR. Calculations of CO_2, methane, and nitrous oxide emissions are provided in this analysis to identify the magnitude of potential project effects. Specifically, it was assumed construction of the proposed modifications would require six additional months and utilize off-road equipment listed in Table 3.6-1. In addition, consistent with the emissions modeling of the 2015 EIR and the requirements of the proposed modifications, it was assumed 28 roundtrip worker trips (20 construction worker trips and eight pick-up truck trips) and 53 roundtrip vendor trips (concrete delivery) would occur each day and nine roundtrip haul trips (six trips for infrastructure delivery and three trips for dump trucks and semi-truck flatbed trailers) would occur over the course of the six-month construction period. Trip lengths for each trip type were based on CalEEMod default trip lengths for the SCAQMD region, which are 14.7 miles for one-way worker trips, 6.9 miles for one-way vendor trips, and 20 miles for one-way haul trips.

methane, consistent with the Intergovernmental Panel on Climate Change's (2007) *Fourth Assessment Report*. Therefore, this analysis utilizes a global warming potential of 25.

Table 3.6-1. Off-road Construction Equipment List for the Proposed Modifications

Equipment	Quantity
Man Lifts	2
Abrasive Blasting Equipment	2
Concrete Pumps with Boom	4
Concrete Saws	2
Welders	3
Air Compressors	6
Rubber Tired Loader	1
Excavator	1
Backhoe	1
Generators	2
Portable Blowers (50,000 CFM)	2
Forklifts	3
Cranes (300-ton)	3
Vacuum Equipment	1

TIG = tungsten inert gas; MIG = metal inert gas; CFM = cubic feet per minute

As shown in Table 3.6-2, the extended construction schedule associated with the proposed modifications would increase construction-related emissions by an estimated total of 109 MT of CO_2e per year when amortized over a 30-year period per SCAQMD guidance. GHG emissions associated with construction of the proposed modifications would increase the Project's GHG emissions to 2,378 MT of CO_2e per year, which would not exceed the threshold of 10,000 MT of CO_2e per year. Therefore, the proposed modifications would not result in new or substantially more severe significant impacts related to GHG emissions generated by construction activities. This impact would remain less than significant, consistent with the 2015 EIR.

Table 3.6-2. Project GHG Emissions with Proposed Modifications

Emission Source	Estimated Emissions (MT of CO_2e per Year)
Existing Conditions Plus Oxidation Retrofit Program (Operation Only)	
Existing Weymouth Plant Facilities[1]	2,919
Oxidation Retrofit Program[1]	1,168
Total	**4,087**
Future with Project and Proposed Modifications (2024)	
Weymouth Plant Facilities (Operation Only)[1]	4,087
Annual Construction for Original Project (Amortized over 30 Years)[1]	394
Annual Construction for Proposed Modifications (Amortized over 30 Years)[2]	109
Solar Generation Project (Operation Only)[1]	(2,212)
Total (Construction and Operational Emissions)	**2,378**
Significance Threshold	10,000
Threshold Exceeded?	**No**

Notes: MT (metric tons), CO_2e (carbon dioxide equivalent).

[1] Source: Table 3.5-2 of the 2015 EIR

[2] Source: CalEEMod output files in Appendix C

Upon completion, the proposed modifications would not require additional operations and maintenance activities beyond those currently occurring at the Weymouth Plant. Therefore, no new operational emissions of GHG would be generated, and the proposed modifications would not result in new or substantially more severe significant operational impacts related to GHG emissions. This impact would be less than significant, consistent with the 2015 EIR.

Conflict with Applicable Plans and Policies

The 2015 EIR determined the original Project would be consistent with applicable plans, policies, and regulations adopted to reduce GHG emissions. The City of La Verne's General Plan (1998) does not contain policies aimed at reducing GHG emissions. Furthermore, the proposed modifications would enable Metropolitan to continue operating its water treatment facilities in an energy-efficient manner and therefore would not conflict with the GHG emissions reduction measures listed in the CARB (2017) Climate Change Scoping Plan. Therefore, the proposed modifications would not conflict with applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of GHGs, and impacts would be less than significant. Additionally, the proposed modifications would not result in new or substantially more severe significant impacts related to the consistency with applicable plans, policies, and regulations adopted to reduce GHG emissions. This impact would be less than significant, consistent with the 2015 EIR.

3.6.4 Conclusion

The proposed modifications to the Project would not result in any new or more severe significant impacts related to GHG emissions or substantially increase the severity of impacts already identified in the 2015

EIR. Impacts would be similar to those determined in the 2015 EIR. Therefore, impacts related to GHG emissions would be less than significant, and no further mitigation is required.

3.7 Hazards and Hazardous Materials

The 2015 EIR prepared for the original Project concluded potential environmental impacts to hazards and hazardous materials would be less than significant. This section provides an analysis of the potential impacts to hazards and hazardous materials associated with the proposed modifications to the Project.

3.7.1 Setting

As discussed in the 2015 EIR, the Project site is not located on an active hazardous materials site; however, it does contain a closed Leaking Underground Storage Tank (LUST) cleanup site that was cleaned up in 1991 and no longer poses a risk to the public or the environment. In addition, there are no active hazardous materials sites within 0.25 mile of the Project site (California State Water Resources Control Board 2021; California Department of Toxic Substances Control 2021). The Weymouth Plant currently uses one hazardous material – chlorine – for day-to-day treatment operations. Chlorine is stored in a tightly controlled and continuously monitored building equipped with video cameras, alarmed doors, chlorine leak detectors, and emergency shut-off systems. Any accidental chlorine release is designed to be contained within the chlorine building and neutralized by a caustic scrubber system. Treatment chemicals are delivered to the Weymouth Plant on a regular basis via an existing rail line or by truck. The Los Angeles County Fire Department hazardous materials response team is responsible for responding to hazardous materials accidents on the Weymouth Plant.

3.7.2 Significance Threshold Criteria

The following CEQA significance threshold criteria were used to evaluate impacts to hazards and hazardous materials associated with the proposed modifications to the Project. Impacts would be potentially significant if the proposed modifications would introduce new impacts or substantially increase the severity of previously identified significant impacts associated with:

a) The creation of a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials

b) The creation of a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment

c) The emission of hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school

d) The location of the project on a site that is included on a list of hazardous materials sites compiled under Government Code Section 65963.5 and, as a result, the creation of a significant hazard to the public or the environment

e) For projects located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, the creation of a safety hazard or excessive noise for people residing or working in the Project area

f) The impairment of the implementation of or the physical interference with an adopted emergency response plan or emergency evacuation plan

g) The exposure of people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires

The 2015 EIR focused on evaluating impacts related to the transportation, use, and disposal of hazardous materials; the creation of a significant hazard through reasonably foreseeable upset and accident conditions ; and the emission of hazardous emissions and handling of acutely hazardous materials within 0.25 mile of a school (questions [a, b, c] of the *State CEQA Guidelines* Appendix G checklist) because the NOP/IS determined implementation of the original Project would not result in significant impacts related to airport hazards, emergency response and evacuation plans, and wildland fires (question [d, e, f, g]). Consequently, these questions will not be discussed in this Addendum.

3.7.3 Potential Impacts

Transportation of Hazardous Materials

The 2015 EIR determined construction of the original Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. As discussed in the 2015 EIR, Project construction activities would temporarily increase the use and transport of commonly used hazardous materials (i.e., gasoline, diesel fuel, hydraulic fluids, paint, and other similarly related materials). These materials would be brought into the Project site, used, stored, and disposed during the construction period. Hazardous materials would be transported in accordance with California Highway Patrol requirements and regulations. Disposal of all hazardous materials would be in compliance with federal and state requirements and regulations. Construction of the proposed modifications to the Project would require use of similar hazardous materials that would be transported and disposed of in accordance with applicable federal and state requirements and regulations. Therefore, construction of the proposed modifications would not result in new or substantially more severe significant impacts related to the transport, use, and disposal of hazardous materials. This impact would be less than significant, consistent with the 2015 EIR.

The 2015 EIR determined operation of the original Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Upon completion, the proposed modifications would not require additional operations and maintenance activities, such as additional chemical truck deliveries, beyond those currently occurring at the Weymouth Plant. Therefore, operation of the proposed modifications would not result in new or substantially more severe significant impacts related to the transport, use, and disposal of hazardous materials. No impact would occur, consistent with the 2015 EIR.

Accidental Upset

The 2015 EIR determined construction of the original Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. As discussed in the 2015 EIR, hazardous materials could accidently be spilled or released into the environment, exposing construction workers, the public, and/or the environment to potentially hazardous conditions during construction activities. However, compliance with safety regulations, use of spill cleanup kits, and implementation of required best management practices (BMPs) such as training of employees and contractors in proper hazardous materials storage and handling procedures, emergency response and cleanup procedures, and installation of secondary containment units would minimize the potential for accidental spills and releases to expose construction workers, the public, and/or the environment to potentially hazardous conditions. Construction of the proposed modifications to the Project would be subject to the same requirements and

would therefore have similarly low potential for accidental spills and releases of hazardous materials to expose construction workers, the public, and/or the environment to potentially hazardous conditions. Therefore, construction of the proposed modifications would not result in new or substantially more severe significant impacts related to the creation of a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. This impact would be less than significant, consistent with the 2015 EIR.

The 2015 EIR determined operation of the original Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Upon completion, the proposed modifications would not require additional operations and maintenance activities, such as additional chemical truck deliveries, beyond those currently occurring at the Weymouth Plant. Therefore, operation of the proposed modifications would not result in new or substantially more severe significant impacts related to the creation of a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. No impact would occur, consistent with the 2015 EIR.

Hazardous Materials near Schools

The 2015 EIR determined construction of the original Project would not result in the emission of hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. As discussed in the 2015 EIR, the Project site is located within 0.25 mile of eight schools, which are summarized below in Table 3.7-1.

Table 3.7-1. School Facilities Located within 0.25 Mile of the Project Site

School Facility	Address
Grace Miller Elementary School	1629 Holly Oak Street
Calvary Baptist School	2990 Damien Avenue
La Verne Parent Participation Preschool	909 Juanita Avenue
La Verne KinderCare	3602 Wheeler Avenue
Damien High School	2280 Damien Avenue
Ramona Middle School	3490 Ramona Avenue
Ramona Avenue Christian Church	909 East Juanita Avenue
Joan Macy School	1350 3rd Street

Source: Table 3.6-1 in the 2015 EIR

Project construction activities would involve the transport of hazardous materials and waste via trucks that would travel from Interstate 210 to the Weymouth Plant via Wheeler Avenue, which is a designated state and federal truck route. All construction workers would comply with local, state, and federal safety regulations regarding the handling, use, and disposal of all hazardous materials and implement BMPs that would prevent a release to the environment from hazardous materials use and transport. The proposed modifications would also be subject to compliance with these regulations and BMPs. Therefore, construction of the proposed modifications would not result in new or substantially more severe significant impacts related to the release of hazardous materials within 0.25 mile of a school. This impact would be less than significant, consistent with the 2015 EIR.

The 2015 EIR determined operation of the original Project would not result in the emission of hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-

quarter mile of an existing or proposed school. Upon completion, the proposed modifications would not require additional operations and maintenance activities, such as additional chemical truck deliveries, beyond those currently occurring at the Weymouth Plant. Therefore, operation of the proposed modifications would not result in new or substantially more severe significant impacts related to the release of hazardous materials within 0.25 mile of a school. No impact would occur, consistent with the 2015 EIR.

3.7.4 Conclusion

The proposed modifications to the Project would not result in new significant impacts to hazards and hazardous materials or substantially increase the severity of significant impacts already identified in the 2015 EIR. Impacts would be similar to those identified in the 2015 EIR. Impacts would remain less than significant, and no further mitigation is required.

3.8 Hydrology and Water Quality

The 2015 EIR prepared for the original Project concluded potential environmental impacts to hydrology and water quality would be less than significant. This section provides an analysis of the potential impacts to hydrology and water quality associated with the proposed modifications to the Project.

3.8.1 Setting

The Project site is located in the San Gabriel River Watershed, which extends from Puente Hills to San Pedro Bay, and is under the jurisdiction of the Los Angeles Regional Water Quality Control Board. Drainages in the Project area include Marshall Creek directly east of the Project site, Puddingstone Channel to the west, Live Oak Channel further east, and Live Oak Wash to the east and south (see Figure 3.7-1 in the 2015 EIR for specific locations of these drainages in relation to the Project site). The Puddingstone Reservoir, a flood control and recreational facility, is located approximately 1.5 miles southwest and downstream of the Project site within the Frank G. Bonelli Regional County Park. There are two water bodies in the Project area listed on the Clean Water Act Section 303(d) list for impairments – the Puddingstone Reservoir (polluted/stressed by chloride, dichlorodiphenyltrichloroethane, mercury, organic enrichment/low dissolved oxygen, polychlorinated biphenyls, and dieldrin) and Walnut Creek Wash (polluted/stressed by benthic-macroinvertebrate bioassessments, indicator bacteria, and pH).

Stormwater runoff flows generally from north to south across the Project site, which is divided into five drainage areas (see Figure 3.7-2 in the 2015 EIR for a map of the drainage areas) that direct runoff and stormwater into Marshall Creek on the eastern side and into storm drains on the western side. The Project site is not located within a flood hazard zone (see Figure 3.7-3 of the 2015 EIR for a map of the Project site in relation to flood hazard zones).

3.8.2 Significance Threshold Criteria

The following CEQA significance threshold criteria were used to evaluate impacts to hydrology and water quality associated with the proposed modifications to the Project. Impacts would be potentially significant if the proposed modifications would introduce new impacts or substantially increase the severity of previously identified significant impacts associated with:

a) The violation of any water quality standards or waste discharge requirements or otherwise substantial degradation of surface or groundwater quality

b) The substantial decrease of groundwater supplies or substantial interference with groundwater recharge such that the project may impede sustainable groundwater management of the basin

c) The substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
   i. Result in substantial erosion or siltation on- or off-site
   ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site
   iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff or
   iv. Impede or redirect flood flows

d) In flood hazard, tsunami, or seiche zones, the risk of releasing pollutants due to project inundation

e) Conflicting with or obstructing implementation of a water quality control plan or sustainable groundwater management plan

The 2015 EIR focused on evaluating impacts related to the degradation of water quality and the alteration of existing drainage patterns (questions [a, c] of the *State CEQA Guidelines* Appendix G checklist) because the NOP/IS determined that implementation of the original Project would not result in significant impacts related to groundwater supplies, flood hazards, tsunamis, and seiches (question [b, d, e]). Consequently, these questions will not be discussed in this Addendum.

3.8.3 Potential Impacts

Water Quality

The 2015 EIR determined construction and operation of the original Project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. As discussed in the 2015 EIR, construction of the original Project would involve demolition and earthmoving activities such as excavation, grading, and soil stockpiling that could result in pollutant discharge and soil erosion and the potential subsequent discharge of pollutants and sediment to down-gradient surface waters or drainages (e.g., Marshall Creek and adjacent storm drains). In addition, Project construction activities would involve the use and handling of chemicals such as, but not limited to, concrete, cement, oil, fuels, and lubricants. In the event of accidental release of chemicals, such as spills during fueling of equipment or vehicles, the chemicals could come into contact with stormwater runoff and discharge into the nearby water bodies, thus affecting surface water quality. However, the 2015 EIR determined impacts would be less than significant due to compliance with the stormwater control requirements of the Statewide National Pollutant Discharge Elimination System Construction General Permit for individual projects with disturbance areas of greater than one acre.

The Basin Nos. 5-8 Rehabilitation and the Filter Building 2 Valves Replacement projects and the proposed modifications would not be subject to the requirements of the Construction General Permit because they would not result in ground disturbance of more than one acre. The proposed modifications to the Project would primarily involve upgrading, replacing, and installing equipment and infrastructure and would not include major ground disturbance that would result in substantial soil erosion. Furthermore, as discussed in Section 2.3.3, *Construction*, BMPs in Metropolitan's standard specifications would be implemented to control erosion and limit any run-off discharge associated with the proposed

modifications. Upon completion, the proposed modifications would not require additional operations and maintenance activities beyond those currently occurring at the Weymouth Plant. Therefore, construction and operation of the proposed modifications would not result in new or substantially more severe significant impacts to water quality. This impact would be less than significant, consistent with the 2015 EIR.

Drainage, Runoff, Flooding, and Storm Drain Capacity

The 2015 EIR determined construction and operation of the original Project would not result in the substantial alteration of the existing drainage pattern of the site or area that would result in substantial erosion or siltation, substantially increase the rate or amount of surface runoff that would result in flooding, create or contribute runoff water that would exceed the capacity of stormwater drainage systems or provide substantial additional sources of polluted runoff, or impede or redirect flood flows. The proposed modifications would be constructed within paved areas of the Weymouth Plant and would not alter existing on-site drainage patterns. In addition, as discussed in the 2015 EIR, Metropolitan's standard practice for smaller projects (less than one acre of disturbance) that do not require Stormwater Pollution Prevention Plans (SWPPPs) under the Statewide National Pollutant Discharge Elimination System Construction General Permit is to have construction contractors prepare a Water Pollution Control Plan (WPCP). A WPCP is similar to a SWPPP but is prepared when the total disturbed area of the project site is less than one acre. A WPCP is a water quality management plan that follows local jurisdiction guidelines and consists of BMPs, drawings, and preventive measures to prevent and minimize impacts to water quality. The proposed modifications would be subject to the WPCP requirements, which would minimize the impacts of construction activities on water quality, runoff volumes, flooding, and stormwater discharge. Furthermore, the proposed modifications would not introduce new impervious surfaces at the Weymouth Plant that would alter the existing on-site drainage pattern. Therefore, the proposed modifications would not result in the substantial alteration of the existing drainage pattern of the site or area that would result in substantial erosion or siltation, substantially increase the rate or amount of surface runoff that would result in flooding, create or contribute runoff water that would exceed the capacity of stormwater drainage systems or provide substantial additional sources of polluted runoff, or impede or redirect flood flows. Therefore, construction and operation of the proposed modifications would not result in new or substantially more severe significant impacts related to drainage, runoff, flooding, and storm drain capacity. This impact would be less than significant, consistent with the 2015 EIR.

3.8.4 Conclusion

The proposed modifications to the Project would not result in new significant impacts to hydrology and water quality or substantially increase the severity of significant impacts already identified in the 2015 EIR. Impacts would be similar to those identified in the 2015 EIR. Therefore, impacts would remain less than significant, and no further mitigation is required.

3.9 Noise and Vibration

The 2015 EIR prepared for the Project concluded potential environmental impacts to noise and vibration would be significant and unavoidable even with the incorporation of Mitigation Measures Noise-1 through Noise-3, which require the installation of temporary noise barriers/curtains prior to the commencement of any significant noise-generating work (i.e., excavation, grading, demolition); implementation of BMPs for construction noise control; and restrictions on haul routes. This section provides an analysis of the potential impacts of noise and vibration associated with the proposed modifications to the Project.

3.9.1 Setting

Overview of Noise and Vibration

Noise

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (California Department of Transportation [Caltrans] 2013).

Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response. Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; dividing the energy in half would result in a 3 dB decrease (Crocker 2007).

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important factors of a project's noise impact. Most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. One of the most frequently used noise metrics is the equivalent noise level (L_{eq}); it considers both duration and sound power level. The L_{eq} is defined as the single steady A-weighted sound level equivalent to the same amount of sound energy as that contained in the actual fluctuating sound levels over time. Typically, the L_{eq} is summed over a one-hour period (Crocker 2007). Normal conversational levels are in the 60 to 65-dBA L_{eq} range; ambient noise levels greater than 65 dBA L_{eq} can interrupt conversations (Federal Transit Administration [FTA] 2018).

Vibration

Vibration is a unique form of noise because its energy is carried through buildings, structures, and the ground, whereas sound is simply carried through the air. Thus, vibration is generally felt rather than heard. Some vibration effects can be caused by noise (e.g., the rattling of windows from passing trucks). Typically, ground-borne vibration generated by manmade activities attenuates rapidly as distance from the source of the vibration increases. Vibration amplitudes are usually expressed in peak particle velocity (PPV) or RMS vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal (Caltrans 2020). The RMS is generally equivalent to 71 percent of the PPV. Thus, human annoyance usually results in a more restrictive vibration limit than structural damage limits. Table 3.13-1 summarizes the construction vibration damage criteria recommended by the Federal Transit Administration and used in the 2015 EIR to evaluate project impacts related to vibration. These criteria are also used in this Addendum to evaluate the vibration impacts of the proposed modifications.

Table 3.13-1. Construction Vibration Damage Criteria

Building Category	Vibration Level (in/sec PPV)
I. Reinforced-concrete, steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3

III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

Notes: in/sec = inches per second; PPV = peak particle velocity
Source: Federal Transit Administration 2018

Existing Noise Environment

The most prevalent sources of noise in the vicinity of the Project site are vehicular traffic on Interstate 210, State Route 66 (Foothill Boulevard), and Wheeler Avenue. The results of the noise level monitoring completed for the 2015 EIR on Wednesday, April 2, 2014 between 10:00 a.m. and 4:00 p.m. are reproduced in Table 3.13-2 and Figure 4. Noise monitoring location 5, located at a single-family residence in the Fountains Mobile Home Park on Moreno Drive, is the closest monitoring location to the site of the proposed modifications. The noise level at this location was measured as approximately 61 dBA L_{eq}.

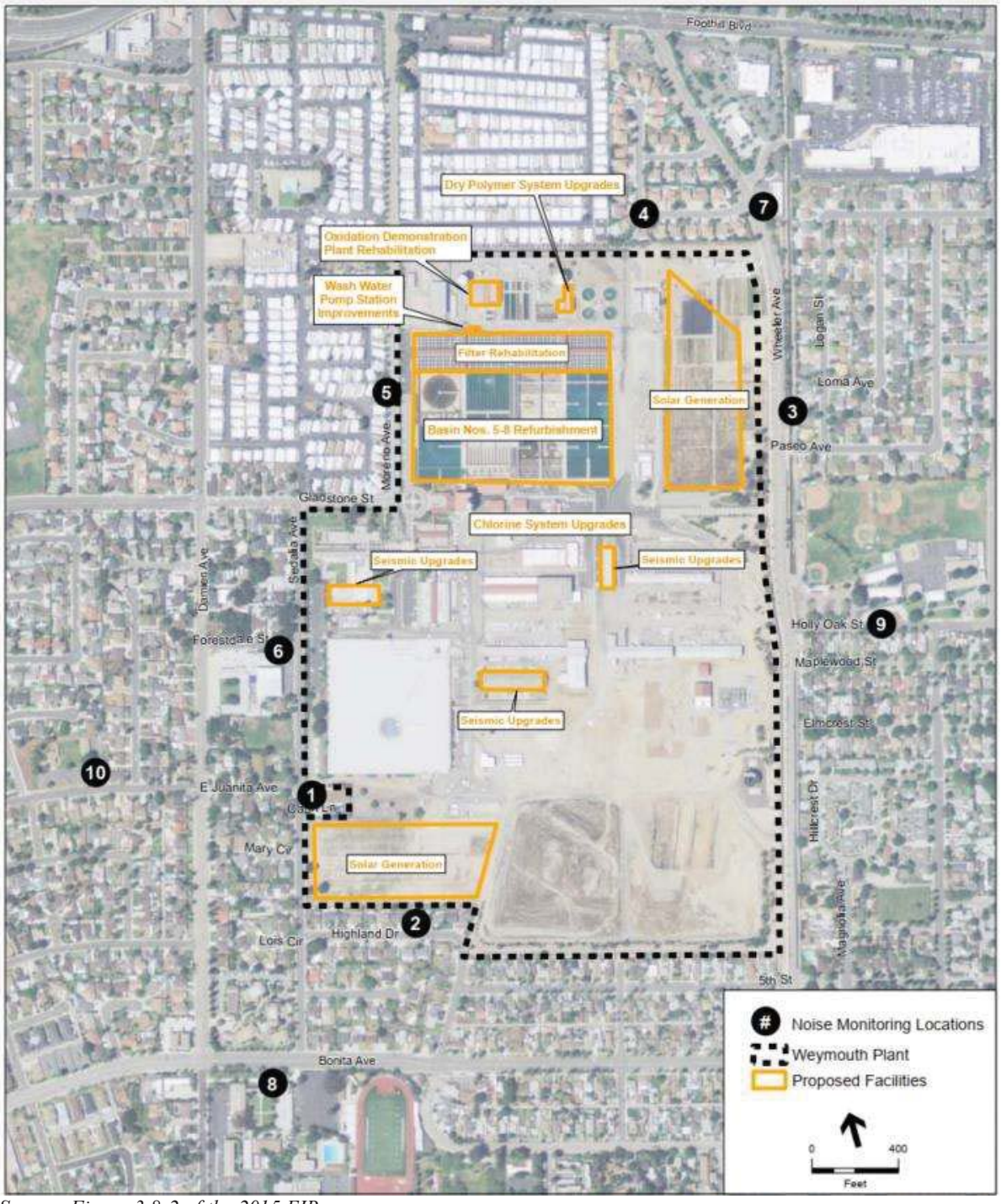
Table 3.13-2. Existing Noise Levels

Noise Monitoring Location	Location Description	Sound Level (dBA L_{eq})
1	Single-Family Residence (Sedalia Avenue)	54.4
2	Single-Family Residence (Highland Drive)	46.6
3	Single-Family Residence (Logan Street)	70.5
4	Single-Family Residence (Ancona Drive)/Single-Family Residence – La Verne Mobile Country Club (Vera Cruz Street)	45.8
5	Single-Family Residence – Fountains Mobile Home Park (Moreno Drive)	60.5
6	Calvary Baptist Church and School	53.7
7	La Verne KinderCare	68.5
8	Damien High School	68.2
9	Grace Miller Elementary School	51.3
10	Ramona Avenue Christian Church	56.4

Notes: dBA = A-weighted decibel; L_{eq} = equivalent noise level
Source: Table 3.8-1 of the 2015 EIR

Some land uses are more sensitive to ambient noise levels than other uses due to the amount of noise exposure and the types of activities involved. For example, residences, motels, hotels, schools, libraries, churches, nursing homes, auditoriums, museums, cultural facilities, parks, and outdoor recreation areas are more sensitive to noise than commercial and industrial land uses. Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. Noise monitoring locations were established at sensitive receivers closest to the Weymouth Plant, including single-family residences, daycare facilities, public and private schools, and churches, (see Table 3.13-2). The closest sensitive receivers to the locations of the proposed modifications are residences located immediately to the west across Moreno Avenue, approximately 140 feet west of Basin Nos. 1-4 and 770 feet west of the Electrical Control Building.

Figure 4 Noise Monitoring Locations



Source: Figure 3.8-2 of the 2015 EIR

3.9.2 Significance Threshold Criteria

The following CEQA significance threshold criteria were used to evaluate impacts to noise associated with the proposed modifications to the Project. Impacts would be potentially significant if the proposed modifications would introduce new impacts or substantially increase the severity of previously identified significant impacts associated with:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies

b) Generation of excessive ground-borne vibration or ground-borne noise levels

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels

The 2015 EIR focused on evaluating impacts related to the generation of a substantial temporary or permanent increase in ambient noise levels and the generation of excessive ground-borne vibration and noise levels (questions [a, b] of the *State CEQA Guidelines* Appendix G checklist) because the NOP/IS determined that implementation of the original Project would not result in significant impacts related to exposure to airport-related noise (question [c]). Consequently, airport noise-related questions will not be discussed in this Addendum.

The noise and vibration thresholds used in the 2015 EIR to evaluate the original Project impacts are also utilized in this analysis to evaluate the impacts of the proposed modifications. Specifically, the 2015 EIR used the City of La Verne's local noise standards, which incorporate by reference the noise standards contained in the County of Los Angeles' noise control ordinance, to evaluate project impacts related to construction and operational noise. Los Angeles County Code Section 12.08.440 establishes an allowable construction noise level for scheduled and relatively long-term operation (i.e., greater than 10 days) of stationary equipment of 60 dBA L_{eq} at single-family residences from the hours of 7:00 a.m. to 8:00 p.m. This noise level limit was also used to evaluate construction noise impacts to schools and religious facilities. To evaluate construction vibration impacts, the 2015 EIR utilized the Federal Transit Administration's construction vibration damage criteria of 0.2 in/sec PPV for non-engineered timber and masonry buildings. To evaluate operational vibration impacts, the 2015 EIR used the County of Los Angeles' vibration perceptibility standard of 0.01 in/sec PPV at the property boundary of the source.

3.9.3 Potential Impacts

Noise Standards

The 2015 EIR concluded Project construction activities, specifically those related to the Filter Rehabilitation and Solar Generation Projects, would result in significant impacts related to construction noise. Therefore, implementation of Mitigation Measures Noise-1 through Noise-3 was required for those two Project components. However, impacts were determined to be significant and unavoidable because construction noise levels would still exceed the threshold of 60 dBA at single-family residences (following Los Angeles County Code Section 12.08.440 for construction noise) near the Project site even with implementation of these mitigation measures.

Noise-1 Prior to any significant noise-generating work (i.e., excavation, grading, demolishing) to be performed for the Solar Generation Project, Filter Rehabilitation, Dry Polymer System

Upgrades, ODP Rehabilitation and Seismic Upgrades to the Water Quality Lab, temporary noise barriers/curtains extending at least eight feet in height shall be erected around the perimeter of the active construction area or project site boundary such that the off-site receptor has no view of the construction effort. The noise barrier/curtain would be designed to achieve a reduction of 5 dBA or greater. The surface of the noise barrier (or sound wall, acoustic blanket) would present a solid face from top to bottom without any openings or cutouts.

Noise-2 During construction, the following measures shall be implemented, as necessary, to ensure compliance with applicable construction noise ordinances:

- All construction equipment, fixed or mobile, shall be outfitted with properly operating and maintained exhaust and intake mufflers, consistent with manufacturers' standards.
- Impact tools (e.g., jack hammers, etc.) used for construction shall be hydraulically or electrically powered when feasible to avoid noise associated with compressed air exhaust from pneumatically powered tools. When use of pneumatic tools is necessary, an exhaust muffler on the compressed air exhaust shall be used. External jackets on the tools themselves shall be used when feasible. Quieter procedures, such as use of drills rather than impact tools, shall be used whenever feasible.
- Stationary noise sources shall be located as far from adjacent receptors as possible.

Noise-3 Haul routes shall be restricted to arterial roads and shall not be designated through residential areas whenever feasible.

All other construction noise impacts, including off-site construction truck noise, were determined to be less than significant. The 2015 EIR also concluded that operational noise impacts would be less than significant for all aspects of the Project.

Similar to the original Project, construction of the proposed modifications would result in temporary elevated noise levels at nearby sensitive receivers. The closest sensitive receivers to the locations of the proposed modifications are residences located immediately to the west across Moreno Avenue, approximately 140 feet west of Basin Nos. 1-4 and 770 feet west of the Electrical Control Building. As discussed in Section 2.3.3, *Construction*, construction of the proposed modifications to the Project would require use of similar construction equipment and a similar-sized construction workforce as described in the 2015 EIR. The proposed modifications would also require six total additional roundtrip truck trips for removing existing infrastructure from the site and transporting new infrastructure to the site, which would equate to approximately one roundtrip truck trip per day for six days over the 18-month duration of construction activities. This one daily additional construction truck trip on six days of the construction period would not perceptibly increase construction traffic noise levels beyond those evaluated in the 2015 EIR. Therefore, noise levels generated by the operation of on-site construction equipment and off-site construction traffic would be similar to those estimated in the 2015 EIR. The 2015 EIR estimated construction noise levels would be approximately 85 dBA L_{eq} at 50 feet. Assuming a standard distance attenuation of 6 dBA per doubling of distance, construction noise levels at the nearest sensitive receivers (residences located immediately to the west across Moreno Avenue) would be approximately 76 dBA L_{eq} during work at Basin Nos. 1-4 (approximately 140 feet away from residences) and 61 dBA L_{eq} during work at the Electrical Control Building (approximately 770 feet away from residences). Therefore, as with the original Project, construction noise levels associated with the proposed modifications would exceed the threshold of 60 dBA L_{eq} at the nearest sensitive receivers. As a result, construction of the proposed modifications would not result in new or substantially more severe significant construction noise impacts. As such, consistent with the 2015 EIR, construction noise impacts would be significant

and unavoidable, and implementation of Mitigation Measures Noise-1 through Noise-3 would be required.

The 2015 EIR determined operation of the original Project would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Upon completion, the proposed modifications would not require additional operations and maintenance activities beyond those currently occurring at the Weymouth Plant. Therefore, no additional operational noise would be generated, and the proposed modifications would not result in new or substantially more severe significant operational noise impacts. This impact would be less than significant, consistent with the 2015 EIR.

Ground-borne Vibration

The 2015 EIR determined construction of the original Project would not generate excessive ground-borne vibration or ground-borne noise levels. Construction of the proposed modifications to the Project would involve the use of heavy equipment, which would generate some ground-borne vibration. Vibration from construction activity is typically below the threshold of perception when the activity is more than 50 feet from receivers (Caltrans 2020). As discussed in the 2015 EIR, construction of the Project would create minor ground vibration; however, vibration levels at the nearest vibration-sensitive receivers (located approximately 40 feet from the nearest original Project construction site and along Highland Drive, which was the southern solar generation facility) would be below the FTA-recommended significance threshold of 0.2 in/sec PPV. Therefore, the 2015 EIR concluded the original Project would not expose people or structures to excessive levels of ground-borne vibration and noise. Impacts from the Project were determined to be less than significant, and no mitigation measures were required.

As discussed in Section 2.3.3, *Construction*, construction of the proposed modifications to the Project would require use of similar construction equipment as anticipated by the 2015 EIR. As mentioned previously, the locations of the proposed modifications are further than 40 feet from the nearest sensitive receivers, which are residences west of Moreno Avenue at approximately 140 feet west of Basin Nos. 1-4 and approximately 770 feet west of the Electrical Control Building. As stated above, the 2015 EIR determined that vibration impacts would be below the FTA-recommended significance threshold of 0.2 in/sec PPV at a distance of 40 feet. Therefore, vibration levels generated by construction of the proposed modifications at the nearest sensitive receivers located 140 feet away from Basin Nos. 1-4 would be low and would be similar to those estimated in the 2015 EIR for the original Project. As such, construction of the proposed modifications would not result in a new or substantially more severe significant construction vibration impacts. As such, consistent with the 2015 EIR, construction vibration impacts would be less than significant.

The 2015 EIR determined operation of the original Project would not generate excessive ground-borne vibration or ground-borne noise levels. Upon completion, the proposed modifications would not require additional operations and maintenance activities beyond those currently occurring at the Weymouth Plant. Therefore, no additional operational vibration would be generated, and the proposed modifications would not result in new or substantially more severe significant operational vibration impacts. This impact would be less than significant, consistent with the 2015 EIR.

3.9.4 Conclusion

The proposed modifications to the Project would not result in new significant noise and vibration impacts or substantially increase the severity of impacts already identified in the 2015 EIR. Impacts would be

similar to those identified in the 2015 EIR. Therefore, construction noise impacts would be significant and unavoidable with implementation of Mitigation Measures Noise-1 through Noise-3 required. All other noise and vibration impacts would be less than significant.

3.10 Transportation and Traffic

The 2015 EIR prepared for the Project concluded potential environmental impacts to transportation would be less than significant. This section provides an analysis of the potential impacts to transportation associated with the proposed modifications to the Project.

3.10.1 Setting

As discussed in the 2015 EIR, regional transportation access to the Project area is provided by the Foothill Freeway (Interstate 210), Orange Freeway (State Route 57), and San Bernardino Freeway (Interstate 10). Local transportation access to the Weymouth Plant is provided by Wheeler Avenue, Foothill Boulevard, Baseline Road, Bonita Avenue, and Arrow Highway. Public transportation in the Project area is provided by Metrolink, Metro Gold Line, and Foothill Transit. According to the 2015 EIR, the intersections along the proposed construction traffic routes on Wheeler Avenue and Foothill Boulevard operated at Level of Service (LOS) D or better under 2014 conditions, which were the existing conditions at the time of certification of the 2015 EIR. Traffic conditions represented by an LOS of D are defined in Table 3.9-1 of the 2015 EIR as "approaching unstable. Drivers may have to wait through more than one red signal cycle. Lane queues develop but dissipate rapidly, without excessive delays."

3.10.2 Significance Threshold Criteria

The following CEQA significance threshold criteria were used to evaluate impacts to transportation and traffic associated with the proposed modifications to the Project. Impacts would be potentially significant if the proposed modifications would introduce new significant impacts or substantially increase the severity of previously identified significant impacts associated with:

a) A conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities

b) A conflict or inconsistency with CEQA Guidelines Section 15064.3(b)

c) An increase in hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)

d) Inadequate emergency access

The 2015 EIR focused on evaluating impacts related to conflicts with applicable plans, ordinances, and policies addressing the circulation system, including those related to the congestion management program and public transit, pedestrian, and bicycle facilities , as well as geometric design features and incompatible uses (questions [a, c] of the *State CEQA Guidelines* Appendix G checklist) because the NOP/IS determined that implementation of the original Project would not result in significant impacts to air traffic patterns or emergency access (question [d]). Consequently, questions related to air traffic patterns and emergency access will not be discussed in this Addendum. In addition, question [b] was not previously analyzed in the 2015 EIR because this threshold was added pursuant to updates to the *State CEQA Guidelines* that took effect in December 2018. As such, this Addendum assesses whether the proposed modifications would result in a potentially significant impact with respect to conflict or inconsistency with *State CEQA Guidelines* Section 15064.3(b) pursuant to question [b].

3.10.3 Potential Impacts

Circulation System – Roadway, Public Transit, Bicycle, and Pedestrian Facilities

The 2015 EIR determined construction and operation of the original Project would not result in a conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. As discussed in the 2015 EIR, construction activities for the original Project were anticipated to generate approximately 180 daily one-way passenger-car equivalent (PCE) trips per day (including 96 daily one-way construction worker trips and 28 daily one-way truck trips) with 24 PCE trips during the AM peak hour and 24 PCE trips during the PM peak hour.[4] With Project-related construction traffic, these intersections were projected to continue operating at a satisfactory LOS of LOS D or better during peak hours (see Tables 3.10-1 and 3.10-2).

Table 3.10-1. Existing Intersection Levels of Service

		AM Peak Hour		PM Peak Hour	
Intersection	Control	V/C	LOS	V/C	LOS
Wheeler Avenue/Foothill Boulevard	Signal	0.710	C	0.840	D
Wheeler Avenue/Holly Oak Street	Signal	0.499	A	0.479	A
Wheeler Avenue/Bonita Avenue	Signal	0.739	C	0.691	B
Foothill Boulevard/I-210 Eastbound Off-ramp	Signal	0.651	B	0.856	D
Foothill Boulevard/I-210 Westbound Ramps	Signal	0.494	A	0.467	A

Notes: v/c = volume-to-capacity ratio; LOS = level of service
Source: Table 3.9-2 of the 2015 EIR

Table 3.10-2. Existing plus Project Construction Traffic Intersection Level of Service Comparison

		Existing Conditions (2014)				Existing Conditions plus Project					
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		V/C Difference	
Intersection	Control	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	AM	PM
Wheeler Avenue/Foothill Boulevard	Signal	0.710	C	0.840	D	0.715	C	0.840	D	+0.005	0.000
Wheeler Avenue/Holly Oak Street	Signal	0.499	A	0.479	A	0.501	A	0.480	A	+0.002	+0.001
Wheeler Avenue/Bonita Avenue	Signal	0.739	C	0.691	B	0.740	C	0.691	B	+0.001	0.000
Foothill Boulevard/I-210 Eastbound Off-ramp	Signal	0.651	B	0.856	D	0.655	B	0.860	D	+0.004	+0.004
Foothill Boulevard/I-210	Signal	0.494	A	0.467	A	0.499	A	0.467	A	+0.005	0.000

[4] A PCE factor of 3.0 was assumed for the truck-trailer trips.

Westbound Ramps											

Notes: v/c = volume-to-capacity ratio; LOS = level of service
Source: Table 3.9-6 of the 2015 EIR

Similar to the original Project, construction-related traffic generated by the proposed modifications would access the site via Wheeler Avenue. As discussed in Section 2.3.3, *Construction*, the proposed modifications would not require additional construction worker trips to the Project site beyond those already anticipated in the 2015 EIR. In addition, simultaneous construction of Basin Nos. 5-8 Rehabilitation and Filter Building 2 Valves Replacement projects, and the proposed modifications would require a total of approximately six roundtrip truck trips spread over the approximately 33-month construction period, which would be well within the 14 daily roundtrip truck trips evaluated in the traffic analysis of the 2015 EIR. Therefore, the proposed modifications would not result in additional impacts to the LOS of nearby intersections or conflict with the Los Angeles County Congestion Management Program. Furthermore, similar to the original Project, the proposed modifications would occur entirely within the Weymouth Plant and would not include any component that would conflict with public transit, bicycle, or pedestrian facilities. Upon completion, the proposed modifications would not require additional operations and maintenance activities beyond those currently occurring at the Weymouth Plant. Therefore, construction and operation of the proposed modifications would not result in new or substantially more severe significant impacts related to consistency with plans, policies, and ordinances addressing the circulation system. This impact would be less than significant, consistent with the 2015 EIR.

State CEQA Guidelines Section 15064.3(b)

State CEQA Guidelines Section 15064.3(b) identifies criteria for evaluating transportation impacts. Specifically, the guidelines state vehicle miles traveled (VMT) exceeding an applicable threshold of significance may indicate a significant impact. According to Section 15064.3(b)(3) of the *State CEQA Guidelines*, a lead agency may include a qualitative analysis of operational and construction traffic. The 2015 EIR did not address VMT because such analysis was not required by the *State CEQA Guidelines* at the time the EIR was certified; VMT requirements were implemented in December 2018. However, as discussed below, the proposed modifications would not substantially affect VMT in the Project area.

A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. As discussed above, traffic on local roadways may temporarily increase during Project construction, including construction traffic associated with the proposed modifications, due to the presence of construction vehicles and equipment. Increases in VMT from construction would be short-term, minimal, and temporary. The proposed modifications, like the original Project, are located at the Weymouth Plant, in an urban community within southern California. As such, it is expected that construction crews and materials would be locally or regionally sourced, reducing construction worker and vendor commute distances. The proposed modifications are located near several major freeway corridors (Interstate 210, Interstate 10, Highway 57), minimizing the travel from major transportation corridors required to reach the Project site. Furthermore, the proposed modifications would not require additional construction workers beyond those anticipated by the 2015 EIR. As a result, construction of the proposed modifications would not involve large construction crews resulting in generation of substantial VMT associated with commuting. Upon completion, the proposed modifications would not require additional operations and maintenance activities beyond those currently occurring at the Weymouth Plant. Because the proposed modifications would not substantially increase construction-related trips or increase operational trips, impacts associated with VMT per *State CEQA Guidelines* Section 15064.3 would be less than significant.

Design Features

The 2015 EIR determined construction and operation of the original Project would not result in an increase in hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). As discussed in the 2015 EIR, the original Project would not require changes to the alignment of existing on- or off-site streets, and construction traffic would utilize the Plant's construction/delivery entrance on Wheeler Avenue designed to accommodate large construction vehicles and delivery trucks. Similarly, the proposed modifications would not include changes to the existing City's traffic circulation system, and construction traffic would utilize the Plant's entrance on Wheeler Avenue. Therefore, the proposed modifications would not result in new or substantially more severe significant impacts related to design features and traffic hazards during construction and operation. This impact would be less than significant, consistent with the 2015 EIR.

3.10.4 Conclusion

The proposed modifications to the Project would not result in new significant impacts to transportation and traffic or substantially increase the severity of impacts already identified in the 2015 EIR. Impacts would be similar to those identified in the 2015 EIR and therefore would be less than significant. No mitigation is required.

3.11 Wildfire

The Project's wildfire impacts were evaluated in Section VIII, *Hazards and Hazardous Materials*, of the NOP/IS of the 2015 EIR. Although a separate chapter evaluating wildfire impacts was not included in the 2015 EIR, a separate discussion of wildfire is included in this Addendum per the most recent version of the *State CEQA Guidelines* in which wildfire is included in the Appendix G checklist as a separate resource category.

3.11.1 Setting

The entire coastal southern California region is prone to large wildfires due to its hot, dry climate and expansive coverage of ignitable vegetation. During the autumn and winter months, strong offshore Santa Ana wind events carry dry, desert air and can fan fast-moving fires that spread rapidly from heavily vegetated wilderness and mountainous areas into developed communities. The Project site is in an urbanized area of La Verne and is approximately 1.1 miles away from the nearest vegetated wildlands (Sycamore Canyon to the north), which limits the spread of large, uncontrolled wildfires. Recent fires in the Project area vicinity include the 2016 San Gabriel Complex Fire (5,399 acres and three fatalities), 2017 Rincon Fire (10 acres), 2018 Fork Fire (166 acres), 2020 San Dimas Fire (131 acres), 2020 Dam Fire (220 acres), 2020 Ranch 2 Fire (4,237 acres), and 2020 Brook Fire (185 acres) (California Department of Forestry and Fire Protection [CAL FIRE] 2017, 2018, 2019, and 2021a; Los Angeles Almanac 2021). These fires all occurred within the Angeles National Forest, which is located approximately 1.8 miles north of the Project site at its nearest point.

The Project site is not located in a designated Very High Fire Hazard Severity Zone (VHFHSZ) or a State Responsibility Area (SRA). The nearest VHFHSZ is an SRA in the city of La Verne, approximately 1.0 mile north of the Project site (CAL FIRE 2021b).

3.11.2 Significance Threshold Criteria

The following CEQA significance threshold criteria were used to evaluate wildfire impacts associated with the proposed modifications to the Project. Impacts would be potentially significant if the proposed modifications are located in or near an SRA or lands classified as VHFHSZ, would introduce new impacts or substantially increase the severity of impacts associated with:

a) Substantial impairment of an adopted emergency response plan or emergency evacuation plan

b) The slope, prevailing winds, and other factors exacerbating wildfire risks and thereby exposure of Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire

c) Project-required installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment

d) Exposure of people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes

3.11.3 Potential Impacts

As discussed in Section 3.11.1*, Setting*, the Project site is not located in lands classified as an SRA or VHFHSZ. The nearest such zones are approximately 1.0 mile north of the Project site and are separated from the Project site by intervening development including Interstate 210, State Route 66, and residential and commercial land uses. Therefore, no impacts related to wildfire would occur.

3.11.4 Conclusion

Given that proposed modifications to the Project are not located on or near lands designated as an SRA or VHFHSZ and the proposed modifications involve upgrading, replacing, and improving existing equipment and infrastructure, no impacts associated with wildfire would occur as a result of the proposed modifications. The proposed modifications would not result in new significant impacts or substantially increase the severity of impacts already identified in the 2015 EIR, and no further mitigation is required.

4 List of Preparers

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6 Conclusion

Section 15164(b) of the *State CEQA Guidelines* states the following:

> "An addendum to an adopted negative declaration may be prepared if only minor technical changes or additions are necessary or none of the conditions described in Section 15162 calling for the preparation of a subsequent EIR or negative declaration have occurred."

The proposed modifications to the original Project would not result in new significant environmental effects or a substantial increase in the severity of previously identified significant effects. Furthermore, new information associated with the proposed modifications does not indicate that the Project will have one or more significant effects not discussed in the 2015 EIR; that significant effects previously examined will be substantially more severe than shown in the 2015 EIR; that mitigation measures previously found not to be feasible would in fact be feasible; or that mitigation measures which are considerably different from those analyzed in the 2015 EIR would substantially reduce one or more significant effects on the environment but the Project proponent declines to adopt the mitigation measures or alternative. Accordingly, an Addendum was prepared as opposed to a subsequent environmental impact report or a negative declaration. As the Lead Agency for the proposed Project modifications, Metropolitan is issuing this Addendum in accordance with the *State CEQA Guidelines* (Section 15164).

The Metropolitan Water District of Southern California

DocuSigned by:
Jennifer Harriger
1C5AACFD98D9493...
Signature

11/16/2021
Date

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Appendix A

Historical Resources Technical Memorandum

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September 14, 2021
Rincon Project No: 21-11505/ Task Order: T020 (BM-1)

The Metropolitan Water District of Southern California
Attn: Ms. Brenda Marines
P.O. Box 54153
Los Angeles, California 90054-0153
Via email: BMarines@mwdh2o.com

Subject: Historical Resources Technical Memorandum – Addendum No. 1 to the 2015 Final Environmental Impact Report for the F.E. Weymouth Water Treatment Plant Improvements Program

Dear Ms. Marines:

Rincon Consultants, Inc. (Rincon) was retained by The Metropolitan Water District of Southern California (Metropolitan) to complete Addendum No. 1 to the 2015 Final Program Environmental Impact Report for the F. E. Weymouth Water Treatment Plant Improvements Program ("2015 EIR"). Certified by the Metropolitan Board on April 14, 2015, the 2015 EIR was prepared in compliance with the California Environmental Quality Act (CEQA) and assessed the potential environmental impacts associated with the F. E. Weymouth Water Treatment Plant Improvements Program ("Weymouth Improvements Program" or "original Project"). Subsequent to the certification of the EIR, minor modifications ("proposed modifications") to the original Project were identified. Specifically, Metropolitan is proposing upgrades to Basin Nos. 1-4 and the Electrical Control Building (formerly called the Davey Shack), as described further below. To comply with CEQA (Public Resources Code Section 21000 et seq.) and the *State CEQA Guidelines* (California Code of Regulations Sections 15000 et seq.), an Addendum to the certified 2015 EIR is being prepared to evaluate the potential environmental impacts associated with the proposed modifications to the original Project.

This historical resources technical memorandum presents an analysis of potential impacts to historical resources in support of Addendum No. 1. The purpose of the analysis presented herein is to determine whether the proposed modifications would result in impacts to historical resources beyond those identified in the certified 2015 EIR for the original Project. As addressed in the certified 2015 EIR, the F. E. Weymouth Water Treatment Plant ("Weymouth Plant") encompasses the Weymouth Water Treatment Plant Historic District ("historic district"). The historic district is eligible for listing in the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR) and is therefore considered a historical resource pursuant to Public Resources Code Section 21084.1. The certified 2015 EIR concluded the original Project would result in less-than-significant impacts to historical resources with mitigation incorporated. The proposed modifications would result in alterations to Basin Nos. 1-4 and the Electrical Control Building, which are contributing elements to the historic district. The alteration of these features was not assessed in the certified 2015 EIR. Therefore, additional analysis is necessary to determine whether the proposed modifications would result in a significant impact to historical resources as defined in Section 15064.5(b) of the *State CEQA Guidelines*.

This memorandum documents the efforts undertaken by Rincon to evaluate the potential for impacts to Basin Nos. 1-4 and the Electrical Control Building, including the following: background research, a site visit, and an analysis of potential impacts to historical resources as a result of the proposed modifications. All work described herein was overseen by Rincon Senior Architectural Historian Steven Treffers, M.H.P., with support provided by Architectural Historian, Rachel Perzel, M.A. Mr. Treffers and Ms. Perzel meet the Secretary of the Interior's Professional Qualification Standards for architectural history and history (36 Code of Federal Regulations Part 61) and have extensive experience in assessing impacts to historical resources.

Project Background

As previously noted, the 2015 EIR for the Weymouth Improvements Program was certified by Metropolitan on April 14, 2015. Since that time, Metropolitan has been implementing the Weymouth Improvements Program at the Weymouth Plant. The certified 2015 EIR concluded some elements of the original Project had the potential to cause a substantial adverse change in the significance of the historic district, which is a qualifying historical resource. Those Project elements specifically included changes to filter basin elements (impacts through engineered design changes) as part of the the Filter Building Rehabilitation project and changes to mechanical equipment in Basin Nos. 5-8 (impacts through engineered design changes and loss of original material and redesign) as part of the Basin Nos. 5-8 Rehabilitation project. To mitigate these impacts to a less-than-significant level, Metropolitan adopted the following two mitigation measures as part of the certified 2015 EIR, which are required for those Project elements with potential to cause significant impacts.

CUL-1 Photo-documentation to Historic American Engineering Record (HAER) Standards

(a) Prior to construction, Metropolitan will document the history of the resource's technology at HAER Standards Level 2 (compilation of historical plans, as-built drawings, photographs, and contractor specifications; for further detail see https://www.nps.gov/hdp/standards/haerguidelines.htm).[1] Prior to the loss of original material (whether visible from the surface or representing character-defining engineered aspects of the Weymouth Plant) will be taken to depict their visual setting and existing condition, using large-format photography (4 x 5 inch or greater). Photo-documentation will be guided by a qualified architectural historian.

(b) During and after construction, photographs will be taken to depict the demolition, new construction, and completed work of the project components, using 35-mm photography or larger.

(c) After construction, the collected documentation will be combined into a HAER-like documentation package (using HAER documentation and formatting) and will be maintained at Metropolitan's Headquarters. This documentation effort will be guided by a qualified architectural historian and documentation will be available for research as appropriate, with consideration given to the security of Metropolitan's facilities.

[1] The weblink provided in the certified 2015 EIR is no longer active and has been updated here.

CUL-2 On-site Exhibit or Display

(a) An on-site interpretative display will be prepared to illustrate the evolution of the design change in filter cells technology over time. The display will depict the original filter cell design, construction, and modifications made as technology changed between 1941 to present.
(b) An example of each distinct actuator type (those south of Filter Building No. 2 and south of Basins 5 to 8) of the period of significance will be retained for display on the grounds of the Weymouth Plant.

Description of Proposed Modifications

The proposed modifications include the rehabilitation of Basin Nos. 1-4 and improvements to the Electrical Control Building, each of which is described below.

Basin Nos. 1-4 Rehabilitation

Rehabilitation of Basin Nos. 1-4 would include replacement of eight inlet gates and associated actuators, and gate guides, two motor control centers (MCCs), two gate power panels, and local control panels as well as installation of a new remote input/output (I/O) device for extension of the remote terminal unit (RTU) to accommodate new gate signal and control functions.[2] The replacement inlet gates would be stainless steel. The MCCs and gate power panels would be replaced in the same locations. The replacement upgrades are planned for the first half-plant shutdown.

Electrical Control Building Improvements

The Electrical Control Building Improvements involve the installation of two MCCs and a wall-mounted air conditioning unit with ¾-inch refrigeration line as well as the replacement of an RTU, electrical panels, three exterior doors, and windows. The replacement of exterior doors and windows would look similar to the existing doors and windows. Electrical conduits would be installed along the exterior building walls to connect the upgraded RTUs and MCCs. The improvements would also include replacement of the roll-up door with double-swing doors, other railings, and resilient flooring inside the building and installation of removable guardrails for the loading dock.

Methods

Background Research and Project Review

The historical significance of the Weymouth Plant has been explored at various levels of detail in several studies, in addition to the certified 2015 EIR. As part of the background research effort conducted for this study, Rincon reviewed the following documents to inform the current analysis and ensure consistency with prior work:

- *Historic Resources Technical Report: F.E. Weymouth Filtration Plant*[3]

[2] A remote I/O device is an electronic device that sends and receives input and output signals using transmission technology.
[3] Leslie Heumann. *Historic Resources Technical Report: F.E. Weymouth Filtration Plant*. Prepared for the Metropolitan Water District of Southern California. December 2004.

- *Cultural Resource Treatment Plan for the Weymouth Water Treatment Plant Historic District, City of La Verne, Los Angeles County, California*[4]

Rincon also performed a review of the plans associated with the proposed modifications, which were provided by Metropolitan and are included as an attachment to this memorandum for reference. Further detail on the proposed modifications was provided verbally in a meeting held between Rincon and Metropolitan on July 15, 2021. In addition, Rincon reviewed *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (the Standards), which provide guidelines from the National Park Service to support the sensitive alteration of historic properties.[5] As addressed in the certified 2015 EIR and defined in Section 15064.5(b)(3) of the *State CEQA Guidelines*, a project that is consistent with the Standards is generally considered to have mitigated impacts to historical resources to a less-than-significant level. The Rehabilitation Standards are the most commonly used treatment for historic buildings; therefore, they have been utilized in the review of the proposed modifications and are included below for reference.[6]

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archaeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be

[4] Chasteen, Carrie, Richard Hanes and Michelle J. Morrison. *Cultural Resource Treatment Plan for the Weymouth Water Treatment Plant Historic District, City of La Verne, Los Angeles County, California*. Prepared for the Metropolitan Water District of Southern California. July 2016.

[5] Kay Weeks and Anne Grimmer. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings*. Washington D.C.: National Park Service. 2017.

[6] Weeks and Grimmer 2017, 3.

differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.[7]

Site Visit

Rincon Architectural Historian Rachel Perzel conducted a site visit to the Weymouth Plant on June 23, 2021. During the site visit, Ms. Perzel was escorted by Metropolitan Environmental Specialist, Brenda S. Marines. The site visit focused on visual inspection of the portions of the Weymouth Plant that have the potential to be impacted by the proposed modifications to the original Project, in particular Basin Nos. 1-4 and the Electrical Control Building. During the site visit, the existing conditions and character-defining features of Basin Nos. 1-4 and the Electrical Control Building, as defined in the 2016 *Cultural Resource Treatment Plan for the Weymouth Water Treatment Plant Historic District* ("CRTP") and further discussed below, were identified and documented through field notes and digital photography. Additionally, all portions of Basin Nos. 1-4 and the Electrical Control Building that may be altered by the proposed modifications were identified and photographed.

Findings and Recommendations

Historical Significance and Character-Defining Features

As discussed earlier, the historic district at the Weymouth Plant is eligible for listing in the NRHP and CRHR. The historic district is eligible under Criteria A/1 for its association with the Colorado River Aqueduct; under Criteria B/2 for its association with the productive life of F.E. Weymouth, Chief Engineer for Metropolitan from 1920 to 1941; and under Criteria C/3 for its embodiment of the Spanish Colonial/Mission Revival style of architecture. The CRTP, which provides further insight into the significance and treatment of the historic district, identifies the Basin Nos. 1-4 and the Electrical Control Building as contributing resources and character-defining features of the historic district.[8] As contributing resources to an NRHP- and CRHR-eligible historic district, Basin Nos. 1-4 and the Electrical Control Building are considered historical resources pursuant to Public Resources Code Section 21084.1.

Character-defining features are distinctive tangible elements and physical features that convey the historical appearance of a property and are indispensable to imparting its historical significance. The identification of character-defining features is necessary for both assessing a project's ability to comply with the Standards and determining potential impacts under CEQA. As defined in Section 15064.5(b) of the *State CEQA Guidelines*, a significant historical resources impact would occur if a project materially impairs a resource by demolishing or adversely altering the physical characteristics that convey its significance and justify its CRHR eligibility.

[7] Ibid, 76.

[8] The background research and site visit conducted for this study confirmed the Electrical Control Building is the rectangular building discussed in the CRTP (in the last paragraph of Section 3.3.6, *Filter Building No. 2 and Basins Nos. 5-8*) and identified as the building located at the southeast corner of Basin No. 8. Given that there is no building present at that location, Rincon assumes that this description was a mischaracterization and that the actual location of the Electrical Control Building is at the southeast corner of Basin No. 6. The building description included in the CRTP is consistent with the Electrical Control Building, as observed on the site visit conducted for this study.

The CRTP identifies the character-defining features of the historic district and ranks them as most significant, significant, or less significant. The CRTP specifically inventories the character-defining features of Basin Nos. 1-4. However, although the CRTP identifies the Electrical Control Building as a most significant feature of the historic district, it does not explicitly inventory its individual character-defining features. Nevertheless, given the Electrical Control Building shares common elements of other contributing buildings, it is assumed the features that define its character would be consistent with those buildings, specifically Filter Building No. 2. The character-defining features of Basin Nos. 1-4 and the Electrical Control Building are presented in Table 1 and Table 2, respectively.

Table 1 Character-Defining Features of Basin Nos. 1-4

Ranking	Character-Defining Features
Most Significant	Floor plan, scale, massing, circulation, and landscape design
	Mixing basins
	Settling basins with catwalks
	Basins
	Settling basins
Significant	Cast concrete walls with visible form lines
	Basins 1 and 2 railings
	Freestanding, pole-mounted lights with bell-shaped metal shades
	Basins 3 and 4 railings
Less Significant	Reel-type flocculators
	Rotary sludge scraper
	Skimming weirs and training walls
Not Historic/Not Character-Defining	Actuators
	Filtration mechanical equipment
	Filter media
	Modern actuators

[1] Although the CRTP identifies the "period actuators" of Basin Nos. 1-4 as significant, the certified 2015 EIR confirms the actuators were in fact were replaced in the 1970s and therefore fall outside of the period of significance of the historic district (see page 3.4-18 of the certified 2015 EIR). As such, the actuators are not considered character-defining features of Basin Nos. 1-4.

Source: Chasteen, Hanes, and Morrison 2016

Table 2 Character-Defining Features of the Electrical Control Building

Ranking	Character-Defining Features
Most Significant	Spanish Colonial/Mission revival architectural style
Significant	Cast concrete walls with visible form lines Spanish tile roof Four-light, metal, hopper windows over two-light, metal, fixed-pane windows
Less Significant	Clear, single-pane window glazing Period doors and associated hardware
Not Historic/Not Character-Defining	Interior Non-original metal roll-up door

Historical Resource Impact Analysis

Basin Nos. 1-4 Rehabilitation

The proposed modifications include the rehabilitation of Basin Nos. 1-4, specifically the replacement of eight inlet gates and associated actuators, and gate guides, two MCCs, two gate power panels, and local control panels as well as installation of a new remote I/O device. These modifications are consistent with Project elements that were proposed for the Basin Nos. 5-8 Rehabilitation project and analyzed in the certified 2015 EIR for the original Project, which also included the replacement of basin inlet gates and gate guides among other elements. Like Basin Nos. 1-4, Basin Nos. 5-8 are contributing elements to the historic district, and the analysis presented in the certified 2015 EIR concluded the following impacts would occur as a result of the replacement of the basin gates and gate guides for Basin Nos. 5-8:

> *The inlet gates are engineered elements critical to the operation of the filtration [treatment] process. While not visible from the surface, they are a significant design component. Removal and replacement of the inlet gates would result in the removal and replacement of original material, although the design and operation of the inlet gates will not change substantially. Nonetheless, the proposed improvements have the potential to cause an adverse change in the significance of the historic resource.*[9]

To address these potential impacts to Basin Nos. 5-8, the certified 2015 EIR required implementation of Mitigation Measure CUL-1, which included documentation of the history of the resource's technology to HAER Standards Level 2, as well as Mitigation Measure CUL-2(b), which included retaining an actuator (located south of Basins 5 to 8) for display. The certified 2015 EIR determined implementation of these mitigation measures would reduce impacts to Basin Nos. 5-8 to a less than significant level.

As discussed earlier, the proposed modifications to the original Project related to Basin Nos. 1-4 are consistent with those analyzed for Basin Nos. 5-8 in the certified 2015 EIR. The proposed modifications would include replacement of the inlet gates and gate guides of Basin Nos. 1-4, which are considered

[9] *Final Environmental Impact Report for the F. E. Weymouth Water Treatment Plant Improvements Program*. Metropolitan Water District of Southern California. (SCH No. 2013121074), April 2015.

character-defining in the certified 2015 EIR and the subsequent CRTP. The inlet gates and gate guides are original to the Weymouth Plant's initial design and construction and represent intact historic fabric. Therefore, the replacement of the Basin Nos. 1-4 inlet gates, and gate guides would also have the potential to result in a significant adverse change in the significance of a historical resource due to the replacement of engineered elements and loss of original material. Implementation of Mitigation Measure CUL-1 is recommended for the proposed modifications to address this potentially significant impact through photo-documentation to HAER standards. However, because the associated actuators at Basin Nos. 1-4 were replaced in the 1970s and therefore fall outside of the period of significance of the historic district, the actuators are not considered character-defining features of Basin Nos. 1-4, and no historic impacts related to these components would occur. As such, implementation of Mitigation Measure CUL-1 is not recommended for these components. (Mitigation Measures CUL-2[a] and CUL-2[b] were only required for the filter cells and the Basin Nos. 5-8 "period actuators" components, respectively, in the certified 2015 EIR. Therefore, these mitigation measures were determined not to be necessary for the project elements specifically relating to the replacement of the inlet gates, associated actuators, and gate guides for Basin Nos. 1-4, especially given that the Basin Nos. 1-4 actuators were replaced in the 1970s and therefore fall outside the period of significance.) The certified 2015 EIR concluded implementation of Mitigation Measure CUL-1 would reduce impacts associated with the replacement of the inlet gates and gate guides of Basin Nos. 5-8 to a less-than-significant level. Similarly, implementation of Mitigation Measure CUL-1 to the Basin Nos. 1-4 project would mitigate impacts to a less-than-significant level. Implementation of Mitigation Measures CUL-2(a) and CUL-2(b) is not recommended because the inlet gate actuators have been replaced and modified since the Plant's original construction in 1939. Therefore, no further mitigation is required.

Electrical Control Building Improvements

Although the original Project did not propose alterations to the Electrical Control Building, it is located within the boundaries of the Weymouth Plant and the historic district. The Electrical Control Building Improvement project includes the installation of two MCCs; a wall-mounted air conditioning unit; railings; flooring; removable guardrails on the loading dock and replacement of an RTU and electrical panels (interior alterations) as well as installation of electrical conduits; replacement of three exterior doors and windows and the replacement of the west elevation roll-up door with double-swing doors (exterior alterations).

As previously noted, the Electrical Control Building is identified in the CRTP as a most significant feature of the historic district. The CRTP discusses a range of potential project-related impacts and provides recommendations and treatment measures for projects involving most significant buildings and features. The CRTP provides the following examples of project activities that could pose a substantial adverse change to a feature ranked most significant, such as the Electrical Control Building:

- Demolition of key architectural features
- Replacement of the hipped roof with Spanish tile with dissimilar forms or materials
- Minor alterations to the Mission-style parapet
- Reconfiguration of certain spaces such as entry rotunda, arcaded walkways
- Removal of terrazzo flooring, period tile, or ox-eye windows

- Removal and replacement of window frames and openings that are dissimilar in style (patterns and configuration of lights), scale, or massing[10]

Many of the elements included in the Electrical Control Building Improvements project would occur on the interior of the Electrical Control Building. As identified in Table 2, the interior of the Electrical Control Building is not considered historically significant and does not contain character-defining features. Therefore, the improvements that would occur on the building's interior (i.e., installation of two MCCs, a wall-mounted air conditioning unit, railings, flooring and removable guardrails on the loading dock and replacement of an RTU and electrical panels) comply with the Standards because they would not negatively alter any character-defining features of the Electrical Control Building. The installation of electrical conduits on the exterior of the Electrical Control Building would be considered a "minor alteration" as defined in the CRTP because it entails the addition of relatively diminutive features to the building and requires minimal intervention to attach.[11] Because this alteration would not require the removal of original material or significantly alter the building's current appearance, it complies with the Standards and is consistent with the guidance of the CRTP.

The Electrical Control Building Improvements project also includes the replacement of all the doors and windows on the Electrical Control Building. As detailed in Table 2 under *Historical Significance and Character-Defining Features*, the windows are considered significant character-defining features while the period doors are considered less significant. The metal roll-up door, which is proposed to be replaced, is not original to the building and is not considered character-defining. Although the designs of the window and door replacements have not yet been finalized, Metropolitan has committed to replacing the doors and windows in kind (i.e., they will be constructed of a consistent material and feature a consistent number and configuration of windowpanes as the building's current windows and doors, which appear original) and installing the new windows and doors in a manner that would not require the widening of the existing openings.

The in-kind replacement of period windows and doors is an intervention that generally complies with the Standards and would not pose a substantial adverse change to the character-defining features of the Electrical Control Building ranked as significant or most significant in Table 2. As such, the proposed replacement of the windows and doors would not require additional mitigation in accordance with the certified 2015 EIR, which states impacts are less than significant when project elements comply with the Standards. Therefore, no further mitigation is required.

Conclusions

As detailed above, impacts to historical resources associated with the proposed modifications to the original Project would be generally consistent with the impacts analyzed in the certified 2015 EIR for original Project, and the mitigation adopted in the certified 2015 EIR would also be sufficient to mitigate the historical resource impacts of the proposed modifications to a less-than-significant level. If project design progresses and deviates from that described above, additional CEQA analysis would be necessary.

[10] Chasteen, Hanes, and Morrison 2016, 64.
[11] The CRTP differentiates between "major alterations," such as demolition or the reconfiguration or the substantial removal of historic materials or features, and "minor alterations," which would not require the removal of original material, changes in the current appearance, or reconfiguration of the elements (changes in size, shape, depth, or appearance). See Chasteen, Hanes, and Morrison 2016, 59-71.

Should you have any questions or comments regarding this assessment, please do not hesitate to contact us at 213-788-4842, or streffers@rinconconsultants.com.

Sincerely,

Rincon Consultants, Inc.

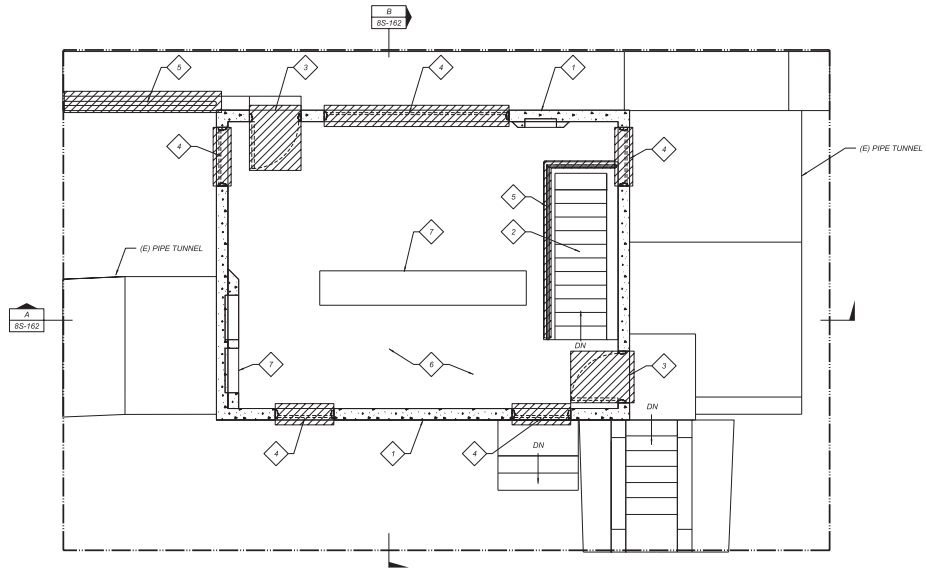
Steven Treffers, M.H.P.
Senior Architectural Historian

Attachments

Attachment 1 Proposed Project Plans for the Electrical Control Building and Basin Nos. 1-4

Attachment 1

Proposed Project Plans for the Electrical Control Building and Basin Nos. 1-4



ELECTRICAL CONTROL ROOM
DEMOLITION FLOOR PLAN

PLAN 1 / SCALE: 3/8" = 1'-0" G-9

KEY NOTES:

1. EXIST CONC WALL TO REMAIN (TYP)
2. EXISTING STAIRS TO REMAIN
3. EXISTING DOOR TO BE REMOVED (TYP)
4. EXISTING WINDOW TO BE REMOVED (TYP)
5. EXISTING RAILING TO BE REMOVED (TYP)
6. EXISTING RESILIENT FLOORING TO BE REMOVED
7. EXISTING ELECTRICAL EQUIPMENT TO BE REMOVED (TYP) SEE ELECT DWGS

LEGEND:

INDICATES AREA TO BE DEMOLISHED

NOTES:

1. FOR ABBREVIATIONS, LEGEND, SYMBOLS AND GENERAL NOTES, SEE SHEET A-1.
2. SEE MECH AND ELECT DWGS FOR ADDITIONAL DEMOLITION WORK NOT SHOWN ON THIS DRAWING.

SCALE: BARS — 3/8" = 1'-0" — 0 4 8 FEET

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WATER TREATMENT PLANTS
F.E. WEYMOUTH WATER TREATMENT PLANT
BASINS 5-8 AND FILTER BUILDING NO. 2 REHABILITATION
AREA 8 - BASINS 5 THRU 8
ELECTRICAL CONTROL BUILDING
ELECTRICAL CONTROL ROOM
DEMOLITION PLAN

SPECIFICATIONS 1982
PROJECT NUMBER 104391
SHEET 8A-1
DWG B-175243 REV 0

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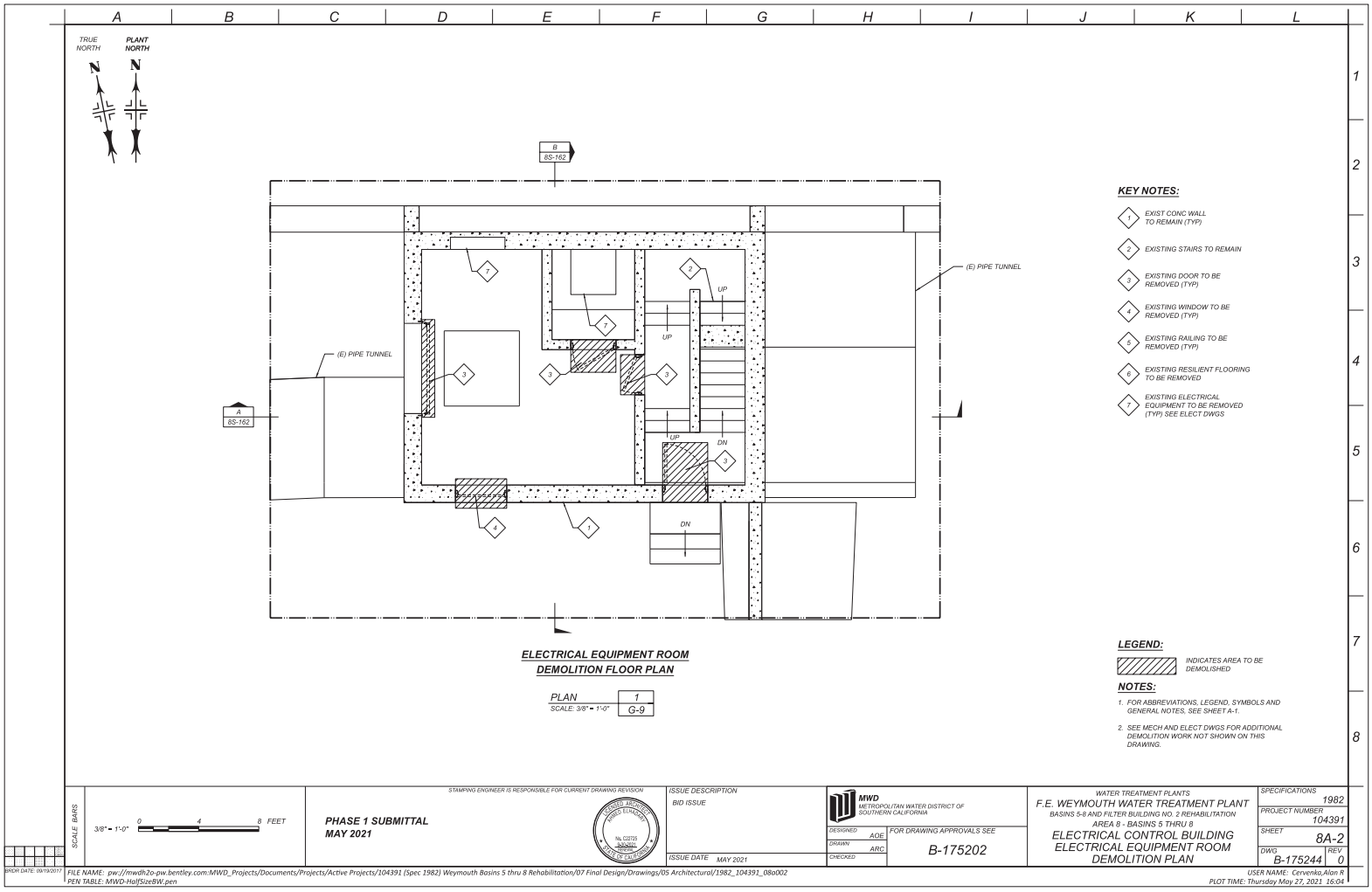

ELECTRICAL EQUIPMENT ROOM DEMOLITION FLOOR PLAN

PLAN 1 / G-9
SCALE: 3/8" = 1'-0"

SCALE: BARS
3/8" = 1'-0" 0 4 8 FEET

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BASINS 5-8 AND FILTER BUILDING NO. 2 REHABILITATION
AREA 8 - BASINS 5 THRU 8
ELECTRICAL CONTROL BUILDING
ELECTRICAL EQUIPMENT ROOM
DEMOLITION PLAN

SPECIFICATIONS 1982
PROJECT NUMBER 104391
SHEET 8A-2
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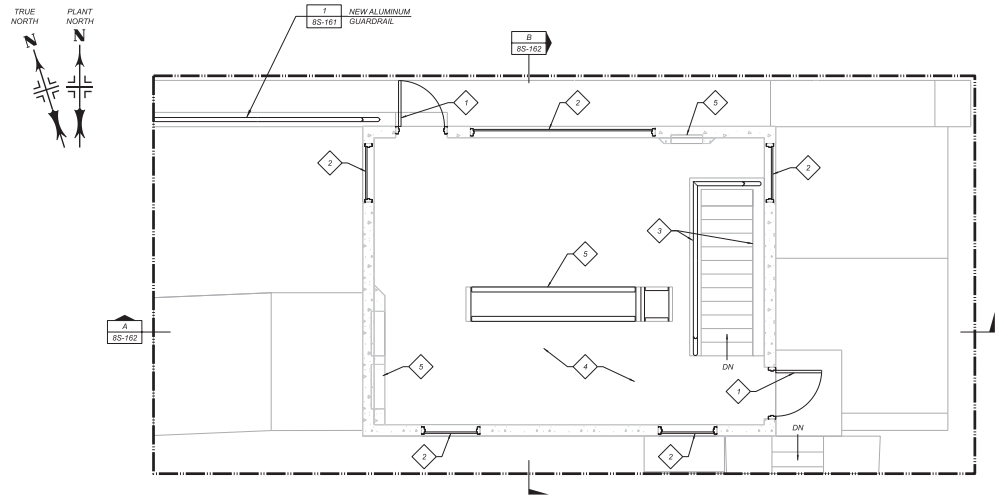

KEY NOTES:

1. NEW DOOR AND FRAME (SEE DOOR SCHEDULE)
2. NEW WINDOW (SEE WINDOW SCHEDULE)
3. NEW ALUMINUM RAILING (TYP)
4. NEW RESILIENT FLOORING
5. NEW ELECTRICAL EQUIPMENT (TYP) SEE ELECT DWGS

ELECTRICAL CONTROL ROOM FLOOR PLAN

PLAN 1 / SCALE: 3/8" = 1'-0" G-9

NOTES:

1. FOR ABBREVIATIONS, LEGEND, SYMBOLS AND GENERAL NOTES, SEE SHEET A-1.
2. SEE MECH AND ELECT DWGS FOR ADDITIONAL NEW CONSTRUCTION WORK NOT SHOWN ON THIS DRAWING.
3. FOR DOOR, DOOR HARDWARE, WINDOW AND INTERIOR ROOM FINISH REQUIREMENTS, SEE SCHEDULES ON SHEET 8A-5.

SCALE: BARS — 3/8" = 1'-0" (0, 4, 8 FEET)

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BASINS 5-8 AND FILTER BUILDING NO. 2 REHABILITATION
AREA 8 - BASINS 5 THRU 8
ELECTRICAL CONTROL BUILDING
ELECTRICAL CONTROL ROOM
FLOOR PLAN

SPECIFICATIONS 1982
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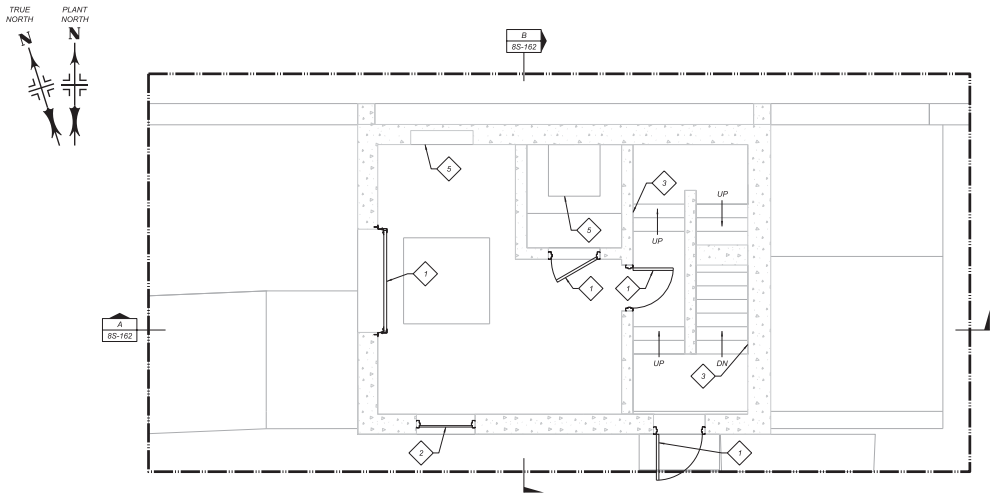

KEY NOTES:

1. NEW DOOR AND FRAME (SEE DOOR SCHEDULE)
2. NEW WINDOW (SEE WINDOW SCHEDULE)
3. NEW ALUMINUM RAILING (TYP)
4. NEW RESILIENT FLOORING
5. NEW ELECTRICAL EQUIPMENT (TYP) SEE ELECT DWGS

ELECTRICAL EQUIPMENT ROOM FLOOR PLAN

PLAN 1 / G-9
SCALE: 3/8" = 1'-0"

NOTES:

1. FOR ABBREVIATIONS, LEGEND, SYMBOLS AND GENERAL NOTES, SEE SHEET A-1.
2. SEE MECH AND ELECT DWGS FOR ADDITIONAL NEW CONSTRUCTION WORK NOT SHOWN ON THIS DRAWING.
3. FOR DOOR, DOOR HARDWARE, WINDOW AND INTERIOR ROOM FINISH REQUIREMENTS, SEE SCHEDULES ON SHEET 8A-5.

SCALE: BARS
3/8" = 1'-0" 0 4 8 FEET

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BASINS 5-8 AND FILTER BUILDING NO. 2 REHABILITATION
AREA 8 - BASINS 5 THRU 8
ELECTRICAL CONTROL BUILDING
ELECTRICAL EQUIPMENT ROOM
FLOOR PLAN

SPECIFICATIONS 1982
PROJECT NUMBER 104391
SHEET 8A-4
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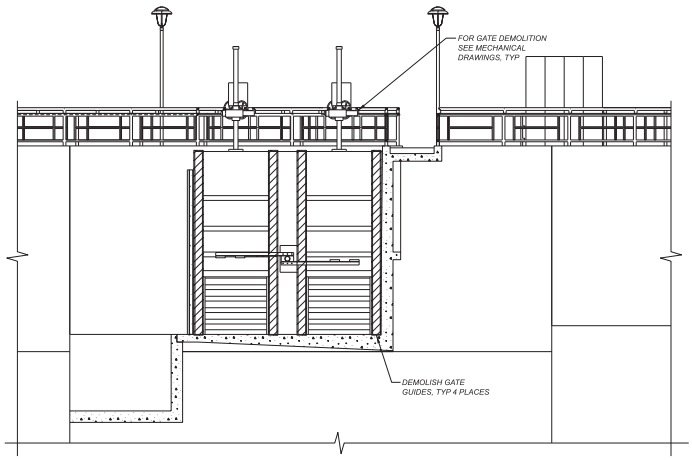

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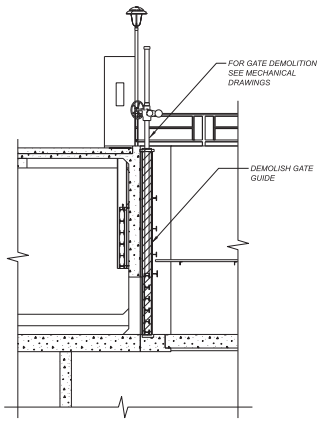

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2. FOR ABBREVIATIONS, SYMBOLS AND LEGEND, SEE SHEET S1-2.

SCALE: BARS

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F.E. WEYMOUTH WATER TREATMENT PLANT
BASINS 5-8 AND FILTER BUILDING NO. 2 REHABILITATION
AREA 7 - BASINS 1 THRU 4
INLET GATE
DEMOLITION SECTIONS AND DETAILS

SPECIFICATIONS 1982
PROJECT NUMBER 104391
SHEET 7S-3
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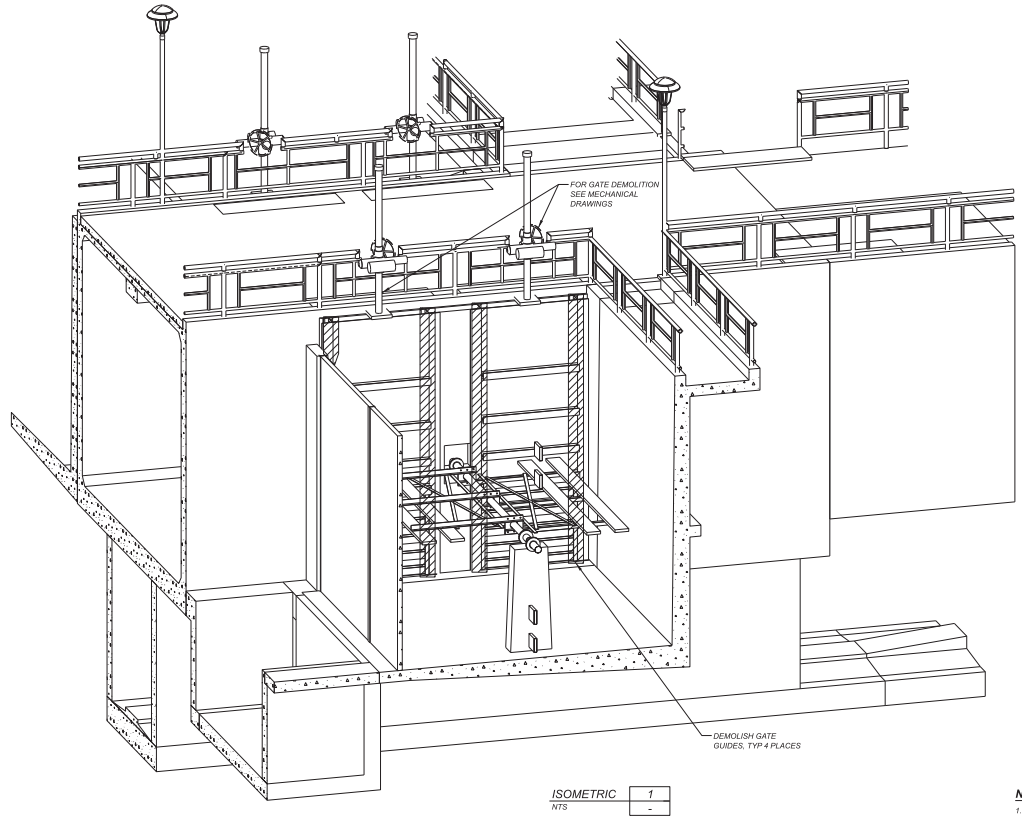

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2. FOR ABBREVIATIONS, SYMBOLS AND LEGEND, SEE SHEET S1-2.

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AREA 7 - BASINS 1 THRU 4
INLET GATE
DEMOLITION DETAILS

SPECIFICATIONS 1982
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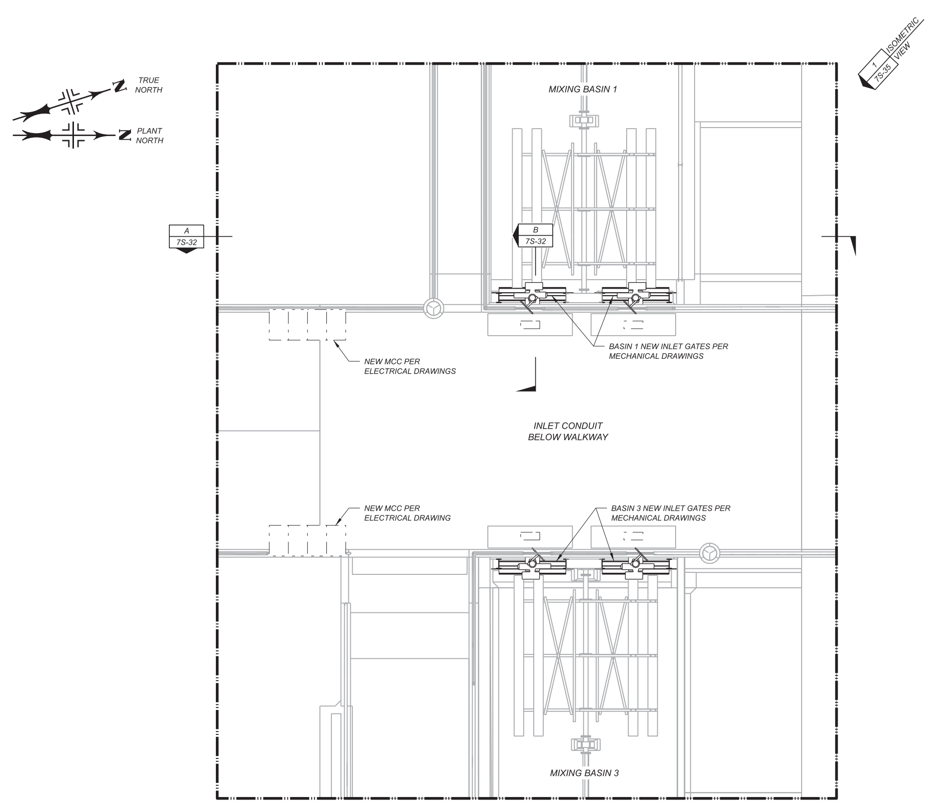

PLAN 1
SCALE: 1/4" = 1'-0" 7S-1

NOTES:

1. FOR GENERAL & CONCRETE NOTES, DESIGN CRITERIA & STANDARDS, MATERIAL PROPERTIES, STRUCTURAL OBSERVATIONS AND POST-INSTALLED ANCHORS, SEE SHEET S1-1.
2. FOR ABBREVIATIONS, SYMBOLS AND LEGEND, SEE SHEET S1-2.

SCALE BARS
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F.E. WEYMOUTH WATER TREATMENT PLANT
BASINS 5-8 AND FILTER BUILDING NO. 2 REHABILITATION
AREA 7 - BASINS 1 AND 3
INLET GATE GUIDE
DEMOLITION PLAN

SPECIFICATIONS 1982
PROJECT NUMBER 104391
SHEET 7S-11
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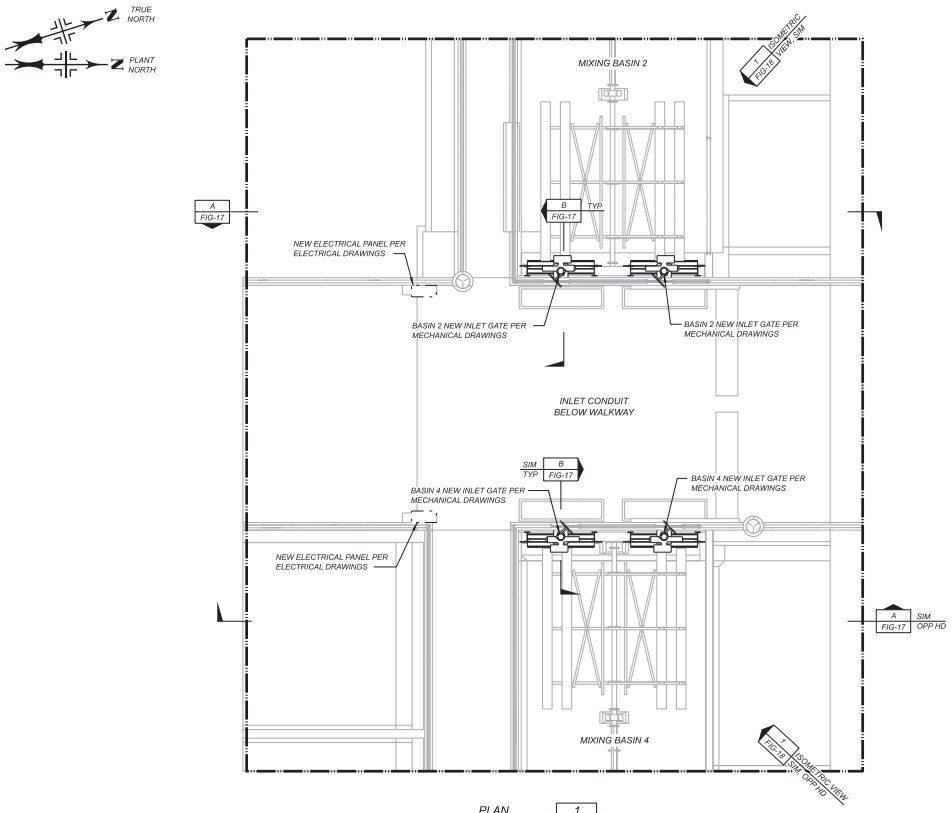

PLAN 1
SCALE: 1/4" = 1'-0" FIG-1

NOTES:

1. FOR GENERAL & CONCRETE NOTES, DESIGN CRITERIA & STANDARDS, MATERIAL PROPERTIES, STRUCTURAL OBSERVATIONS AND POST-INSTALLED ANCHORS, SEE SHEET S1-1.
2. FOR ABBREVIATIONS, SYMBOLS AND LEGEND, SEE SHEET S1-2.

SCALE: BARS
1/4" = 1'-0" 0 4 8 12 FEET

STAMPING ENGINEER IS RESPONSIBLE FOR CURRENT DRAWING REVISION

PHASE 1 SUBMITTAL
MAY 2021

ISSUE DESCRIPTION
BID ISSUE
ISSUE DATE MAY 2021

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
DESIGNED KCO
DRAWN CLV
CHECKED
FOR DRAWING APPROVALS SEE B-175202

WATER TREATMENT PLANTS
F.E. WEYMOUTH WATER TREATMENT PLANT
BASINS 5-8 AND FILTER BUILDING NO. 2 REHABILITATION
AREA 7 - BASINS 2 AND 4
INLET GATE PLAN

SPECIFICATIONS 1982
PROJECT NUMBER 104391
SHEET 7S-12
DWG B-175283 REV 0

ERROR DATE: 09/19/2017
FILE NAME: pw://mwdh2o-pw.bentley.com:MWD_Projects/Documents/Projects/Active Projects/104391 (Spec 1982) Weymouth Basins 5 thru 8 Rehabilitation/07 Final Design/Drawings/06 Structural/1982_104391_07s012
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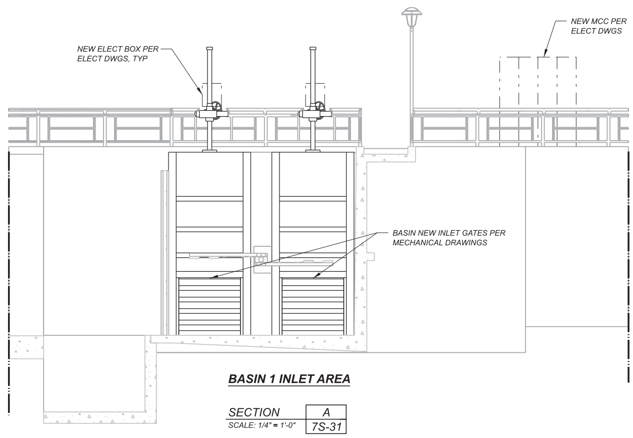
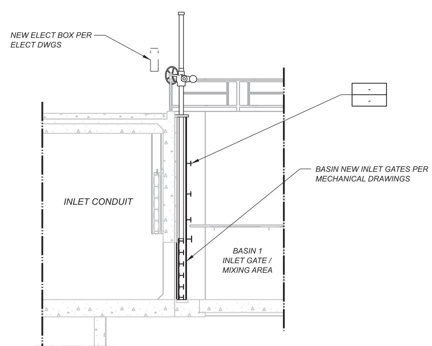
PLOT TIME: Wednesday May 26, 2021 16:56



BASIN 1 INLET AREA

SECTION A 7S-31
SCALE: 1/4" = 1'-0"



SECTION B 7S-31
SCALE: 1/4" = 1'-0"

NOTES:

1. FOR GENERAL & CONCRETE NOTES, DESIGN CRITERIA & STANDARDS, MATERIAL PROPERTIES, STRUCTURAL OBSERVATIONS AND POST-INSTALLED ANCHORS, SEE SHEET S1-1.
2. FOR ABBREVIATIONS, SYMBOLS AND LEGEND, SEE SHEET S1-2.

SCALE BARS 1/4" = 1'-0" 0 4 8 12 FEET

PHASE 1 SUBMITTAL
MAY 2021

STAMPING ENGINEER IS RESPONSIBLE FOR CURRENT DRAWING REVISION

REGISTERED PROFESSIONAL ENGINEER KINGSLEY CHINEDU OZEGBE No. S5269 STRUCTURAL STATE OF CALIFORNIA

ISSUE DESCRIPTION: BID ISSUE
ISSUE DATE: MAY 2021

MWD METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

DESIGNED KCO
DRAWN CLV
CHECKED

FOR DRAWING APPROVALS SEE B-175202

WATER TREATMENT PLANTS
F.E. WEYMOUTH WATER TREATMENT PLANT
BASINS 5-8 AND FILTER BUILDING NO. 2 REHABILITATION
AREA 7 - BASINS 1 THRU 4
INLET GATE
SECTIONS

SPECIFICATIONS 1982
PROJECT NUMBER 104391
SHEET 7S-13
DWG B-175284 REV 0

BRDR DATE: 09/19/2017
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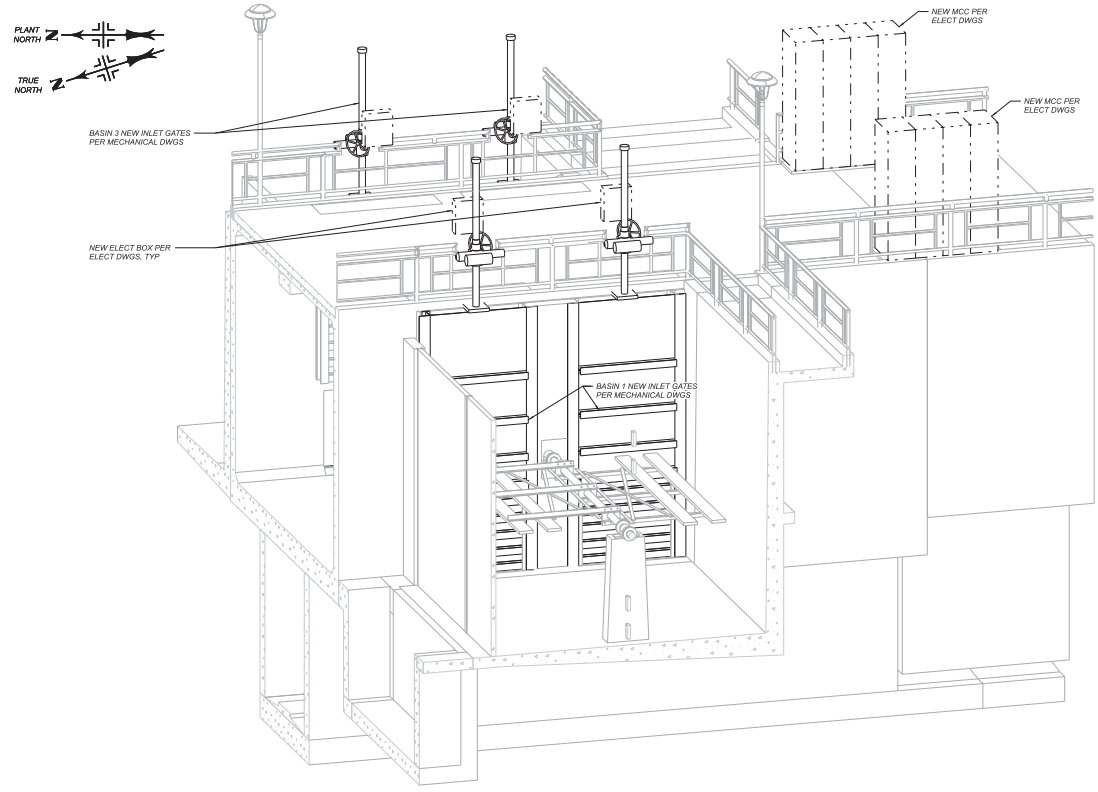
PLOT TIME: Wednesday May 26, 2021 16:39



ISOMETRIC 1
SCALE: 3/8" = 1'-0" 7S-31

NOTES:

1. FOR GENERAL & CONCRETE NOTES, DESIGN CRITERIA & STANDARDS, MATERIAL PROPERTIES, STRUCTURAL OBSERVATIONS AND POST-INSTALLED ANCHORS, SEE SHEET S1-1.
2. FOR ABBREVIATIONS, SYMBOLS AND LEGEND, SEE SHEET S1-2.

SCALE: BARS
3/8" = 1'-0" 0 4 8 FEET

STAMPING ENGINEER IS RESPONSIBLE FOR CURRENT DRAWING REVISION

PHASE 1 SUBMITTAL
MAY 2021

ISSUE DESCRIPTION
BID ISSUE

ISSUE DATE MAY 2021

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

DESIGNED KCO
DRAWN CLV
CHECKED

FOR DRAWING APPROVALS SEE
B-175202

WATER TREATMENT PLANTS
F.E. WEYMOUTH WATER TREATMENT PLANT
BASINS 5-8 AND FILTER BUILDING NO. 2 REHABILITATION
AREA 7 - BASINS 1 THRU 4
INLET GATE
ISOMETRIC VIEW

SPECIFICATIONS 1982
PROJECT NUMBER 104391
SHEET 7S-15
DWG B-175286 REV 0

ERROR DATE: 09/19/2017

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PEN TABLE: MWD-HalfSizeBW.pen

USER NAME: Vanlman,Curtis L
PLOT TIME: Wednesday May 26, 2021 17:44

Appendix B

Energy Calculations

Basin Nos. 1-4 Rehabilitation and Electrical Control Building Improvements

Last Updated: July 7, 2021

Compression-Ignition Engine Brake-Specific Fuel Consumption (BSFC) Factors **[1]**:

HP: 0 to 100	0.0588	HP: Greater than 100	0.0529

Values above are expressed in gallons per horsepower-hour/BSFC.

CONSTRUCTION EQUIPMENT

Construction Equipment	#	Hours per Day	Horsepower	Load Factor	Construction Phase	Fuel Used (gallons)
Rough Terrain Forklifts	2	8	100	0.4	Construction Activities	4,964.40
Aerial Lifts	2	8	63	0.31	Construction Activities	2,423.87
Other Construction Equipment	2	8	172	0.42	Construction Activities	8,064.74
Forklifts	4	8	89	0.2	Construction Activities	4,418.32
Concrete/Industrial Saws	2	8	81	0.73	Construction Activities	7,338.63
Welders	4	8	46	0.45	Construction Activities	5,138.16
Air Compressors	8	8	78	0.48	Construction Activities	18,586.72
Rubber Tired Loaders	1	8	203	0.36	Construction Activities	4,079.26
Excavators	1	8	158	0.38	Construction Activities	3,351.38
Generator Sets	2	8	84	0.74	Construction Activities	7,714.68
Pumps	4	8	84	0.74	Construction Activities	15,429.36
Other General Industrial Equipment	2	4	50	0.34	Construction Activities	1,054.94
Other Construction Equipment	1	8	51	0.42	Construction Activities	1,329.22
Cranes	3	8	500	0.29	Construction Activities	24,281.31
Cranes	2	8	231	0.29	Construction Activities	7,478.64
Tractors/Loaders/Backhoes	1	8	97	0.37	Construction Activities	2,227.15
					Total Fuel Used	**117,880.77 (Gallons)**

Construction Phase	Days of Operation
Construction Activities	132
Total Days	132

WORKER TRIPS

Constuction Phase	MPG [2]	Trips		Trip Length (miles)	Fuel Used (gallons)
Construction Activities	24.4	56		14.7	4453.38
			Fuel		**4,453.38**

HAULING AND VENDOR TRIPS

Trip Class	MPG [2]	Trips		Trip Length (miles)	Fuel Used (gallons)
HAULING TRIPS					
Construction Activities	7.5	8		20.0	21.33
			Fuel		**21.33**
VENDOR TRIPS					
Construction Activities	7.5	106		6.9	12872.64
			Fuel		**12,872.64**

Total Gasoline Consumption (gallons)	**4,453.38**
Total Diesel Consumption (gallons)	**130,774.74**

Sources:

[1] United States Environmental Protection Agency. 2018. *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES2014b* . July 2018. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf.

[2] United States Department of Transportation, Bureau of Transportation Statistics. 2019. *National Transportation Statistics 2019* . Available at: https://www.bts.gov/topics/national-transportation-statistics.

Appendix C

Greenhouse Gas Modeling

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Weymouth Basin Nos. 1-4 and Electrical Control Building - Total Construction

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	4.84	Acre	4.84	210,830.40	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2024
Utility Company	User Defined				
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction only - no operational energy usage.

Land Use - Approximate area of Basin Nos. 1-4 and Electrical Control Bldg

Construction Phase - 21 month extension of construction schedule

Off-road Equipment - Construction list based on 2015 EIR.

Trips and VMT - 40 daily one-way pickup truck trips (32 one-way worker trips + 8 pick-up truck trips), 6 daily one-way concrete truck trips, 12 one-way haul trips for infrastructure removal/delivery + 6 dump truck/flat-bed trailer trips

Demolition - No structural demolition.

Grading - No soil import/export

Vehicle Trips - No new O&M activities.

Woodstoves - No new O&M activities.

Consumer Products - No new O&M activities.

Area Coating - No new O&M activities.

Weymouth Basin Nos. 1-4 and Electrical Control Building - Total Construction - South Coast AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Landscape Equipment - No new O&M activities.

Energy Use - No new O&M activities.

Water And Wastewater - No new O&M activities.

Solid Waste - No new O&M activities.

Operational Off-Road Equipment - No new O&M activities.

Stationary Sources - Emergency Generators and Fire Pumps - No new O&M activities.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	12650	0
tblConstructionPhase	NumDays	230.00	458.00
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblLandscapeEquipment	NumberSummerDays	250	0
tblOffRoadEquipment	HorsePower	231.00	500.00
tblOffRoadEquipment	HorsePower	88.00	50.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Construction Activities
tblOffRoadEquipment	PhaseName		Construction Activities
tblOffRoadEquipment	PhaseName		Construction Activities

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	PhaseName		Construction Activities
tblOffRoadEquipment	PhaseName		Construction Activities
tblOffRoadEquipment	PhaseName		Construction Activities
tblOffRoadEquipment	PhaseName		Construction Activities
tblOffRoadEquipment	PhaseName		Construction Activities
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripNumber	0.00	18.00
tblTripsAndVMT	VendorTripNumber	35.00	6.00
tblTripsAndVMT	WorkerTripNumber	89.00	40.00

2.0 Emissions Summary

Weymouth Basin Nos. 1-4 and Electrical Control Building - Total Construction - South Coast AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	1.0557	9.0347	10.0139	0.0180	0.0523	0.4398	0.4921	0.0140	0.4227	0.4367	0.0000	1,552.4655	1,552.4655	0.2833	2.8700e-003	1,560.4022
2023	1.0608	8.9435	10.6888	0.0196	0.0571	0.4157	0.4727	0.0153	0.3995	0.4147	0.0000	1,692.6002	1,692.6002	0.3045	2.9500e-003	1,701.0902
Maximum	**1.0608**	**9.0347**	**10.6888**	**0.0196**	**0.0571**	**0.4398**	**0.4921**	**0.0153**	**0.4227**	**0.4367**	**0.0000**	**1,692.6002**	**1,692.6002**	**0.3045**	**2.9500e-003**	**1,701.0902**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	1.0557	9.0347	10.0139	0.0180	0.0523	0.4398	0.4921	0.0140	0.4227	0.4367	0.0000	1,552.4637	1,552.4637	0.2833	2.8700e-003	1,560.4005
2023	1.0608	8.9435	10.6888	0.0196	0.0571	0.4157	0.4727	0.0153	0.3995	0.4147	0.0000	1,692.5982	1,692.5982	0.3045	2.9500e-003	1,701.0883
Maximum	**1.0608**	**9.0347**	**10.6888**	**0.0196**	**0.0571**	**0.4398**	**0.4921**	**0.0153**	**0.4227**	**0.4367**	**0.0000**	**1,692.5982**	**1,692.5982**	**0.3045**	**2.9500e-003**	**1,701.0883**

Weymouth Basin Nos. 1-4 and Electrical Control Building - Total Construction - South Coast AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-1-2022	5-31-2022	3.0274	3.0274
2	6-1-2022	8-31-2022	3.0271	3.0271
3	9-1-2022	11-30-2022	2.9948	2.9948
4	12-1-2022	2-28-2023	2.7845	2.7845
5	3-1-2023	5-31-2023	2.7504	2.7504
6	6-1-2023	8-31-2023	2.7502	2.7502
7	9-1-2023	9-30-2023	0.8968	0.8968
		Highest	3.0274	3.0274

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Construction Activities	Building Construction	3/1/2022	11/30/2023	5	458	

Acres of Grading (Site Preparation Phase): 0

Weymouth Basin Nos. 1-4 and Electrical Control Building - Total Construction - South Coast AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Acres of Grading (Grading Phase): 0

Acres of Paving: 4.84

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Construction Activities	Aerial Lifts	2	8.00	63	0.31
Construction Activities	Air Compressors	6	8.00	78	0.48
Construction Activities	Concrete/Industrial Saws	2	8.00	81	0.73
Construction Activities	Cranes	3	8.00	500	0.29
Construction Activities	Excavators	1	8.00	158	0.38
Construction Activities	Forklifts	3	8.00	89	0.20
Construction Activities	Generator Sets	2	8.00	84	0.74
Construction Activities	Other Construction Equipment	2	8.00	172	0.42
Construction Activities	Other General Industrial Equipment	2	8.00	50	0.34
Construction Activities	Pumps	4	8.00	84	0.74
Construction Activities	Rubber Tired Loaders	1	8.00	203	0.36
Construction Activities	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Construction Activities	Welders	3	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Construction Activities	41	40.00	6.00	18.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Weymouth Basin Nos. 1-4 and Electrical Control Building - Total Construction - South Coast AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Construction Activities - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.0398	8.9901	9.8477	0.0174		0.4392	0.4392		0.4221	0.4221	0.0000	1,500.8393	1,500.8393	0.2818	0.0000	1,507.8839
Total	**1.0398**	**8.9901**	**9.8477**	**0.0174**		**0.4392**	**0.4392**		**0.4221**	**0.4221**	**0.0000**	**1,500.8393**	**1,500.8393**	**0.2818**	**0.0000**	**1,507.8839**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.1000e-004	1.6000e-004	0.0000	7.0000e-005	1.0000e-005	8.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.2592	0.2592	1.0000e-005	4.0000e-005	0.2718
Vendor	1.1900e-003	0.0321	0.0107	1.3000e-004	4.1400e-003	3.2000e-004	4.4600e-003	1.2000e-003	3.1000e-004	1.5000e-003	0.0000	12.2609	12.2609	4.1000e-004	1.7800e-003	12.8013
Worker	0.0147	0.0119	0.1554	4.2000e-004	0.0481	2.9000e-004	0.0484	0.0128	2.7000e-004	0.0130	0.0000	39.1061	39.1061	1.0800e-003	1.0500e-003	39.4452
Total	**0.0159**	**0.0447**	**0.1662**	**5.5000e-004**	**0.0523**	**6.2000e-004**	**0.0529**	**0.0140**	**5.9000e-004**	**0.0146**	**0.0000**	**51.6262**	**51.6262**	**1.5000e-003**	**2.8700e-003**	**52.5184**

Weymouth Basin Nos. 1-4 and Electrical Control Building - Total Construction - South Coast AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Construction Activities - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.0398	8.9901	9.8477	0.0174		0.4392	0.4392		0.4221	0.4221	0.0000	1,500.8375	1,500.8375	0.2818	0.0000	1,507.8821
Total	**1.0398**	**8.9901**	**9.8477**	**0.0174**		**0.4392**	**0.4392**		**0.4221**	**0.4221**	**0.0000**	**1,500.8375**	**1,500.8375**	**0.2818**	**0.0000**	**1,507.8821**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.1000e-004	1.6000e-004	0.0000	7.0000e-005	1.0000e-005	8.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.2592	0.2592	1.0000e-005	4.0000e-005	0.2718
Vendor	1.1900e-003	0.0321	0.0107	1.3000e-004	4.1400e-003	3.2000e-004	4.4600e-003	1.2000e-003	3.1000e-004	1.5000e-003	0.0000	12.2609	12.2609	4.1000e-004	1.7800e-003	12.8013
Worker	0.0147	0.0119	0.1554	4.2000e-004	0.0481	2.9000e-004	0.0484	0.0128	2.7000e-004	0.0130	0.0000	39.1061	39.1061	1.0800e-003	1.0500e-003	39.4452
Total	**0.0159**	**0.0447**	**0.1662**	**5.5000e-004**	**0.0523**	**6.2000e-004**	**0.0529**	**0.0140**	**5.9000e-004**	**0.0146**	**0.0000**	**51.6262**	**51.6262**	**1.5000e-003**	**2.8700e-003**	**52.5184**

Weymouth Basin Nos. 1-4 and Electrical Control Building - Total Construction - South Coast AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Construction Activities - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.0451	8.9042	10.5218	0.0190		0.4152	0.4152		0.3991	0.3991	0.0000	1,638.0168	1,638.0168	0.3030	0.0000	1,645.5911
Total	**1.0451**	**8.9042**	**10.5218**	**0.0190**		**0.4152**	**0.4152**		**0.3991**	**0.3991**	**0.0000**	**1,638.0168**	**1,638.0168**	**0.3030**	**0.0000**	**1,645.5911**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	6.0000e-004	1.6000e-004	0.0000	8.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	3.0000e-005	0.0000	0.2679	0.2679	1.0000e-005	4.0000e-005	0.2809
Vendor	7.7000e-004	0.0273	0.0104	1.3000e-004	4.5200e-003	1.5000e-004	4.6700e-003	1.3000e-003	1.5000e-004	1.4500e-003	0.0000	12.7606	12.7606	4.3000e-004	1.8500e-003	13.3222
Worker	0.0149	0.0115	0.1564	4.5000e-004	0.0524	3.0000e-004	0.0527	0.0139	2.8000e-004	0.0142	0.0000	41.5549	41.5549	1.0500e-003	1.0600e-003	41.8959
Total	**0.0157**	**0.0394**	**0.1670**	**5.8000e-004**	**0.0570**	**4.5000e-004**	**0.0575**	**0.0153**	**4.3000e-004**	**0.0157**	**0.0000**	**54.5834**	**54.5834**	**1.4900e-003**	**2.9500e-003**	**55.4991**

Weymouth Basin Nos. 1-4 and Electrical Control Building - Total Construction - South Coast AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Construction Activities - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.0451	8.9042	10.5218	0.0190		0.4152	0.4152		0.3991	0.3991	0.0000	1,638.0149	1,638.0149	0.3030	0.0000	1,645.5892
Total	**1.0451**	**8.9042**	**10.5218**	**0.0190**		**0.4152**	**0.4152**		**0.3991**	**0.3991**	**0.0000**	**1,638.0149**	**1,638.0149**	**0.3030**	**0.0000**	**1,645.5892**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	6.0000e-004	1.6000e-004	0.0000	8.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	3.0000e-005	0.0000	0.2679	0.2679	1.0000e-005	4.0000e-005	0.2809
Vendor	7.7000e-004	0.0273	0.0104	1.3000e-004	4.5200e-003	1.5000e-004	4.6700e-003	1.3000e-003	1.5000e-004	1.4500e-003	0.0000	12.7606	12.7606	4.3000e-004	1.8500e-003	13.3222
Worker	0.0149	0.0115	0.1564	4.5000e-004	0.0524	3.0000e-004	0.0527	0.0139	2.8000e-004	0.0142	0.0000	41.5549	41.5549	1.0500e-003	1.0600e-003	41.8959
Total	**0.0157**	**0.0394**	**0.1670**	**5.8000e-004**	**0.0570**	**4.5000e-004**	**0.0575**	**0.0153**	**4.3000e-004**	**0.0157**	**0.0000**	**54.5834**	**54.5834**	**1.4900e-003**	**2.9500e-003**	**55.4991**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.542450	0.061470	0.185138	0.129299	0.023799	0.006448	0.011958	0.009209	0.000810	0.000503	0.024446	0.000751	0.003721

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Weymouth Basin Nos. 1-4 and Electrical Control Building - Total Construction - South Coast AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Weymouth Basin Nos. 1-4 and Electrical Control Building - Total Construction - South Coast AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

DocuSign

Certificate Of Completion

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Envelope Summary Events	Status	Timestamps
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Certified Delivered	Security Checked	11/16/2021 11:14:08 AM
Signing Complete	Security Checked	11/16/2021 11:14:18 AM
Completed	Security Checked	11/16/2021 11:14:22 AM

Payment Events	Status	Timestamps

Engineering & Operations Committee

Weymouth Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation

Item #7-5

May 10, 2022

Weymouth Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation

Current Action

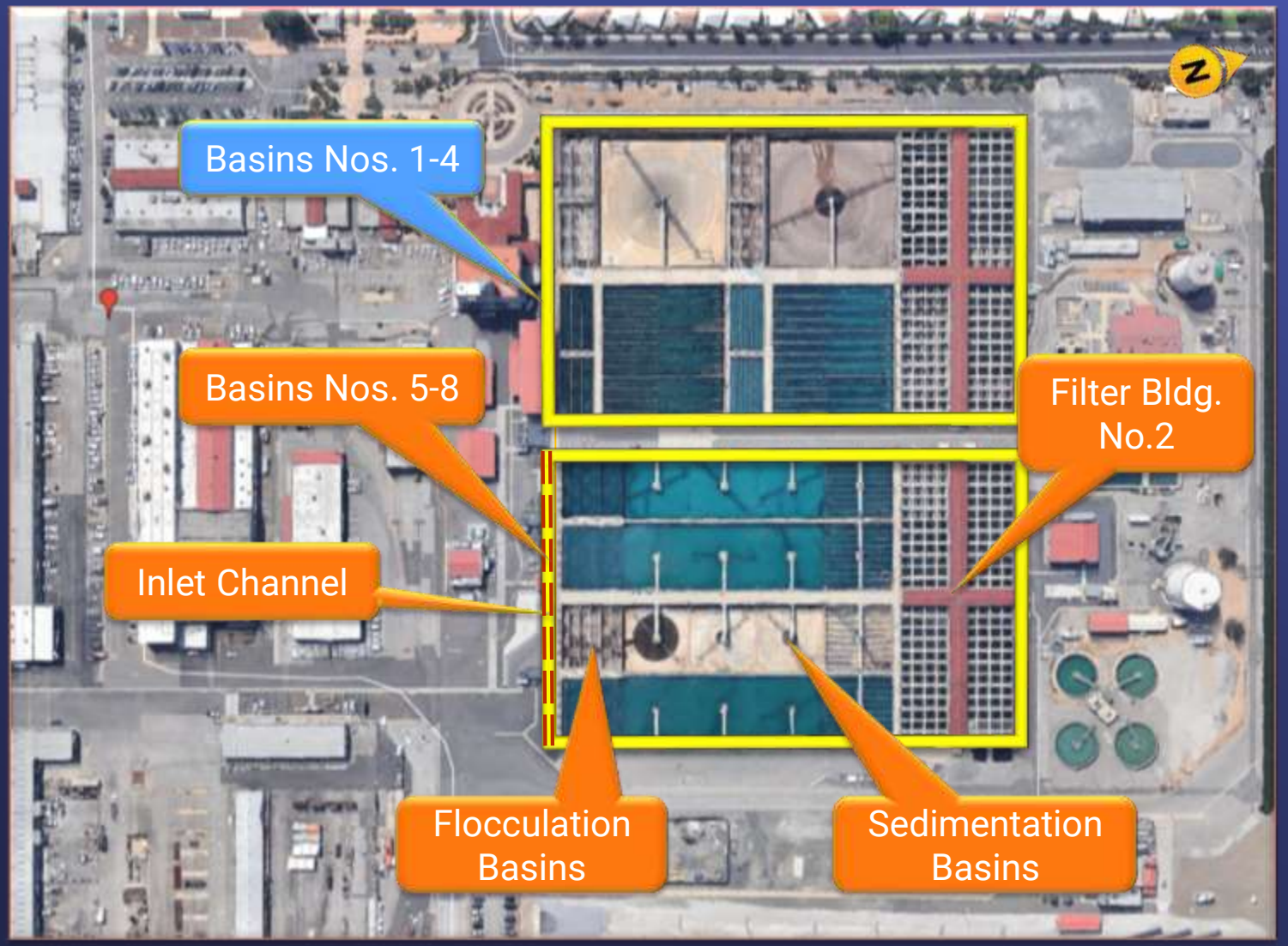
- Review and consider Addendum No. 1 to the certified 2015 Final Environmental Impact Report for the Weymouth Plant Improvements
- Award a $93,840,000 contract to J. F. Shea Construction, Inc. to rehabilitate Basins Nos. 5-8 and Filter Building No. 2
- Authorize an agreement with Carollo Engineers, Inc. for a not-to-exceed amount of $495,000

Distribution System

Weymouth Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation

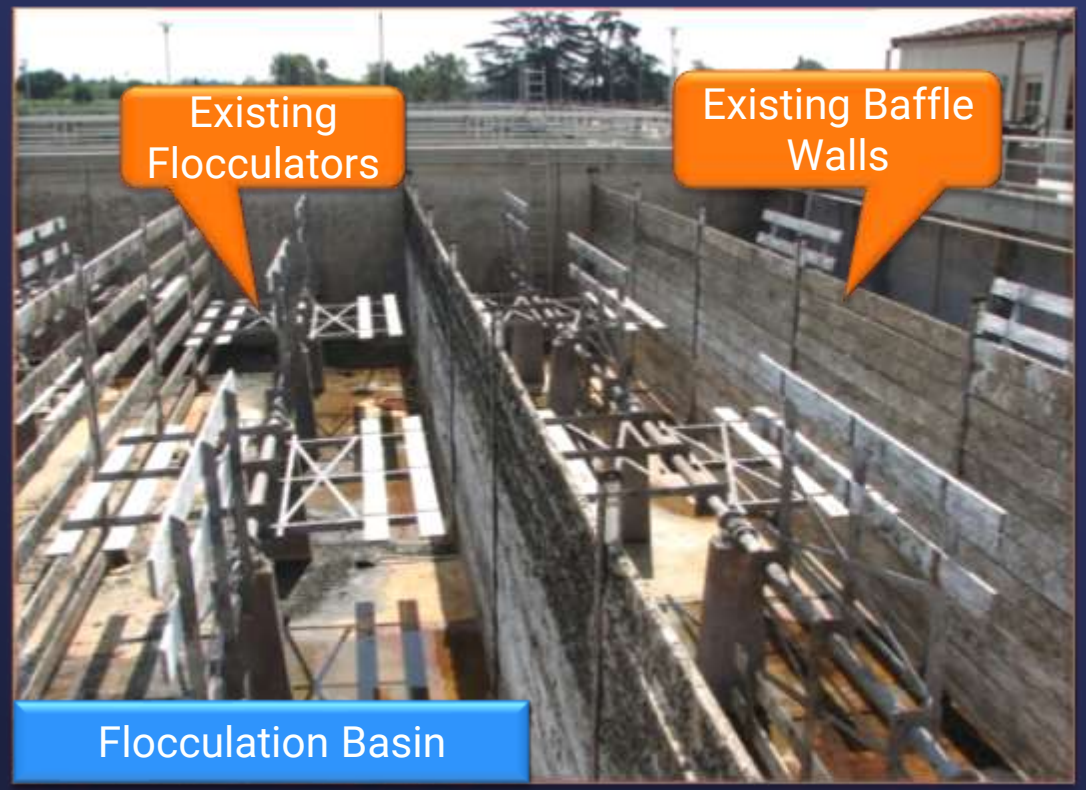
Background

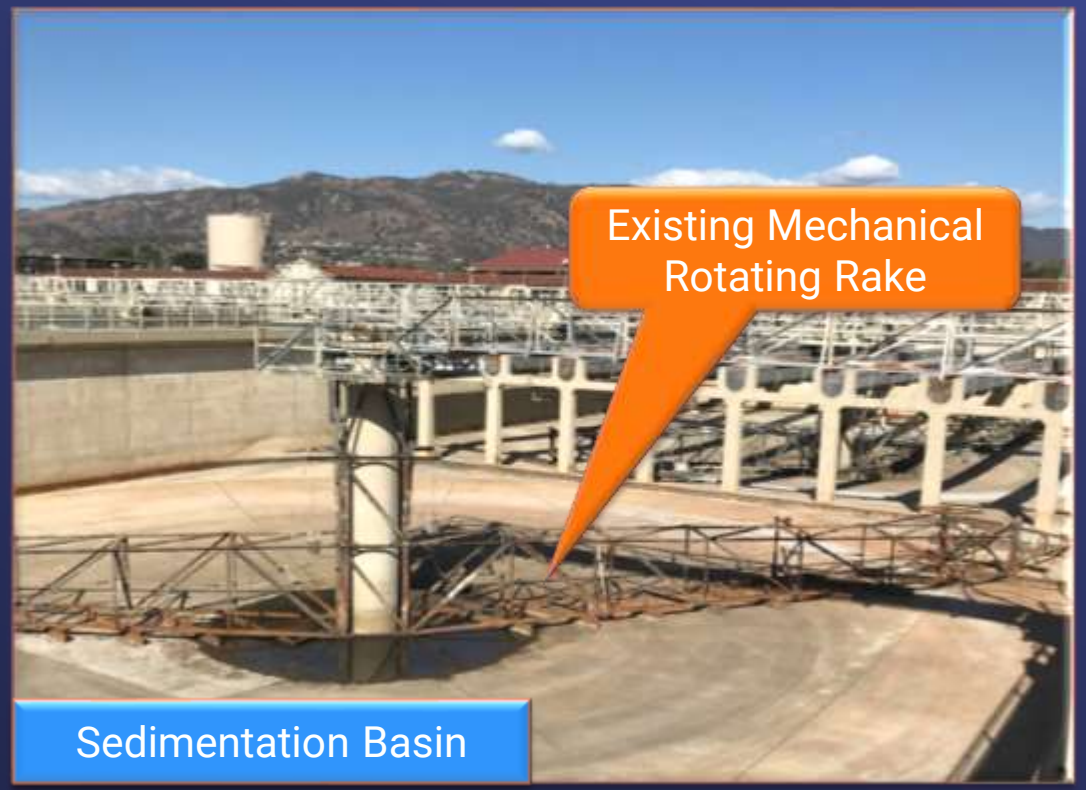
- 1941 - Basins Nos. 1&2
- 1949 - Basins Nos. 3&4
- 1962 - Basins Nos. 5-8 and Filter Building No. 2



Background (Cont.)

- Basins Nos. 5-8
  - Basin mechanical and electrical components have deteriorated
  - Inlet channel gates are leaking
- Seismic Retrofit
  - Risk assessment identified deficiencies
  - Strengthen inlet channel and basin walls





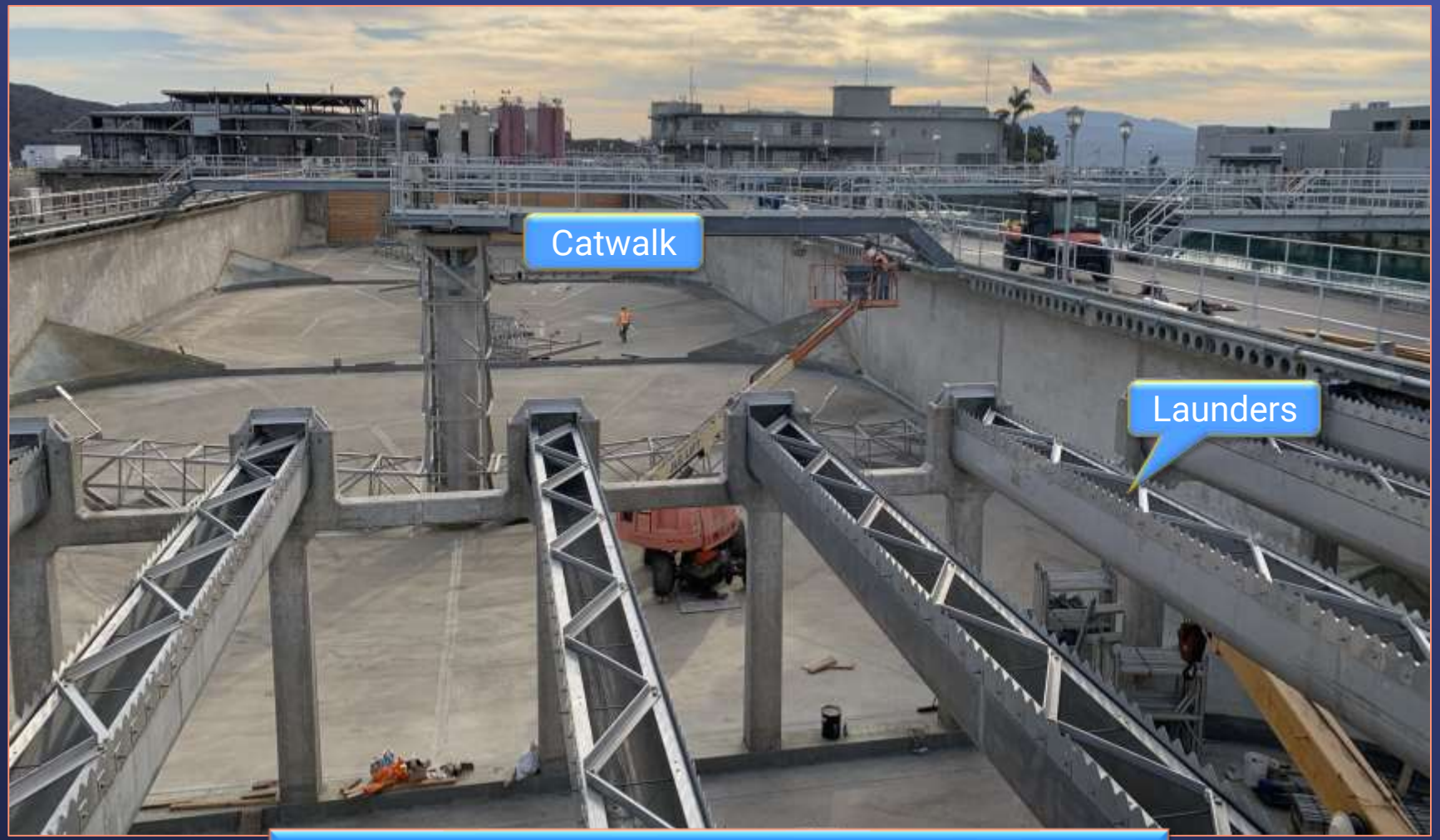
Weymouth Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation

Alternatives Considered

- Rehabilitate basins and valves under separate contracts
  - Disruptive to Weymouth Operations
  - Prolongs construction duration
- Single construction contract approach
  - Reduces plant shutdowns
  - Reduces contract administration and project costs
  - Improves construction efficiency

Contractor Scope

- Replace treatment basin equipment
- Install electrical and control equipment
- Strengthen the basin and inlet channel walls



Recent Diemer West Basin Rehabilitation Work

Contractor Scope (Cont.)

- Hazardous material abatement
  - $3M O&M funded
- Replace 127 filter valves and actuators in Filter Building No. 2
- Replace basin launders and basin inlet gates

Weymouth Plant Filters and Basins Nos. 5-8

Metropolitan Scope

- Perform construction management/inspection and survey control
- Provide project management and contract administration
- Force Construction
  - Provide plant shutdown and outage support

Recent New Flocculators at Diemer West Basins

Weymouth Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation

New Agreement – Carollo Engineers, Inc.

- Engineer of record - Filter Building No. 2
  - Mechanical and electrical disciplines
- Scope of work
  - Technical support during construction
    - Submittal review
    - Respond to RFIs
  - Prepare record drawings
- NTE amount: $495,000

Bid Results
Specifications No. 1982

Bids Received	April 7, 2022
No. of Bidders*	3
Low Bidder	J. F. Shea Construction, Inc.
Low Bid	$93,840,000
Higher Bid	$95.2 million
Engineer's estimate	$107.4 million
SBE Participation**	21%

*Apparent low bidder was released from its bid in accordance with the Public Contract Code.

**SBE (Small Business Enterprise) participation level set at 20%

Allocation of Funds

Contract	
J. F. Shea Construction, Inc. [1]	$90,840,000
Metropolitan Labor	
Program mgmt. & contract administration	2,047,000
Force Construction	2,478,000
Construction management/inspection	9,638,000
Submittal review, technical support & record drawings	2,655,000
Materials & Supplies	925,000
Professional Services	
Carollo Engineers, Inc.	495,000
Psomas	100,000
Consultant Inspection	75,000
Remaining Budget	4,747,000
Total	$114,000,000

[1] The total contract amount is $93,840,000, of which $3 million will be paid from O&M funds.

Project Schedule

Project	2022	2023	2024	2025
Weymouth Basins Nos. 5-8 and Filter Building No. 2 Rehabilitation				

Board Action

Planned Outages

Construction

Completion of Construction

Board Options

- Option #1
  a) Review and consider Addendum No. 1 to the certified 2015 Final Environmental Impact Report for the Weymouth Plant Improvements.
  b) Award a $93,840,000 contract to J. F. Shea Construction, Inc. to rehabilitate Basins Nos. 5-8 and Filter Building No. 2 at the Weymouth plant.
  c) Authorize an agreement with Carollo Engineers, Inc. for a new not-to-exceed total of $495,000 to provide engineering support.
- Option #2
  - Do not proceed with the project at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA

7-6

Subject

Award $2,654,000 contract to MMC Inc. for replacement of chillers at OC-88 Pump Station; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

The chiller units at OC-88 Pump Station circulate chilled liquids to cool pumps and other process equipment. Without reliable chiller units, equipment can overheat and shutdown. The existing three chiller units have exceeded their expected useful service life and require replacement. This action awards a contract to furnish and install new chillers and chilled water pumps to ensure reliability of the pumping station and avoid service disruptions.

Details

Background

Treated water from the Robert B. Diemer Treatment Plant is conveyed through the Allen-McColloch Pipeline to the OC-88 Pump Station, which in turn pumps water directly into Municipal Water District of Orange County's South County Pipeline. The South County Pipeline extends 25 miles through south Orange County to the city of San Clemente.

The OC-88 Pump Station was constructed in 1990 and is located in the city of Lake Forest. The chillers at the OC-88 Pump Station are essential for normal operation of the pump station as they provide cooling water to the pumps at the facility; the heating, ventilation, and air conditioning system; and electrical equipment necessary to run the facility, such as motor control centers. The pumps will not start without at least one operational chiller at the pump station.

The OC-88 Pump Station currently has three chillers and two chilled water pumps. One chiller has failed, cannot be repaired, and has been taken out of service. Another chiller is only capable of running at half of its designed capacity. Currently, only one chiller is fully functional. To extend the service life of the two operable chillers, staff has performed repair and maintenance on these units by using salvaged parts from the nonfunctional chiller. Additional replacement parts are difficult to obtain and require direct purchase from the original manufacturer with varying lead times. If all chillers were to fail, the pumps at OC-88 would not be able to operate. This may result in downstream service disruptions. Additionally, the two chilled water pumps have exceeded their service lives and are also in need of replacement.

In addition to the mechanical issues associated with the three chillers, the equipment uses a refrigerant that is classified as a "high global warming potential" substance per South Coast Air Quality Management District (SCAQMD) rules. Consequently, it is not possible to recharge the chillers with new refrigerant. Under the proposed project, the existing chillers would be replaced with new SCAQMD-compliant units.

Final design for the OC-88 Pump Station Chiller Replacement Project is now complete, and staff recommends award of a construction contract at this time.

In accordance with the April 2020 action on the biennial budget for fiscal years 2020/21 and 2021/22, the General Manager will authorize staff to proceed with the actions described below, pending board award of the construction contract. Based on the current Capital Investment Plan expenditure forecast, funds for the work to be

performed pursuant to this action during the current biennium are available within the Capital Investment Plan Appropriation for Fiscal Years 2020/21 and 2021/22 (Appropriation No. 15517). Funds required for work to be performed pursuant to the subject contract after fiscal year 2021/22 are budgeted within the Capital Investment Plan Appropriation for Fiscal Years 2022/23 and 2023/24. This project has been reviewed in accordance with Metropolitan's Capital Investment Plan (CIP) prioritization criteria and was approved by Metropolitan's CIP evaluation team to be included in the Conveyance & Distribution System Rehabilitation Program.

OC-88 Pump Station Chiller Replacement – Construction

The project consists of furnishing and replacing three chillers and two chilled water pumps; providing a fully automated control system compatible with Metropolitan's supervisory control and data acquisition (SCADA) system to remotely control the installed chillers and pumps; installing conduit, piping, and supports; performing electrical modifications; and other work necessary for an operational system. Metropolitan forces will provide electrical tie-in support, perform submittal review, and SCADA integration.

A total of $4,200,000 is required for this work. In addition to the amount of the contract described below, other funds to be allocated include $128,000 for Metropolitan force construction, as described above; $387,000 for construction management and inspection; $335,000 for submittal review, technical support during construction, responding to requests for information, and preparation of record drawings; $298,000 for contract administration and project management; and $398,000 for remaining budget. Approximately $500,000 has been expended on this project to date.

Attachment 1 provides the allocation of the required funds. The total estimated cost to complete OC-88 Pump Station Chiller Replacement, including the amount allocated to date and funds allocated for the work described in this action, is approximately $4.7 million.

Award of Construction Contract (MMC Inc.)

Specification No. 2024 for the construction of the OC-88 Pump Station Chiller Replacement was advertised on March 2, 2022. As shown in **Attachment 2**, one bid was received and opened on April 6, 2022. The bid from MMC Inc. in the amount of $2,654,000 complies with the requirements of the specifications. The engineer's estimate for this project was $3,000,000. Staff investigated the reason for the single bid and attributes the lack of multiple bids to the high volume of electrical work currently underway in the region, the significant amount of equipment procurement that is required for the contract, and the continued supply chain uncertainty that impacted other contractor's confidence in their ability to meet the project schedule. For this contract, Metropolitan established a Small Business Enterprise (SBE) participation level of at least 20 percent of the bid amount. MMC Inc., is an SBE firm, and thus achieves 100 percent participation. The subcontractors for this contract are listed in **Attachment 3**.

As described above, Metropolitan staff will perform construction management and inspection. Engineering Services' performance metric target range for inspection of projects with construction less than $3 million is 15 percent. For this project, the performance metric goal for inspection is 13.9 percent of the total construction cost. The total cost of construction for this project is $2,782,000, which includes the cost of the contract ($2,654,000) and Metropolitan force construction ($128,000).

Alternatives Considered

Staff assessed the viability of continuing to maintain the existing chillers. This is not possible due to the lack of spare parts and the use of a non-SCAQMD compliant refrigerant. Staff also considered upsizing the two existing chillers and abandoning the third non-operational chiller. However, these chillers are located on the rooftop of the OC-88 Pump Station structure and the larger chiller units would require expensive modifications of the existing roof structure. Additionally, peak demand months typically require two chiller units to stay operational. A third chiller provides increased operational flexibility and allows for one unit to be removed from service for maintenance even during periods of peak demand.

Staff recommends replacement of the three existing chillers at OC-88 Pump Station. This alternative will reduce the amount of maintenance hours spent on repairing faulty parts on the existing units, provide operational flexibility, and increase the overall reliability of the pumping plant. Moreover, new chiller units would minimize environmental impacts and allow Metropolitan to stay complaint with SCAQMD rules.

Summary

This action awards a $2,654,000 construction contract to MMC Inc. for construction of the OC-88 Pump Station Chiller Replacement Project. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Abstract of Bids, **Attachment 3** for the listing of Subcontractors for Low Bidder, and **Attachment 4** for the Location Map.

Project Milestone

May 2023– Completion of construction of OC-88 Pump Station Chiller Replacement Project

Policy

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

By Minute Item 51963, dated April 14, 2020 the Board appropriated a total of $500 million for projects identified in the Capital Investment Plan for Fiscal Years 2020/21 and 2021/22.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action consists of awarding a construction contract and modifying existing public facilities with negligible or no expansion of use and no possibility of significantly impacting the physical environment. Accordingly, the proposed action qualifies as a Class 1 Categorical Exemption (Section 15301 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

Award $2,654,000 contract to MMC Inc. for construction of the OC-88 Pump Station Chiller Replacement project.

Fiscal Impact: Expenditure of $4,200,000 in capital funds. Approximately $100,000 will be incurred in the current biennium and has been previously authorized. The remaining funds from this action are accounted for in the next biennial budget and were authorized in April 2022.

Business Analysis: This option will protect Metropolitan's facility, ensure reliable water delivery, enhance operational flexibility, and avoid risk of fines from SCAQMD.

Option #2

Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: This option will not reduce risk of a service disruption at the OC-88 Pump Station.

Staff Recommendation

Option #1

4/25/2022

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

4/27/2022

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Abstract of Bids

Attachment 3 – Listing of Subcontractors

Attachment 4 – Location Map

Ref# es12688396

Allocation of Funds for OC-88 Pump Station Chiller Replacement

	Current Board Action (May 2022)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	295,000
Submittals Review & Record Drwgs.	335,000
Construction Inspection & Support	387,000
Metropolitan Force Construction	128,000
Materials & Supplies	-
Incidental Expenses	3,000
Professional/Technical Services	-
Right-of-Way	-
Equipment Use	-
Contracts	-
MMC Inc.	2,654,000
Remaining Budget	398,000
Total	**$ 4,200,000**

The total amount expended to date replace the chillers at OC-88 Pumping Station is approximately $500,000. The total estimated cost to complete the chiller replacement, including the amount appropriated to date and funds allocated for the work described in this action is $4.7 million.

The Metropolitan Water District of Southern California

Abstract of Bids Received on April 6, 2022 at 2:00 P.M.

Specifications No. 2024
OC-88 Pump Station Chiller Replacement

The work includes furnishing and replacing three chillers and two chilled water pumps, providing a fully automated control system, install conduit, piping, and electrical modifications.

Engineer's estimate: $3,000,000

Bidder and Location	Total	SBE $	SBE %	Met SBE[1]
MMC Inc. **La Palma, CA**	**$2,654,000**	**$839,000**	**100%**	**Yes**

[1] Small Business Enterprise (SBE) participation level established at 20% for this contract.

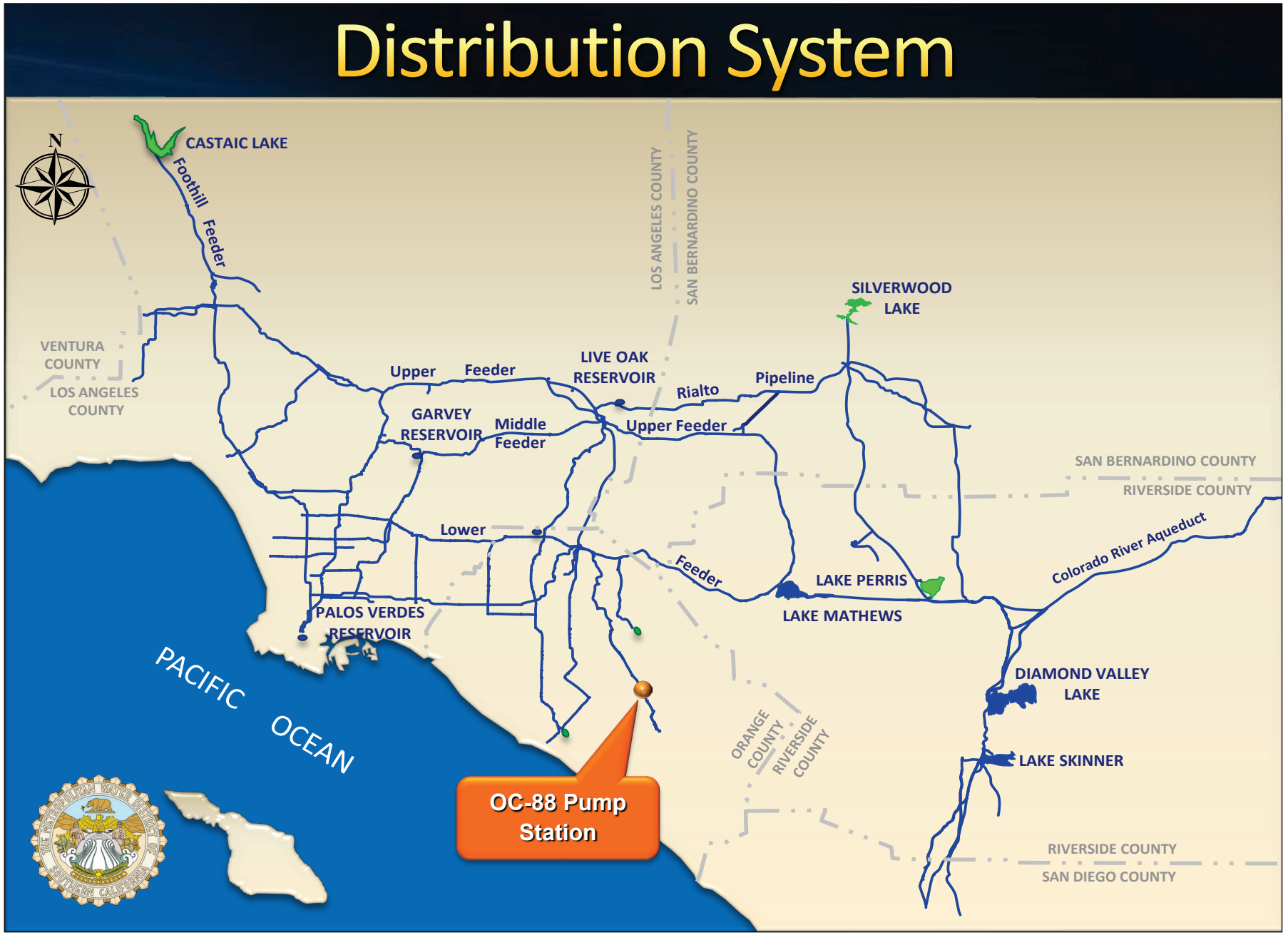
The Metropolitan Water District of Southern California

Subcontractors for Low Bidder

Specifications No. 2024
OC-88 Pump Station Chiller Replacement

Low bidder: MMC Inc.

Subcontractor and Location
Leed Electric Santa Fe Springs, CA


Distribution System
N
CASTAIC LAKE
Foothill Feeder
VENTURA COUNTY
LOS ANGELES COUNTY
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
SILVERWOOD LAKE
Upper Feeder
LIVE OAK RESERVOIR
Rialto Pipeline
GARVEY RESERVOIR
Middle Feeder
Upper Feeder
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
Lower Feeder
Colorado River Aqueduct
LAKE PERRIS
LAKE MATHEWS
PALOS VERDES RESERVOIR
PACIFIC OCEAN
DIAMOND VALLEY LAKE
ORANGE COUNTY
RIVERSIDE COUNTY
LAKE SKINNER
OC-88 Pump Station
RIVERSIDE COUNTY
SAN DIEGO COUNTY

Engineering & Operations Committee

OC-88 Pump Station Chiller Replacement

Item #7-6

May 10, 2022

OC-88 Pump Station Chiller Replacement

Current Action

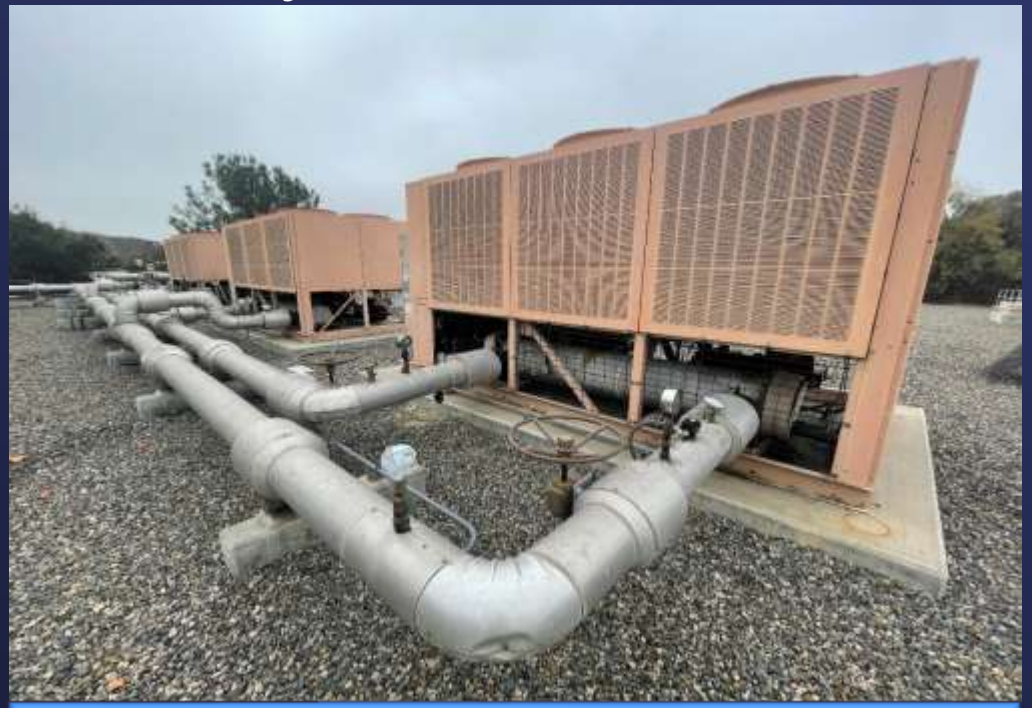
- Award $2,654,000 contract to MMC Inc. for replacement of chillers at OC-88 Pump Station

Distribution System

OC-88 Pump Station

Background

- Chiller units and chilled water pumps exceeded service lives
- Chillers experience non-compliant refrigerant leak
- Unable to operate pump station without chillers
  - May result in service interruptions



Existing chiller units

Existing chilled water pumps

OC-88 Pump Station Chiller Replacement

Alternatives Considered

- Continue to maintain existing chillers
  - Spare parts unavailable
  - Refrigerant phased out
- Upsize two existing chillers
  - Modification of roof structure needed
  - Reduces operational flexibility during peak demand
- Replace three chillers - Selected Option
  - Increase overall reliability and operational flexibility of the pump station

Contractor Scope

- Furnish and replace three chillers and two chilled water pumps
- Provide fully automated control system
- Install conduit, piping, supports, and electrical modifications

Chiller Unit

Electrical Panels

Metropolitan Scope

- Support electrical tie-in
- Provide support during Supervisory Control and Data Acquisition (SCADA) integration
- Perform submittal review, respond to requests for information, and prepare record drawings
- Perform construction management & inspection
- Perform project management and contract administration

Bid Results
Specifications No. 2024

Bids Received	April 6, 2022
No. of Bidders	1
Bidder	MMC Inc.
Bid	$2,654,000
Engineer’s estimate	$3 M
SBE Participation*	100%

*SBE (Small Business Enterprise) participation level set at 20%

Allocation of Funds

Contract	
MMC Inc.	$2,654,000
Metropolitan Labor	
Program mgmt. & contract admin.	295,000
Force construction	128,000
Construction management/inspection	387,000
Submittal review, technical support & record drawings	335,000
Incidental Expenses	3,000
Remaining Budget	398,000
Total	$4,200,000

Project Schedule

Project	2022	2023
OC-88 Pump Station Chiller Replacement		

Board Action

Construction

Completion of Construction

Board Options

- Option #1

  Award $2,654,000 contract to MMC Inc. for construction of the OC-88 Pump Station Chiller Replacement project.

- Option #2

  Do not proceed with the project at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

- Board of Directors
  Engineering and Operations Committee

5/10/2022 Board Meeting

7-7

Subject

Review and consider Addendum No. 5 to the certified 2017 Programmatic Environmental Impact Report for the Prestressed Concrete Cylinder Pipe Rehabilitation Program; and award an $11,884,700 contract to J. F. Shea Construction, Inc. to rehabilitate a portion of the Second Lower Feeder

Executive Summary

The Second Lower Feeder is the initial pipeline to be addressed under Metropolitan's Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program. This pipeline has been in continuous service for over 50 years and has required several urgent repairs to its PCCP segments. Due to the shorter-than-expected service life of its PCCP segments, all PCCP within the Second Lower Feeder will be lined with new steel liner pipe or replaced. This action represents the fourth major contract to reline the PCCP sections within the Second Lower Feeder. This action awards a construction contract to install approximately 6,500 feet of welded steel liner pipe within the Second Lower Feeder in the city of Rolling Hills Estates.

Details

Background

In September 2011, Metropolitan's Board authorized the initiation of the PCCP Rehabilitation Program to develop a comprehensive, long-term plan for the replacement or relining of Metropolitan's at-risk PCCP lines. Metropolitan's strategy for maintaining PCCP reliability consists of four coordinated elements: (1) continued assessment and monitoring of PCCP lines; (2) monitoring of stray currents and installation of cathodic protection; (3) near-term repair of distressed PCCP segments; and (4) long-term rehabilitation.

Assessments of Metropolitan's 27 PCCP feeders led to five lines being identified as priority lines to be addressed under the PCCP Rehabilitation Program. These priority lines include: (1) the Allen-McColloch Pipeline; (2) the Calabasas Feeder; (3) the Rialto Pipeline; (4) the Second Lower Feeder; and (5) the Sepulveda Feeder. A proactive, long-term program to rehabilitate these five feeders has been incorporated into Metropolitan's Capital Investment Plan (CIP). Background information on the program is included in **Attachment 2**, along with the status of activities within each of the four aforementioned elements.

In January 2017, Metropolitan's Board certified the Final Programmatic Environmental Impact Report (Final PEIR) for the PCCP Rehabilitation Program for the purpose of compliance with the California Environmental Quality Act (CEQA). The inclusion of all five lines within a single programmatic CEQA document provides flexibility to adjust construction sequencing by enabling the rehabilitation of specific reaches of PCCP to move forward based on the most up-to-date condition assessments and priorities.

The Second Lower Feeder, one of the five priority lines being addressed under the PCCP Rehabilitation Program, delivers treated water from the Robert B. Diemer Water Treatment Plant in the city of Yorba Linda to Palos Verdes Reservoir in the city of Rolling Hills Estates. This pipeline was constructed in 1967 and is 39 miles long, with diameters ranging from 78 inches to 84 inches. The pipeline originally contained approximately 30 miles of PCCP, with the remainder constructed of welded steel pipe. The Second Lower Feeder operates at pressures up to 300 pounds per square inch and crosses through a dense urban area.

The Second Lower Feeder is the initial PCCP pipeline to be addressed under the PCCP Rehabilitation Program due to its condition, its history of repairs, the presence of corrosive soils and third-party stray currents, and its high internal operating pressure. In January 2015, Metropolitan's Board authorized the design to rehabilitate PCCP within the Second Lower Feeder. From August 2017 through June 2020, Metropolitan's Board authorized three construction contracts under which, to date, 14 of the original 30 miles of PCCP have been rehabilitated with steel liner pipe. In May 2019, Metropolitan's Board also authorized procurement of 12,150 feet of welded steel liner pipe for current and future Second Lower Feeder PCCP relining projects. Approximately 4,455 feet of that pipe will be utilized for the relining work to be performed under the subject construction contract.

Final design for rehabilitation of 6,500 feet of PCCP portions of the Second Lower Feeder within the city of Rolling Hills Estates is now complete, and staff recommends moving forward with construction at this time. The remaining 15.8 miles of PCCP within the Second Lower Feeder will be completed over several years, with multiple construction and procurement contracts, including a 3.8-mile segment that staff anticipates bringing to the Board in late 2022 for award of a construction contract.

In accordance with the April 2020 action on the biennial budget for fiscal years 2020/21 and 2021/22, the General Manager will authorize staff to proceed with the actions described below, pending board award of the construction contract. Based on the current CIP expenditure forecast, funds for the work to be performed pursuant to this action during the current biennium are available within the CIP Appropriation for Fiscal Years 2020/21 and 2021/22 (Appropriation No. 15497). Funds required for work to be performed pursuant to the subject contract after fiscal year 2021/22 are budgeted within the CIP Appropriation for Fiscal Years 2022/23 and 2023/24. This project has been reviewed in accordance with Metropolitan's CIP prioritization criteria and was approved by Metropolitan's CIP Evaluation Team to be included in the PCCP Reliability Program.

Second Lower Feeder PCCP Rehabilitation, Reach 3A – Construction

The scope of the contract includes lining approximately 6,500 feet of existing PCCP segments with a smaller-diameter steel liner that will accommodate full internal and external pressures on the pipeline. To minimize above-ground impacts, two access shafts will be excavated to allow for installation of the new steel liners. The work also includes enlarging four existing pipe access shafts for improved egress and relocation of one air release and vacuum valve from below grade to above grade to reduce the risk of cross contamination of the pipeline's potable water supply. Metropolitan forces will perform pipeline shutdown work, including isolation and dewatering of the pipe in preparation for the contractor's work. This includes fabrication and installation of blind flanges at the manifold piping at the Oak Street Pressure Control Structure in order to minimize water leakage into the work area. The planned shutdown for a portion of the Second Lower Feeder extends from January through May 2023.

A total of $19.1 million is required for this work. In addition to the amount of the contract described below, other funds to be allocated include $1,899,000 for Metropolitan force work, as described above; $295,000 for material and supplies; $2,010,000 for construction management and inspection; $90,000 for welding inspection services; $247,000 for an agreement with the city of Rolling Hills Estates covering permitting and community impact costs, and a license to use city-owned property for temporary access and storage areas; $180,000 for a land lease agreement with Los Angeles Community College for the storage of Metropolitan-furnished liner pipe; $384,000 for submittal review and preparation of record drawings; $255,000 for technical support during construction by Black and Veatch, Inc., $75,000 for community outreach services by Water System Consulting, and $200,000 for environmental monitoring and reporting by Helix Group Inc., all three under existing board authorized agreements; $814,000 for contract administration, environmental support, and project management; and $766,300 for remaining budget. Welding inspections will be performed by a specialty firm under a new professional services agreement that is planned to be executed under the General Manager's Administrative Code authority to award contracts of $250,000 or less. The agreement with the city of Rolling Hills Estates is planned to be executed under the General Manager's Administrative Code authority to award contracts of $250,000 or less.

Award of Construction Contract (J. F. Shea Construction, Inc.)

Specifications No. 1903 for the rehabilitation of PCCP segments within the Second Lower Feeder was advertised for bids on February 7, 2022. As shown in Attachment 3, two bids were received and opened on April 5, 2022. The low bid from J. F. Shea Construction, Inc. in the amount of $11,884,700 complies with the requirements of the specifications. The other bid was $23,967,049, while the engineer's estimate was $16.5 million. Staff

investigated the difference between the engineer's estimate and the low bid and attributes the difference to a conservative engineer's estimate that factored inflation for labor and steel liner pipe. The low bidder has successfully completed several PCCP relining projects for Metropolitan. For this contract, Metropolitan established a Small Business Enterprise participation level of at least five percent of the bid amount. J. F. Shea Construction, Inc. has committed to a participation level of 13 percent of the bid amount. The subcontractors for this contract are listed in **Attachment 4**.

As described above, Metropolitan staff will perform construction management and inspection with assistance from a specialty welding inspection consultant. Engineering Services' performance metric target range for construction management and inspection of projects with construction greater than $3 million is 9 to 12 percent. For this project, the performance metric goal for inspection is 11.2 percent of the total construction cost. The total cost of construction for this project is $17,988,700, which includes the cost of the contract ($11,884,700), Metropolitan force construction and supplies ($2,194,000), and steel liner pipe ($3,910,000).

Alternatives Considered

Staff evaluated two alternatives to rehabilitating the southernmost reach of the PCCP portions of the Second Lower Feeder, which consist of 26,000 feet of PCCP and three sectionalizing valves. The first alternative would perform all work under one construction contract. However, this alternative would have required an 8-month shutdown of the pipeline. This reach of the Second Lower Feeder is the only source of water supply to member agencies in its service area, and the affected service connections cannot tolerate a shutdown greater than a few weeks during the low demand winter season, and much less during peak demand periods.

The second alternative, which is the selected one, will instead break up the work into two contracts. The first contract will reline approximately 6,500 feet of PCCP in a specific portion of the Second Lower Feeder that can accommodate a four-month shutdown. The second contract will complete the remaining 19,500 feet of PCCP and replacement of three sectionalizing valves under two additional four-month shutdowns. Breaking up the work into two contracts allows for greater lead time to procure temporary bypass piping and reduces schedule and materials procurement risks associated with longer shutdowns.

The selected alternative is a cost-effective approach which manages the risks associated with a relatively short shutdown on the Second Lower Feeder and minimizes service interruptions to member agencies. This alternative is consistent with the objectives of Metropolitan's PCCP Rehabilitation Program and will enhance the reliability of Metropolitan's distribution system.

Summary

This action awards an $11,884,700 construction contract to J. F. Shea Construction, Inc. to reline PCCP within the Second Lower. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Background and Program Status, **Attachment 3** for the Abstract of Bids, **Attachment 4** for the listing of Subcontractors for Low Bidder, **Attachment 5** for the Location Map, **Attachment 6** for Addendum No. 5 to the Final PEIR for the PCCP Rehabilitation Program, **Attachment 7** for the Final PEIR for the Second Lower Feeder Vol 1, and **Attachment 8** for Final PEIR Vol 2 Findings of Fact, Mitigation Monitoring, and Statement of Overriding Considerations.

Project Milestone

July 2023 – Completion of construction

Policy

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

By Minute Item 50009, dated January 13, 2015, the Board authorized the first phase of final design to rehabilitate the PCCP portions of the Second Lower Feeder.

By Minute Item 50699, dated January 10, 2017, the Board certified the Final Programmatic Environmental Impact Report for the PCCP Rehabilitation Program, and approved the program for the Second Lower Feeder, Sepulveda Feeder, Calabasas Feeder, Rialto Pipeline, and Allen-McColloch Pipeline for the purposes of CEQA.

By Minute Item 51597, dated May 14, 2019, the Board awarded a contract to construct and procure materials for the rehabilitation of portions of the Second Lower Feeder.

By Minute Item 51963, dated April 13, 2020, the Board appropriated a total of $500 million for projects identified in the Capital Investment Plan for Fiscal Years 2020/21 and 2021/22.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

Metropolitan's Board certified the PCCP Rehabilitation Program's Final PEIR on January 10, 2017. At that time, the Board also adopted the Findings, the SOC, the MMRP, and the program itself. On January 19, 2022, Addendum No. 5 to the Final PEIR was prepared to document the proposed minor modifications to the approved project as described in this letter. CEQA and the State CEQA Guidelines require the preparation of an addendum to a previously certified PEIR if changes or additions are necessary, but none of the conditions calling for the preparation of a subsequent EIR have occurred (Section 15164 of the State CEQA Guidelines). Instead, the proposed modifications require only minor changes or additions to the evaluation in the certified Final PEIR to make it adequate under CEQA. None of the proposed modifications would result in significant adverse impacts beyond those impacts already disclosed in the Final PEIR.

CEQA determination for Option #2:

None required

Board Options

Option #1

Review and consider Addendum No. 5 to the 2017 Programmatic Environmental Impact Report, and award an $11,884,700 contract to J. F. Shea Construction, Inc. to procure materials and perform construction for the rehabilitation of portions of the Second Lower Feeder.

Fiscal Impact: Expenditures of $19,100,000 in capital funds. Approximately $100,000 will be incurred in the current biennium and has been previously authorized. The remaining funds from this action are accounted for in the next biennial budget and were authorized in April 2022.

Business Analysis: This option will advance Metropolitan's long-term plan to rehabilitate PCCP portions of the Second Lower Feeder. This option will also enhance the reliability of Metropolitan's PCCP feeders and reduce the risk of costly urgent repairs.

Option #2

Do not move forward to rehabilitate Reach 3A of the Second Lower Feeder at this time.

Fiscal Impact: None

Business Analysis: This option would likely increase the risk of pipe failures, unplanned shutdowns, and costly repairs over time.

Staff Recommendation

Option #1

4/21/2022

John V. Bednarski *Date*
Manager/Chief Engineer
Engineering Services

4/25/2022

Adel Hagekhalil *Date*
General Manager

Attachment 1 – Allocation of Funds

Attachment 2 – Background and Program Status

Attachment 3 – Abstract of Bids

Attachment 4 – Subcontractors for the Low Bidder

Attachment 5 – Location Map

Attachment 6 – Addendum No. 5 to Final PEIR

Attachment 7 – Final PEIR Vol 1

Attachment 8 – Final PEIR Vol 2 Findings-MMRP-SOC

Ref# ES12687822

Allocation of Funds for Second Lower Feeder PCCP Rehabilitation - Reach 3A

	Current Board Action (May 2022)
Labor	
Studies & Investigations	$ -
Final Design	-
Owner Costs (Program mgmt., permitting, contract admin, & travel envir. monitoring, & contract admin)	814,000
Submittals Review & Record Drwgs.	384,000
Construction Inspection & Support	2,010,000
Metropolitan Force Construction	1,644,000
Materials & Supplies	295,000
Incidental Expenses	255,000
Professional/Technical Services	-
Black & Veatch	255,000
Helix Group Inc.	200,000
Water Systems Consulting	75,000
Welding Inspection	90,000
Right-of-Way	427,000
Equipment Use	-
Contracts	-
J. F. Shea Construction, Inc.	11,884,700
Remaining Budget	766,300
Total	$ 19,100,000

The total amount expended to date for the Second Lower Feeder PCCP Rehabilitation - Reach 3A project is approximately $2.46 million. The total estimated cost to complete this pipeline rehabilitation project, including the amount appropriated to date and funds allocated for the work described in this action, is $21.56 million.

PCCP REHABILITATION PROGRAM
BACKGROUND AND PROGRAM STATUS

Metropolitan's water delivery system includes approximately 830 miles of large-diameter pipelines, of which 148 miles are currently comprised of prestressed concrete cylinder pipe (PCCP). The total original length of PCCP was 163 miles. There are PCCP reaches within 27 feeders, with diameters ranging from 54 to 201 inches. These PCCP lines are in both dense urban regions and remote areas and were installed between 1965 and 1985.

Over the last several decades, water agencies throughout the United States and other countries have found that under certain conditions, PCCP lines may have a reduced service life and elevated risk of failure versus other types of pipe. PCCP failures can be catastrophic and may occur without warning. A PCCP failure may compromise system reliability and result in significant costs due to interruption of service, unplanned major repairs, and potential third-party damages.

In September 2011, as a proactive measure to maintain overall system reliability, Metropolitan initiated a comprehensive program to inspect, manage, and rehabilitate its PCCP feeders. This effort included preparation of a risk analysis to assess the need and priority for rehabilitation of individual PCCP lines. Through this process, five of Metropolitan's 27 PCCP lines were identified to have experienced a disproportionate share of all prestressing wire breaks, repair length to date, and cost of repairs. The five priority lines are: (1) Allen-McColloch Pipeline, (2) Calabasas Feeder, (3) Rialto Pipeline, (4) Second Lower Feeder, and (5) Sepulveda Feeder. The PCCP within these five lines is expected to continue to deteriorate, as indicated by a progression of prestressing wire breaks over time. While Metropolitan's other PCCP feeders contain prestressing wire breaks in some pipe segments, they do not exhibit the same trend of increasing wire breaks over time. These other feeders may eventually need to be rehabilitated but appear to be stable at present. Their condition will be reevaluated on a regular basis, and adjustments will be made to the program if additional feeders are determined to be at risk in the future.

The PCCP Rehabilitation Program has been organized to provide flexibility in the timing and priority of the work. In January 2015, final design commenced to rehabilitate the initial pipeline: Second Lower Feeder. In January 2017, Metropolitan's Board certified the Final Programmatic Environmental Impact Report (Final PEIR) for the entire PCCP Rehabilitation Program and approved the program for all five priority lines for the purpose of compliance with the California Environmental Quality Act (CEQA). The inclusion of all five lines within a single programmatic CEQA document provides flexibility to adjust construction sequencing by enabling the rehabilitation of specific reaches of PCCP to move forward based on up-to-date condition assessments and priorities.

The comprehensive strategy for managing Metropolitan's PCCP lines and maintaining their reliability is comprised of four coordinated elements. The following describes these elements and summarizes the status of activities for each:

No.	Element	Status
1	**Continued Assessment and Monitoring of PCCP Lines –** Metropolitan currently inspects all PCCP lines within the distribution system every three to seven years. In order to increase knowledge of the pipelines' baseline condition to track prestressing wire breaks over time, and to identify distressed PCCP segments, staff will continue to aggressively inspect PCCP lines using state-of-the-art inspection techniques.	At present, electromagnetic inspection continues to be the industry's primary technique for identification of wire breaks. A complete cycle of inspections of Metropolitan's feeders takes approximately five to seven years to complete. To date, four cycles of electromagnetic inspections have been performed on most of the PCCP feeders. Inspections of portions of the Sepulveda Feeder, Second Lower Feeder, West Valley Feeder No. 1, Rialto Pipeline, and Jensen Bypass were inspected during the 2021/22 shutdown season.

No.	Element	Status
2	**Monitoring of Stray Currents and Installation of Cathodic Protection** – Metropolitan will continue to perform corrosion surveys and monitor stray currents on a one to two-year cycle. Where indicated by corrosion monitoring, staff will install stray current drain stations or impressed current systems to minimize continued deterioration from stray current interference, which is a major cause of corrosion damage.	To date, stray current protection has been installed in 31.5 miles of PCCP lines. This protection includes both current drain stations and impressed current systems. In November 2017, an impressed current cathodic protection system was installed on the PCCP portions of the Allen-McColloch Pipeline. A CIP project to install three more stray current drain stations on the Sepulveda Feeder is scheduled for next year.
3	**Near-Term Repair of Distressed PCCP Segments** – Metropolitan will continue to prioritize and repair PCCP segments with elevated numbers of prestressing wire breaks, broken-back cracks, or other indications of risk or distress. During the course of the PCCP Rehabilitation Program, individual PCCP segments may be identified as distressed prior to the scheduled rehabilitation of an entire feeder. If needed, staff will recommend moving forward with near-term repairs to those individual PCCP segments.	To date, approximately 4.5 miles of distressed PCCP segments have been repaired. Most recently, urgent repairs of distressed PCCP on the Second Lower Feeder were completed in 2013, 2014, 2016, and 2020 and on the Sepulveda Feeder in 2016 and 2019. Urgent repairs were completed on the Allen-McColloch Pipeline in 2021.
4	**Long-Term Rehabilitation –** The goal of this element is to complete the rehabilitation or replacement of all PCCP segments within the five priority lines.	For the Second Lower Feeder, the following is a summary of work to date: • Preliminary Design – Reach 9, which crosses the Newport-Inglewood Fault zone: Geotechnical investigations and seismic studies are underway. • Final Design – Reach 3B: Design is underway. • Procurement – Manufacturing of 13 large diameter conical plug isolation valves is underway. • Construction – relining of the following reaches is complete: – Reach 1 (23,100 feet) – Reach 2 (26,900 feet) – Reach 4 (10,000 feet) – Reach 8 (2,900 feet) For the Sepulveda Feeder, the following is a summary of work to date: • Preliminary Design – South Reach: Preliminary design is complete; final design is ongoing – North Reach: Design effort is ongoing. • Final Design of South Reach – Reach 1: Design in progress – Reach 2: Design in progress

No.	Element	Status
		For the Allen-McColloch Pipeline, Calabasas Feeder, and Rialto Pipeline, the following is a summary of work to date: • Preliminary design activities are underway. For all five at-risk pipelines, the following is a summary of work to date: • Outreach – Currently underway with member agencies to address construction phasing, service connection outages, shutdown durations, and water quality-related issues. – Currently underway with local agencies and communities to minimize traffic and other potential impacts to the public.

The goal of this comprehensive strategy for managing PCCP lines is to maintain reliable deliveries to Metropolitan's member agencies while optimizing the remaining useful life of PCCP lines. The effort includes development of a multi-year schedule and conceptual-level cost estimates with a long-term rehabilitation and replacement plan for the five priority PCCP lines. The overall schedule, cost estimates, and sequencing of work will be reassessed regularly during the development of Metropolitan's biennial capital budget.

System-wide hydraulic analyses are underway to assess hydraulic impacts of the PCCP rehabilitation work on Metropolitan's distribution system. The results of the analyses have been used to develop alternatives to minimize the loss of hydraulic capacity, to evaluate impacts of extended shutdowns on individual service connections, and to identify options for maintaining deliveries. The replacement of small-diameter sectionalizing valves and meters with larger units is an example of an approach for maintaining feeder hydraulic capacity.

The strategy for the priority feeders is to complete preliminary design of the rehabilitation work for the entire length of each feeder at an early stage of the program. This approach will provide flexibility to adjust construction sequencing of individual reaches if priorities change. The sequencing for rehabilitation will be determined by several factors, including: (1) updated assessments of risk; (2) Metropolitan's water supply availability and the operational needs for specific feeders; (3) impacts to member agency service connections; and (4) readiness for construction.

The Metropolitan Water District of Southern California

Abstract of Bids Received on April 5, 2022, at 2:00 P.M.

Specifications No. 1903
Second Lower Feeder PCCP Rehabilitation
Reach 3A

This work includes lining approximately 6,500 feet of prestressed concrete cylinder pipe (PCCP) within Reach 3A of the Second Lower Feeder, pipe access sites, removing of portions of existing PCCP for access portals, installing of Metropolitan-furnished and contractor-furnished coiled steel liner cylinders, expanding the coiled cylinders, welding the steel cylinders, grouting the annular space, applying cement mortar lining, modifying existing maintenance holes, constructing a new maintenance hole, relocating an air release valve above grade, disinfecting the pipeline, restoring the site, and providing traffic control.

Engineer's estimate: $16,500,000

Bidder and Location	Total	SBE $	SBE %	Met SBE[1]
J. F. Shea Construction, Inc Walnut, CA	**$11,884,700**	**$1,513,372**	**13%**	**Yes**
Michels Corporation Brownsville, WI	$23,967,049	-	-	-

[1] Small Business Enterprise (SBE) participation level established at 5% for this contract.

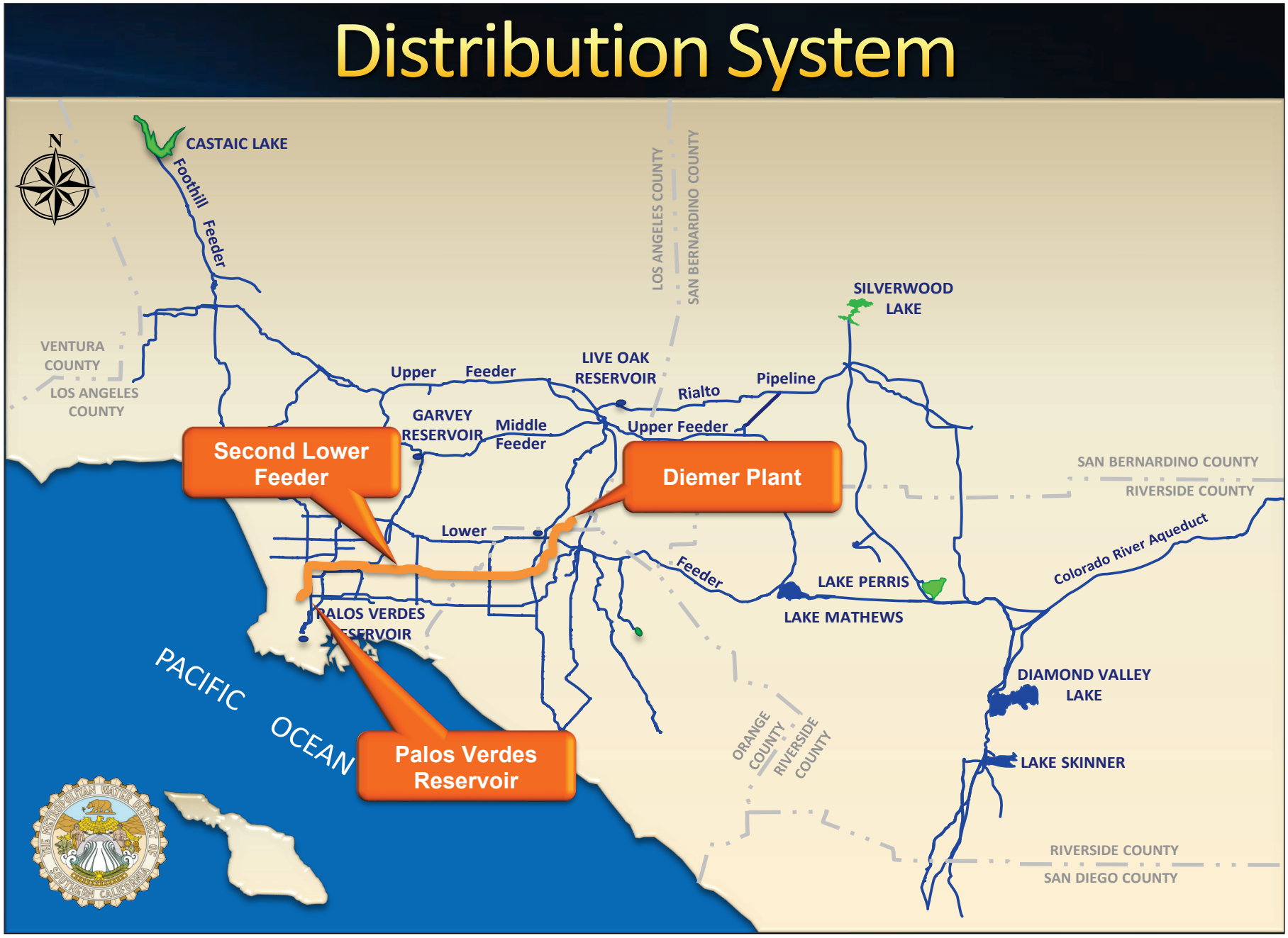
The Metropolitan Water District of Southern California

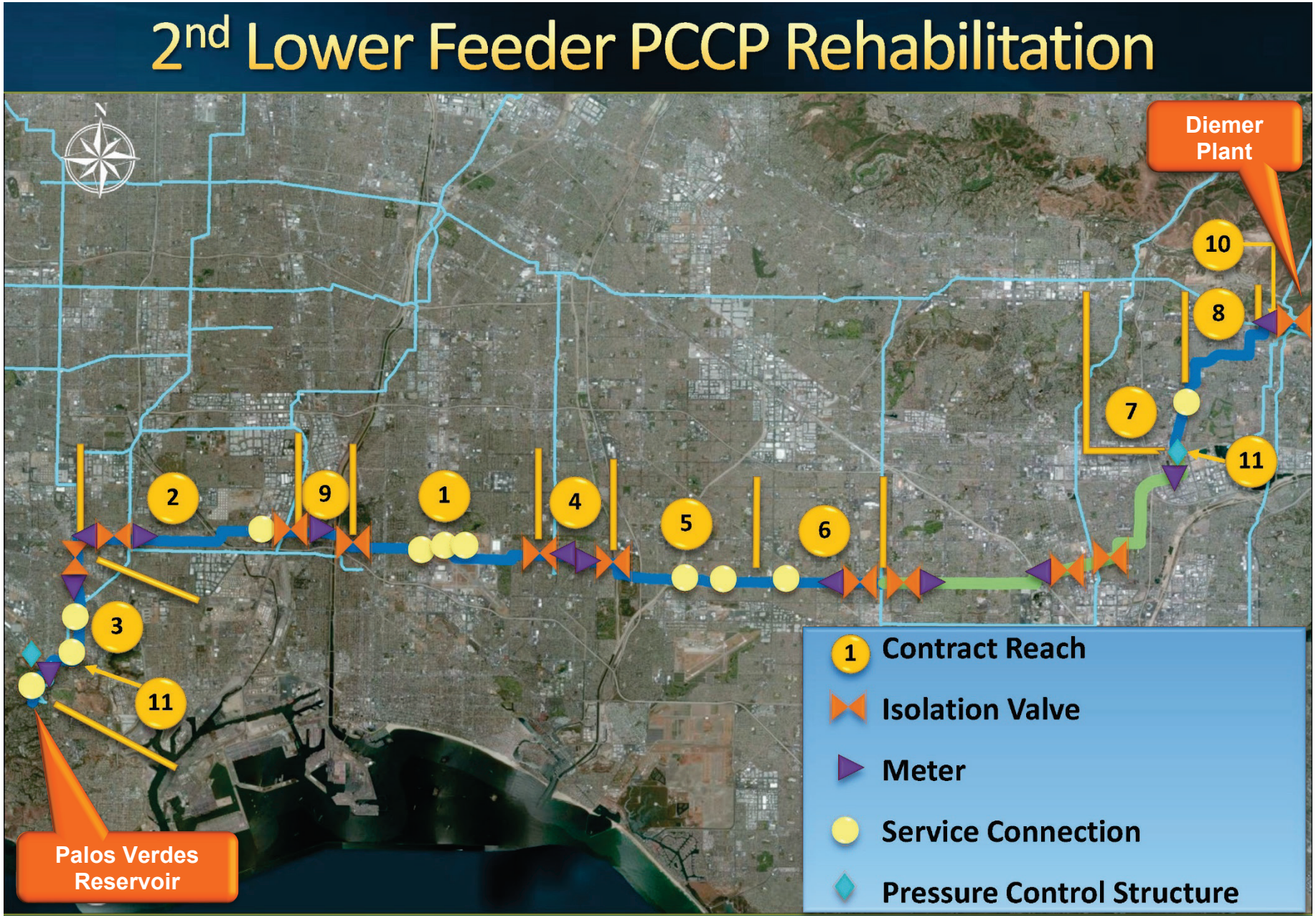
Subcontractors for Low Bidder

Specifications No. 1903
Second Lower Feeder PCCP Rehabilitation - Reach 3A

Low bidder: J. F. Shea Construction, Inc.

Subcontractor and Location
Alcorn Fence Sun Valley, CA
Cell-Crete Monrovia, CA
Dean's Welding Temecula, CA
Environmental Construction Group Signal Hill, CA
H. Wayne Lewis, Inc, DBA Amber Steel Co. Rialto CA
Hardy & Harper Lake Forest, CA


Distribution System
N
CASTAIC LAKE
Foothill Feeder
VENTURA COUNTY
LOS ANGELES COUNTY
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
SILVERWOOD LAKE
Upper Feeder
LIVE OAK RESERVOIR
Rialto Pipeline
GARVEY RESERVOIR
Middle Feeder
Upper Feeder
Second Lower Feeder
Diemer Plant
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
Lower Feeder
Colorado River Aqueduct
LAKE PERRIS
LAKE MATHEWS
PALOS VERDES RESERVOIR
PACIFIC OCEAN
Palos Verdes Reservoir
DIAMOND VALLEY LAKE
ORANGE COUNTY
RIVERSIDE COUNTY
LAKE SKINNER
RIVERSIDE COUNTY
SAN DIEGO COUNTY


2nd Lower Feeder PCCP Rehabilitation
N
Diemer Plant
Palos Verdes Reservoir
1
2
3
4
5
6
7
8
9
10
11
Contract Reach
Isolation Valve
Meter
Service Connection
Pressure Control Structure

ADDENDUM #5
to the
Programmatic Environmental Impact Report for the
Prestressed Concrete Cylinder Pipe Rehabilitation Program
Second Lower Feeder Reach 3

January 2022

The Metropolitan Water District of
Southern California
700 North Alameda Street
Los Angeles, California 90012

Metropolitan Report No. 1527-5

1234

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ADDENDUM #5

to the

PROGRAMMATIC ENVIRONMENTAL IMPACT REPORT

for the

PRESTRESSED CONCRETE CYLINDER PIPE
REHABILITATION PROGRAM

SECOND LOWER FEEDER REACH 3

SCH: 2014121055

Background

Lead Agency: The Metropolitan Water District of Southern California

Addendum to Certified Programmatic Environmental Impact Report Pursuant to: California Code of Regulations, Title 14, Division 6, Chapter 3, Article 11, Section 15164.

Background and Description of the Prestressed Concrete Cylinder Pipe Rehabilitation Program

Between 1962 and 1985, 163 miles of Prestressed Concrete Cylinder Pipeline (PCCP) were installed throughout The Metropolitan Water District of Southern California's (Metropolitan) service area. Under certain subsurface conditions, PCCP lines have an elevated risk of failure compared with other types of pipe. In response to this risk of failure, in the late 1990s, Metropolitan inspected and assessed all 163 miles of PCCP within its distribution system. In 2011, Metropolitan initiated a comprehensive program of inspections to evaluate and rank PCCP lines with the highest risk of failure. The data indicate that the following five pipelines represent the highest risk: Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, Second Lower Feeder, and Sepulveda Feeder. The PCCP Rehabilitation Program (PCCP Program) was developed to rehabilitate the PCCP portions of the five subsurface water distribution pipelines (also known as feeders) that were identified as having the highest risk as described above.

The PCCP Program is designed to maintain the reliability of Metropolitan's distribution system to minimize risks associated with failures by proactively rehabilitating each portion of PCCP, starting with the pipes that show the greatest risk of failure. The PCCP Program will help Metropolitan avoid possible unplanned system outages, thereby increasing service reliability for customers within Metropolitan's service area.

The following are the objectives of the PCCP Program:

- Reduce the risk of unplanned outages.
- Extend the service life of the pipelines.
- Perform the rehabilitation work in a cost-effective manner.
- Minimize the effects of rehabilitation efforts on Member Agency deliveries.
- Minimize the loss of hydraulic capacity due to rehabilitation.
- Improve system operational and emergency flexibility.

A Programmatic Environmental Impact Report (PEIR) was prepared in accordance with the California Environmental Quality Act (CEQA) of 1970 (Public Resources Code [PRC] Section 21000 et seq.) and the Guidelines for Implementation of CEQA (State CEQA Guidelines) published by the Public Resources Agency of the State of California (California Code of Regulations, Title 14, Section 15000 et seq.). The PCCP PEIR was certified by the Metropolitan Board of Directors on January 10, 2017.

Proposed Project Summary

The proposed project, Reach 3 of the Second Lower Feeder, covers rehabilitation of portions of a 4.9-mile section of the 78-inch diameter Second Lower Feeder in the cities of Los Angeles, Torrance, Lomita, and Rolling Hills Estates and a 300-linear-foot section of the 84-inch diameter Sepulveda Feeder in the cities of Los Angeles and Torrance. Proposed locations for project elements have been identified, including the contractor's work and storage area, pipe access sites from which the feeder would be relined, installation of large isolation valves, belowground structures that would be improved, air-release/vacuum valves that would be relocated above grade, air-release/vacuum valves that would be improved, and the construction of a service connection (WB-41). Rehabilitation and site restoration activities would take approximately 21 months and would be broken into three phases identified as Phase 3a, Phase 3b, and Phase 3c. For Phase 3a, mobilization of equipment and traffic control setup would be scheduled to begin in December 2022, and traffic control and equipment would be removed, and the sites restored by the end of June 2023. Water service would be interrupted on the Second Lower and Sepulveda Feeders beginning in January 2023, and the pipelines would be returned to service in April 2023. For Phase 3b, mobilization of equipment and traffic control setup would begin in December 2023 and would extend to June 2024. Water service would be interrupted from January 2024 through April 2024. For Phase 3c, mobilization of equipment and traffic control setup would begin in December 2024 and would extend to June 2025. Water service would be interrupted from January 2025 through April 2025. The PCCP Rehabilitation Program schedule is dependent on periodic pipeline inspections and risk assessments of all the PCCP lines within Metropolitan's service area. Thus, if inspections reveal another pipeline or pipeline reach is at greater risk, the repair schedule would be altered. Shutdowns are primarily scheduled during low water use times (i.e., the optimum time for pipeline shutdowns is winter months when water demand is less than during the summer months).

Environmental Consequences

Consistent with the procedures identified in Section 15168(c) of the State CEQA Guidelines, the proposed project is a subsequent activity that is part of the PCCP Program, which "must be examined in the light of the program EIR to determine whether an additional environmental document must be

prepared." Metropolitan has prepared an Initial Study to determine if the proposed project would have new effects that were not examined in the PEIR.

The environmental consequences of the proposed project are described in the attached Initial Study. The impacts of the proposed project are compared to the impacts described in the PEIR to determine whether the proposed project would result in new impacts not previously described and whether those new impacts would be significant, or whether the proposed project would result in significant impacts that are substantially more severe than the impacts identified in the PEIR. Several environmental resource areas are not discussed in this Initial Study, as these items were determined not to require further analysis beyond what was included for the Second Lower Feeder portion of the PCCP Program in the December 2014 Initial Study. The State CEQA Guidelines Appendix G items that are not included in this Initial Study are detailed in the introductory section.

The categories of impacts evaluated in the attached Initial Study include:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Recreation
- Transportation/Traffic

As described in the Initial Study that follows, the impacts of the proposed project are either consistent with the impacts described in the PEIR or less severe than those identified in the PEIR; therefore, the proposed project would not result in new significant impacts or substantially more severe significant impacts than those described in the PEIR. Applicable mitigation measures identified in the PEIR will be implemented for the proposed project.

Finding

This Addendum to the PCCP PEIR reflects the independent judgement of Metropolitan. Pursuant to Section 15168 of the State CEQA Guidelines, the proposed project is within the scope of the program covered by the PCCP PEIR. The proposed project would result in no new significant environmental impacts or substantially more severe significant impacts than those described in the PEIR. The Initial Study identifies mitigation measures from the PEIR that will be implemented for the proposed project. No new project-specific mitigation measures were identified. Consequently, the proposed project would not affect the original January 2017 program approval determination, and no supplemental environmental impact report (EIR), subsequent EIR, or Mitigated Negative Declaration to the PEIR is required.

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INITIAL STUDY

FOR THE

SECOND LOWER FEEDER REACH 3 OF THE PRESTRESSED CONCRETE CYLINDER PIPE REHABILITATION PROGRAM

The Metropolitan Water District of Southern California
Environmental Planning Section
700 N. Alameda Street
Los Angeles, California 90012

MAILING ADDRESS:
P.O. Box 54153
Los Angeles, California 90054-0153

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EP@mwdh2o.com

Metropolitan Report No. 1527-5
January 2022

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APPENDICES

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LIST OF ACRONYMS

AB	Assembly Bill
ANSI	American National Standards Institute
AQMP	Air Quality Management Plan
AWWA	American Water Works Association
BMPs	best management practices
BRA	Biological Resource Assessment
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
CRS	Cultural Resources Study
dBA	A-weighted decibel
DPM	diesel particulate matter
DTSC	California Department of Toxic Substances Control
EIR	Environmental Impact Report
GHG	greenhouse gas
HCP	Habitat Conservation Plan
L_{EQ}	average sound energy over a specified period
LOS	level of service
LST	Localized Significance Threshold
LUST	leaking underground storage tank
Metropolitan	The Metropolitan Water District of Southern California
MM	mitigation measure
N/A	not applicable
NCCP	Natural Community Conservation Plan
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
PCCP	Prestressed Concrete Cylinder Pipe
PCCP Program	Prestressed Concrete Cylinder Pipe Rehabilitation Program
PEIR	Programmatic Environmental Impact Report
$PM_{2.5}$	particulate matter 2.5 microns or less in diameter
PM_{10}	particulate matter 10 microns or less in diameter
PRC	Public Resources Code
PRIMP	Paleontological Resources Impact Mitigation Program
proposed project	Second Lower Feeder Reach 3

ROW	right-of-way
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SLF	Second Lower Feeder
SO_X	sulfur oxides
Sta.	Station Number
s/v	second per vehicle (delay)
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
V/C	volume to capacity
VOC	volatile organic compounds

INTRODUCTION

Purpose of the Initial Study

The purpose of this Initial Study is to assess the potential for new or more severe significant environmental impacts for the Second Lower Feeder Reach 3 (proposed project) rehabilitation beyond those identified in the Programmatic Environmental Impact Report (PEIR) prepared for the Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program (PCCP Program). The PEIR was certified by The Metropolitan Water District of Southern California's (Metropolitan) Board of Directors on January 10, 2017 (SCH #2014121055) and addressed the potential for environmental impacts at a planning level for each of the five pipelines that would be rehabilitated under the PCCP Program. The proposed project covers rehabilitation of a 4.9-mile section of the Second Lower Feeder in the cities of Los Angeles, Torrance, Lomita, and Rolling Hills Estates and a 300-linear-foot section of the 84-inch-diameter Sepulveda Feeder in the cities of Los Angeles and Torrance (see **Figure 1**).

The PEIR was prepared in accordance with the California Environmental Quality Act (CEQA) of 1970 (Public Resources Code [PRC] Section 21000 et seq.) and the Guidelines for Implementation of CEQA (State CEQA Guidelines) published by the Public Resources Agency of the State of California (California Code of Regulations, Title 14, Section 15000 et seq.). Consistent with the procedures identified in Section 15168(c) of the State CEQA Guidelines, the proposed project is a subsequent activity that is part of the PCCP Program, which "must be examined in the light of the program EIR to determine whether an additional environmental document must be prepared." Metropolitan is conducting an Initial Study to determine if the proposed project would have new effects that were not examined in the PEIR. In accordance with the State CEQA Guidelines Section 15168(c)(1) and (2), in the event that no new or substantially more severe significant effects from the subsequent activity are identified and no new mitigation measures are required, Metropolitan can approve the activity as being within the scope of the program covered by the PEIR, and no new environmental document is required. However, if new or substantially more severe significant impacts or additional mitigation measures are identified, a Negative Declaration or Environmental Impact Report (EIR) is required.

Scope of the Initial Study

As discussed above, this Initial Study evaluates the proposed project to determine whether new or more severe significant environmental effects beyond those identified in the PEIR would occur. Previous analysis completed as part of the December 2014 Initial Study/Notice of Preparation prepared for the PCCP Program and Second Lower Feeder Project determined that further analysis would not be required for some resource areas. It should be noted that the December 2014 Initial Study/Notice of Preparation described the PEIR as both a project-level EIR for the Second Lower Feeder Project and a PEIR for four other pipelines. Only a programmatic analysis was conducted for the certified PEIR, however; therefore, this Initial Study serves as the project-level analysis for one portion of the PCCP Program—Reach 3 of the Second Lower Feeder. The following items were determined not to require further analysis beyond what was included for the Second Lower Feeder portion of the PCCP Program in the December 2014 Initial Study because no significant environmental impacts were identified:

I. Aesthetics (b. substantially damage scenic resources)

II. Agriculture and Forestry Resources (a. conversion of farmland; b. conflict with agricultural use or Williamson Act; c. conflict with forestland or timberland zoning; d. conversion of forestland; e. changes that could convert farmland or forestland)

III. Air Quality (e. odors)

IV. Biological Resources (d. interfere with species movement; f. conflict with a habitat conservation plan)

VI. Geology and Soils (e. soils incapable of supporting septic tanks)

VIII. Hazards and hazardous materials (f. private airstrip; h. wildland fires)

IX. Hydrology and Water Quality (b. groundwater supplies; f. otherwise degrade water quality; g. housing in a 100-year flood hazard area; h. structures in a 100-year flood hazard zone; i. risk due to flooding or levee/dam failure)

X. Land Use and Planning (a. physically divide an established community; c. conflict with a habitat conservation plan)

XI. Mineral Resources (a. loss of availability of a mineral resource of value to the region and state; b. loss of availability of a locally important mineral resource)

XII. Noise (c. permanent increase in ambient noise levels; f. noise in the vicinity of a private airstrip)

XIII. Population and Housing (a. induce substantial population growth; b. displace substantial number of housing units; c. displace substantial numbers of people)

XIV. Public Services (a. provision of new or physically altered governmental facilities or the need for new or physically altered governmental facilities)

XV. Recreation (b. inclusion, construction, or expansion of recreational facilities)

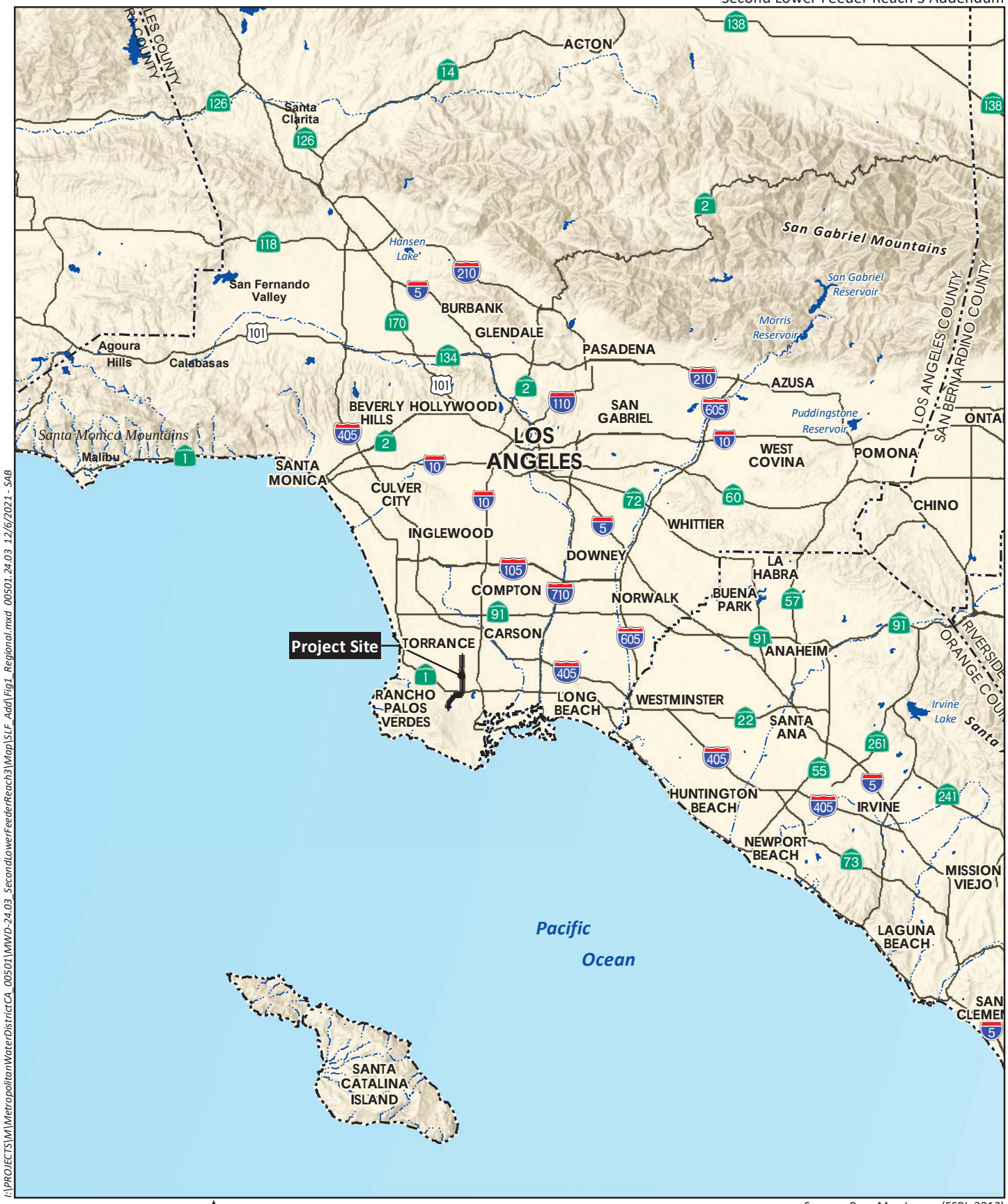
XVI. Utilities and Service Systems (a. conflict with wastewater treatment requirements; b. construction or expansion of new water or wastewater treatment facilities; c. construction or expansion of stormwater drainage facilities; d. sufficient water supplies; e. adequate wastewater capacity; f. sufficient landfill capacity; g. federal, state and local statutes and regulations related to solid waste)

The PCCP PEIR included an analysis of energy conservation consistent with Appendix F to the State CEQA Guidelines, which concluded that energy consumption related to program implementation would not be wasteful, inefficient, or unnecessary. Because Appendix F specifies that energy conservation is to be considered as part of an EIR, and the PEIR considered energy conservation in the analysis of program energy consumption, no additional analysis related to energy conservation is included in this Initial Study.

Additional analyses for issues and resources not included in the list above are provided in the Initial Study checklist that follows.

Format of the Initial Study

The Initial Study uses a modified version of the checklist set forth in Appendix G of the State CEQA Guidelines. It indicates whether an environmental impact category would have new or more severe significant impacts than those identified in the PCCP PEIR, or whether impacts would be less than or equal to those identified in the PCCP PEIR. In addition, the Initial Study identifies applicable mitigation measures included in the PCCP PEIR for implementation, as part of the proposed project. In certain circumstances, the mitigation measures included in the PCCP PEIR are not applicable to the proposed project because the project location or specific characteristics of the proposed project do not trigger the need for mitigation. For example, no historic structures are located within the project limits; therefore, mitigation for such resources is not required.



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Source: Base Map Layers (ESRI, 2013)

HELIX Environmental Planning

Regional Location

Figure 1

APPENDIX G, ENVIRONMENTAL CHECKLIST FORM

1. Title

Initial Study for the Second Lower Feeder, Reach 3 of the Prestressed Concrete Cylinder Pipe Rehabilitation Program

2. Lead Agency Name and Address

The Metropolitan Water District of Southern California
700 N. Alameda Street
Los Angeles, California 90012

Mailing Address

P.O. Box 54153
Los Angeles, California 90054-0153

3. Contact Person and E-mail

Lilia I. Martínez, Principal Environmental Specialist
EP@mwdh2o.com

4. Location

Cities of Los Angeles, Torrance, Lomita, and Rolling Hills Estates, California

5. Sponsor's Name and Address

The Metropolitan Water District of Southern California
700 N. Alameda Street
Los Angeles, California 90012

6. Land Use

Public Right-of-way

7. Zoning

Public Right-of-way (Not Zoned)

8. Project Description

The proposed project is located within the cities of Los Angeles, Torrance, Lomita, and Rolling Hills Estates, California and would reline approximately 26,000 linear feet (4.9 miles) of PCCP along the Second Lower Feeder and approximately 300 linear feet along the Sepulveda Feeder with prefabricated coiled steel liner pipe, extending from Second Lower Feeder Station 1860+10 (located at the intersection of Western Avenue and 220th Street in the city of Los Angeles) to Second Lower Feeder Station 2116+84 (located adjacent to the Palos Verdes Reservoir in the city of Rolling Hills Estates) and from Sepulveda Feeder (SF) Station 2270+46 to SF Station 2273+29 (located along Western Avenue between 219th and

220th streets in the cities of Torrance and Los Angeles); see **Figure 2**. Rehabilitation activities would occur throughout the project footprint including air release/vacuum valve relocations, valve replacements, pumpwell air vent installations, maintenance hole enlargements, incorporation of new maintenance holes, and other minor work.

Construction within the pipelines would occur over three phases referred to as Phase 3a, Phase 3b, and Phase 3c. Each of the three phases would include a four-month shutdown period (January to April 2023 for Phase 3a, January to April 2024 for Phase 3b, and January to April 2025 for Phase 3c). During these shutdowns, the Second Lower Feeder would be shutoff and dewatered from Station 1475+25 (located on Bixby Road west of Long Beach Boulevard in the city of Long Beach) to Station 2116+84 (located adjacent to the Palos Verdes Reservoir in the city of Rolling Hills Estates) and the Sepulveda Feeder would be shut down and dewatered from Station 1927+65 (located on Van Ness Avenue at El Segundo Boulevard in the city of Gardena) to Station 2273+36 (located on Western at 220th Street in the city of Torrance). Construction activities would include:

- Approximately 21 months of mobilization and traffic control work, including 12 months of pipeline rehabilitation activities as follows: Beginning in December 2022, equipment would be mobilized, and traffic control would be set up. Water service shutdowns would begin in January 2023 and the pipelines returned to service by the end of April 2023. Traffic controls and equipment would be removed by the end of June 2023. In December 2023, equipment would again be mobilized, and traffic control set up. Water service shutdowns would begin in January 2024, and the pipelines returned to service in April 2024. Traffic controls and equipment would be removed by the end of June 2024. In December 2024, equipment would again be mobilized for a third time, and traffic control would be set up. Water service shutdowns would begin in January 2025 and the pipelines returned to service in April 2025. Traffic controls and equipment would be removed by the end of June 2025.

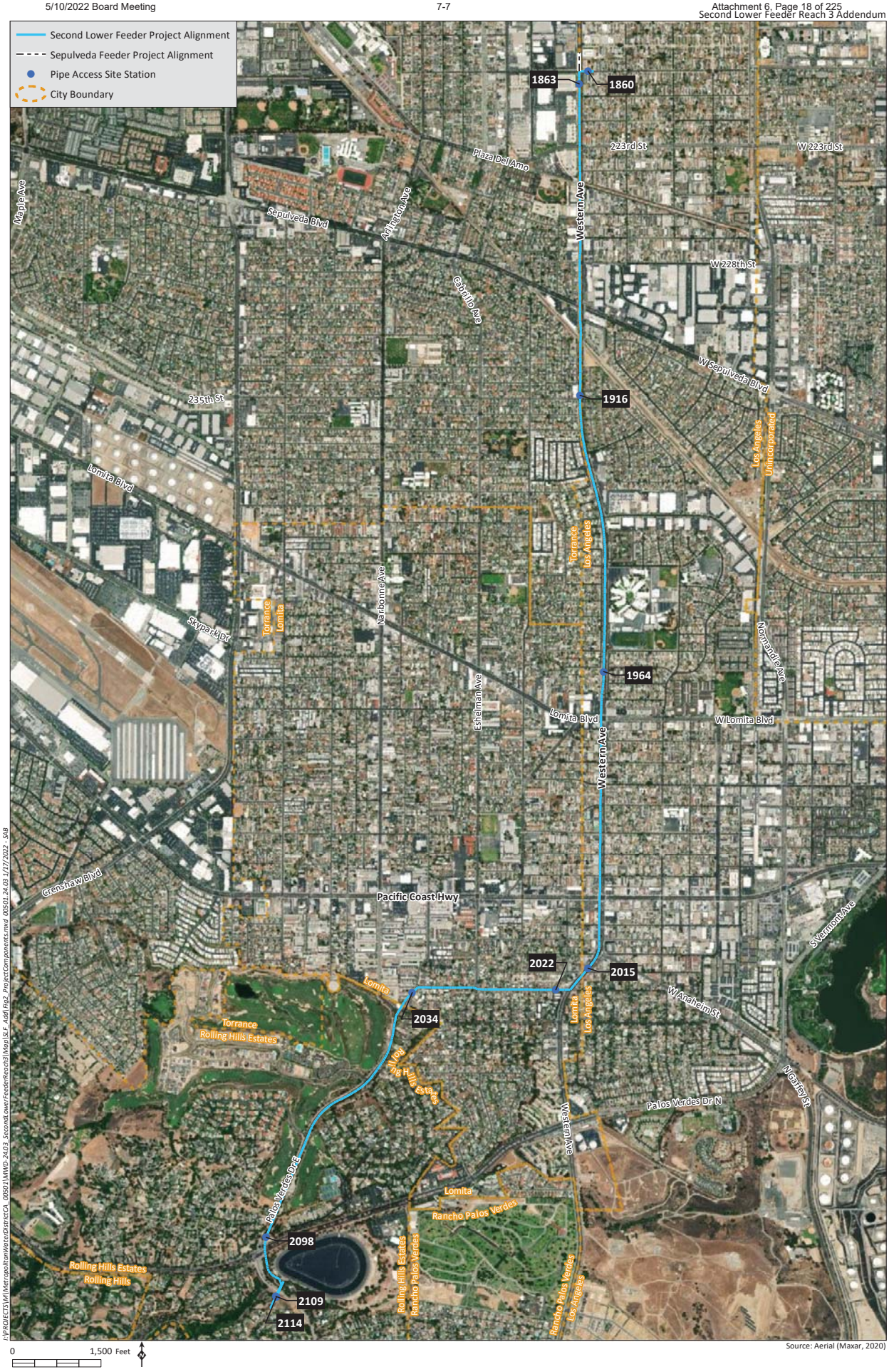
Dewatering activities, as well as pipeline relining activities and ventilation, would generally occur 24 hours per day, Monday through Sunday. Other construction activities, such as excavation, would generally be limited to 7:00 a.m. to 7:00 p.m. Monday through Friday, and on Saturdays when necessary and with prior approval of the Engineer, in accordance with local cities and municipalities. Noise attenuation measures would be implemented where needed, consistent with the PEIR, and appropriate jurisdictional permits will be obtained.

After all rehabilitation activities have been completed, for a period of five to ten days, the Second Lower Feeder and Sepulveda Feeder would be disinfected in accordance with American Water Works Association (AWWA) and American National Standards Institute (ANSI) standards. After disinfection, both feeders would be returned to service.

The following sections describe the components of the PCCP Program generally and how those components would be implemented as part of the proposed project.

Project Components

As discussed in the PEIR, rehabilitation of PCCP can be categorized as primary, secondary, and associated temporary construction components. These components and the various methods needed to construct, install, and operate the components are summarized below and would be used as appropriate for rehabilitation efforts under the proposed project.



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Project Components

Figure 2

- Primary components include the different methods of rehabilitation considered for segments of the pipelines under the PCCP Program. The rehabilitation method that would be used for this proposed project would be relining with coiled steel liner pipe.

- Secondary components include permanent appurtenant structures. These appurtenant structures include buried (underground) structures and aboveground enclosures. Buried structures include vaults that house piping such as those at interconnections and equipment such as valves, meters, service connections, and blow-offs. Aboveground enclosures, typically located on sidewalks or median strips, house air release/vacuum valves and air vents.

- Temporary construction components include pipe access sites, structure excavation sites, contractor work areas, and equipment staging areas.

Primary Project Components

Relining with Coiled Steel Liner Pipe

As discussed in the PEIR, steel cylinder relining rehabilitation of PCCP would involve the following:

- Inserting coiled steel liner pipe into the existing PCCP line.

- Expanding the coiled steel liner pipe to fit properly within the PCCP interior.

- Welding the expanded steel liner pipe within the PCCP.

- Filling the annular space between the expanded steel liner pipe and existing PCCP with cement grout.

- Applying a cement mortar lining to the interior surface of the steel liner pipe.

Most of the rehabilitation activities would occur within the existing pipeline, and site impacts would occur primarily at the pipe access sites. **Figure 3** shows an example of the type of coiled steel liner pipe that would be inserted into the existing PCCP. All work described above would be done inside the existing pipeline from pipe access sites along the existing pipeline alignment.

Figure 3. Coiled Steel Pipe Section

Secondary Project Components

As discussed in the PEIR, pipeline systems typically include equipment vaults that house water meters, isolation valves, check valves, bypass valves, back-flow preventer valves, pressure-reducing valves, pump wells, service connection, and blow-offs. The top of the structure is typically several feet belowground surface and the structures are accessed via ladders from street-level hatches or maintenance holes.

Maintenance Holes and Aboveground Enclosures

Maintenance holes typically provide access for maintenance and repairs and are spaced at regular intervals along pipelines. Existing maintenance holes would be used for ventilation, as well as for access to the interior of the pipeline for personnel, small equipment, and materials during rehabilitation of other project components (e.g., pipeline relining).

The proposed project would include the following three activities related to maintenance holes: maintenance hole enlargement, relocation of air release and vacuum valves at nine maintenance hole vaults to aboveground location, and maintenance hole refurbishment. Each activity is further described below.

Maintenance hole enlargement would occur at the five existing maintenance holes shown in **Table 1**. If determined to be necessary, the five maintenance hole enlargement sites may also be used as pipe access

sites. Therefore, in order to provide flexibility during construction, these sites are conservatively assumed to also be used as pipe access sites with an average excavation area of 86 feet by 34 feet.

Table 1. Maintenance Hole Enlargement Sites

Site	Location	Approximate Contractor's Work Area Dimensions (Length x Width, in feet)
SLF Sta. 1875+56	Within the center of Western Avenue, immediately south of W 223rd Street	150 x 35
SLF Sta. 1899+76	Within the east side of Western Avenue, north of Sepulveda Boulevard	200 x 40
SLF Sta. 1957+80	Within the Western Ave median adjacent to W 246th Street	20 x 40
SLF Sta. 2034+32	On the north side of 262nd Street, west of Monte Vista Avenue	40 x 15
SLF Sta. 2045+04	Within the grassy parkway on the south side of 262nd Street west of Murad Ave	20 x 40

Note: For irregularly-shaped work areas, the maximum width and length are presented in the table.
SLF Sta.: Second Lower Feeder Station Number

California State Water Resources Control Board regulations require that all treated water supply systems be protected from potential contamination. Air release/vacuum valves currently located in vaults along the project pipeline have a potential to introduce contaminants into the Second Lower Feeder. The purpose of these valves is to control air pressure in the mainline by automatically opening to the atmosphere to allow air into or out of the pipeline during dewatering or filling operations. Being located in underground vaults that are susceptible to flooding with rain runoff or seepage water, there is a possibility that as these valves open, they will allow water that has flooded the vault into the pipeline, thereby contaminating it with rain-runoff or seepage water pollutants. Therefore, per the aforementioned regulations, existing air release/vacuum valves in underground vaults along the project would be relocated aboveground.

The relocation of air release/vacuum valves from belowground to aboveground would involve installation of new piping from the existing valve connection point in the vault to a nearby aboveground location and installation of a new valve aboveground. This would require shallow trenching from the existing belowground vault to the new aboveground location.

For the proposed project, the trench would be approximately two feet wide and about five feet deep. The length of the trench would vary with the size of the street to be crossed, as valves would be moved from their current underground locations within the roadway to nearby area outside of the roadway. In addition, the access structures would be retrofitted with locking maintenance hole covers, and the access structure ring would be removed.

The new aboveground air release/vacuum valves would be housed in small enclosures within the public right-of-way in a median or sidewalk or within Metropolitan-owned property. **Figure 4** shows a typical aboveground valve enclosure. **Table 2** identifies the locations where air release/vacuum valves would be relocated aboveground.

Following the equipment relocation, the remaining equipment in the maintenance vaults would be repainted. Additionally, existing mortar coating would be removed, existing steel pipe would be coated and new steel pipe sleeves would be installed in 24 maintenance holes and in two side outlets.

Figure 4. Typical Aboveground Valve Enclosure

Table 2. Air Release/Vacuum Valve Relocation Sites

Site	Location	Approximate Contractor's Work Area Dimensions (Length x Width, in feet)
SLF Sta. 1863+24	Within the sidewalk on the east side of Western Ave south of 220th Street	20 x 40
SLF Sta. 1910+14	Within the Western Ave median north of 234th Street	20 x 40
SLF Sta. 1918+31	Within the sidewalk on the east side of Western Ave south of 235th Street	20 x 40
SLF Sta. 1934+77	Within the Western Ave median south of 238th Street	20 x 40
SLF Sta. 1957+80	Within the Western Ave median adjacent to W 246th Street	20 x 40
SLF Sta. 1963+48	Within the east side of Western Ave adjacent to W 247th Place	20 x 40
SLF Sta. 2034+32	On the north side of 262nd Street, west of Monte Vista Avenue	40 x 14.5
SLF Sta. 2045+04	Within the grassy parkway on the south side of 262nd Street west of Murad Ave	20 x 40
SLF Sta. 2101+17	Within the dirt parkway on Palos Verdes Drive E south of Palos Verdes Drive N	20 x 40

Note: For irregularly-shaped work areas, the maximum width and length are presented in the table.
SLF Sta.: Second Lower Feeder Station Number

Pumpwells and Blow-off Structures

As discussed in the PEIR, pumpwells and blow-off structures along pipelines are used to dewater the pipeline into natural creeks, channels, waterways, and storm drains when a shutdown of the pipeline is necessary. Pumpwells allow temporary pumps to be used to dewater a pipeline. Blow-offs allow gravity to dewater the pipelines. Pumpwells and blow-offs also provide access points for routine maintenance or pipeline inspection. These structures are typically located within the buried equipment vaults.

Table 3 identifies the location and improvements that would occur at the one pumpwell and three blowoff isolation structures within the project limits.

Table 3. Pumpwell Isolation Valve and Blow-off Structure Improvement Locations

Site	Location	Improvement	Approximate Contractor's Work Area Dimensions (Length x Width, in feet)
SLF Sta. 1875+56	Within the sidewalk on the east side of Western Avenue south of 223rd Street	Install new vent stack for pump well structure	50 x 20
SLF Sta. 1920+30	Within the median on Western Avenue south of W 235th Street	Modify blow-off structure	140 x 40
SLF Sta. 1961+70	Within the median on Western Avenue south of W 247th Street	Modify blow-off structure	140 x 40
SLF Sta. 1973+18	Within the southbound lanes of Western Avenue on the southwest corner of Lomita Boulevard and Western Avenue	Modify blow-off structure	140 x 40

Note: For irregularly-shaped work areas, the maximum width and length are presented in the table.
SLF Sta.: Second Lower Feeder Station Number

Isolation Valves and Flow Meters

The proposed project would involve the removal of three existing and installation of three new mainline isolation valves, including rehabilitation of the existing valve vault structures and replacement of appurtenances. The work includes removal of two existing flow meters within the valve vault structures, and replacement of both meters within the new pipe sections. The proposed project also includes removal of one existing and installation of one new stand-alone meter within Oak Street. The three new isolation valves would require structural modifications to the existing large reinforced concrete vault structures within existing developed streets, including mechanical, electrical, instrumentation, and controls equipment. **Table 4** identifies the location and improvements that would occur at the three isolation valve vaults and one flow meter vault structure within the project limits.

Table 4. Isolation Valve Vault and Flow Meter Vault Structures Improvement Locations

Site	Location	Improvement	Approximate Contractor's Work Area Dimensions (Length x Width, in feet)
SLF Sta. 1859+80	Within westbound lane of 220th Street east of Western Avenue	Isolation valve replacement and flow meter replacement, and modify existing vault structure	230 x 45
SLF Sta. 1865+41	Within the median on Western Avenue south of 220th Street and north of 221st Street	Isolation valve and flow meter replacement, and modify existing vault structure	200 x 40
SLF Sta. 2050+00	In Oak Street south of 262nd Street	Remove existing flow meter and install new flow meter	100 x 40
SF Sta. 2270+35	Within the median on Western Avenue north of 220th Street and south of 219th Street	Isolation valve and flow meter replacement, and modify existing vault structure	200 x 40

Note: For irregularly-shaped work areas, the maximum width and length are presented in the table.
SLF Sta.: Second Lower Feeder Station Number; SF Sta.: Sepulveda Feeder Station Number

Other Improvements

In addition to the isolation valve replacements at the improvement locations previously described, multiple other isolation valves and three service connection valves would be replaced.

Temporary Construction Components

As discussed in the PEIR, the temporary construction components include pipe access sites, installation of bulkhead, vault excavation sites, contractor work areas, and equipment staging areas. The temporary construction components would be present during rehabilitation activities only. After construction, these components would be removed, and the sites would be returned to pre-construction conditions.

Bulkhead Installation

As discussed in the PEIR, bulkheads may be required along various sections of the pipelines to isolate one section of the pipeline from another and to ensure continued and reliable water supply delivery to member agencies while rehabilitation is being performed on another section of pipe. For the proposed project, one bulkhead would be installed at Second Lower Feeder Station 1594+20.

Contractor's Work Areas

As discussed in the PEIR, contractor's work areas allow for construction activities to occur safely and efficiently within a construction site. Construction activities would include excavation, shoring, pipe removal, pipeline rehabilitation, electrical panel installation, and construction support activities such as ventilation, dewatering, pipe disinfection, and refilling.

One of the contractor's work areas is proposed to extend into Metro Park, located at 26205 Oak Street in the city of Lomita. Tree removal and grass disturbance would be required within Metro Park to allow for the storage of equipment. Trees that are removed at Metro Park would not be replaced in order to provide operational flexibility.

Pipe Access Sites

As discussed in the PEIR, a pipe access site is defined as the entry or exit portal that exposes the underground PCCP section of the pipe or equipment vault to be rehabilitated (i.e., it is the trench from which new coiled steel liner pipe, valves, and/or temporary bulkheads would be installed). Each pipe access site would be located within a contractor's work area with space to stage liner pipe prior to installation. Multiple pipe access sites would be needed to rehabilitate the pipeline and buried equipment vaults included in the PCCP Program.

Spacing of pipe access sites would vary based on several factors, including the horizontal and vertical bends of the pipe; the locations of valves, vaults, and other equipment; and other factors. Pipe access sites for the proposed project are shown in **Figure 2**. The pipe access sites would vary in size but would be up to 20 feet deep for the proposed project. **Table 5** identifies the locations and approximate sizes of the pipe access sites. However, as previously discussed, the five maintenance hole enlargement sites shown in **Table 1** may also be used as pipe access sites. Therefore, in order to provide flexibility during construction, these sites are conservatively assumed to also be used as pipe access sites with an average excavation area of 40 feet long, 17 feet wide, and 19 feet deep.

Existing surface improvements, such as road pavements, sidewalks, and landscaping, would be removed at each pipe access site, and soils would be excavated and temporarily removed from the site to expose the existing pipeline. Tree removal and/or trimming would be required at multiple pipe access sites, and overhead utility line relocation would be required at Second Lower Feeder Station 1859+80. Once rehabilitation is complete, many of the pipe access sites would have maintenance holes installed for future maintenance/repairs and the surrounding area would either be backfilled with soils originally excavated or backfilled with cement slurry, and the surface of each access site and surrounding work zone would be restored to existing conditions with the addition of maintenance hole covers in some locations. This would involve re-paving existing roads, repairing or replacing existing sidewalks, and replanting landscaping.

Pipe Access Site Ingress/Egress

Pipe access sites within roadways would generally be accessed via the roadway; however, access to Pipe Access Sites 2109 and 2114 would require additional ingress/egress routes. Ingress to the Pipe Access Sites 2109 and 2114 would be achieved by traveling west along Palos Verdes Drive North and then south along Palos Verdes Drive East. Egress would involve a U-turn across Palos Verdes Drive East to exit the area traveling north and then east on Palos Verdes Drive North.

Additionally, ingress to the flow meter vault at Second Lower Feeder Station 2050, located near the southern terminus of Oak Street, would be achieved via Oak Street. Egress would either be achieved via Oak Street or from Oak Street through a Metropolitan-owned property and out to Palos Verdes Drive North.

Contractor Staging and Storage Areas

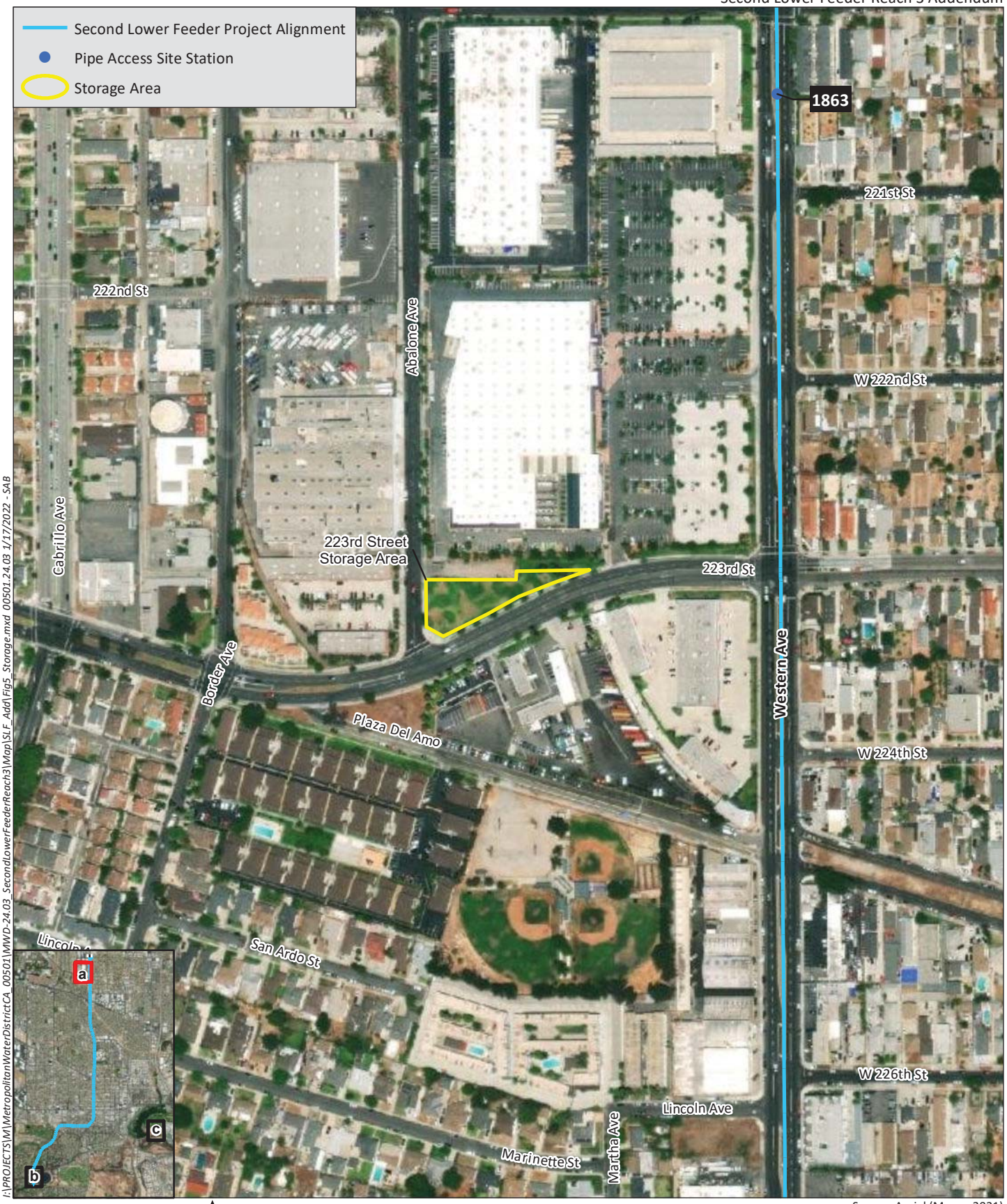
Contractor staging and storage areas provide space to temporarily store liner pipes, construction materials such as shoring boxes and pipe bedding materials, and equipment such as excavators and dump trucks. Space within the contractor's work areas may be used as a temporary staging area; however, space limitations require that most materials and equipment be stored at a larger contractor storage area.

Three staging areas are proposed along the project alignment. The first staging area would be located in the city of Torrance on the northeast corner of West 223rd Street and Abalone Avenue (**Figure 5a**). This

site would be primarily used for staging during the proposed valve replacement at the intersection of 220th Street and Western Avenue. At this location, existing trees and utilities would be avoided. The second would be located in the city of Rolling Hills Estates at the northeast corner of Palos Verdes North and Palos Verdes East (**Figure 5b**). At this location, the project would either use the existing dirt lot as a staging area or would create a laydown area within the street adjacent to the dirt lot. The third staging area would be located in the vacant area immediately southeast of the pipe access site at Second Lower Feeder Station 2109+65, southwest of Palos Verdes Drive East (**Figure 5b**).

In addition to these three smaller staging areas, a larger contractor storage area would be required and would be located at an approximately 12-acre vacant lot at Los Angeles Harbor College, one mile east of the project alignment (**Figure 5c**). Metropolitan has leased the site from Los Angeles Harbor College from February 2020 through January 31, 2023, with the potential for one or two 1-year extensions. In addition to storing equipment, materials, and vehicles at the site, Metropolitan would install temporary office trailers as well as security gates. Metropolitan determined through previous environmental documentation (dated November 2019) that there would be no potential significant impacts associated with using the Los Angeles Harbor College site as a contractor storage area for the PCCP Program and it is therefore not included in the analysis of this document.

Upon completion of construction work on the Second Lower Feeder, the contractor storage and staging areas would be returned to their pre-construction condition, as appropriate and pursuant to any agreements. For example, if pavement were to be damaged during staging, Metropolitan would re-pave the area.



Source: Aerial (Maxar, 2021)

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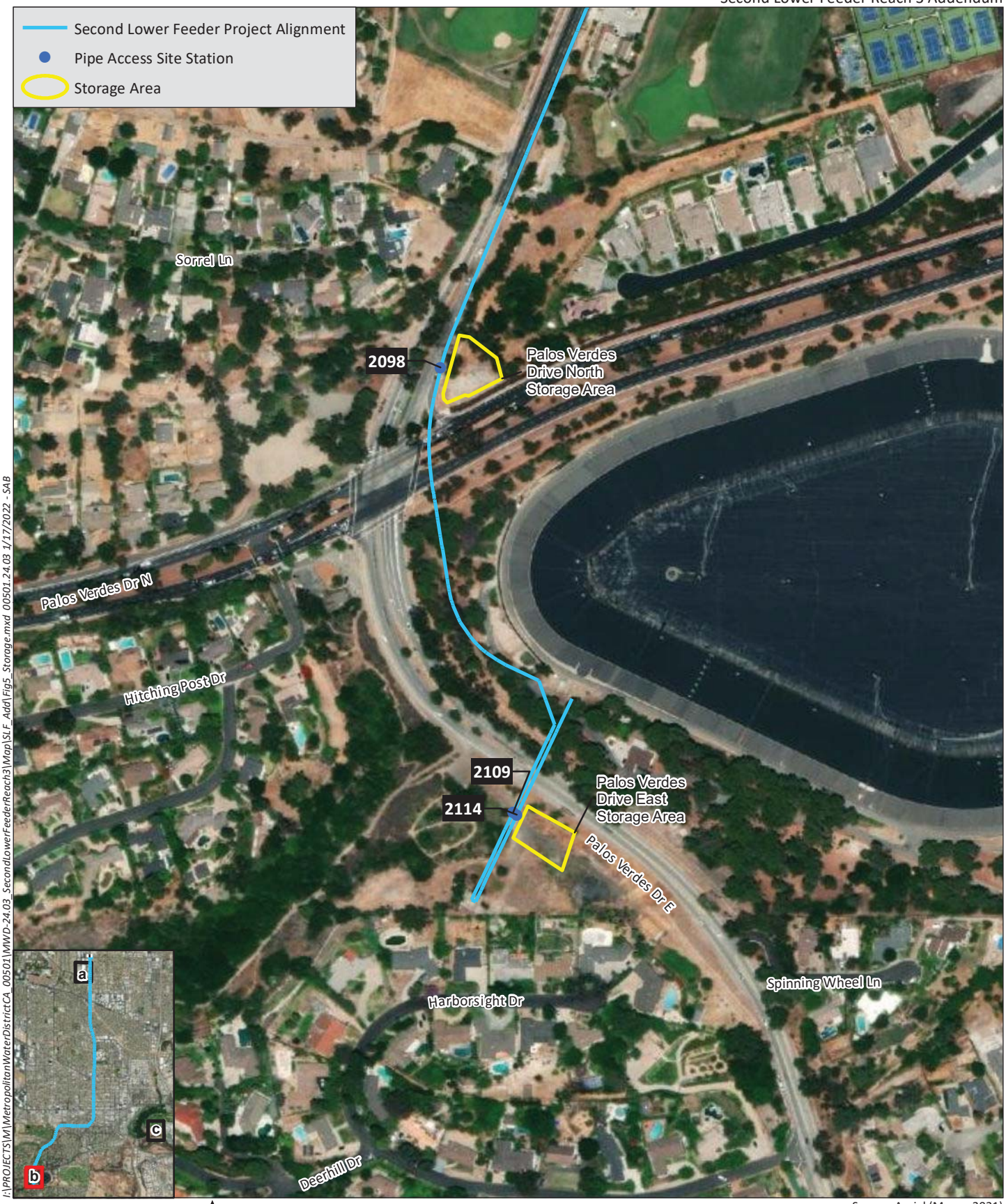
Contractor Staging Area

Figure 5a



Source: Aerial (Maxar, 2021)

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Contractor Staging Areas

Figure 5b

Source: Aerial (Maxar, 2021)

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Contractor Storage Area

Figure 5c

Table 5. Proposed Project Pipe Access Sites for PCCP Relining

Pipe Access Site	Location	Alignment	Approximate Excavation Dimensions (Length x Width x Depth, in feet)	Approximate Contractor's Work Area Dimensions (Length x Width, in feet)	Location Type
SLF Sta. 1860	On the north side of W 220th Street, east of Western Avenue	East/West	40 x 18 x 20	230 x 45	Public ROW Roadway Utility
SLF Sta. 1863	Within the median on Western Avenue, south of 220th Street	North/South	40 x 18 x 20	200 x 40	Public ROW Roadway Utility
SLF Sta. 1916	Within the median on Western Avenue, north of W 235th Street	North/South	40 x 18 x 17	200 x 40	Public ROW Roadway Utility
SLF Sta. 1964	Within the median on Western Avenue, south of W 247th Place	North/South	40 x 18 x 18	200 x 40	Public ROW Roadway Utility
SLF Sta. 2015	Within the median on Western Avenue, north of W 261st Street	North/South	40 x 18 x 25	220 x 35	Public ROW Roadway Utility
SLF Sta. 2022	On the north side of 262nd Street, east of Cayuga Avenue	East/West	40 x 18 x 19	140 x 30	Public ROW Roadway Utility
SLF Sta. 2034	On the north side of 262nd Street, west of Monte Vista Avenue	East/West	40 x 15 x 18	140 x 30	Public ROW Roadway Utility
SLF Sta. 2098	On Palos Verdes Drive E north off Palos Verdes Drive N.	North/South	40 x 13 x 21.5	215 x 30	Public ROW Roadway Utility
SLF Sta. 2109 and 2114	Southwest of Palos Verdes Drive E	North/South	40 x 18 x 15.5	250 x 65	MWD Permanent Easement 1413-22-1 Utility

Note: For irregularly-shaped work areas, the maximum width and length are presented in the table.
ROW: right-of-way; SLF Sta.: Second Lower Feeder Station Number

CHECKLIST

Organization of the Initial Study

This Initial Study uses a modified version of the checklist set forth in Appendix G of the State CEQA Guidelines. Based on the analysis that follows, it was determined that no new or more severe significant impacts than those identified in the PEIR would occur as a result of implementation of the proposed project.

Determination

On the basis of this initial evaluation and application of the State CEQA Guidelines (Section 15162, 15163, and 15164):

	YES	NO
1. Substantial changes are proposed in the project that will require major revisions of the PEIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or		X
2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous PEIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or		X
3. New information of substantial importance to the project becomes available, and		
a. The information was not known and could not have been known at the time the PEIR was certified as complete or was adopted, and		X
b. The new information shows any of the following:		
i. The project will have one or more significant effects not discussed previously in the PEIR;		X
ii. Significant effects previously examined will be substantially more severe than shown in the PEIR;		X
iii. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project; or		X
iv. Mitigation measures or alternatives that were not previously considered in the PEIR would substantially lessen one or more significant effects on the environment.		X

Findings:

1. The project has effects that were not examined in the EIR; therefore, an Initial Study needs to be prepared leading to either an EIR or a Negative Declaration.		X
2. The agency finds that pursuant to Section 15162, no new effects will occur and no new mitigation measures will be required. The agency can approve the project as being within the scope of the project covered by the PEIR, and no new environmental document is required.	X	

Jennifer Harriger
Signature

01-19-2022
Date

Jennifer Harriger
Printed Name

Section Manager, Environmental Planning Section
Title

I. AESTHETICS

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
a. Have a substantial adverse effect on a scenic vista?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR noted that while there are some scenic resources present in the program area, impacts to these resources would be less than significant for the following reasons: (1) aesthetic impacts during construction would be temporary; (2) work areas would be restored to pre-construction conditions once construction is completed; and (3) visible, aboveground components of proposed PCCP Program facilities would be minimal (e.g., air release/vacuum valves). No mitigation was proposed.

As noted in Table 4.1-4 of the PCCP PEIR, Palos Verdes Drive East and Palos Verdes Drive North are the only scenic resources within the vicinity of the Second Lower Feeder. Reach 3 of the Second Lower Feeder travels along or immediately adjacent to Palos Verdes Drive East for approximately one mile, and excavation sites 2098 and 2109/2114 occur on or adjacent to Palos Verdes Drive East. Additionally, the pipeline transects Palos Verdes Drive North, and two contractor storage sites would occur along these roadways (one at the intersection of Palos Verdes Drive East and Palos Verdes Drive North, and one in the vacant lot southeast of site 2109, southwest of Palos Verdes Drive East). An air release/vacuum valve would also be relocated aboveground at the intersection of Palos Verdes Drive East and Palos Verdes Drive North. However, as stated in the PEIR, potential aesthetic impacts resulting from the rehabilitation and contractor storage areas associated with the proposed project would be temporary, and the working areas would be restored to pre-construction conditions. The visible aboveground component would be minimal and would not result in a significant adverse effect on Palos Verdes Drive North or Palos Verdes Drive East (see **Figure 4**). Therefore, impacts regarding substantial adverse effects on a scenic vista would be less than significant.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As described in the PCCP PEIR, multiple excavation areas would be used for program rehabilitation activities, which would have the potential to contribute to the degradation of the existing visual character and quality of the project site and the immediate surroundings through the introduction of vehicles, equipment, stockpiled material, and other elements. Due to the short-term nature of construction activities and use of contractor storage areas, however, the impact of the program was determined to be less than significant. Also, as described in the PEIR, permanent visible changes after construction are expected to result in minimal impacts because only aboveground components, such as the relocation of air release/vacuum valves, would be visible (see **Figure 4**). The PCCP PEIR concluded that impacts to visual character or quality related to aboveground structures would be less than significant due to the small footprints of the aboveground structures and because the aboveground structures would likely be placed intermittently and not grouped together. In addition, the aboveground structures would be located in developed areas, where such structures already

commonly exist; these areas would generally not be sensitive to the introduction of such structures. No mitigation was proposed.

Consistent with the PCCP Program, construction of the proposed project would involve the introduction of vehicles, equipment, stockpiled material, and other elements to residential neighborhoods during the course of rehabilitation activities. Thus, the same potential for short-term impacts related to visual character and quality, as discussed in the PEIR, would occur under the proposed project.

Table 2 identifies the nine aboveground relocation sites of the air release/vacuum valves of the proposed project. **Table 3** identifies the location of the pumpwell relocation and blow-off structure improvement locations for the proposed project. Permanent visible changes would be the same as those discussed in the PCCP PEIR, and related impacts would be less than significant. No mitigation would be required.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR discussed the possible use of lighting in contractor's work areas and storage areas for safety and security purposes and the potential for that lighting to spill over into adjacent light-sensitive areas, especially residential land uses, which could result in significant construction-related impacts. Permanent lighting was not included as part of the program; therefore, the PCCP PEIR identified no operational impacts related to light and glare. For construction impacts, the following mitigation measure was identified:

- **MM AES-1** requires that all safety and security lighting at contractor's work areas and staging areas be directed downward and shielded to avoid light spilling over into residential areas, thereby reducing impacts to a less than significant level.

For the proposed project, nighttime work and lighting may be required for the 24-hour periods when the Second Lower Feeder is either dewatered or returned to service, as well as during some pipeline relining and related ventilation work. Implementation of **MM AES-1** would reduce impacts related to light and glare to below a level of significance.

The severity of the impact would be the same as that identified in the PCCP PEIR.

II. AIR QUALITY

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, the criteria used to identify consistency with the South Coast Air Quality Management District (SCAQMD) 2012 Air Quality Management Plan (AQMP) included whether there would be air quality violations or delays in attainment or whether there would be exceedances of the

assumptions included in the AQMP. Regarding the consistency of the PCCP Program with the assumptions included in the AQMP, programmatic impacts were determined to be less than significant because no permanent land use changes would occur as a result of program implementation. With respect to the potential for air quality violation or delays in attainment, the PCCP Program was determined to result in significant impacts as a result of construction-period emissions exceeding SCAQMD regional mass emissions thresholds, and the following mitigation measure was identified:

- **MM AIR-1** requires controls on emissions from construction equipment through the use of best available control technology devices.

While construction-period emissions would be reduced with implementation of **MM AIR-1**, impacts were determined to remain significant and unavoidable.

The total amount of concurrent construction activities assumed for the proposed project based on the project phasing (up to 5 excavation sites, 5 new valve/meter vault structures, and 3 above grade relocations of air release/vacuum valves) would be less than what was analyzed within the PEIR, which assumed concurrent construction activities for 10 excavation sites, 3 aboveground relocations of air-release/vacuum valves, 2 new valve/vault/blow-off structures, and a 1,000-foot-long segment of pipe in a new alignment. Construction assumptions, including equipment, for the proposed construction activities would be similar to that analyzed in the PEIR; however, Reach 3 does not include installation of parallel pipeline. Additional details regarding assumptions and adjustments made to the PEIR analysis are provided in Appendix A.

Table 6 shows daily regional mass emissions at individual sites with implementation of **MM AIR-1**. As shown therein, no regional SCAQMD threshold would be exceeded at any individual site. Additionally, as shown in **Table 7**, maximum daily regional mass emissions for the concurrent construction schedule would not exceed the SCAQMD regional mass emissions thresholds for concurrent construction activities under the proposed project with implementation of **MM AIR-1**.

Table 6. Mitigated Daily Regional Mass Emissions for Single Sites (pounds per day)

Project Component	Location	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Typical Excavation Site	On-Site	0.5	30.1	2.3	<0.1	0.2	<0.1
	Off-Site	<0.1	0.4	0.2	<0.1	0.1	<0.1
	Total	*0.6*	*30.5*	*2.5*	*<0.1*	*0.3*	*0.1*
Typical New Valve/Meter Vault Structure	On-Site	0.4	25.5	1.8	<0.1	<0.1	<0.1
	Off-Site	<0.1	0.8	0.1	<0.1	0.1	<0.1
	Total	*0.5*	*26.3*	*2.0*	*<0.1*	*0.2*	*<0.1*
Typical Belowground Air-release/ Vacuum Valve Relocation	On-Site	0.1	6.5	0.5	<0.1	<0.1	<0.1
	Off-Site	<0.1	0.4	0.2	<0.1	0.2	<0.1
	Total	*0.2*	*6.9*	*0.7*	*<0.1*	*0.2*	*<0.1*
Single-Site Maximum	**-**	**1.2**	**63.7**	**5.2**	**0.1**	**0.7**	**0.3**
Regional Mass Emissions Threshold	-	75	550	100	150	150	55
Single Site Exceeds Threshold?	**-**	***No***	***No***	***No***	***No***	***No***	***No***

Source: Calculations by HELIX 2021 (see Appendix A).
VOC = volatile organic compounds; CO = carbon monoxide; NO_X = nitrogen oxides; SO_X = sulfur oxides; PM_{10} = particulate matter 10 microns or less in diameter; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

Table 7. Mitigated Daily Regional Mass Emissions for Concurrent Construction Scenario (pounds per day)

Emission Site Location	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
On-Site	5.1	297.3	22.1	0.5	1.2	0.7
Off-Site	0.6	7.4	2.4	0.1	1.8	0.5
Total for Concurrent Construction Schedule	**5.7**	**304.7**	**24.5**	**0.5**	**3.0**	**1.2**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Total Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

Source: Calculations by HELIX 2021 (see Appendix A).
Note: Emissions are the result of the unrounded single-site emissions, multiplied by the number of applicable construction sites; numbers may not add correctly due to rounding.
The concurrent construction scenario assumes five excavation sites, five new valve/meter vault structures, and three above grade relocations of air release/vacuum valves occurring simultaneously.
VOC = volatile organic compounds; CO = carbon monoxide; NO_X = nitrogen oxides; SO_X = sulfur oxides; PM_{10} = particulate matter 10 microns or less in diameter; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

Subsequent to the certification of the PEIR, the Board of the SCAQMD approved the 2016 AQMP, which identifies stationary and mobile source strategies to ensure that federal Clean Air Act deadlines for attainment of the National Ambient Air Quality Standards are met. The proposed project, as was discussed for the program, would not involve changes to land uses such that the assumptions used in the development of the 2016 AQMP would be exceeded. Thus, no conflict with the AQMP would occur.

The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, concurrent regional mass emissions for the full construction scenario (as described above) would result in emissions that exceed the SCAQMD thresholds for volatile organic compounds (VOCs), nitrogen oxides (NO_X), and carbon monoxide (CO). After the implementation of **MM AIR-1**, thresholds would still be exceeded for NO_X and CO. Thus, regional emissions from the PCCP Program were determined to be significant and unavoidable. The PEIR determined that localized emissions during program rehabilitation efforts would exceed the SCAQMD localized significance thresholds for NO_X, but implementation of **MM AIR-1** would reduce the impact to a less-than-significant level.

As discussed in Item II.a, the proposed project would not result in regional mass emissions that would exceed SCAQMD thresholds following the implementation of **MM AIR-1**. Thus, impacts would be less than significant after implementation of **MM AIR-1**. Localized emissions would be no greater than identified in the PEIR, as discussed in Item (d), and would be less than significant after implementation of **MM AIR-1**. Furthermore, because the proposed project rehabilitation activities within roadways would mostly occur on relatively low-volume streets with alternative routes available for roadways users, no CO or particulate matter hotspots would result from increased congestion near excavation sites.

The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
c. Result in a cumulatively considerable net increase in any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. Refer to the discussion in Items II.a and II.b. As shown in Table 4.3-7 of the PEIR, the South Coast Air Basin is in non-attainment for federal and state ozone standards. However, because emissions from the proposed project would not exceed the SCAQMD regional mass emissions thresholds, impacts would be less than significant after implementation of **MM AIR-1**.

The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
d. Expose sensitive receptors to substantial pollutant concentrations?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As identified in the PEIR, program rehabilitation activities were determined to have a significant impact on sensitive receptors located in proximity to excavation sites. Such impacts were determined to be reduced with the implementation of **MM AIR-1**, but were found to be significant and unavoidable.

The proposed project would involve rehabilitation activities in proximity to sensitive receptors, such as residences and schools. All excavation areas would occur in residential neighborhoods, as would the aboveground relocation of air-release/vacuum valves and many of the blowers used for pipeline ventilation. Because the locations of these activities are consistent with the distances from sensitive receptors analyzed in the PEIR and the emissions at these locations would be no greater than identified in the PEIR, impacts related to sensitive receptors would be the same as described in the PEIR.

Diesel particulate matter (DPM) is the primary toxic air contaminant (TAC) that would be emitted during construction and would be generated from the use of off-road diesel equipment required for demolition, site grading, excavation, and other construction activities. Health-related risks associated with diesel-exhaust emissions are primarily linked to long-term exposure and the associated risk of contracting cancer. The amount to which the receptors could be exposed, which is a function of concentration and duration of exposure, is the primary factor used to determine health risk. The generation of TAC emissions during construction would be variable and sporadic due to the nature of construction activity. Additionally, construction activities would occur in multiple places over 4.9 miles and would not be concentrated in a single location. Therefore, due to the short duration and intermittent nature of construction activities, and due to the highly dispersive properties of DPM, project-related TAC emission impacts during construction would not expose sensitive receptors to substantial pollutant concentrations and the impact would be less than significant.

A CO hotspot is an area of localized CO pollution caused by severe vehicle congestion on major roadways, typically near intersections. If a project increases average delay at signalized intersections operating at Level of Service (LOS) E or F or causes an intersection that would

operate at LOS D or better without the project to operate at LOS E or F with the project, a quantitative screening is required. The increase in daily trips associated with construction of the project would be nominal compared to local traffic volumes, and operation of the project would not result in an increase in traffic. The project would neither cause new severe congestion nor significantly worsen existing congestion. There would be no potential for a CO hotspot or exposure of sensitive receptors to substantial, project-generated, local CO emissions. The impact would be less than significant.

The severity of the impact would be the same as that identified in the PEIR.

III. BIOLOGICAL RESOURCES

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR identified impacts to special-status species as potentially significant at the programmatic level. Areas that are most likely to contain special-status species near the Second Lower Feeder were identified as the Diemer Water Treatment Plant and Black Hills Golf Course in Yorba Linda, and open space areas near the southwest terminus of the Second Lower Feeder in Rolling Hills Estates. Mitigation measures were identified in the PEIR to reduce potential impacts to special-status species resulting from PCCP Program activities:

- **MM BIO-1** requires a pre-construction survey by a qualified biologist for project sites where vegetation removal or ground disturbance would occur in areas that contain special-status species; and
- **MM BIO-2** requires a qualified biologist to determine the presence of nesting bird species in areas where vegetation removal would occur during the nesting season. If a nest is found, the biologist shall determine site-specific measures necessary to avoid disturbing the nest until nesting activity has ceased.

While these measures would reduce the potential for significant impacts to candidate, sensitive, or special-status species resulting from PCCP Program activities, the PEIR determined that impacts may remain significant. The PCCP PEIR concluded that further project-specific analysis and documentation would be necessary to determine if impacts could be reduced to a less-than-significant level.

A Biological Resources Assessment (BRA) was completed for the proposed project by Rincon Consultants, Inc. (Rincon; 2020a) and is provided as Appendix B. The proposed project site is located primarily within paved rights-of-way of existing roadways in highly developed/disturbed urbanized areas. The areas identified by the PEIR as most likely to include special-status species are not located within the proposed project limits.

The California Natural Diversity Database lists 21 special-status plant species and 21 special-status wildlife species that have the potential to occur within a five-mile radius of the proposed project

limits. One sensitive plant community (southern coastal bluff scrub) was also identified within five miles of the project site. Since sensitive plant and wildlife species typically have very specific habitat requirements, and the project area is highly disturbed and lacks suitable habitat, the noted species are not considered to have potential to occur in the project area.

Low-quality foraging and/or roosting habitat for three special-status species (southern California legless-lizard, western mastiff bat, and San Diego desert woodrat) occurs adjacent to and within the proposed project limits, with Palos Verdes Reservoir and Second Lower Feeder Stations 2109/2114 having the greatest potential to support special-status species. The BRA notes, however, that the project site and surrounding areas have a history of frequent disturbance and are surrounded by existing development and heavily travelled transportation corridors; therefore, there is low potential for the identified special-status species to occur on site. Additionally, the BRA states that the adjacent areas with low-quality potentially suitable habitat are also heavily disturbed and have low potential for occurrence of special-status species.

Overall, the project site does not contain habitat that would support species identified as candidate, sensitive, or special-status species; therefore, **MM BIO-1** would not be applicable to the proposed project.

Migratory birds, including most birds that could nest in the study area, are protected by the federal Migratory Bird Treaty Act, which forbids most forms of harm to birds, including to their active nests. In addition, California Fish and Game Code Section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Where vegetation, and especially trees, are removed as part of construction during the nesting season (generally February 1 to August 31), there is the potential for violations under the Migratory Bird Treaty Act and Section 3503 et seq. of the California Fish and Game Code. The project site contains ornamental trees and shrubs that could provide suitable nesting habitat for several common bird species. Implementation of **MM BIO-2** would reduce potential impacts on nesting birds to a less-than-significant level.

The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR identified impacts to riparian habitat and other sensitive natural communities as potentially significant at the programmatic level. Areas that are most likely to contain riparian habitat or other sensitive natural communities near the Second Lower Feeder were identified as the Diemer Water Treatment Plant and Black Hills Golf Course in Yorba Linda and open space areas near the southwest terminus of the Second Lower Feeder in Rolling Hills Estates. Mitigation measures were identified in the PCCP PEIR to reduce potential impacts to riparian habitat and other sensitive natural communities resulting from PCCP Program activities:

- **MM BIO-3** requires a pre-construction survey by a qualified biologist for project sites where vegetation removal or ground disturbance would occur in areas that contain riparian habitat; and
- **MM BIO-4** requires adherence to adopted Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs), or a pre-construction survey by a qualified biologist for areas or activities not covered by an adopted HCP/NCCP, where vegetation removal and/or ground disturbance would occur in areas that contain sensitive natural communities.

The PCCP PEIR concluded that further project-specific analysis and documentation would be necessary to determine if impacts could be reduced to a less-than-significant level.

The BRA states that no riparian habitat, sensitive plant communities, or other sensitive natural communities are present within the proposed project limits or designated work areas. The proposed project would therefore have no impact on riparian habitat or other sensitive natural communities in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service, and **MM BIO-3** and **MM BIO-4** would not be applicable to the proposed project.

The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
c. Have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal areas, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR identified impacts to wetlands as potentially significant at the programmatic level. Areas that are most likely to contain wetlands near the Second Lower Feeder were identified as the Diemer Water Treatment Plant and Black Hills Golf Course in Yorba Linda and open space areas near the southwest terminus of the Second Lower Feeder in Rolling Hills Estates. Mitigation was identified in the PEIR to reduce potential impacts to wetlands resulting from PCCP Program activities:

- **MM BIO-5** requires a pre-construction survey by a qualified biologist for project sites where vegetation removal or ground disturbance would occur in areas that contain wetland.

The PCCP PEIR concluded that further project-specific analysis and documentation would be necessary to determine if impacts could be reduced to a less-than-significant level.

The BRA states that although a riparian corridor is mapped within the work area for Second Lower Feeder Station 2098 in the USFWS NWI Wetland Mapper, this feature was not found to be present during the pedestrian survey. The area was found to be dominated by non-native Peruvian pepper trees and no water source was observed. A band of riverine habitat was also mapped along the Palos Verdes Drive East between Oak Street and Club View Lane. This feature was not observed in the field and no work areas are proposed at this location. Therefore, per the BRA, no potentially jurisdictional drainages or wetlands occur within the proposed project limits or designated work areas. The proposed project would have no impact on federally protected wetlands; therefore, **MM BIO-5** would not be applicable to the proposed project.

The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PEIR notes that PCCP Program pipelines cross many counties and cities that have tree preservation policies or ordinances in place. The PCCP Program would involve the removal of some trees and vegetation during construction activities, and restoration of project sites to pre-construction conditions may not be consistent with existing tree preservation policies or ordinances; therefore, the PCCP PEIR determined that related impacts would be potentially significant. Mitigation was identified to reduce potential impacts related to conflicts with tree preservation policies:

- **MM BIO-7** requires Metropolitan to coordinate with affected jurisdictions to determine appropriate requirements for PCCP Program projects that would require vegetation removal.

The proposed project may involve trimming or removal of vegetation and trees. The proposed project limits cross the jurisdiction of the cities of Los Angeles, Torrance, Lomita, and Rolling Hills Estates, and each of these jurisdictions has its own tree preservation ordinance. Trimming or removal of vegetation and trees related to the proposed project may occur within the jurisdiction of each of these cities. Additionally, the portion of the project site located along Western Avenue occurs within the California Department of Transportation (Caltrans) right-of-way; therefore, tree removal in this location would require coordination with Caltrans. Impacts would be potentially significant, but implementation of **MM BIO-7** would reduce impacts to a less-than-significant level.

The severity of the impact would be the same as that identified in the PEIR.

IV. CULTURAL RESOURCES

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
a. Cause a substantial adverse change in the significance of a historical resource, as defined in Section 15064.5?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR noted that ground-borne vibration from excavation and concrete cutting could potentially affect the nearby built environment and impacts to historical resources in the vicinity of program-related work could be potentially significant. Table 4.5-8 of the PCCP PEIR identified one known historical resource in the vicinity of the Second Lower Feeder where it crosses Almeda Drive: the Mojave Road former Indian trade route and U.S. Army Road (California Historical Landmark #963). Mitigation was identified to reduce potential impacts to historical resources:

- **MM CUL-1** requires a qualified cultural resource specialist to determine the presence of identified or eligible historical resources and to provide measures to prevent impacts to those resources as appropriate.

In accordance with **MM CUL-1**, a Cultural Resources Study (CRS) was completed for the proposed project by Rincon (2020b) and is provided as Appendix C. The records search completed

in support of the CRS identified seven historic resources within 0.5-mile of the project, although none occurs within the project boundaries and no historic resources were discovered within the project boundaries during the field survey. The closest of-age resource is the Palos Verdes Reservoir constructed in 1939, located approximately 60 feet from the project. However, the project is not expected to impact the reservoir. Additionally, the reservoir was previously recommended ineligible for listing on the National Register of Historic Places and the California Register of Historical Resources. The CRS states that since the project site is located in a residential area and has been previously developed with modern infrastructure, and since no historic cultural resources have been recorded or were observed during surveys of the excavation sites, staging location, or pipeline alignment, additional steps related to **MM CUL-1** would not be necessary for the proposed project. The historical resource identified in the PEIR is outside of the proposed project limits, and proposed activities would not result in a substantial adverse change in the significance of this resource. No mitigation would be required.

The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR discussed how sediments in proximity to pipelines have been previously disturbed and determined that the possibility of encountering intact archaeological resources during PCCP Program activities would be low. The possibility that archaeological resources may be encountered still exists, however, and the PEIR stated that impacts would be potentially significant. The following mitigation measures from the PEIR would reduce programmatic impacts to a less-than-significant level:

- **MM CUL-2** requires a pre-construction, site-specific records search to identify if additional sites or resources have been recorded on or adjacent to the proposed project site. If the proposed project site is found to be within the recorded area of a significant or potentially significant site, then archaeological and/or Native American monitoring during ground-disturbing activities is required.
- **MM CUL-3** requires a pre-construction meeting to inform construction personnel how to identify cultural resources during ground-disturbing activities and what to do if such potential resources are found.
- **MM CUL-4** establishes a protocol in the event that potentially significant cultural resources are unexpectedly encountered during construction.
- **MM CUL-5** requires a professional archaeologist to perform a pedestrian survey of areas where ground-disturbing activities are proposed. If archaeological resources are recorded or are discovered during the survey and avoidance is not feasible, then site testing and evaluation by a professional archaeologist is required.

Table 4.5-8 of the PCCP PEIR identified one known archaeological resource adjacent to the Second Lower Feeder (Site CA-LAN-281): a deep dark midden deposit and probable village site that was removed in conjunction with the construction of Metropolitan's Palos Verdes Reservoir. The identified archaeological resource is not within the proposed project limits, and the proposed project would not result in a substantial adverse change in the significance of this archaeological resource.

Pursuant to **MM CUL-2** and **MM CUL-5**, the CRS for the proposed project included a cultural resources records search, a sacred lands file search, and a field survey. The records search identified six archaeological cultural resources within 0.5-mile of the project, none of which occurs within the project boundaries. The nearest cultural resource identified in the records search (19-000191) consisted of a prehistoric shell midden located at the Palos Verdes Reservoir. However, the CRS notes that this resource was likely completely destroyed by the construction of the Palos Verdes Reservoir in 1939. No cultural resources were discovered within the project boundaries during the pedestrian survey. Additionally, in accordance with **MM CUL-2**, Metropolitan requested a Sacred Lands File search from the Native American Heritage Commission in early 2015. The Sacred Lands File search was completed with negative results for the project site. Because no archaeological resources have been identified within the proposed project limits, archaeological monitoring and Native American monitoring under **MM CUL-2** would not be required for the proposed project. The proposed project will, however, implement requirements from **MM CUL-3** and **MM CUL-4**, which would ensure impacts to archaeological resources would be less than significant. The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. Table 4.5-9 of the PCCP PEIR lists geologic formations located within the vicinity of the Second Lower Feeder where fossils have been recovered. The PEIR analysis concluded that it would be unlikely that paleontological resources would be discovered in areas with sediments previously disturbed by original pipeline construction; however, the possibility of encountering such resources still remains and the following mitigation measure was identified:

- **MM CUL-6** requires the development and implementation of a site-specific mitigation program to address potential impacts to paleontological resources.

Implementation of **MM CUL-6** would reduce potential impacts resulting from the PCCP Program to a less-than-significant level.

In compliance with **MM CUL-6**, a Paleontological Resources Impact Mitigation Program (PRIMP) for the proposed project was prepared by Rincon (2020c), and is provided as Appendix D. According to the paleontological records search performed as part of the PRIMP, 11 vertebrate localities were identified in the general vicinity of the project although no fossil localities have been previously recorded within the proposed project limits. The nearest vertebrate localities (LACM 1053 and LACM 3065) were identified approximately 0.2 mile southwest of Second Lower Feeder Station 2049. Additionally, LACM 1099 was identified less than 0.25 mile west of Second Lower Feeder Station 2098. LACM 1098 was also identified further to the southwest, south of Palos Verdes Drive North and east of Portuguese Bend Road.

According to the PRIMP, the geologic units underlying the project area have a paleontological sensitivity ranging from low to high. The older Quaternary alluvium, older Quaternary eolian deposits, San Pedro Formation, and Monterey Formation immediately underlying most of the project area are all assigned a high paleontological sensitivity because they have proven to yield vertebrate fossils near the project area and throughout the Los Angeles Basin. Holocene surficial alluvial deposits (Qya2, Qyf2), underlying a small segment of the southwestern project area, have a low paleontological sensitivity at the surface because they are too young to preserve fossilized

remains. At shallow depth, the Holocene alluvial deposits overlie sensitive Pleistocene age deposits across the project area. Therefore, the paleontological sensitivity of the Holocene deposits is determined to be low to high, increasing at a depth of about five feet below ground surface (see Figure 3 in Appendix D).

Requirements in the PRIMP include retention of a qualified paleontologist to implement the PRIMP, a Worker Environmental Awareness Program to train all site personnel prior to the start of work, obtainment of a curation agreement with an accredited museum prior to construction, monitoring during earth moving in previously undisturbed areas, the availability of appropriate equipment and supplies, adherence to guidelines involving bulk matrix sampling, appropriate laboratory preparation and curation protocol, and a final report of findings. Details regarding each of these requirements can be found in Section 3 of Appendix D. With the implementation of the PRIMP, as required by **MM CUL-6**, impacts to paleontological resources would be less than significant.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
d. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PEIR identified the potential for PCCP Program activities to disturb human remains within the pipeline alignments or in staging areas during excavations or grading and determined that this could result in a significant impact if damage to or destruction of human remains occurred. Compliance with California state law in Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the PRC would, however, reduce potential programmatic impacts related to disturbance of human remains to a less-than-significant level. No mitigation was proposed.

Activities associated with the proposed project could also disturb human remains, which would result in a significant impact. Consistent with analysis in the PEIR, however, compliance with California state law in Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the PRC would make this potential impact of the proposed project less than significant. No mitigation would be required.

The severity of the impact would be the same as that identified in the PEIR.

V. GEOLOGY AND SOILS

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:		
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42)?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR discussed how the PCCP Program is located within a seismically active area. All of the feeders, with the exception of the Calabasas Feeder, cross at least one Alquist-Priolo Earthquake Fault Zone. The PEIR determined that the PCCP Program would nonetheless have less-than-significant impacts related to fault rupture for the following reasons: (1) the PCCP Program would not include the construction of structures intended for human occupancy; (2) the PCCP Program would not draw a significant amount of people to the area; (3) the probability of a seismic event coinciding with construction is very low; and (4) Metropolitan would require contractors to comply with the requirements of the California Building Code and the California Division of Occupational Safety and Health. The PEIR also stated that hazards related to fault rupture are considered to pose an acceptable level of risk for construction and operation of a water conveyance system. No mitigation was proposed.

The proposed project components would not be located within an Alquist-Priolo Earthquake Fault Zone (CGS 1999). The Newport-Inglewood-Rose Canyon Fault Zone is the closest Alquist-Priolo Earthquake Fault Zone, located approximately 3.5 miles northeast of the project. As discussed in the PEIR, impacts related to fault rupture would be less than significant because the proposed project would not include the construction of structures intended for human occupancy and would comply with all applicable requirements. No mitigation would be required.

The severity of the impact would be the same as that identified in the PEIR.

	New or More Severe Significant Impact than Identified in the PEIR	*Impact Less than or Equal to Impact Identified in the PEIR*
ii. Strong seismic ground shaking?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR discussed that all five feeders would be potentially subject to strong seismic shaking as a result of earthquakes on nearby or more distant faults, but determined that impacts related to seismic shaking would be less than significant for the same reasons as summarized above for Item V.a.i. No mitigation was proposed.

The proposed project would be potentially subject to strong seismic shaking as a result of earthquakes on nearby or more distant faults. Impacts of the proposed project would be of the same severity as those analyzed in the PCCP PEIR, as the proposed project would not include the construction of structures intended for human occupancy and would comply with all applicable requirements. No mitigation would be required.

The severity of the impact would be the same as that identified in the PEIR.

	New or More Severe Significant Impact than Identified in the PEIR	*Impact Less than or Equal to Impact Identified in the PEIR*
iii. Seismically related ground failure, including liquefaction?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. Figure 4.6-8 of the PCCP PEIR identified areas surrounding the Second Lower Feeder that are susceptible to liquefaction during seismic events, which would result in settlement and lateral spreading that could damage the pipelines and result in impacts. Analysis included in the PEIR determined, however, that impacts related to liquefaction would be less than significant for the same reasons as summarized above for Item V.a.i. No mitigation was proposed.

As shown in Figure 4.6-8 of the PCCP PEIR, Reach 3 of the Second Lower Feeder is not located within an area that is susceptible to liquefaction. Additionally, the proposed project would not include the construction of structures intended for human occupancy and would comply with applicable requirements. Therefore, the proposed project is at a lower risk for liquefaction than what was analyzed in the PEIR. No mitigation would be required.

The severity of the impact would be less than that identified in the PEIR.

	New or More Severe Significant Impact than Identified in the PEIR	*Impact Less than or Equal to Impact Identified in the PEIR*
iv. Landslides?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. Figure 4.6-8 of the PCCP PEIR identified areas surrounding the Second Lower Feeder that are susceptible to earthquake-induced landslides that could damage the pipelines and result in impacts. Programmatic impacts were determined to be less than significant for the reasons summarized above for Item V.a.i. No mitigation was proposed.

The proposed project is located in an area with little topography and is surrounded by urban development. As shown in Figure 4.6-8 of the PCCP PEIR, there is the potential for earthquake-induced landslides along the southern region of Reach 3 of the Second Lower Feeder; however, the potential for earthquake-induced landslides is low, and the severity of the impact would be the same as that identified in the PEIR. No mitigation would be required.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
b. Result in substantial soil erosion or the loss of topsoil?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR identified the potential for soil erosion or the loss of topsoil to occur as a result of trenching during pipeline rehabilitation. In addition, the movement and temporary stockpiling of excavated soil could result in short-term erosion and sedimentation if improperly handled and stored. The PEIR identified environmental commitments Metropolitan would fulfill as part of the PCCP Program which would reduce potential impacts to a less-than-significant level. These commitments include:

- Compliance with SCAQMD Rule 403 to minimize fugitive dust, construction traffic, and particulate matter releases; and

- Implementation of water quality best management practices (BMPs), including a Storm Water Pollution Prevention Plan (SWPPP), as applicable, for sediment and erosion control, pollutant treatment, outlet protection, and general site management.

As described in the PEIR, no specific areas in which soil erosion is likely were identified within the vicinity of the Second Lower Feeder. Because the proposed project is not located in an area identified as susceptible to soil erosion, the proposed project would have the same potential impacts as those identified in the PCCP Program and would employ the same environmental commitments identified within the PEIR.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. Aside from the earthquake-related landslide and liquefaction hazards discussed above, the PCCP PEIR did not identify other unstable geology or soils hazards area within the vicinity of the Second Lower Feeder. Consequently, no additional geology or soils hazards are anticipated. There would therefore be no impacts beyond the less-than-significant impacts identified for Items V.a.iii and V.a.iv, which discuss impacts related to earthquake-related landslide and liquefaction hazards.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR stated that while some areas of the PCCP Program may be underlain by expansive soils that could deform, resulting in damage to feeders and risking injury to workers, impacts would be less than significant for similar reasons summarized above for Item V.a.i. No mitigation was proposed.

Expansive soils identified in the PCCP PEIR in the vicinity of the Second Lower Feeder occur in unincorporated Orange County and the cities of Buena Park, Lomita, and Rancho Palos Verdes. According to the Safety Element of the City of Lomita General Plan, soils within the central and southern portions of Lomita have a high shrink-swell potential and are therefore at an increased risk of hazards related to expansive soil (City of Lomita 1998). A portion of the proposed project would cross through the southern portion of Lomita, and therefore has the potential to be located on expansive soil. However, the hazard of expansive soils is an existing risk for the current operation of the feeders, and the proposed project would not increase this risk. Additionally, for the same reasons as summarized above for Item V.a.i, impacts related to expansive soil would be less than significant.

The severity of the impact would be the same as that identified in the PEIR.

VI. GREENHOUSE GAS EMISSIONS

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, greenhouse gas (GHG) emissions would occur as a result of program rehabilitation activities, including the use of construction equipment, material delivery and off-haul, and commute trips by workers. Because program emissions would exceed the SCAQMD interim threshold of 3,000 metric tons per year, impacts were determined to be significant. Although there would be small reductions in GHG emissions associated with implementation of **MM AIR-1**, programmatic impacts were determined to be significant and unavoidable.

Proposed project GHG emissions were estimated using the PEIR's quantification of individual sites and multiplying that by the total number of sites (i.e., all three phases combined) that would be used as part of the proposed project. Consistent with SCAQMD's prescribed methodology and the PEIR analysis, GHG emissions were amortized over a 30-year period. As shown in **Table 8**, the proposed project would result in 323.0 metric tons of carbon dioxide equivalent (CO_2e), which would be 10.8 metric tons of CO_2e per year when amortized over 30 years. Because the proposed project would not exceed the SCAQMD interim GHG emissions threshold, impacts would be less than significant, which is less than impacts identified in the PEIR. Nevertheless, **MM AIR-1** will be implemented due to the overall program GHG emissions.

The severity of the impact would be less than that which was identified in the PEIR.

Table 8. Estimate of Proposed Project GHG Emissions (metric tons)

Phase	Individual Site CO_2e	Proposed Project CO_2e
Typical Excavation Site (Quantity: 15)	9.2	137.6
Typical New Valve/Meter Vault Structure (Quantity: 9)	17.5	157.9
Typical Belowground Air-release/Vacuum Valve Relocation (Quantity: 8)	3.4	27.4
Total Construction Emissions[1]		323.0
30-year Amortized Total		10.8

Source: HELIX 2021, Appendix A.
[1] Note that numbers may not total due to rounding.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
b. Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, because Metropolitan has not adopted a qualified plan, policy, or regulation to reduce GHG emissions, the most applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions is Assembly Bill (AB) 32, which codified the state's GHG emissions-reduction targets for 2020. Although rehabilitation activities would result in GHG emissions, it was determined that

program emissions would not conflict with GHG reduction goals outlined in the AB 32 Scoping Plan.

Additionally, the PEIR discussed two Executive Orders (EOs) related to the reduction of statewide GHG emissions. EO B-30-15 established an interim GHG reduction target of 40 percent below 1990 levels by 2030, and EO S-03-05 established a long-term goal of reducing statewide GHG emissions to 80 percent below 1990 levels by 2050. Senate Bill (SB) 32, which codified the state's GHG emissions-reduction targets for 2030, was signed into law in September 2016. The PEIR pointed out that significant policy, technical, and economic solutions will be required in order to meet the goals of EO S-03-05 and B-30-15; however, these changes would require state and/or federal action and would be outside of the control of Metropolitan. While long-term climate change policy and regulatory changes are currently unknown, the PEIR concluded that PCCP Program features would not conflict with the goals in EO S-03-05 and EO B-30-15, and related impacts would be less than significant.

The proposed project would result in GHG emissions associated with rehabilitation activities, as shown in the discussion of Item VI.a. These activities would result in a net increase in GHG emissions, but the emissions would be minimal and temporary and would not otherwise conflict with the statewide GHG reduction targets identified in AB 32 and SB 32.

The severity of the impact would be the same as that identified in the PEIR.

VII. HAZARDS AND HAZARDOUS MATERIALS

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As described in the PCCP PEIR, although solvents, paints, oils, grease, and fuels would be transported, used, and disposed of during the construction phase, these materials would not represent the transport, use, and disposal of acutely hazardous materials. In addition, as described in the PEIR, Metropolitan's contractors would implement the following environmental commitments as part of the PCCP Program:

- Rehabilitation activities would incorporate BMPs, including a SWPPP, as applicable, for sediment and erosion control, pollutant treatment, outlet protection, and general site management; and
- A Spill Emergency Response Plan would be prepared prior to the start of construction to ensure that hazardous materials and waste are handled, stored, and disposed of in accordance with applicable federal and state laws and regulations. All materials and fuels within staging areas and excavation sites and work zones would be stored in a manner that reduces potential for spills.

Due to implementation of the above environmental commitments and required compliance with existing regulations, the PEIR concluded that impacts related to the routine transport, use, or disposal of hazardous materials would be less than significant, and no mitigation was proposed.

The proposed project would require transport, use, and disposal of hazardous materials such as solvents, paints, oils, grease, and fuels. Compliance with applicable regulations and implementation of the described environmental commitments of the PCCP Program would result in

less-than-significant impacts related to the routine transport, use, or disposal of hazardous materials, and no mitigation would be required.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed above, the PCCP PEIR determined that the program would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. The risk of upset and accidents involving the release of hazardous materials into the environment was therefore also determined to be less than significant for the PCCP Program.

For the proposed project, as described in Item VII.a., rehabilitation activities would require transport, use, and disposal of hazardous materials, which could result in upset or accidents that could release hazardous materials into the environment. Such transport, use, and disposal must be compliant with applicable regulations, and impacts would be similar to those identified in the PEIR.

After rehabilitation activities are complete, the operation of the proposed project would be the same as existing conditions. Therefore, there would be no impacts related to risk of upset and accidents involving the release of hazardous materials into the environment associated with operation of the program pipelines.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, construction-related hazardous releases that could occur within 0.25 mile of a school would be from commonly used materials such as fossil fuels, solvents, and paints and would not include substances listed in 40 Code of Federal Regulations 355, Appendix A, *Extremely Hazardous Substances and Their Threshold Planning Quantities*. Accidental releases of commonly used hazardous materials would be localized and immediately contained and cleaned up. The PEIR determined that program impacts would be less than significant with the implementation of the following mitigation measures:

- **MM HAZ-1** requires the preparation of a project-level analysis of previously identified hazardous materials sites in the vicinity;
- **MM HAZ-2** establishes a protocol for the identification and management of previously unknown hazardous materials sites that may be encountered during construction activities;
- **MM HAZ-3** requires the construction contractor to implement BMPs to minimize human exposure to potential contaminants; and
- **MM HAZ-4** establishes a protocol for the handling of contaminated groundwater that could be encountered during construction.

As shown in **Table 9**, there are five schools within 0.25 mile of the proposed project alignment. Additionally, the main contractor storage area would be located at a vacant lot at Los Angeles Harbor College. Although rehabilitation would involve hazardous materials typical of a construction project (as discussed above under Item VII.a.), the proposed project would operate in compliance with federal, state, and local regulations. In accordance with **MM HAZ-1**, a project-level analysis of previously identified hazardous materials sites in the vicinity has been conducted (see Item VII.d, below). Additionally, **MM HAZ-2** through **MM HAZ-4** would be implemented for the proposed project, thereby reducing potential impacts to a less-than-significant level.

Table 9. Schools within 0.25 mile of the Proposed Project Alignment

School	Address	Approximate Distance from the Proposed Project
Harbor City Elementary School	1508 254th Street, Harbor City	0.20 mile east
Eshelman Avenue Elementary School	25902 Eshelman Avenue, Lomita	0.17 mile north
President Avenue Elementary School	1465 West 243rd Street, Harbor City	0.24 mile east
Alexander Fleming Middle School	25425 Walnut Street, Lomita	0.24 mile west
Narbonne High School	24300 S Western Avenue, Harbor City	50 feet east

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR identified the potential for rehabilitation activities to encounter hazardous materials sites found in various environmental databases. Excavations into contaminated media at known or unknown sites could result in a significant hazard to the construction workers, the public, or the environment. Program impacts were determined to be potentially significant, but impacts would be mitigated to a less-than-significant level through the implementation of **MM HAZ-1** through **MM HAZ-4** of the PEIR.

In accordance with **MM-HAZ-1**, a records search was conducted in June 2021 of state databases that identify sites for which a hazardous materials release or incident has occurred or sites that

generate, store, treat, or dispose of hazardous materials. Specifically, this included the California Department of Toxic Substances Control (DTSC) EnviroStor website and the State Water Resources Control Board (SWRCB) GeoTracker website. Four hazardous materials sites were identified within 1,000 feet of the proposed project on the EnviroStor site's map (DTSC 2021). These include an active voluntary cleanup site at a former automotive shop located 100 feet east of the project (case number 60001269); a site under evaluation located at 1638 West 227th Street, approximately 270 feet east of the project (case number 19990046); a site under evaluation located at 2026 Abalone Avenue, approximately 430 feet west of the project (case number 19240022); and a closed school investigation at Los Angeles Harbor College (case number 60001351). The GeoTracker website lists 13 sites within 1,000 feet of the proposed project, all of which consist of a leaking underground storage tank (LUST) cleanup site. The locations of these sites are listed below:

- Rubber Craft (1800 220th Street), 800 feet west of the project (case number 905010134)
- Pasminco Property (22219 Western Avenue), 50 feet west of the project (case number 905010034)
- Thrifty Oil Company (22620 Western Avenue), 50 feet east of the project (case number 10595/25919)
- Former Shell Gas Station (22930 Western Avenue), 50 feet east of the project (case number 905010189)
- Aable Muffler (23908 Western Avenue), 50 feet east of the project (case number 907100134)
- Shell Oil Company (25001 Western Avenue), 50 feet west of the project (case number 907100098)
- Lomita Gas Station (1800 Lomita Boulevard), 250 feet west of the project (case number I-04807)
- Mobil Gas Station (1701 Pacific Coast Highway), 100 feet west of the project (case number R-09417)
- Former Shell Services Station (1695 Pacific Coast Highway), 100 feet east of the project (case number 907100089A)
- Former Texaco (1752 Pacific Coast Highway), 320 feet west of the project (case number I-06181)
- Chevron (25800 Western Avenue), 50 feet east of the project (case number 907100070)
- Los Angeles Harbor College (1111 Figueroa Place), adjacent to the project (case number 907440425)
- Lomita Sheriff's Station (26123 Narbonne Avenue), 380 feet northwest of the project (case number R-05421)

There are multiple known hazardous materials sites near the proposed project limits, and there is potential for construction crews to encounter previously unknown contaminated media during excavations, which could result in a significant impact. However, MM HAZ-2 through MM HAZ-4 shall be implemented to reduce potential impacts to a less-than-significant level.

After rehabilitation is complete, the operation of the proposed project would be the same as existing conditions.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
e. For a project located within an airport land use plan or, where such plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, the Second Lower Feeder is within the notification area for Joint Forces Training Base in Los Alamitos. Notification areas are established to ensure that structures are not built near the airport that would adversely affect day-to-day operations. Since the PCCP Program only includes small aboveground structures, such as small valve enclosures (see **Figure 4**), it was determined that the program would have no impact on airport operations at the Joint Forces Training Base in Los Alamitos.

The PEIR also notes that the Second Lower Feeder is within the runway protection zone of the Long Beach Municipal Airport. Runway protection zones are intended to provide for the unobstructed passage of landing aircraft, and no structures or congregation of people are allowed in this zone. Aboveground rehabilitation activities or permanent aboveground elements of the PCCP Program within this zone would result in potentially significant impacts, and the following mitigation was identified:

- **MM HAZ-5** requires coordination with airport management, as appropriate, for rehabilitation activities occurring within runway protection zones and implementation of identified operation and safety requirements; and
- **MM HAZ-6** requires prior approval of airport officials for any aboveground elements within runway protection zones.

The PEIR determined that implementation of these mitigation measures would reduce impacts to airport operations and safety to less-than-significant levels.

The Long Beach Municipal Airport is located approximately 8.3 miles to the east of the proposed project limits; therefore, the proposed project limits are not located within the Airport Influence Area (County 2003). The runway protection zone is more than eight miles away from the closest proposed excavation site. No related impacts would occur, and no mitigation would be required.

The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, if an excavation were to take place in roadways that serve as emergency/evacuation routes, and capacity of the affected streets were reduced during construction (such as reducing four lanes to two lanes), the ability of these streets to serve as emergency/evacuation routes may be impaired

and impacts would be potentially significant. The following mitigation was identified to address these potentially significant impacts:

- **MM HAZ-7** requires emergency/evacuation routes to be maintained during PCCP Program construction activities by: (1) avoiding the placement of excavation sites in roadways designated as emergency/evacuation routes; (2) working with local jurisdictions to maintain capacity on emergency/evacuation routes when those roadways cannot be avoided; and/or (3) notifying emergency personnel and posting temporary signage to direct emergency/evacuation traffic if detours are necessary.

Implementation of **MM HAZ-7** would reduce programmatic impacts to a less-than-significant level.

The PEIR does not identify an emergency response plan or an emergency evacuation plan for the city of Torrance; however, there are known designated emergency/evacuation routes within the cities of Los Angeles, Lomita, and Rolling Hills Estates. These include Normandie Avenue and Vermont Avenue in Los Angeles; Pacific Coast Highway, Western Avenue, Narbonne Avenue, and Lomita Boulevard in Lomita; and Palos Verdes Drive East and Palos Verdes Drive North in Rolling Hills Estates. However, as stated above, implementation of **MM HAZ-7** would reduce impacts to a less-than-significant level. Additionally, as discussed below in Item XII.a, construction traffic control measures and procedures would be implemented as part of the proposed project in order to reduce temporary construction traffic and transportation impacts on city streets. Impacts to emergency response and/or evacuation during project construction would therefore be less than significant. Once rehabilitation is complete, all proposed project sites would be returned to pre-construction conditions, and no related long-term impacts would occur.

The severity of the impact would be less than that identified in the PEIR.

VIII. HYDROLOGY AND WATER QUALITY

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
a. Violate any water quality standards or waste discharge requirements?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, construction-related chemicals, such as fuels, oils, grease, solvents, and paints, would be stored in limited quantities at work sites, which could wash into and pollute surface waters or groundwater in the absence of proper controls. The PEIR points out, however, that Metropolitan would incorporate Sediment and Erosion Control standard practices and requirements to minimize construction-related runoff impacts, and contractors would be required to comply with applicable National Pollutant Discharge Elimination System (NPDES) regulations. Programmatic impacts were determined to be less than significant.

The proposed project would involve excavation sites and work areas in which construction-related chemicals would be used and stored and sediment would be stockpiled. As described in Item V.b., however, water quality BMPs would be implemented for sediment and erosion control, pollutant treatment, outlet protection, and general site management. Additionally, compliance with applicable NPDES regulations would be required. Project-specific impacts would be less than significant.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PEIR, no alteration of the course of a stream or river would occur under the PCCP Program. While construction would include excavation and the overall disturbance of existing hardscape and landscape, which could temporarily alter drainage patterns and potentially cause erosion and sedimentation, implementation of water quality BMPs was determined to reduce programmatic impacts to a less-than-significant level.

The proposed project would involve excavation sites, which could temporarily alter drainage patterns with the potential to cause erosion and sedimentation, but water quality BMPs, as described in Item V.b., would be implemented to ensure such project impacts would be less than significant.

Following the completion of rehabilitation activities, work areas would be returned to existing conditions, and no impact would occur.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PEIR, no alteration of the course of a stream or river would occur under the PCCP Program. The PEIR did discuss the potential for new aboveground facilities to change the extent of permeable or impermeable surfaces, which could alter the direction and volume of overland flows during both wet and dry periods. The following mitigation was identified:

- **MM HYD-1** requires the development and implementation of a project-specific grading and drainage plan for proposed aboveground facilities within pervious areas to ensure no increase in flooding would occur on or off site.

As shown in **Table 2**, there are nine air-release/vacuum valves that are proposed to be relocated to aboveground locations. The aboveground relocation sites would be located within existing paved areas for seven of the stations: 1863+24, 1910+14, 1918+31, 1934+77, 1957+80, 1963+48, and 2034+32. The aboveground relocation sites at Stations 2045+04 and 2101+17 would be within existing parkways; however, the footprint of the new enclosures would be minimal. The proposed project would not involve the substantial conversion of permeable surfaces to impermeable surfaces. As such, impacts would be less than significant, and no mitigation would be required.

The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PEIR, runoff could be generated during construction of the PCCP Program facilities during a storm event or from non-stormwater discharges, such as water used for dust control or hydrostatic testing of the pipelines. The PEIR stated that Sediment and Erosion Control and Groundwater Dewatering standard practices and requirements would be implemented to minimize construction-related runoff and dewatering impacts. Impacts were determined to be less than significant with implementation of these standard practices and requirements, as well as compliance with applicable NPDES regulations.

The proposed project could involve polluted runoff during storm events or during non-storm discharges, as discussed in the PEIR; however, with proper implementation of BMPs and compliance with applicable regulations, impacts would be less than significant. Following the completion of rehabilitation activities, work areas would be returned to their existing condition and no permanent changes related to runoff would occur.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
j. Expose people or structures to inundation by seiche, tsunami, or mudflow?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR states that the program study area does not include coastal areas that could be subject to tsunami. While some areas in the PCCP Program are adjacent to bodies of water that could be subject to inundation by seiche under extreme conditions, the PEIR points out that placement of proposed facilities in these areas would not exacerbate this condition. The majority of the PCCP Program area, including areas surrounding the Second Lower Feeder, is relatively flat and not susceptible to mudflows. Based on these considerations, the PEIR determined that programmatic impacts related to inundation by seiche, tsunami, or mudflow would be less than significant.

The proposed project is not located in an area that has been identified as a tsunami inundation zone or an area close to enclosed water bodies or hillsides that suggest risks related to seiches or mudflows. Furthermore, no habitable structures are included in the proposed project. Therefore, impacts would be less than significant.

The severity of the impact would be the same as that identified in the PEIR.

IX. LAND USE AND PLANNING

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
b. Conflict with applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PEIR discussed that since the PCCP Program would not change land uses, the program's consistency with land use plans would be the same as the existing condition and no programmatic impacts related to conflicts with land use plans, policies, and regulations would result from program implementation. No mitigation was proposed.

Work activities related to the proposed project would temporarily occupy public rights-of-way, but would not change existing land uses. All required permits would be obtained prior to the start of construction. No conflict with land use plans, policies, or regulations would occur, and no mitigation would be required.

The severity of the impact would be the same as that identified in the PEIR.

X. NOISE

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
a. Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PCCP PEIR discussed the potential for noise impacts related to rehabilitation activities such as excavation, concrete sawing, and providing ventilation and power. Since determining noise impacts requires an analysis of ambient noise conditions, the location of receptors, and attenuation of the noise, the PEIR concluded that severity and location of the impacts could not be determined until excavation sites were identified. The following mitigation measures related to construction noise were identified:

- **MM NOI-2** requires a noise consultant to be retained during excavation site planning to assist in locating excavation sites away from sensitive receptors or where sensitive receptors can be shielded from construction noise;
- **MM NOI-3** requires a project-level noise study at all excavation sites where sensitive receptors are present; and
- **MM NOI-4** requires staging areas to be located in areas that would not affect sensitive receptors or where receptors can be shielded from staging noise.

As required by **MM NOI-2** and **MM NOI-3**, a construction noise impact analysis for the proposed project was prepared by HELIX in December 2021, and is included as Appendix E. The contractor

storage and staging areas were sited per **MM NOI-4**, with one occurring at a vacant lot at Los Angeles Harbor College, one at the intersection of Palos Verdes Drive North and Palos Verdes Drive East, one southwest of Palos Verdes Drive East, and one at the northeast corner of West 223rd Street and Abalone Avenue.

The severity of the impacts would vary depending upon the proximity of construction activity to sensitive receptors, but the PEIR found that it is likely that noise levels would exceed local standards. Thus, program impacts were determined to be significant and unavoidable following the implementation of **MM NOI-2** through **MM NOI-4**.

On Friday, December 7, 2018, six site-specific field noise measurements were conducted along the pipeline alignment. These measurement locations are summarized in **Table 10**. Measurements ranged from 57.3 to 76.1 A-weighted decibels (dBA).

Table 10. Site Survey Noise Measurement Results

Approximate Location	Time	Measurement (dBA L_{EQ})
SLF Sta. 1863	11:24 a.m.	73.7
SLF Sta. 1897	11:05 a.m.	76.1
SLF Sta. 1964	10:42 a.m.	72.3
SLF Sta. 2022	10:18 a.m.	62.3
SLF Sta. 2098	9:51 a.m.	68.0
SLF Sta. 2114	7:36 a.m.	57.3

L_{EQ}: an average of the sound energy occurring over a specified period, SLF Sta.: Second Lower Feeder Station Number.

The PEIR references the noise elements of each jurisdiction's general plan and noise ordinance and identifies whether local CEQA thresholds have been adopted. For the proposed project, the applicable thresholds from the cities of Los Angeles, Torrance, Lomita, and Rolling Hills Estates are included in Table 11.

Table 11. Applicable Noise Thresholds

City of Los Angeles CEQA Thresholds Guide
Los Angeles developed a CEQA Thresholds Guide (Los Angeles 2006) to establish significance thresholds for construction activities. These thresholds would be applicable to construction activities within 500 feet of a noise-sensitive use. A project would normally have a significant impact on noise levels from construction if: • Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise-sensitive use; • Construction activities lasting more than 10 days in a three-month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use; or • Construction activities would exceed the ambient noise level by 5 dBA at a noise-sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at any time on Sunday.
City of Torrance Municipal Code
Article 3 – construction. 46.3.1: • Construction can occur between 7:30 a.m. to 6 p.m. Monday through Friday, and 9 a.m. to 5 p.m. on Saturdays. Prohibited on Sundays and Holidays observed by City Hall. • Can request extended hours from the Community Development Director.

City of Lomita Municipal Code
Chapter 4.4.04 • During day hours, noise limits are 65 dBA for residential, 75 dBA for commercial, and 80 dBA for manufacturing. • During night hours, noise limits are 55 dBA for residential, 70 dBA for commercial, and 75 dBA for manufacturing. Chapter 4.4.11 • Construction equipment can operate between 7 a.m. and 6 p.m. Monday through Friday, except holidays and between 9 a.m. and 5 p.m. Saturday and Sunday. • Noise levels cannot reach more than 35 dB for a cumulative period of 15 minutes of an hour at any receiving property line.
City of Rolling Hills Estates Municipal Code
Chapter 8.32-Noise: 8.32.210 A. Permitted construction hours and days. • Monday through Friday 7 a.m. to 5 p.m., and Saturday 9 a.m. to 5 p.m. • Construction is not allowed any time on Sunday and holidays. Chapter 8.32-Noise: 8.32.050 • From 7:00 a.m. to 10:00 p.m. exterior noise limits are 55 dBA for residential, 65 dBA for commercial, and 75 dBA for industrial. • from 10:00 p.m. to 7:00 a.m. exterior noise limits are 45 dBA for residential, 55 dBA for commercial, and 45 dBA for industrial.

Excavation to access the pipeline is proposed at the locations shown in **Table 5**. The Second Lower Feeder pipe access sites occur in the cities of Los Angeles, Torrance, Lomita, and Rolling Hills Estates. Specifically, Stations 1860, 1863, and 1964 occur in Los Angeles; Station 1916 occurs in both Los Angeles and Torrance; Station 2022 occurs in Lomita; Station 2015 occurs in both Los Angeles and Lomita; and Stations 2098 and 2109/2112 occur in Rolling Hills Estates. The maintenance hole enlargement sites at SLF Stations 1875+56 and 1957+80 occur in Los Angeles, SLF Station 1899+76 occurs in Torrance, and SLF Stations 2034+32 and 2045+04 occur in Lomita. The five maintenance hole enlargement sites may also be used as pipe access sites. All potential pipe access sites are located within single-family residential areas. In addition to single-family residences, four of the sites are also surrounded by multi-family residences (Stations 1860, 1864, 1916, and 2022), one site is located near a park (Station 2098), and one site is located near a school (Station 1957+80).

The city of Torrance does not set noise level standards for construction, and impacts from the various construction activities described below that are located in Torrance would therefore be less than significant when conducted between the hours of 7:30 a.m. to 6 p.m. on weekdays and 9 a.m. to 5 p.m. on Saturdays. If necessary, extended hours can be requested from the Community Development Director. Construction activities, such as dewatering, pipeline relining, and ventilation to support relining work, that occur outside of these specified days and timeframes, however, would represent a significant and unmitigable impact.

Excavation would require the simultaneous use of an excavator and dump truck for short periods of time to access the pipeline segments. Construction noise due to pipeline excavation would generate noise levels exceeding the applicable thresholds at each of the potential pipe access locations. Therefore, potential significant impacts would occur at all excavation sites as a result of construction noise from pipeline excavation. Pipe access site construction noise levels are provided below in Table 12.

Table 12. Pipe Access Site Construction Noise

SLF Site	NSLU Jurisdiction	Threshold at NSLU (dBA L_{EQ} [1 hour])	Modeled Noise Levels (dBA L_{EQ} [1 hour])	Exceed Standard at NSLU?
Pipe Access Sites				
1860	Los Angeles	55	89.1	Yes
1863	Los Angeles	55	77.1	Yes
1916	Los Angeles/ Torrance	55 / NA	77.1	Yes / NA
1964	Los Angeles	55	69.1	Yes
2015	Los Angeles/ Lomita	55 / 65	70.0	Yes
2022	Lomita	65	83.1	Yes
2034	Lomita	65	83.1	
2098	Rolling Hills Estates	55	66.8	Yes
2109 and 2114	Rolling Hills Estates	55	63.1	Yes
Maintenance Hole Enlargement Sites (Potential Pipe Access Sites)				
1875+56	Los Angeles	55	75.1	Yes
1899+76	Torrance	NA	73.5	NA
1957+80	Los Angeles	55	75.1	Yes
2034+32	Lomita	65	83.1	Yes
2045+04	Lomita	65	89.1	Yes

Source: HELIX 2021; Appendix E
NSLU = Noise Sensitive Land Use; dBA = A-weighted decibels; L_{EQ} = equivalent sound level
NA = not applicable (Torrance does not have daytime noise level limits for construction activities).

A grouting mixer, generator, welder, and crane would be required for relining activity at each excavation area. The loudest equipment types would be a grouting mixer and generator in use simultaneously. Construction noise due to pipeline relining would exceed applicable noise levels at each of the pipe access locations. Construction noise from relining activities is provided in **Table 13**.

Table 13. Relining Activity Site Construction Noise

SLF Site	NSLU Jurisdiction	NSLU Distance	Day Threshold at NSLU (dBA L_{EQ} [1 hour])[1]	Night Threshold at NSLU (dBA L_{EQ} [1 hour]) [1]	Noise Levels (dBA L_{EQ} [one hour])	Exceed Day Standard at NSLU?	Exceed Night Standard at NSLU?
Pipe Access Sites							
1860	Los Angeles	10 feet	55	45	92.4	Yes	Yes
1863	Los Angeles	40 feet	55	45	80.4	Yes	Yes
1916	Los Angeles/ Torrance	40 feet	55 / NA	45 / 50	80.4	Yes	Yes
1964	Los Angeles	100 feet	55	45	72.2	Yes	Yes
2015	Los Angeles/ Lomita	90 feet	55 / 65	45 / No construction allowed	73.2	Yes	Yes / NA
2022	Lomita	20 feet	65	No construction allowed	86.4	Yes	NA
2034	Lomita	20 feet	65	No construction allowed	86.4	Yes	Yes
2098	Rolling Hills Estates	130 feet	55	No construction allowed	69.9	Yes	NA
2109 and 2114	Rolling Hills Estates	200 feet	55	No construction allowed	66.0	Yes	NA
Maintenance Hole Enlargement Sites (Potential Pipe Access Sites)							
1875+56	Los Angeles	50 feet	55	45	78.4	Yes	Yes
1899+76	Torrance	60 feet	NA	50	76.8	Yes	Yes
1957+80	Los Angeles	50 feet	55	45	78.4	Yes	Yes
2034+32	Lomita	20 feet	65	No construction allowed	86.4	Yes	NA
2045+04	Lomita	10 feet	65	No construction allowed	92.4	Yes	NA

Source: HELIX 2021; Appendix E

[1] Relining activity would fall under the Los Angeles standard for construction activity lasting more than 10 days in a three-month period, which is 5 dBA above the 50 dBA ambient noise levels presumed for a residential neighborhood.

NSLU = Noise Sensitive Land Use; dBA = A-weighted decibels; L_{EQ} = equivalent sound level

NA = not applicable.

Ventilation and access to support relining work would be conducted along the project alignment at manhole locations, to provide adequate air supply and access for workers and equipment. A generator, welder, and fan/blower would be in use simultaneously, and could generate elevated noise levels at nearby noise sensitive land uses (NSLUs). For daytime ventilation activities, potentially significant impacts would occur if the ventilation activities were conducted within 265 feet of an NSLU in a residential area in the city of Los Angeles, 90 feet of an NSLU in a residential area in Lomita, 30 feet of an NSLU in a commercial area in Lomita, 265 feet of an NSLU in a residential area in Rolling Hills Estates, or 90 feet of an NSLU in a commercial area in Rolling Hills Estates. The city of Torrance does not set daytime construction noise level standards in its municipal code, and impacts would therefore be less than significant when conducted between the hours of 7:30 a.m. and 6:00 p.m. on weekdays and between 9:00 a.m. and 5:00 p.m. on

Saturdays. For nighttime ventilation activities, potentially significant impacts would occur if the ventilation activities were conducted within 850 feet of residential uses in the nighttime in Los Angeles, or within 500 feet of residential uses in Torrance. Nighttime construction is not allowed in Lomita and Rolling Hills Estates, so nighttime ventilation activities in these two cities would result in significant impacts.

A jackhammer would be required for maintenance hole refurbishment and blow-off structure improvements. For work requiring the use of a jackhammer, noise levels would exceed local standards if located within 1,000 feet of an NSLU in a residential area in the city of Los Angeles; 550 feet of an NSLU in a residential area in Lomita; 180 feet of an NSLU in a commercial area in Lomita; 1,750 feet of an NSLU in a residential area of Rolling Hills Estates; or 550 feet of an NSLU in a commercial area of Rolling Hills Estates. As stated above, the city of Torrance does not set daytime construction noise level standards in its municipal code, so impacts would be less than significant when conducted during the outlined daytime hours.

Relocation of the air release/vacuum valves from belowground to aboveground would involve running new piping from the existing valve connection point in the vault to a nearby aboveground location and installing a new vault aboveground. This would require shallow trenching from the existing belowground vault to the new aboveground location. Shallow trenching would require the short-term use of a concrete saw and backhoe. Similarly, the replacement of and improvements to isolation valves, flow meters, and service connections would also require shallow trenching, which would require a backhoe and concrete saw. For the use of a backhoe, noise levels would exceed standards if located within 270 feet of an NSLU in the city of Los Angeles, 150 feet of an NSLU in a residential area of Lomita, 48 feet of an NSLU in a commercial area of Lomita, 480 feet of an NSLU is a residential area of Rolling Hills Estates, or 150 feet of an NSLU in a commercial area of Rolling Hills Estates. For the use of a concrete saw, noise levels would exceed standards if located within 2,000 feet of an NSLU in the city of Los Angeles, 1,150 feet of an NSLU in a residential area of Lomita, 350 feet of an NSLU in a commercial area of Lomita, 3,500 feet of an NSLU is a residential area of Rolling Hills Estates, or 1,150 feet of an NSLU in a commercial area of Rolling Hills Estates. As stated above, the city of Torrance does not set daytime construction noise level standards in its municipal code, so impacts would be less than significant when conducted during the outlined daytime hours.

Dewatering would require the use of a submersible pump and generator to power the pump. The only audible equipment would be the generator. Dewatering would occur 24 hours per day up to seven days. For dewatering requiring the use of a generator, noise levels from a generator would exceed daytime standards if located within 75 feet of an NSLU in the city of Los Angeles, 40 feet of an NSLU in a residential area of Lomita, 12 feet of an NSLU in a commercial area of Lomita, 120 feet of an NSLU is a residential area of Rolling Hills Estates, or 40 feet of an NSLU in a commercial area of Rolling Hills Estates. The city of Torrance does not set daytime construction noise level standards, so impacts would be less than significant when done during the designated daytime hours. For dewatering during nighttime hours, noise levels from a generator would exceed standards if located within 380 feet of an NSLU in the city of Los Angeles or within 215 feet of an NSLU in the city of Torrance. Dewatering activities within the cities of Lomita and Rolling Hills Estates would represent a significant and unmitigable impact, due to required nighttime work.

The project would also require other instances of nighttime construction. The proposed valve replacement at Service Connection T-08, located at Second Lower Feeder Station 1902+95 near the intersection of Western Avenue and Sepulveda Boulevard, and modifications to a blow-off structure, located at Station 1973+18 near the intersection of Western Avenue and Lomita Boulevard, may require nighttime work to minimize traffic effects at these major intersections. Construction work associated with improvements to Service Connection T-08 would occur as close as 200 feet from a residential NSLU within Torrance, where nighttime construction work is limited

to 50 dBA L_{EQ} (1-hour). Improvements would involve construction activities similar to those described above (trenching using a concrete saw and backhoe). At 200 feet, a backhoe would generate a noise level of 62.5 dBA L_{EQ} and a concrete saw would generate a noise level of 77.6 dBA L_{EQ}. As previously discussed, due to the short-term and mobile nature of the use of a backhoe, a barrier would likely not be used, and noise levels would exceed the Torrance nighttime noise limit of 50 dBA L_{EQ} (1-hour). For use of concrete saw, a 6-foot noise barrier would attenuate noise levels to approximately 60 dBA L_{EQ}, and noise levels at the nearby residential NSLUs would exceed the 50-dBA L_{EQ} (1-hour) nighttime noise limit for Torrance.

Construction work associated with modifications to the blow-off structure at Second Lower Feeder Station 1973+18 would occur as close as 120 feet from a residential NSLU within Los Angeles, where nighttime construction work is limited to 45 dBA L_{EQ} (1-hour). Blow-off structure modifications would require the use of a jackhammer, as described above. At 120 feet, a jackhammer would generate a noise level of 78.3 dBA L_{EQ}. With a 6-foot noise barrier, noise levels would be reduced to approximately 63 dBA L_{EQ}, and noise levels at the nearby residential NSLUs would exceed the 45-dBA L_{EQ} (1-hour) nighttime noise limit for Los Angeles.

Construction traffic would travel on local streets. A general rule of thumb is that a doubling of traffic would cause a doubling in sound energy (a 3-dBA increase), which would be perceptible, and therefore a significant increase. The proposed project would result in a minimal increase in traffic during construction that would not constitute a doubling of traffic. Therefore traffic-related noise resulting from construction would not be expected to cause a doubling in noise. Furthermore, overall construction noise impacts would be temporary and operation of the project would not result in an increase in traffic. Impacts from the addition of construction traffic would be less than significant.

To comply with **MM NOI-3**, the following project-specific measures shall be implemented:

- **MM NOI-3.1 Construction Exterior Noise Level Standards.** Construction noise from project construction activities shall comply with the daytime and nighttime thresholds and hours specified by the cities of Los Angeles, Torrance, Lomita, and Rolling Hills Estates for sensitive receptors to the maximum extent feasible.

  Within the city of Los Angeles, daytime construction activities lasting more than one day and less than 10 days in a three-month period shall comply with the 60 dBA L_{EQ} standard for residential zones. Daytime construction activities lasting more than 10 days in a three-month period shall comply with the 55 dBA L_{EQ} standard for residential zones. Nighttime (9:00 p.m. to 7:00 a.m. on weekdays, before 8:00 a.m. and after 6:00 p.m. on Saturday, and any time on Sunday) activities shall comply with the 45 dBA L_{EQ} standard for residential zones.

  Within the city of Torrance, construction activities shall occur only between 7:30 a.m. and 6:00 p.m. Monday through Friday and between 9:00 a.m. and 5:00 p.m. on Saturdays, if feasible. If construction occurs outside these hours, noise levels shall not exceed 50 dBA as measured at property lines.

  Within the city of Lomita, construction activities shall occur only between 7:00 a.m. and 6:00 p.m. Monday through Friday and between 9:00 a.m. and 5:00 p.m. on Saturdays, Sundays, and Holidays. In addition, daytime construction noise shall comply with the 65 dBA standard for residential land uses and the 75 dBA standard for commercial land uses.

  Within the city of Rolling Hill Estates, construction activities shall occur only between 7:00 a.m. and 5:00 p.m. Monday through Friday and between 9:00 a.m. and 5:00 p.m. on

Saturdays. In addition, daytime construction noise shall comply with the 55 dBA standard for residential land uses and the 65 dBA standard for commercial uses.

- **MM NOI-3.2 Noise Reduction Measures for Pipe Access Site Excavation and Relining Activities.** Measures to reduce noise levels to below a level of significance may include the use of noise barriers; noise attenuation devices/modifications to construction equipment; limitations on the hours of operation; or a combination of these measures.

  For excavation and pipeline relining activities at all proposed pipe access sites, a 12-foot noise barrier shall be required to reduce noise levels.

  All noise barriers shall be solid and constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove or close-butted seams and must be at least ¾-inch thick or have a surface density of at least 3.5 pounds per square foot. Sheet metal of 18 gauge (minimum) may be used if it meets the other criteria and is properly supported and stiffened so that it does not rattle or create noise itself from vibration or wind. Noise blankets, hoods, or covers also may be used, provided they are appropriately implemented to provide the required sound attenuation. The noise barrier enclosures should be of an elongated "U" shape, with the elongated sides parallel to the pipeline.

- **MM NOI-3.3 Setback Distances for Mobile Operations (Ventilators, Manholes, Valves).** For construction operations that would require equipment to move along multiple locations along the pipeline alignment, the following setback distances and/or noise barriers shall be necessary to maintain noise levels to within local standards for residential land uses in Los Angeles, Torrance, Lomita, and Rolling Hills Estates, and for commercial land uses in the Lomita and Rolling Hills Estates. Setback distances and/or noise barriers shall be used to the extent feasible.

  Daytime

  For ventilation activities, equipment shall be set back outside of the distances within which noise levels would exceed thresholds, which would be at least 70 feet away with an 8-foot barrier, 110 feet away with a 6-foot barrier, or 265 feet away with no barrier from an NSLU in a residential area in the city of Los Angeles; at least 20 feet away with an 8-foot barrier, 33 feet away with a 6-foot barrier, or 90 feet away with no barrier from an NSLU in a residential area in the city of Lomita; at least 6 feet away with an 8-foot barrier, 11 feet away with a 6-foot barrier, or 30 feet away with no barrier from an NSLU in a commercial area in the city of Lomita; at least 70 feet away with an 8-foot barrier, 110 feet away with a 6-foot barrier, or 265 feet away with no barrier from an NSLU in a residential area in the city of Rolling Hills Estates; and at least 20 feet away with an 8-foot barrier, 33 feet away with a 6-foot barrier, or 90 feet away with no barrier from an NSLU in a commercial area in the city of Rolling Hills Estates.

  For the continuous use of a jackhammer during a single hour, equipment shall be set back outside of the distances within which noise levels would exceed thresholds, which would be at least 180 feet away with a 6-foot noise barrier or 1,000 feet away with no noise barrier from an NSLU in the city of Los Angeles; at least 100 feet away with a 6-foot noise barrier or 550 feet away with no noise barrier from an NSLU in a residential area in the city of Lomita; at least 32 feet away with a 6-foot barrier or 180 feet away with no noise barrier from an NSLU in a commercial area in the city of Lomita; at least 325 feet away with a 6-foot noise barrier or 1,750 feet away with no barrier from an NSLU in a residential area in the city of Rolling Hills Estates; and at least 100 feet away with a 6-foot

noise barrier or 550 feet away with no noise barrier from an NSLU in a commercial area in the city of Rolling Hills Estates. Noise generated from a jackhammer is limited to the impact point with the ground, so increasing the height of the noise barrier would not significantly lower noise levels.

A backhoe would be used at numerous and variable locations along the pipeline alignment, noise levels at specific receptors are not provided. Instead, the setback distances needed to meet the cities of Los Angeles', Lomita's, Rolling Hills Estates', and Carson's exterior noise thresholds at land uses located in proximity to anticipated work sites are provided. Due to the short-term use of a backhoe and the mobile nature of its use, a temporary noise barrier would not likely be used. For use of a backhoe, equipment shall be set back outside of the distances within which noise levels would exceed thresholds, which would be at least 270 feet from an NSLU in a residential area in the city of Los Angeles; at least 150 feet away from an NSLU in a residential area in the city of Lomita; at least 48 feet away from an NSLU in a commercial area in the city of Lomita; at least 480 feet away from an NSLU in a residential area in the city of Rolling Hills Estates; and at least 150 feet away from an NSLU in a commercial area in the city of Rolling Hills Estates.

For the continuous use of a concrete saw during a single hour, equipment shall be set back outside of the distances within which noise levels would exceed thresholds, which would be at least 300 feet away with a 6-foot noise barrier or 2,000 feet away with no noise barrier from an NSLU in a residential area in the city of Los Angeles; at least 160 feet away with a 6-foot noise barrier or 1,150 feet away with no barrier from an NSLU in a residential area in the city of Lomita; at least 50 feet away with a 6-foot noise barrier or 350 feet away with no noise barrier from an NSLU in a commercial area in the city of Lomita; at least 500 feet away with a 6-foot noise barrier or 3,500 feet away with no noise barrier from an NSLU in a residential area in the city of Rolling Hills Estates; and at least 160 feet away with a 6-foot noise barrier or 1,150 feet away with no noise barrier from an NSLU in a commercial area in the city of Rolling Hills Estates. Noise generated from a concrete saw is limited to the impact point with the ground, so increasing the height of the noise barrier would not significantly lower noise levels.

For the continuous use of a generator during a single hour, equipment shall be set back outside of the distances within which noise levels would exceed thresholds, which would be at least 25 feet away with a 6-foot noise barrier or 75 feet away with no noise barrier from an NSLU in a residential area in the city of Los Angeles; at least 14 feet away with a 6-foot noise barrier or 40 feet away with no barrier from an NSLU in a residential area in the city of Lomita; at least 5 feet away with a 6-foot noise barrier or 12 feet away with no noise barrier from an NSLU in a commercial area in the city of Lomita; at least 45 feet away with a 6-foot noise barrier or 120 feet away with no barrier from an NSLU in a residential area in the city of Rolling Hills Estates; and at least 14 feet away with a 6-foot noise barrier or 40 feet away with no noise barrier from an NSLU in a commercial area in the city of Rolling Hills Estates.

Nighttime

For the continuous use of a generator during a single hour at night, equipment shall be set back outside of the distances within which noise levels would exceed thresholds, which would be at least 135 feet away with a 6-foot noise barrier or 380 feet away with no noise barrier in the city of Los Angeles, and at least 80 feet away with a 6-foot noise barrier or 215 feet away with no noise barrier in the city of Torrance.

For nighttime ventilation activities, equipment shall be set back outside of the distances within which noise levels would exceed thresholds, which would be at least 170 feet away

with an 8-foot noise barrier or 850 feet away with no noise barrier in the city of Los Angeles, and at least 95 feet away with an 8-foot noise barrier or 500 feet away with no noise barrier in the city of Torrance.

- **MM NOI-3.4 Nighttime Construction Management Plan.** The project specifications shall require preparation of a Nighttime Construction Management Plan prior to the onset of construction. The plan shall describe measures to reduce noise levels for any nighttime work that may occur. Specific measures to reduce construction noise may include:
    - Placement of noise-generating equipment as far as feasible from noise-sensitive land uses.
    - Utilization of enclosures or other barriers for equipment to reduce noise levels.
        - If work at Service Connection T-08 using a concrete saw occurs during nighttime hours, a six-foot noise barrier shall be required between the equipment and residential land uses to reduce noise levels.
        - If work at the blow-off structure located at Second Lower Feeder Station 1973+18 using a jackhammer occurs during nighttime hours, a six-foot noise barrier shall be required between the equipment and residential land uses to reduce noise levels.
    - Construction equipment properly outfitted and maintained with manufacturer-recommended noise-reduction devices.
    - Diesel equipment operated with closed engine doors and equipped with factory-recommended mufflers.
    - Written notification to residents within 100 feet of the project site boundaries, provided a minimum of one week prior to nighttime construction activity. Notification to include a description of activities anticipated, expected dates and hours for construction, and contact information with details of a complaint and response procedure.

For daytime construction, impacts from pipe access site excavation would remain significant at all pipe access sites with the use of a 12-foot noise barrier. Impacts from relining activities would also remain significant at all pipe access sites except at Second Lower Feeder Station 1964, 2098, and 2109/2114 with the use of a 12-foot noise barrier. Impacts associated with pipe access site excavation and relining are therefore considered significant and unavoidable. As noted above, however, impacts would be consistent with those identified in the PEIR. For activities that would occur at various locations along the pipeline alignment and require equipment to move along the alignment, provided the setback distances with or without inclusion of noise barriers as described in MM NOI-3.3 are maintained, impacts would be reduced to less-than-significant levels.

For nighttime construction, noise levels from nighttime relining activities at all pipe access sites within the cities of Los Angeles and Torrance would exceed respective nighttime standards at nearby NSLUs, and impacts would be significant and unavoidable; however, impacts would be consistent with those identified in the PEIR. Similarly, noise levels from nighttime work at Service Connection T-08 in Torrance and at the blow-off structure located at Second Lower Feeder Station 1973+18 in the city of Los Angeles would exceed respective nighttime standards at nearby NSLUs, even with the use of noise barriers, and impacts would be significant and unavoidable; however, these impacts would be consistent with those identified in the PEIR. Impacts associated with dewatering and ventilation activities within the cities of Los Angeles and Torrance would be less than significant after

mitigation, which involves maintaining the setback distances listed in MM NOI-3.3. If dewatering or ventilation activities occur within these setback distances, impacts would be significant but consistent with those identified in the PEIR.

The use of noise barriers during nighttime dewatering, relining, and ventilation activities would reduce noise levels at nearby NSLUs within the cities of Lomita and Rolling Hills Estates; however, because the cities of Lomita and Rolling Hills Estates do not allow nighttime construction, noise impacts associated with construction between the hours of 6:00 p.m. and 7:00 a.m. on weekdays, before 9:00 a.m. and after 5:00 p.m. on Saturdays, Sundays, and Holidays in Lomita, or between the hours of 5:00 p.m. and 7:00 a.m. on weekdays, before 9:00 a.m. and after 5:00 p.m. on Saturdays, or any time on Sundays in the city of Rolling Hills Estates, impacts would be significant and unavoidable. As noted above, however, impacts would be consistent with those identified in the PEIR.

The severity of noise impacts for both daytime and nighttime work would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
b. Expose persons to or generate excessive groundborne vibration or groundborne noise levels?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, the severity and location of excessive groundborne vibration or groundborne noise level impacts could not be determined until excavation sites were identified. The following mitigation was identified to reduce such impacts to a less-than-significant level:

- **MM NOI-1** requires a noise and vibration consultant to be retained during excavation site planning to assist in locating excavation sites away from vibration-sensitive land uses wherever possible, or to identify appropriate mitigation to reduce vibration levels at vibration-sensitive land uses to less-than-significant levels.

As stated in the Construction Noise Technical Report prepared for the proposed project, numerous pipe access sites would be within 200 feet of single-family and multi-family residences, with the nearest sensitive use living area approximately 30 feet from Pipe Access Site 1860. The greatest source of vibration would be from compaction of the soil following relining activities and prior to final paving of each site. Due to the size of the excavation areas, a small vibratory plate compactor or tamping rammer would likely be used. These are handheld units and would have no measurable vibration beyond 10 to 15 feet. Impacts from excessive vibration would therefore be less than significant.

The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity, above levels existing without the project?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. Temporary or periodic increases in ambient noise levels would result from construction activities associated with the project. These impacts are described in X.a., above. Impacts would remain significant and unavoidable.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, some portions of the existing pipelines are within airport land use plans or near airports; however, since the PCCP Program would not change land uses, and construction workers would wear noise safety gear as required by the federal Occupational Safety and Health Administration, noise impacts related to nearby airports were determined to be less than significant and no mitigation was proposed.

The project proposes the relining of an underground pipeline, and no housing or permanent workers would result from the project. Additionally, as mentioned, construction workers would wear noise safety gear as required by the federal Occupational Safety and Health Administration that would also serve as protection from airport noise exposure. No impacts from airport noise exposure would occur.

The severity of the impact would be less than that identified in the PEIR.

XI. RECREATION

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. The PEIR discussed that construction storage areas for the PCCP Program may be located in parks or other recreational facilities for months or longer, depending on how many excavation sites the storage area is serving. The PEIR stated that Metropolitan would work with the local jurisdictions and schools to ensure that rehabilitation activities would not result in significant temporary impacts on recreational activities or permanent physical deterioration of recreational facilities, and programmatic impacts were determined to be less than significant. No mitigation was proposed.

As described above in the Project Description, a main contractor storage area has been established for the proposed project at Los Angeles Harbor College, one mile east of the project alignment. Three contractor staging areas are proposed along the project alignment: one at the northeastern corner of the intersection of Palos Verdes Drive North and Palos Verdes Drive East, one southeast of Second Lower Feeder Station 2109+65 southwest of Palos Verdes Drive East, and one at the northeast corner of the intersection of West 223rd Street and Abalone Avenue (see **Figures 5a** through **5c**).

The contractor storage area is located adjacent to Machado Lake and is less than 0.5 mile from Ken Malloy Harbor Regional Park. The two contractor staging areas located along Palos Verdes Drive East are within 0.25 mile of Dapplegray Park and the George F Canyon Nature Center and Preserve. The contractor staging area at the northeast corner of the intersection of West 223rd Street and Abalone Avenue is located approximately 450 feet north of recreational baseball fields and 1,850 feet northwest of Torrance Park. Additionally, the pipeline alignment is located within 0.25 mile of Metro Park, Lomita Park, and Sur La Brea Park. One of the contractor's work areas is proposed to extend into Metro Park and require tree removal and grass disturbance to allow for the storage of equipment. However, such impacts would be minimal and would not permanently diminish the quality of this recreational facility. Although there are recreational areas located near contractor storage and staging areas, and rehabilitation sites, the recreational areas would not experience significant adverse impacts as a result of the project. Impacts to parks or other recreational areas would be less than significant, and no mitigation would be required.

The severity of the impact would be less than that identified in the PEIR.

XII. TRANSPORTATION/TRAFFIC

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
a. Conflict with an applicable plan, ordinance, or policy that establishes measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel, and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, and pedestrian and bicycle paths?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, the disruption of local and regional traffic caused by capacity reduction from program rehabilitation activities would be significant at some locations, but the level of impacts would be determined at the project level when rehabilitation locations had been identified. The PEIR identified the following mitigation measures to reduce potentially significant impacts:

- **MM TRA-1** requires that excavation sites be located to avoid traffic impacts to the maximum extent feasible;
- **MM TRA-2** requires Metropolitan and/or its contractors to coordinate with the appropriate counties and local jurisdictions to develop construction traffic control measures and procedures prior to the start of construction; and
- **MM TRA-3** requires excavation work zones and construction staging areas to avoid interfering with parking for adjacent land uses, to the extent feasible.

The PEIR determined that implementation of **MM TRA-1** would reduce impacts related to temporary traffic disruptions and reduced capacity in some locations but stated that the severity or location of impacts could not be determined; therefore, programmatic impacts were found to be significant and unavoidable. Temporary programmatic impacts related to construction traffic and parking were determined to be less than significant with the implementation of **MM TRA-2** and **MM TRA-3**.

The proposed project would generate construction-related traffic during site preparation, ground excavation, pipe isolation and dewatering activities, and rehabilitation work at the proposed excavation sites (see **Figure 2**). Construction vehicle access to the proposed excavation sites would require temporary lane closures on select streets. However, these impacts would be temporary, and the roadways would be restored to existing conditions following the completion of construction. Additionally, in accordance with **MM TRA-1** and **MM TRA-3**, Metropolitan has planned excavation work zones and contractor's work areas in such a manner as to minimize traffic and parking impacts to the extent feasible. Further, pursuant to **MM TRA-2**, Metropolitan would coordinate with the cities of Los Angeles, Torrance, Lomita, and Rolling Hills Estates to develop construction traffic control measures and procedures, prior to the start of construction on each excavation/pipe access site. Site-specific measures to reduce temporary construction traffic and transportation impacts on city streets may include, but would not be limited to, the following:

- Provide advance written notification of construction activities to residences, schools, and businesses around each construction site. Notifications will include a brief overview of the proposed project and its purpose, as well as the proposed construction activities and schedule. Notification would also include the name and contact information for each Metropolitan project manager or representative responsible for resolving traffic issues for the given pipeline.
- Identify travel routes and establish optimal arrival and departure times to minimize conflicts with residents, schools, and businesses, as feasible.
- Employ provisions to detour pedestrians and bicyclists from project activities near or on sidewalks and bike lanes.
- Implement safety measures, such as signs, flaggers, cones, signage, and advance notice as appropriate.
- Cover all open trenches with steel plating per Caltrans standards when not in use or at the end of each workday, as applicable.

Due to the temporary nature of the anticipated traffic impacts, no permanent off-site roadway improvements would be required for the proposed project. Site-specific traffic control measures would be identified by Metropolitan in coordination with the appropriate jurisdictions, and implementation of these measures would reduce temporary impacts to a less-than-significant level. No long-term mitigation would be required. Following the completion of proposed project rehabilitation activities, all operational transportation circulation would be restored to existing conditions.

The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
b. Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, because the program would include rehabilitation of existing pipelines, which are underground, there would be minimal impacts related to long-term congestion management plans. For program

rehabilitation activities that would be located on or around arterials or intersections identified in the Los Angeles County Metropolitan Transportation Authority 2010 Congestion Management Program (CMP), the PCCP Program was determined to generate only a small number of truck trips and employee commuter trips compared with the daily traffic volumes for these access roads, and individual projects would take place over a few months or years. Once rehabilitation is complete in the CMP roadway, the street would be restored to preconstruction conditions. As such, program impacts were determined to be less than significant.

More than half of the length of the pipeline occurs within or adjacent to State Route 213, which is identified as an arterial within the CMP transportation network. The pipeline also crosses Interstate 1, which is also identified as an arterial, although the project does not propose excavation on or adjacent to Interstate 1 (Los Angeles County Metropolitan Transportation Authority 2010). Although portions of the project would occur within an arterial that is part of the CMP, the project would result in minimal temporary impacts to roadways. As described above under Item XII.a, the project would implement traffic control measures and procedures for the duration of construction to further minimize impacts. Following the completion of construction, roadways would be returned to existing conditions. The project would operate similar to existing conditions and would not result in an increase in operational traffic. Therefore, due to the minimal and temporary impacts to CMP arterials and freeways, impacts would be less than significant.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, the Second Lower Feeder crosses under a portion of the Long Beach Municipal Airport and is within a runway protection zone. The PEIR noted that for aboveground rehabilitation activities in these runway protection zones, construction equipment and/or personnel could interfere with airport operations. Also, where pipelines cross under runway or taxiway areas, there is the potential for belowground construction activities to affect or be affected by airport operations and safety. Impacts would be less than significant with the incorporation of mitigation measures. Implementation of **MM HAZ-5** would reduce program construction-period impacts to less-than-significant levels. Aboveground elements for program operation in a runway protection zone were determined to result in a significant impact if they could interfere with airport operations and safety, but program impacts would be less than significant with the implementation of **MM HAZ-6**, as the measure would require approval from airport officials on program elements.

The proposed project limits are not located within the Airport Influence Area or runway protection zone for the Long Beach Municipal Airport (County 2003). The runway protection zone is more than eight miles east of the closest proposed excavation site. Accordingly, no related impacts would occur, and no mitigation would be required.

The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, no obstacles that would affect sight distance were determined to result from program construction. The PEIR also noted the potential for safety hazards to result from maneuvering of construction-related vehicles and equipment among general-purpose traffic on local streets and that temporary lane closures could affect non-motorized travel along affected road sections. Program impacts were determined to be less than significant with the implementation of **MM TRA-2**.

The proposed project would involve construction equipment and vehicles within fenced work areas. Traffic would be rerouted to avoid these areas such that no increase in hazards would occur. With the implementation of **MM TRA-2**, project-specific impacts would be less than significant.

The severity of the impact would be the same as that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
e. Result in inadequate emergency access?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, in some cases the program pipelines are within street rights-of-way that serve as emergency response routes and/or evacuation routes. The PEIR stated that if excavation were to take place in roadways that serve as emergency access and capacity of the affected streets were reduced during construction (such as reducing four lanes to two lanes), the ability of these streets to serve as emergency access routes may be impaired. Implementation of **MM HAZ-7** would reduce impacts to a less-than-significant level. Once rehabilitation is complete, contractors would be required to return the street to preconstruction conditions; therefore, there would be no long-term impacts related to emergency access.

As discussed in Item VII.g, the PEIR does not identify an emergency response plan or an emergency evacuation plan for the city of Torrance; however, there are known designated emergency/evacuation routes within the cities of Los Angeles, Lomita, and Rolling Hills Estates. These include Normandie Avenue and Vermont Avenue in Los Angeles; Pacific Coast Highway, Western Avenue, Narbonne Avenue, and Lomita Boulevard in Lomita; and Palos Verdes Drive East and Palos Verdes Drive North in Rolling Hills Estates. However, as stated above, implementation of **MM HAZ-7** would reduce impacts to a less-than-significant level. Additionally, as discussed in Item XII.a, traffic control measures and procedures would be implemented to reduce temporary construction traffic and transportation impacts on city streets. Temporary, construction-related impacts to emergency access would therefore be less than significant. Once rehabilitation is complete, proposed project sites would be returned to preconstruction conditions; therefore, no long-term impacts would occur.

The severity of the impact would be less than that identified in the PEIR.

Would the proposed project:	*New or More Severe Significant Impact than Identified in the PEIR*	*Impact Less than or Equal to Impact Identified in the PEIR*
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities or otherwise decrease the performance or safety of such facilities?	☐	☒

Impact Less than or Equal to Impact Identified in the PEIR. As discussed in the PCCP PEIR, program rehabilitation would require temporary lane closures on certain streets. Where the pipeline directly travels under Class II bicycle lanes or encroaches on existing bus stops, work zones could interfere with bus services and bicycle traffic on these streets. Lane closures would be restricted to a short distance and would be short in duration, but temporary impacts could be significant. With implementation of **MM TRA-1** and **MM TRA-2**, however, programmatic impacts were determined to be less than significant.

The PCCP PEIR lists roads with designated Class II bicycle lanes in the vicinity of the Second Lower Feeder; none occur within the project boundaries. There is one bus route within the proposed project limits: GTrans Line 2, which travels along Western Avenue. Metro Line 205 also travels along Western Avenue within a small portion of the project site (Metro Transit 2018). Sidewalks and private driveways are present along the majority of the Reach 3 alignment. Implementation of **MM TRA-2** and related site-specific traffic control measures that are identified through coordination between Metropolitan and the appropriate jurisdictions would ensure that temporary impacts to pedestrian and bicycle facilities during construction activities would be less than significant.

Proposed project operation would have no impact on transit, bicycle, or pedestrian travel.

The severity of the impact would be the same as that identified in the PEIR.

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PREPARERS OF INITIAL STUDY

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Appendix A
Air Quality/Greenhouse Gas Emissions Calculations

MWD-24 PCCP Reach3 Maximum Daily Emissions

CalEEMod Summary

Site Type	Location	Maximum Unmitigated Emissions (pounds per day)										Maximum Mitigated Emissions (pounds per day)									
		ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Typical Excavation Site	On-Site	3.14	27.48	27.55	0.05	0.00	1.62	1.62	0.00	1.54	1.54	0.53	2.31	30.11	0.05	0.00	0.07	0.07	0.00	0.07	0.07
	Off-Site	0.04	0.23	0.43	0.00	0.14	0.00	0.14	0.04	0.00	0.04	0.04	0.23	0.43	0.00	0.14	0.00	0.14	0.04	0.00	0.04
Typical New Valve/Meter Vault Structure	On-Site	2.55	22.61	23.43	0.04	0.00	1.30	1.30	0.00	1.24	1.24	0.42	1.84	25.48	0.04	0.00	0.06	0.06	0.00	0.06	0.06
	Off-Site	0.04	0.13	0.80	0.01	0.30	0.00	0.13	0.03	0.00	0.03	0.04	0.13	0.80	0.01	0.30	0.00	0.13	0.03	0.00	0.03
Typical Below Grade AV/VV Relocation	On-Site	0.55	4.71	6.00	0.01	0.00	0.25	0.25	0.00	0.24	0.24	0.10	0.45	6.45	0.01	0.00	0.01	0.01	0.00	0.01	0.01
	Off-Site	0.04	0.20	0.40	0.00	0.15	0.00	0.13	0.03	0.00	0.04	0.04	0.20	0.40	0.00	0.15	0.00	0.15	0.03	0.00	0.04

On-Site Fugitive Dust

Site Type	Max CY/Day	pounds per day	
		PM10	PM2.5
Typical Excavation Site	638.7	8.73E-02	1.32E-02
Typical New Valve/Meter Vault Structure	177.8	2.43E-02	3.68E-03
Typical Below Grade AV/VV Relocation	25.9	3.54E-03	5.36E-04

On-Site Haul Truck Idling

Site Type	Max Trip/Day	ROG	CO	NOX	PM10	PM2.5
Typical Excavation Site	3	3.78E-05	1.91E-04	1.36E-03	2.59E-06	2.48E-06
Typical New Valve/Meter Vault Structure	2	2.52E-05	1.27E-04	9.08E-04	1.73E-06	1.65E-06
Typical Below Grade AV/VV Relocation	2	2.52E-05	1.27E-04	9.08E-04	1.73E-06	1.65E-06

Maximum Concurrent Site Construction

Typical Excavation Site	5
Typical New Valve/Meter Vault Structure	5
Typical Below Grade AV/VV Relocation	3

Project Total

	Unmitigated Emissions (pounds per day)										Mitigated Emissions (pounds per day)									
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
On-Site	30.1	264.6	272.9	0.5	0.6	15.3	15.9	0.0	14.6	14.6	5.1	22.1	297.3	0.5	0.6	0.7	1.2	0.0	0.7	0.7
Off-Site	0.6	2.4	7.4	0.1	2.6	0.0	1.7	0.5	0.0	0.5	0.6	2.4	7.4	0.1	2.6	0.0	1.8	0.5	0.0	0.5
Total	**30.6**	**267.0**	**280.2**	**0.5**	**3.2**	**15.3**	**17.6**	**0.5**	**14.6**	**15.1**	**5.7**	**24.5**	**304.7**	**0.5**	**3.2**	**0.7**	**3.0**	**0.5**	**0.7**	**1.2**
SCAQMD Threshold	75	100	550	150	-	-	150	-	-	55	75	100	550	150	-	-	150	-	-	55
Exceed Threshold?	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Source:
1. CalEEMod version 2020.4.0
2. USEPA AP-42 Fifth Edition: 13.2.4 Aggregate Handling And Storage Piles
3. USEPA AP-42 Fifth Edition: 13.2.2 Unpaved Roads Table 13.2.2-1, Construction Sites
4. EMFAC2021 (v1.0.1) Emissions Inventory

MWD-24 PCCP Reach3 Annual GHG Emissions

CalEEMod Summary						
	Emissions (MT per year)					
Site Type	Bio CO2	N-Bio CO2	Total CO2	CH4	N20	CO2e
Typical Excavation Site	0.0	8.7	8.7	0.0	0.0	8.8
Typical New Valve/Meter Vault Structure	0.0	17.4	17.4	0.0	0.0	17.5
Typical Below Grade AV/VV Relocation	0.0	3.4	3.4	0.0	0.0	3.4

On-Site Haul Truck Idling					
	Total	Emissions (MT per year)			
Site Type	Trips	CO2	CH4	N20	CO2e
Typical Excavation Site	81	4.0E-01	1.8E-06	6.3E-05	4.0E-01
Typical New Valve/Meter Vault Structure	2	9.8E-03	4.5E-08	1.6E-06	9.8E-03
Typical Below Grade AV/VV Relocation	2	9.8E-03	4.5E-08	1.6E-06	9.8E-03

Total Site Types	
Typical Excavation Site	15
Typical New Valve/Meter Vault Structure	9
Typical Below Grade AV/VV Relocation	8

Project Total						
	Emissions (MT per year)					
	Bio CO2	N-Bio CO2	Total CO2	CH4	N20	CO2e
Total	0.0	320.6	320.6	0.1	0.0	323.0

On-Site Fugitive Dust Emissions

Soil Handling Emission Factors[1]		
	PM10	PM2.5
k, particle size multiplier	0.35	0.053
U, mean wind speed, miles per hour[6]	5.7	5.7
M, material moisture content (%)	12	12
CY per ton[2]	1.2641662	1.2641662
Emission Factor (pounds per CY material)	1.3664E-04	2.0692E-05

Vehicle Dust Emissions Factors[3]			
Input			
		PM10	PM2.5
a, empirical constant		0.9	0.9
b, empirical constant		0.45	0.45
k, empirical constant		1.5	0.15
s, surface material silt content (%)[4]		8.5	8.5
Emissions Factor (lb/VMT)			
Vehicles	W (tons)	PM10	PM2.5
Highway Haul Trucks	15	2.2690	0.2269

Highway Haul Trucks on Unpaved Roads						
			PM10		PM2.5	
Source	Round Trips	Miles/Trip	Emissions Factor (lb/VMT)	Max Daily (lb)	Emissions Factor (lb/VMT)	Max Daily (lb)
Highway Haul Trucks	1	0.2	2.2690	0.454	0.2185	0.044
Total Uncontrolled				**0.5**		**0.0**
Water unpaved travel surfaces twice daily (55% Reduction)				**0.2**		**0.0**
Speed limit 15 MPH (66.7% Reduction))				**0.1**		**0.0**

Notes:
1. Emissions factors from USEPA AP-42 Fifth Edition: 13.2.4 Aggregate Handling And Storage Piles:
EF = k * (0.0032) * ((U/5)^1.3 / (M/2)^1.4)
2. 1 cubic yard soil = 1.2641662 tons (CalEEMod User's Guide Appendix A)
3. Emissions factor equation from USEPA AP-42 Fifth Edition: 13.2.2 Unpaved Roads:
EF = k * (s/12)^a * (W/3)^b
4. Silt content from USEPA AP-42 Fifth Edition: 13.2.2 Unpaved Roads Table 13.2.2-1, Construction Sites.
5. Dust control on unpaved roads from Western Regional Air Partnership Fugitive Dust Handbook.
6. Mean wind speed from Long Beach Aiport ASOS data:
https://mesonet.agron.iastate.edu/sites/windrose.phtml?station=LGB&network=CA_ASOS

Idling Emissions for Heavy Duty Trucks

Input		Pounds per Day					MT per Year				
		ROG	CO	NOX	PM10	PM2.5		CO2	CH4	N20	Total
Trucks per Day in the Idling Queue	1.00						GWP	1	25	298	
Average Idling Time (minutes)	5.0	1.26E-05	6.36E-05	4.54E-04	8.65E-07	8.27E-07		0.00	2.25E-08	7.75E-07	0.00
Days Per Year	85.0										
Metric Tonnes (MT) per Pound	4.54E-04										

Notes:
1. Idling emissions are approximated by 5 mph emissions.
2. Average idling emissions in pounds per minute for Los Angeles County calculated using weighted average of annual VMT for heavy duty trucks.

Source: EMFAC2021 (v1.0.1) Emissions Inventory
Region Type: Sub-Area
Region: Los Angeles (SC)
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, tons/day for Emissions, 1000 gallons/day for Fuel Consumption, mph for Speed, kWh/day for Energy Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Total VMT		ROG_RUNEX	CO_RUNEX	NOx_RUNEX	CO2_RUNEX	CH4_RUNEX	PM10_RUNEX	PM2.5_RUNEX	N2O_RUNEX
Los Angeles (SC)	2022	HHDT	Aggregate	5	Diesel	618.6509		0.000233543	0.001179758	0.008426822	2.368646593	1.08475E-05	1.60519E-05	1.53575E-05	0.000373181
					Total	**618.65**	**lbs/min**	**2.5167E-06**	**1.2713E-05**	**9.0809E-05**	**2.5525E-02**	**1.1689E-07**	**1.7298E-07**	**1.6549E-07**	**4.0215E-06**

Appendix B
Biological Resources Assessment

July 20, 2020
Project No: 17-04026

Lilia Martínez
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Subject: Biological Resources Assessment for the Prestressed Concrete Cylinder Pipe Rehabilitation Program – Second Lower Feeder Reach 3 Project, Cities of Los Angeles, Torrance, Lomita, and Rolling Hills Estates, Carson, and Long Beach, Los Angeles County, California

Dear Ms. Martinez:

This report documents the findings of a Biological Resources Assessment conducted by Rincon Consultants, Inc. (Rincon), for the proposed Prestressed Concrete Cylinder Pipeline (PCCP) Rehabilitation Program - Second Lower Feeder (SLF) Reach 3 Project (project). The project is located along the alignment of the Metropolitan Water District of Southern California's (Metropolitan) Second Lower Feeder water distribution pipeline within the cities of Los Angeles, Torrance, Lomita, Rolling Hills Estates, Carson, and Long Beach and a section of the Sepulveda Feeder in the cities of Los Angeles and Torrance. The assessment was completed to document existing site conditions via desktop analysis and field survey, to determine potential impacts to special-status biological resources based upon current project plans, and to compare project impacts to those previously analyzed within Metropolitan's Programmatic Environmental Impact Report (PEIR) (SCH No. 2014121055) (ICF International 2016).

Additional improvements at Station 1565+92, 1569+91, and 1594+15 are located along the existing SLF alignment and are within the PEIR area of analysis. The potential presence of sensitive biological resources in the vicinity of the additional improvements locations was previously evaluated in Addendum No. 3 (Reach 2) to the PEIR (Metropolitan 2019). Site conditions at these stations relevant for biological resources have not changes since the addendum was published.

The proposed project site contains habitat for nesting birds and the project proposes the trimming or removal of trees and vegetation. Therefore, appropriate mitigation (MM BIO-2 and MM BIO-7) as identified in the PEIR is recommended herein to reduce impacts to these sensitive biological resources.

Project Location and Description

The proposed project, Reach 3 of the SLF, covers rehabilitation of portions of a 4.9-mile section of the 78-inch-diameter Second Lower Feeder in the cities of Los Angeles, Torrance, Lomita, Rolling Hills Estates, Carson, and Long Beach and a 300-linear-foot section of the 84-inch-diameter Sepulveda Feeder in the cities of Los Angeles and Torrance (Figure 1). Proposed locations for project elements have been identified, including the contractor's work and storage area, pipe access sites from which the feeder

would be relined, installation of large isolation valves, below ground structures that would be improved, air-release/vacuum valves that would be relocated above grade, air-release/vacuum valves that would be improved, and the construction of a service connection (WB-41).

Ground disturbance in the project area is primarily proposed for Stations 1860, 1864, 1916, 1964, 2015, 2022, 2049, 2098, 2104, and 2109/2114, as well as WB-41. The maximum depth of excavation in these areas would be 20 feet below ground surface. Minor ground disturbance would also occur throughout the project footprint for other project elements (e.g., air-release/vacuum valve relocations). Additional improvements incorporated as part of the project include: the relocation of a vacuum valve to an above ground location within the sidewalk at Station 1565+92 (Reach 2); the relocation of an air release/vacuum valve at Station 1569+91 (Reach 2); and the replacement of an existing 16-inch valve at service connection WB-37 located at Station 1594+15 (Reach 2). All proposed excavation is along the existing pipeline alignment and ground disturbance is expected to remain primarily within disturbed soils.

Existing surface improvements, such as road pavements, sidewalks, and landscaping, would be removed at each excavation area, and soils would be excavated and temporarily removed from the site to expose the existing pipeline. Once rehabilitation is complete, the excavation area would either be backfilled with soils originally excavated or backfilled with slurry, and the surface of each excavation area and surrounding work zone would be restored to existing conditions. This would involve re-paving existing roads, repairing or replacing existing sidewalks, and replanting landscaping.

Rehabilitation activities would take approximately one year, with mobilization of equipment and traffic control setup scheduled to begin as early as October 2021. Water service shutdowns on the Second Lower and Sepulveda Feeders would begin in mid-October 2021, and the proposed project pipeline segment would be returned to service in April 2022. Traffic controls and equipment would be removed by the end of October 2022. The PCCP Program schedule is dependent on risk assessment of the pipeline, thus if inspections reveal another segment is more at risk, the repair schedule will be altered. Shutdowns are primarily scheduled during low water use times (i.e., the optimum time for pipeline shutdowns is winter months when water demand is less than during the summer months).

Previous Environmental Review

The PEIR assessed the potential environmental effects of the PCCP Rehabilitation Program (SCH No. 2014121055) in accordance with the California Environmental Quality Act (CEQA) of 1970 (Public Resources Code [PRC] Section 21000 et seq.) and the Guidelines for Implementation of CEQA (State CEQA Guidelines) published by the Public Resources Agency of the state of California (California Code of Regulations [CCR], Title 14, Section 15000 et seq.). The PEIR analyzed rehabilitation of the PCCP portions of the five pipelines within Metropolitan's service area that were identified as having the highest risk, including the Reach 3 segment of the Second Lower Feeder. The SLF Reach 3 additional improvements are located along the existing SLF alignment (Reach 2) and are within the PEIR area of analysis.

The PEIR identified programmatic impacts associated with thresholds BIO(a), BIO(b), BIO(c), BIO(d) and BIO(f) as potentially significant and unavoidable despite proposed mitigation, noting that the level of impact would need to be determined at the project level. Impacts associated with threshold BIO(e) were identified as less than significant after mitigation.

Methodology

Regulatory Overview

Regulated or sensitive resources studied and analyzed herein include special-status plant and wildlife species, nesting birds and raptors, sensitive plant communities, jurisdictional waters and wetlands, wildlife movement, and locally protected resources, such as protected trees.

Environmental Statutes

For the purpose of this report, potential impacts to biological resources were analyzed based on the following statutes:

- California Environmental Quality Act (CEQA)
- Federal Endangered Species Act (ESA)
- California Endangered Species Act (CESA)
- Federal Clean Water Act (CWA)
- California Fish and Game Code (CFGC)
- Migratory Bird Treaty Act (MBTA)
- The Bald and Golden Eagle Protection Act
- Porter-Cologne Water Quality Control Act
- City of Los Angeles Municipal Code
- City of Torrance Municipal Code
- City of Lomita Municipal Code
- City of Rolling Hills Estates Municipal Code
- City of Carson
- City of Long Beach Municipal Code

Guidelines for Determining CEQA Significance

The following threshold criteria, as defined by the CEQA Guidelines Appendix G Initial Study Checklist, were used to evaluate potential environmental effects. Based on these criteria, the proposed project would have a significant effect on biological resources if it would:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marshes, vernal pools, coastal areas, etc.) through direct removal, filling, hydrological interruption, or other means.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional or state habitat conservation plan.

Literature Review

A literature review was conducted to establish the environmental and regulatory setting of the proposed project. Specific literature reviewed for the subject analysis is provided in the references section of this document. The reviewed literature also included the United States Department of Agriculture (USDA) Soil Survey for the United States Geological Service (USGS) *Torrance, California* 7.5-minute topographic quadrangle (USDA 2019), and literature detailing the habitat requirements of subject species. Aerial photographs, topographic maps, and soil survey maps were also examined.

Queries of the United States Fish and Wildlife Service (USFWS) Environmental Conservation Online System (ECOS): Information, Planning and Conservation System (IPaC) (USFWS 2019a), USFWS Critical Habitat Portal (USFWS 2019b), USFWS National Wetland Inventory (NWI) (USFWS 2019c), California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2019a), CDFW Biogeographic Information and Observation System (BIOS) (CDFW 2019b) and California Native Plant Society (CNPS) *Online Inventory of Rare, Threatened and Endangered Plants of California* (CNPS 2019) were conducted. The queries were conducted to obtain comprehensive information regarding state and federally listed species, sensitive communities and federally designated critical habitat known to or considered to have potential to occur within the vicinity of the project site.

Field Reconnaissance Survey

The field reconnaissance survey was limited to providing an overview of site biological constraints and the potential presence of sensitive biological resources, including special-status plant and wildlife species, sensitive plant communities, jurisdictional waters and wetlands, protected trees, wildlife movement, and habitat for nesting birds. The survey area consisted of the approximately 4.9-mile project footprint extending from Second Lower Feeder Station (SLF STA) 1859+80 (located on West 220th Street in the city of Los Angeles) to SLF STA 2116+84 (located adjacent to the Palos Verdes Reservoir in the city of Rolling Hills Estates) and from Sepulveda Feeder Station (SF STA) 2270+35 to SF STA 2273+23, located on Western Avenue in the cities of Torrance and Los Angeles. Site photographs are included in Attachment C.

Rincon biologist Amy Leigh Trost conducted the field reconnaissance survey on September 26, 2019. The survey was performed by walking and driving along the proposed work area to characterize the existing biological resources present (e.g., vegetative communities, potential presence of special-status species and/or habitats, and presence of potentially jurisdictional waters). Where portions of the survey area were inaccessible on foot (e.g., private property and fenced areas), the biologist visually inspected these areas with binoculars (10 x 40). Weather conditions during the survey included an average temperature of 71 degrees Fahrenheit, with winds between 0 and 3 miles per hour and overcast skies.

Existing Conditions

Physical Characteristics

The project site is located within developed/disturbed urbanized areas, primarily within the paved rights-of-way of existing roadways. Based on a review of historic aerial photographs, most of the project site and surrounding areas have been heavily developed and disturbed since at least 1952.

Soils onsite consist of the following soil types, of which Urban land-Thums-Windfetch complex, 0 to 2 percent slopes, and Urban land-Marina complex, 0 to 5 percent slopes, are considered hydric (Attachment B, Figure 2, USDA 2019):

- Urban land-Aquic Xerothents, fine substratum-Cropley complex, 0 to 5 percent slopes
- Urban land-Haploxeralfs complex, 0 to 2 percent slopes
- Urban land-Anthraltic Xerorthents, loamy substratum-Grommet complex, 0 to 5 percent slopes
- Urban land-Typic Xerothents, coarse substratum-Typic Haploxeralfs complex, 0 to 5 percent slopes
- Urban land-Thums-Windfetch complex, 0 to 5 percent slopes
- Urban land-Thums-Windfetch complex, 0 to 2 percent slopes
- Urban land-Marina complex, 0 to 5 percent slopes
- Urban land-Metz-Pico complex, 0 to 2 percent slopes
- Urban land-Windfetch-Sepulveda complex, 2 to 9 percent slopes
- Lunada-Zaca complex, 30 to 75 percent slopes
- Urban land-Dapplegray-Oceanaire complex, 10 to 35 percent slopes
- Pits and Quarries
- Dapplegray-Urban land complex, 10 to 35 percent slopes, terraced

Land use adjacent to the project site consists of developed and urban areas including a mixture of institutional, residential, and commercial uses.

Vegetation

Based on a review of available aerial imagery and the field reconnaissance survey, the project site is primarily characterized by urban and developed land including paved road rights-of-way, and adjacent sidewalks and utility poles. These portions of the project site are devoid of vegetation with the exception of landscaped medians, sidewalks and street trees, which are dominated by ornamental species such as eucalyptus (*Eucalyptus* sp.), large pines (*Pinus* sp.), Peruvian pepper tree (*Schinus molle*), crimson bottlebrush (*Callistemon lanceolatus*), and ornamental palms. Trees located within Palos Verdes Reservoir are primarily large pine trees. Two coast live oak (*Quercus agrifolia*) trees were documented in the work area for SLF STA 2109/2114 in the city of Rolling Hills Estates.

General Wildlife

The urban and developed habitat in the project site supports common urban wildlife. Wildlife species observed directly or detected from calls, tracks, scat, or other sign were documented. The detection of wildlife species was limited by seasonal and temporal factors. Avian species observed/detected on or adjacent to the site include mourning dove (*Zenaida macroura*), house finch (*Haemorhous mexicanus*),

European starling (*Sturnus vulgaris*), American crow (*Corvus brachyrhynchos*), and Anna's hummingbird (*Calypte anna*).

Sensitive Biological Resources

Based on review of aerial photographs and the field reconnaissance survey, Rincon evaluated the potential presence of sensitive biological resources on and adjacent to the project site.

Special-Status Species

Local, state, and federal agencies regulate special-status species and generally require an assessment of their presence or potential presence to be conducted prior to the approval of a proposed project. Assessments for the potential occurrence of special-status species are based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB, species occurrence records from other sites in the vicinity of the survey area, and previous reports for the project site. The potential for each special-status species to occur in the survey area was evaluated according to the following criteria:

- **No Potential.** Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- **Low Potential.** Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- **Moderate Potential.** Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- **High Potential.** All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- **Present.** Species is observed on the site or has been recorded (e.g., CNDDB, other reports) on the site recently (within the last 5 years).

The CNDDB has records for 21 special-status plant species and 21 special-status wildlife species within five miles of the project site (Attachment D). One sensitive plant community, southern coastal bluff scrub, was identified within five miles of the project site. Special-status plant and wildlife species typically have very specific habitat requirements, which are not found on the project site.

Special-Status Plant Species

The project site is located within highly developed/disturbed urbanized areas, and primarily within the paved rights-of-way of existing roadways. Because of historic and existing disturbance from high levels of anthropogenic activities, the site is not suitable for special-status plant species.

Special-Status Wildlife Species

The project site is located within highly developed/disturbed urbanized areas, and primarily within the paved rights-of-way of existing roadways. Because of historic, existing disturbance from high levels of

anthropogenic activities, and the lack of specific coastal habitats or suitable substrates, the site is not suitable for most special-status wildlife species.

Low quality or marginal foraging and/or roosting habitat for three special-status wildlife species occurs within and adjacent to the project site:

- Southern California legless-lizard (*Anniella stebbinsi*); CDFW Species of Special Concern (SSC)
- Western mastiff bat (*Eumops perotis californicus*); CDFW SSC
- San Diego desert woodrat (*Neotoma lepida intermedia*); CDFW SSC

The project site is dominated by landscaped areas containing ornamental trees with low buildings that may potentially serve as habitat for southern California legless lizard (SCLL), San Diego desert woodrat (SDDW), and roosting western mastiff bat. The habitat surrounding Palos Verdes Reservoir and SLF STA 2109/2114 has the greatest potential to support special-status species; however, these areas are regularly disturbed. SLF STA 2109/2114 contains some woody shrubs and is located directly adjacent to the George F. Canyon Nature Preserve where there is some potentially suitable habitat for SCLL and SDDW. Palos Verdes Reservoir was developed in the 1960s and portions of the property have returned to a semi-natural habitat with suitable understory for both SCLL and SDDW. Therefore, potential for occurrence of these species is low. The project site has a history of frequent disturbance and is surrounded by existing development and heavily traveled transportation corridors. These factors reduce the potential for occurrence for most wildlife species mentioned.

Nesting Birds

Ornamental shrubs and trees that could provide suitable nesting habitat for several common avian species occur throughout the project site. Nesting birds are protected by CFGC 3503 and the MBTA.

Sensitive Plant Communities

No sensitive plant communities as defined by the CNDDB or local ordinances are present on the project site.

Jurisdictional Waters and Wetlands

Based on aerial review, including review of the USFWS NWI Wetland Mapper (USFWS 2019c), and the reconnaissance field survey, no potentially jurisdictional drainages or wetlands are present within any designated work areas. A riparian corridor is mapped within the work area for SLF STA 2098; however, this feature was not present in the field (Attachment C, Photograph 3). The area is dominated by non-native Peruvian pepper trees and no water source was observed. A length of riverine habitat is also mapped along Palos Verdes Drive East between Oak Street and Club View Lane. This feature was not observed in the field and furthermore, no project work is proposed in this area.

Addendum No. 3 (Reach 2) to the PEIR identified concrete-lined storm water channels, including Dominguez Channel and Los Cerritos Drain. Both channels are potential jurisdictional features, but are located more than 100 feet from the project's additional improvement locations.

Wildlife Movement

Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning

areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

The project site is located within a developed urban area and occurs close to heavily traveled transportation corridors including Interstate (I) 110 and I-405. The closest mapped *Natural Landscape Block* (Spencer et al. 2010) is approximately 22 miles northeast of the project site in the Puente Hills (including the Worsham Open Space Preserve) near the city of Whittier. The project site is separated from these habitat connectivity areas by existing development, major highways, and paved roadways. The project site is located adjacent to the George F. Canyon Nature Preserve, which is located just north of SLF STA 2109/2114 at the southern end of the project site. This area provides for local movement of common wildlife but does not serve as a significant migratory wildlife corridor. Furthermore, the site has been previously disturbed and no work is proposed in the nature preserve. Therefore, the project site does not contain significant migratory wildlife corridors.

Resources Protected by Local Policies and Ordinances

City of Lomita

The Lomita City Tree Ordinance (9-2.30) states that alteration or removal of any city tree shall require a tree trimming or removal permit, respectively. Furthermore, the ordinance states that all city pine trees in the Lomita Pines neighborhood with a diameter at breast height of twelve inches or greater, shall be given protected tree status. All reasonable efforts to save trees must be exhausted before removal will be allowed. The Lomita Pines neighborhood is generally bordered by Pacific Coast Highway to the north, Western Avenue to the east, Narbonne Avenue to the west, and ends just north of Via Madonna in the city of Lomita.

City of Los Angeles

The city of Los Angeles Protected Tree Relocation or Replacement Ordinance (177404) states that no protected tree may be relocated or removed unless the removal of the tree has been approved by the Advisory Agency. Los Angeles protects all of the following Southern California native tree species, which measure four inches or more in cumulative diameter, four and one-half feet above the ground level at the base of the tree: Oak trees including valley oak (*Quercus lobata*), California live oak (*Quercus agrifolia*), or any other tree of the oak genus indigenous to California but excluding the scrub oak (*Quercus dumosa*), southern California black walnut (*Juglans californica* var. *californica*), western sycamore (*Platanus racemosa*), and California bay (*Umbellularia californica*). Non-protected street trees within Los Angeles require a street tree removal permit.

City of Rolling Hills Estates

The Rolling Hills Estates Street Tree Ordinance (12.20) states that a property owner shall file a written request to the superintendent to initiate removal of street trees from a planting strip or easement.

City of Torrance

The Torrance Tree Ordinance (75.1.1) states that no person may cut, trim, remove, prune, plant, injure, or interfere with any tree upon any street, park, alley, or public place within the City without first obtaining a permit from the Public Works Director.

City of Carson

The City of Carson Municipal Code Chapter 9 states that the Public Works Division shall be responsible for administering and scheduling pruning of all City trees; otherwise all other trimming is prohibited, unless a permit is obtained. All City trees shall be trimmed using professionally accepted standards, as established by the International Society of Arboriculture (ISA) Best Management Practice and ANSI Pruning Standards, whichever is more protective of tree preservation. All City trees shall be pruned in a manner that will encourage good development while preserving their health, structure, and natural appearance. Shearing, topping, heading back, stubbing, lion tailing, or pollarding of public trees is prohibited, except in accordance with ISA standards (City of Carson 2020).

City of Long Beach

The City of Long Beach Municipal Code Section 14.28 states that tree trimming and removal of any City-owned street tree will be conducted by the Public Works Department following submittal of an application for a no-fee permit (City of Long Beach 2006, 2013).

California Department of Transportation

The portion of the project site that occurs within the California Department of Transportation (Caltrans) right-of-way includes the length of the project along Western Avenue (California State Route 213). This segment will require coordination with Caltrans prior to tree removal in this area.

Conservation Plans

The proposed project is not located within the jurisdiction of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Impact Analysis and Mitigation Measures

Special-Status Species

Twenty one special-status plant species and 21 special-status wildlife species are known to occur within a five-mile radius of the project site. Due to the historic and existing disturbed/developed condition of the project site, the site is not suitable for any special-status plant species; therefore, no impacts to special-status plant species would occur. The severity of the impact would be less than that identified in the PEIR.

Of the 21 special-status wildlife species identified, three species have low potential to occur onsite: southern California legless-lizard, western mastiff bat, and San Diego desert woodrat.

The project proposes the removal or trimming of trees which may provide low-quality foraging habitat as well as daytime or nighttime roosts for the western mastiff bat, as well as low-quality habitat for SCLL and SDDW. As such, the project may result in loss of low quality habitat for these species, as well as potential injury or death to individuals. It should be noted that these species are not geographically restricted to the vicinity of the project area and the loss of low quality habitat would not significantly affect the species. Given the low potential for occurrence onsite and the location of the proposed project adjacent to disturbed/developed areas, the proposed project would not have population-wide negative effects on these species. Impacts would be less than significant and no further actions are recommended. The severity of the impact would be less than that identified in the PEIR.

As described above, the project site contains ornamental shrubs and trees that could provide suitable nesting habitat for several common avian species. Implementation of MM BIO-2 as identified in the PEIR would reduce impacts to a less than significant level. The severity of the impact would be equal to that identified in the PEIR.

> **MM BIO-2: Impacts on Nesting Birds.** For any projects within the program that require vegetation removal during the nesting season for sensitive species protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code Section 3503, including street trees and other landscaping, a qualified biologist will inspect the vegetation to be removed no more than 10 days prior to tree/ vegetation removal to determine whether nesting birds are present. If a nest is found, the biologist will determine the site-specific measures necessary to avoid disturbing the nest until nesting activity has ceased. Nothing in this mitigation measure precludes the use of deterrent measures to prevent bird nesting.

Sensitive Plant Communities

The project site does not contain riparian habitat or other sensitive natural communities. Therefore, no impacts are expected and the severity of the impact would be less than that identified in the PEIR.

Jurisdictional Waters and Wetlands

The project site does not contain any jurisdictional drainages or wetlands. A riparian corridor is mapped within the work area for SLF STA 2098; however, this feature was not present in the field (Attachment C, Photograph 3). The area is dominated by non-native Peruvian pepper trees and no water source was observed. A band of riverine habitat is also mapped along Palos Verdes Drive East between Oak Street and Club View Lane. This feature was not observed in the field and furthermore, no work areas are proposed at this location. Therefore, no impacts to jurisdictional waters and wetlands are expected.

Wildlife Movement

As discussed above, the project site is located within a developed urban area and occurs close to heavily traveled transportation corridors including I-110 and I-405. The closest mapped *Natural Landscape Block* (Spencer et al. 2010) is approximately 22 miles northeast of the project site in the Puente Hills (including the Worsham Open Space Preserve) near the city of Whittier. The project site is separated from these habitat connectivity areas by existing development, major highways, and paved roadways. The project site is located adjacent to the George F. Canyon Nature Preserve. The site has been previously disturbed and no work is proposed in the nature preserve. The project site does not contain significant migratory wildlife corridors; therefore, no impacts are expected and the severity of the impact would be less than that identified in the PEIR.

Local Policies and Ordinances

As described above, trees and vegetation are proposed to be trimmed or removed in order to complete the project. Implementation of MM BIO-7 as identified in the PEIR would reduce impacts to a less than significant level. The severity of the impact would be equal to that identified in the PEIR.

> **MM BIO-7: Conflicts with Local Policies Related to Biological Resources.** For any projects within the program that require vegetation removal, Metropolitan will determine if there are any applicable local policies related to biological resources and, if so, coordinate with the affected jurisdiction, as necessary, to determine appropriate requirements for vegetation removal and replacement. The contractor will be required to comply with any applicable requirements. Nothing in this mitigation

will require the contractor to make improvements beyond the existing condition prior to construction.

Conservation Plans

The proposed project is not located within the jurisdiction of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, no impact would occur and the severity of the impact would be less than that identified in the PEIR.

Thank you for the opportunity to provide this Biological Resources Assessment. Please contact the undersigned with any questions.

Sincerely,
Rincon Consultants, Inc.

Amy Leigh Trost
Associate Biologist

Brenna Vredeveld
Senior Biologist/Project Manager

Steven J. Hongola
Principal Biologist

Attachments

Attachment A References
Attachment B Figures
Attachment C Site Photographs
Attachment D Special-Status Species Potential to Occur

Attachment A

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Attachment B

Figures

Figure 1 Project Location

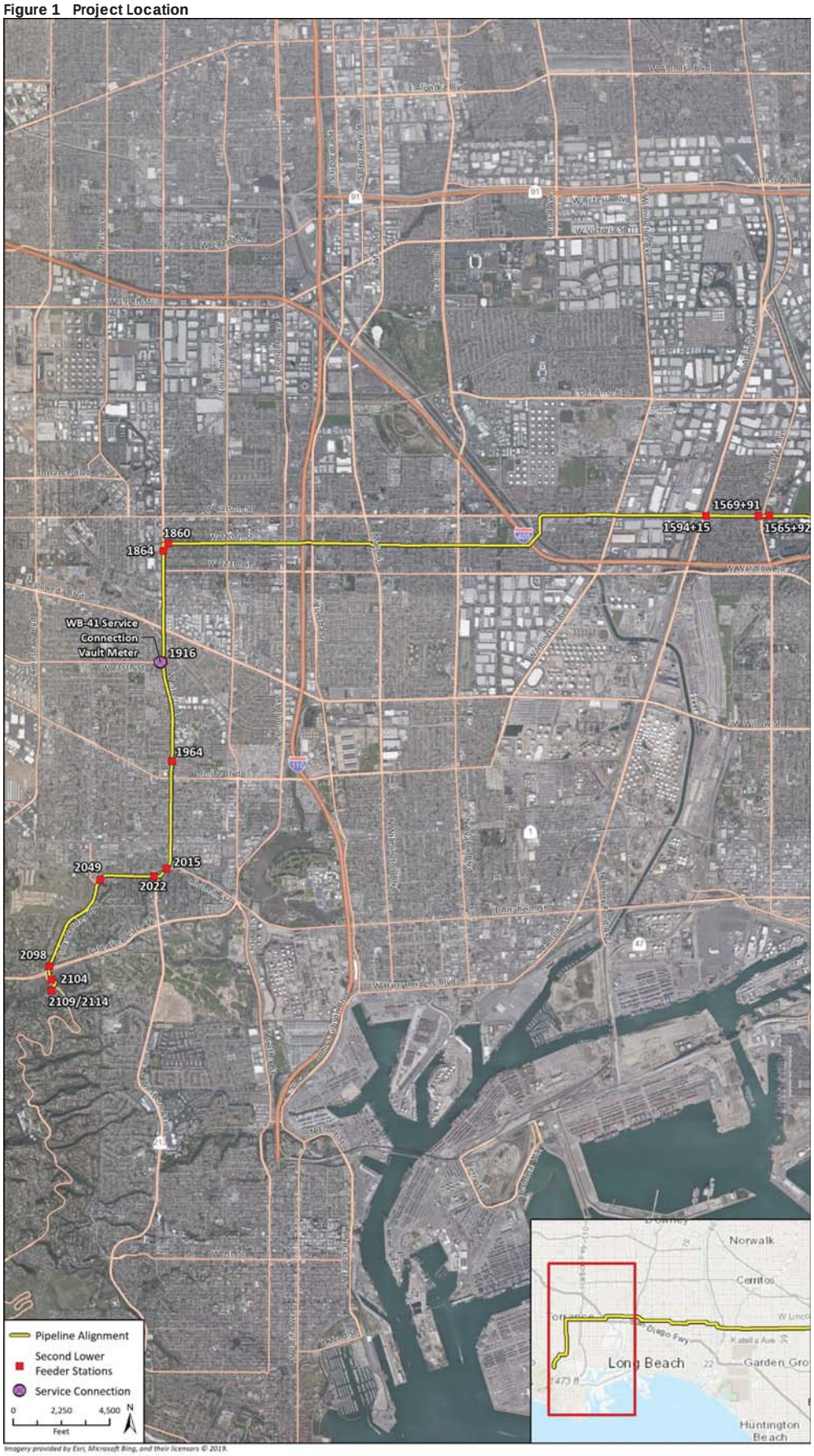
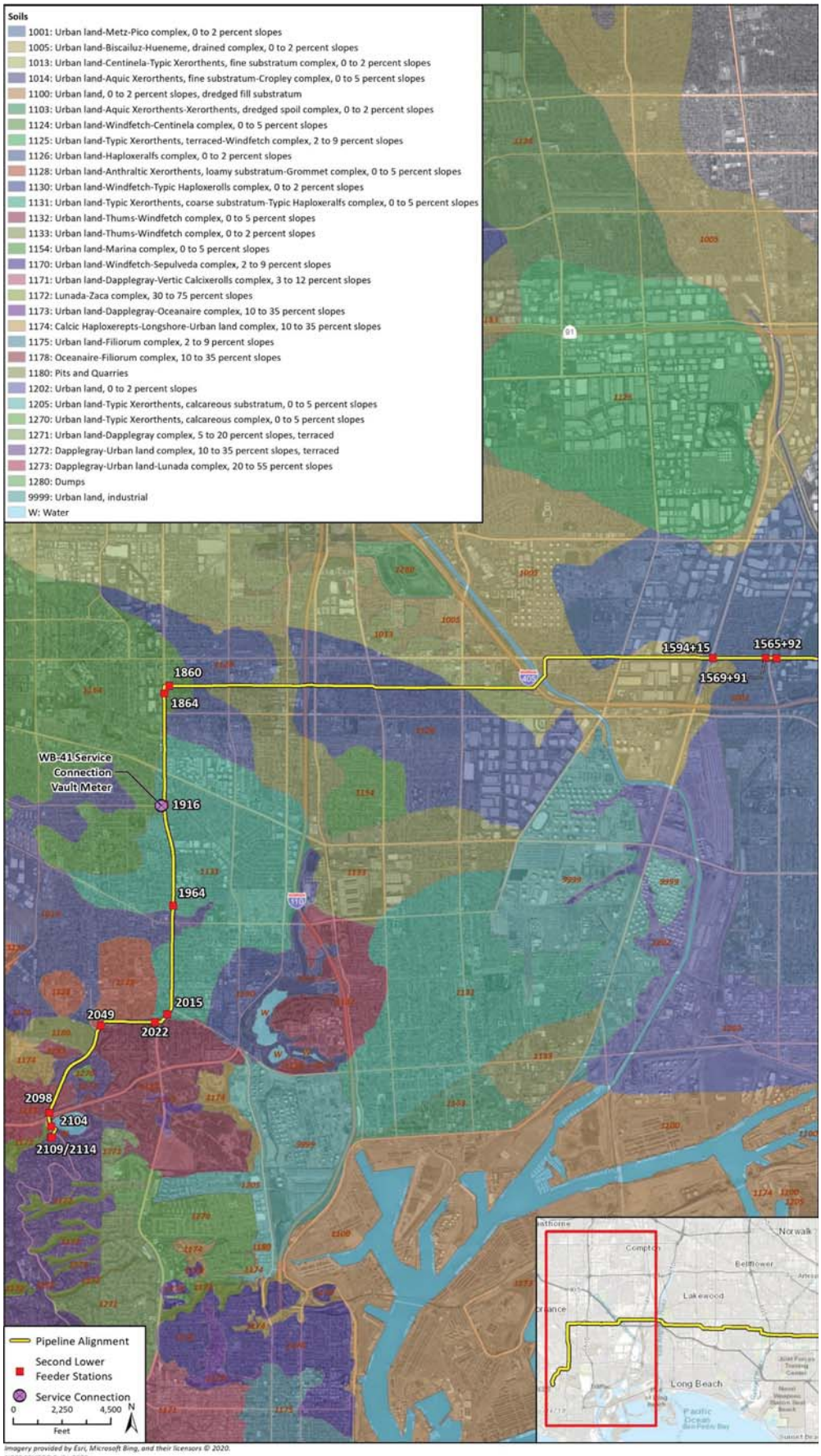


Figure 2 Mapped Soil Units in the Project Vicinity



Imagery provided by Esri, Microsoft Bing, and their licensors © 2020.
NRCS SSURGO Soils, 2020.

Attachment C

Site Photographs

Photograph 1. SLF STA 2109/2114, facing northeast.

Photograph 2. SLF STA 2104 within Palos Verdes Reservoir, facing north.

Photograph 3. SLF STA 2098, facing west.

Photograph 4. Metro Park adjacent to SLF STA 2049, facing west.

Photograph 5. Project site with street trees proposed for trimming/removal, facing south.

Photograph 6. Project site along Western Avenue, facing north.

Attachment D

Special-status Species Potential to Occur

Special-Status Species in the Regional Vicinity of the Project Site

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Plants and Lichens				
Aphanisma blitoides aphanisma	None/None 1B.2	Coastal bluff scrub, coastal dunes, coastal scrub. On bluffs and slopes near the ocean in sandy or clay soils. 3-305 m. annual herb. Blooms Feb-Jun	None	No coastal scrub habitats occur along the site.
Atriplex coulteri Coulter's saltbush	None/None 1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland. Ocean bluffs, ridgetops, as well as alkaline low places. Alkaline or clay soils. 2-460 m. perennial herb. Blooms Mar-Oct	None	No coastal scrub or grassland habitats occur along the site.
Atriplex pacifica south coast saltscale	None/None 1B.2	Coastal scrub, coastal bluff scrub, playas, coastal dunes. Alkali soils. 1-400 m. annual herb. Blooms Mar-Oct	None	No coastal scrub habitats or playas occur along the site.
Atriplex parishii Parish's brittlescale	None/None 1B.1	Vernal pools, chenopod scrub, playas. Usually on drying alkali flats with fine soils. 5-1420 m. annual herb. Blooms Jun-Oct	None	No vernal pools or scrub habitats occur along the site.
Atriplex serenana var. *davidsonii* Davidson's saltscale	None/None 1B.2	Coastal bluff scrub, coastal scrub. Alkaline soil. 0-460 m. annual herb. Blooms Apr-Oct	None	No coastal scrub habitats occur along the site.
Centromadia parryi ssp. *australis* southern tarplant	None/None 1B.1	Marshes and swamps (margins), valley and foothill grassland, vernal pools. Often in disturbed sites near the coast at marsh edges; also in alkaline soils sometimes with saltgrass. Sometimes on vernal pool margins. 0-975 m. annual herb. Blooms May-Nov	None	No marshes or swamps, grasslands, or vernal pools occur along the site.

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Centromadia pungens ssp. *laevis* smooth tarplant	None/None 1B.1	Valley and foothill grassland, chenopod scrub, meadows and seeps, playas, riparian woodland. Alkali meadow, alkali scrub; also in disturbed places. 5-1170 m. annual herb. Blooms Apr-Sep	None	No grassland, scrub, meadows, playas, or riparian habitats occur along the site.
Chloropyron maritimum ssp. *maritimum* salt marsh bird's-beak	FE/FE 1B.2	Marshes and swamps, coastal dunes. Limited to the higher zones of salt marsh habitat. 0-10 m. annual herb (hemiparasitic). Blooms May-Oct (Nov)	None	No marshes or swamps, or dunes occur along the site.
Crossosoma californicum Catalina crossosoma	None/None 1B.2	Chaparral, coastal scrub. On rocky sea bluffs, wooded canyons, and dry, open sunny spots on rocky clay. 5-535 m. perennial deciduous shrub. Blooms Feb-May	None	No chaparral, scrub, canyons, or clay soils occur along the site.
Dudleya virens ssp. *insularis* island green dudleya	None/None 1B.2	Coastal bluff scrub, coastal scrub. Rocky soils. 0-275 m. perennial herb. Blooms Apr-Jun	None	No coastal scrub habitats occur along the site.
Horkelia cuneata var. *puberula* mesa horkelia	None/None 1B.1	Chaparral, cismontane woodland, coastal scrub. Sandy or gravelly sites. 15-1645 m. perennial herb. Blooms Feb-Jul(Sep)	None	No chaparral, scrub, or woodland habitats occur along the site.
Isocoma menziesii var. *decumbens* decumbent goldenbush	None/None 1B.2	Coastal scrub, chaparral. Sandy soils; often in disturbed sites. 1-915 m. perennial shrub. Blooms Apr-Nov	None	No chaparral or scrub habitats occur along the site.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	None/None 1B.1	Coastal salt marshes, playas, vernal pools. Usually found on alkaline soils in playas, sinks, and grasslands. 1-1375 m. annual herb. Blooms Feb-Jun	None	No salt marshes, playas, or vernal pools occur along the site.
Lycium brevipes var. *hassei* Santa Catalina Island desert-thorn	None/None 3.1	Coastal bluff scrub, coastal scrub. Coastal bluffs and slopes. 30-95 m. perennial deciduous shrub. Blooms Jun (Aug)	None	No coastal scrub habitats occur along the site.

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Nama stenocarpa mud nama	None/None 2B.2	Marshes and swamps. Lake shores, river banks, intermittently wet areas. 5-500 m. annual / perennial herb. Blooms Jan-Jul	None	No marhes, swamps, or other natural aquatic habitats occur along the site.
Navarretia prostrata prostrate vernal pool navarretia	None/None 1B.2	Coastal scrub, valley and foothill grassland, vernal pools, meadows and seeps. Alkaline soils in grassland, or in vernal pools. Mesic, alkaline sites. 3-1235 m. annual herb. Blooms Apr-Jul	None	No scrub or grassland habitats, or vernal pools, meadows or seeps occur along the site.
Nemacaulis denudata var. *denudata* coast woolly-heads	None/None 1B.2	Coastal dunes. 0-100 m. annual herb. Blooms Apr-Sep	None	No coastal dunes occur along the site.
Pentachaeta lyonii Lyon's pentachaeta	FE/FE 1B.1	Chaparral, valley and foothill grassland, coastal scrub. Edges of clearings in chaparral, usually at the ecotone between grassland and chaparral or edges of firebreaks. 30-630 m. annual herb. Blooms (Feb)Mar-Aug	None	No chaparral, grassland, or scrub habitats occur along the site.
Phacelia stellaris Brand's star phacelia	None/None 1B.1	Coastal scrub, coastal dunes. Open areas. 3-370 m. annual herb. Blooms Mar-Jun	None	No coastal scrub or dune habitats occur along the site.
Suaeda esteroa estuary seablite	None/None 1B.2	Marshes and swamps. Coastal salt marshes in clay, silt, and sand substrates. 0-80 m. perennial herb. Blooms (May)Jul-Oct (Jan)	None	No marshes or swamps occur along the site.
Symphyotrichum defoliatum San Bernardino aster	None/None 1B.2	Meadows and seeps, cismontane woodland, coastal scrub, lower montane coniferous forest, marshes and swamps, valley and foothill grassland. Vernally mesic grassland or near ditches, streams and springs; disturbed areas. 2-2040 m. perennial rhizomatous herb. Blooms Jul-Nov	None	No meadows or seeeps, woodlands or forests, grassland, or scrub habitats occur along the site.
Invertebrates				

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Bombus crotchii Crotch bumble bee	None/SC	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.	None	No suitable food plant species occur along the site.
Cicindela gabbii western tidal-flat tiger beetle	None/None	Inhabits estuaries and mudflats along the coast of Southern California. Generally found on dark-colored mud in the lower zone; occasionally found on dry saline flats of estuaries.	None	No estuaries or mudflats occur along the site.
Cicindela hirticollis gravida sandy beach tiger beetle	None/None	Inhabits areas adjacent to non-brackish water along the coast of California from San Francisco Bay to northern Mexico. Clean, dry, light-colored sand in the upper zone. Subterranean larvae prefer moist sand not affected by wave action.	None	No coastal areas occur along the site.
Cicindela latesignata latesignata western beach tiger beetle	None/None	Mudflats and beaches in coastal Southern California.	None	No mudflats or beaches occur along the site.
Danaus plexippus pop. 1 monarch - California overwintering population	None/None	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	None	Eucalyptus trees occur along the site; however, these areas are sparse and would not provide suitable roosting sites.
Euphilotes battoides allyni El Segundo blue butterfly	FE/None	Restricted to remnant coastal dune habitat in Southern California. Host plant is *Eriogonum parvifolium*; larvae feed only on the flowers and seeds; used by adults as major nectar source.	None	No suitable host plant species occur along the site.
Glaucopsyche lygdamus palosverdesensis Palos Verdes blue butterfly	FE/None	Restricted to the cool, fog-shrouded, seaward side of Palos Verdes Hills, Los Angeles County. Host plant is Astragalus trichopodus var. lonchus (locoweed).	None	No suitable host plant species occur along the site.

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Streptocephalus woottoni Riverside fairy shrimp	FE/None	Endemic to Western Riverside, Orange, and San Diego counties in areas of tectonic swales/earth slump basins in grassland and coastal sage scrub. Inhabit seasonally astatic pools filled by winter/spring rains. Hatch in warm water later in the season.	None	No vernal pools occur along the site.
Tryonia imitator mimic tryonia (=California brackishwater snail)	None/None	Inhabits coastal lagoons, estuaries and salt marshes, from Sonoma County south to San Diego County. Found only in permanently submerged areas in a variety of sediment types; able to withstand a wide range of salinities.	None	No lagoons, estuaries, or salt marshes occur along the site.
Fish				
Siphateles bicolor mohavensis Mohave tui chub	FE/FE FP	Endemic to the Mojave River basin, adapted to alkaline, mineralized waters. Needs deep pools, ponds, or slough-like areas. Needs vegetation for spawning.	None	No pools or ponds occur along the site.
Reptiles				
Anniella stebbinsi southern California legless lizard	None/None SSC	Generally south of the Transverse Range, extending to northwestern Baja California. Occurs in sandy or loose loamy soils under sparse vegetation. Disjunct populations in the Tehachapi and Piute Mountains in Kern County. Variety of habitats; generally in moist, loose soil. They prefer soils with a high moisture content.	Low	Potentially suitable habitat for this species occurs within Palos Verdes Reservoir and SLF STA 2109/2114; however, these areas are regularly subject to maintenance and other disturbance.
Phrynosoma blainvillii coast horned lizard	None/None SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	None	No sandy soils occur along the site.
Birds				

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Agelaius tricolor tricolored blackbird	None/FT SSC	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	None	No suitable open water habitats with nesting substrate occurs along the site.
Coccyzus americanus occidentalis western yellow-billed cuckoo	FT/SE	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	None	No riparian habitat occurs along the site.
Polioptila californica californica coastal California gnatcatcher	FT/None SSC	Obligate, permanent resident of coastal sage scrub below 2500 ft in Southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	None	No coastal sage scrub occurs along the site.
Riparia riparia bank swallow	None/ST	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	None	No riparian habitat or vertical banks or cliffs occur along the site.
Sternula antillarum browni California least tern	FE/SE FP	Nests along the coast from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, land fills, or paved areas.	None	No beaches, alkali flat, or other suitable habitats occur along the site.
Mammals				
Eumops perotis californicus western mastiff bat	None/None SSC	Many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	Low	Potentially suitable roost trees for this species occur within Palos Verdes Reservoir; however, this area is regularly subject to maintenance and other disturbance.

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Neotoma lepida intermedia San Diego desert woodrat	None/None SSC	Coastal scrub of Southern California from San Diego County to San Luis Obispo County. Moderate to dense canopies preferred. They are particularly abundant in rock outcrops, rocky cliffs, and slopes.	Low	Potentially suitable habitat for this species occurs within Palos Verdes Reservoir and SLF STA 2109/2114; however, this area is regularly subject to maintenance and other disturbance.
Nyctinomops femorosaccus pocketed free-tailed bat	None/None SSC	Variety of arid areas in Southern California; pine-juniper woodlands, desert scrub, palm oasis, desert wash, desert riparian, etc. Rocky areas with high cliffs.	None	No rocky areas with high cliffs occur along the site for roosting.
Perognathus longimembris pacificus Pacific pocket mouse	FE/None SSC	Inhabits the narrow coastal plains from the Mexican border north to El Segundo, Los Angeles County. Seems to prefer soils of fine alluvial sands near the ocean, but much remains to be learned.	None	No alluvial sands occur along the site.
Sensitive Natural Communities				
Southern Coastal Bluff Scrub Southern Coastal Bluff Scrub	None/None		None	This natural community does not occur along the project site.

Regional Vicinity refers to within a 5-mile search radius of site.

FE = Federally Endangered FT = Federally Threatened FC = Federal Candidate Species

SE = State Endangered ST = State Threatened SC = State Candidate SR = State Rare

SSC = CDFW Species of Special Concern

CRPR (CNPS California Rare Plant Rank):

1A=Presumed Extinct in California

1B=Rare, Threatened, or Endangered in California and elsewhere

2A=Plants presumed extirpated in California, but more common elsewhere

2B=Plants Rare, Threatened, or Endangered in California, but more common elsewhere

CRPR Threat Code Extension:

.1=Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2=Fairly endangered in California (20-80% occurrences threatened)

.3=Not very endangered in California (<20% of occurrences threatened)

Appendix C
Cultural Resources Study

Revised July 16, 2020
Rincon Project No: 17-04026

Lilia Martínez
Senior Environmental Specialist
The Metropolitan Water District of Southern California
Environmental Planning Section
700 North Alameda Street
Los Angeles, California 90012
Via email: limartinez@mwdh2o.com

Subject: **Cultural Resources Study for the Prestressed Concrete Cylinder Pipe Rehabilitation Program – Second Lower Feeder Reach 3 Project, cities of Los Angeles, Torrance, Lomita, Rolling Hills Estates, Carson, and Long Beach, Los Angeles County, California.**

Dear Ms. Martínez:

Rincon Consultants, Inc. (Rincon) was retained by HELIX Environmental Planning, Inc. on behalf of The Metropolitan Water District of Southern California (Metropolitan) to conduct a cultural resources study for the Prestressed Concrete Cylinder Pipeline (PCCP) Rehabilitation Program – Second Lower Feeder (SLF) Reach 3 Project (project) in the cities of Los Angeles, Torrance, Lomita, Rolling Hills Estates, Carson, and Long Beach, Los Angeles County, California. This letter report presents the results of a cultural resources records search review and field survey completed for the proposed project. This cultural resources study has been completed in accordance with the requirements of Mitigation Measures (MM) CUL-1: Historic Resources Protection Program, CUL-2: Avoidance or Monitoring of Archaeological Sites, and CUL-5: Archaeological Survey of Non-Pipeline Area in Metropolitan's Programmatic Environmental Impact Report (PEIR) Volume 2: Findings of Fact, Mitigation Monitoring and Reporting Program (MMRP; SCH No. 2014121055), and Statement of Overriding Considerations for cultural resources (Metropolitan 2016).

Project Location and Description

The proposed project, Reach 3 of the SLF, covers rehabilitation of portions of a 4.9-mile-long section of the 78-inch-diameter Second Lower Feeder in the cities of Los Angeles, Torrance, Lomita, Rolling Hills Estates, Carson, and Long Beach and a 300-linear-foot section of the 84-inch-diameter Sepulveda Feeder in the cities of Los Angeles and Torrance. Proposed locations for project elements have been identified, including the contractor's work and storage areas, pipe access sites from which the feeder would be relined, installation of large isolation valves, below ground structures that would be improved, air-release/vacuum valves that would be relocated above grade, air-release/vacuum valves that would be improved, and the construction of a service connection (WB-41).

Ground disturbance in the project area is primarily proposed for Stations 1860, 1864, 1916, 1964, 2015, 2022, 2049, 2098, 2104, and 2109/2114, as well as WB-41. The maximum depth of excavation in these

areas would be 20 feet below ground surface. Minor ground disturbance would also occur throughout the project footprint for other project elements (e.g., air-release/vacuum valve relocations). Additional improvements incorporated as part of the project include: the relocation of a vacuum valve to an above ground location within the sidewalk at Station 1565+92 (Reach 2); the relocation of an air release/vacuum valve at Station 1569+91 (Reach 2); and the replacement of an existing 16-inch valve at service connection WB-37 located at Station 1594+15 (Reach 2). All proposed excavation is along the existing pipeline alignment and ground disturbance is expected to remain primarily within disturbed soils.

Existing surface improvements, such as road pavements, sidewalks, and landscaping, would be removed at each excavation area, and soils would be excavated and temporarily removed from the site to expose the existing pipeline. Once rehabilitation is complete, the excavation area would either be backfilled with soils originally excavated or backfilled with slurry, and the surface of each excavation area and surrounding work zone would be restored to existing conditions. This would involve re-paving existing roads, repairing or replacing existing sidewalks, and replanting landscaping.

Rehabilitation activities would take approximately one year, with mobilization of equipment and traffic control setup scheduled to begin as early as October 2021. Water service shutdowns on the Second Lower and Sepulveda Feeders would begin in mid-October 2021, and the proposed project pipeline segment would be returned to service in April 2022. Traffic controls and equipment would be removed by the end of October 2022. The PCCP Program schedule is dependent on risk assessment of the pipeline, thus if inspections reveal another segment is more at risk, the repair schedule will be altered. Shutdowns are primarily scheduled during low water use times (i.e., the optimum time for pipeline shutdowns is winter months when water demand is less than during the summer months).

Regulatory Setting

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires a lead agency to determine whether a project may have a significant effect on historical resources (Public Resources Code [PRC] §21084.1). A historical resource is one listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR), a resource included in a local register of historical resources, or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be *historically significant* (State CEQA Guidelines §15064.5[a][1-3]).

A resource shall be considered *historically significant* if it meets any of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
2. Is associated with the lives of persons important in our past
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values
4. Has yielded, or may be likely to yield, information important in prehistory or history

Generally, a cultural resource must be at least 50 years old to be considered for listing on the CRHR. Resources that have achieved significance within the past 50 years may also be eligible for inclusion in

the CRHR, provided that enough time has elapsed to obtain a scholarly perspective on the events or individuals associated with the resource (Office of Historic Preservation 2011:3).

If it can be demonstrated a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to allow any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC §21083.2[a], [b]).

PRC §21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person

City of Torrance

The City of Torrance General Plan Community Resources Element contains the following objective and policies pertaining to cultural resources and relevant to the current project:

Objective CR.12: Preservation of sites of local historical or cultural importance

Policy CR.12.1: Encourage the preservation of public and private buildings which are of local, historical, or cultural importance.

Policy CR.12.2: Support the work of local historic groups to identify and preserve local structures and sites of historical interest and importance.

The City of Torrance Historic Preservation Ordinance provides criteria for the designation of “landmarks” and “landmark districts” per the Torrance Municipal Code Section 91.50.010. A cultural resource may be designated as a landmark if it meets one of the following criteria:

A. It is associated with events that have made a significant contribution to the broad patterns of local, regional, state, or national history, or the cultural heritage of the City, California, or the United States;
B. It is associated with an important person or persons who made a significant contribution to the history, development, and/or culture of the City, region, state, or nation;
C. It embodies the distinctive characteristics of a type, period, style, or method of construction;
D. It is representative of the work of a master;
E. It possesses high artistic or aesthetic values;
F. It has yielded or has the potential to yield information important to the prehistory or history of the city, region, state, or nation;
G. It is among the last, best remaining examples of an architectural or historical type or specimen.
H. In addition to having significance, a property or area must demonstrate integrity for the time period in which it is significant. Integrity is defined by seven aspects: location, design, setting,

materials, workmanship, feeling, and association. A property or area need not possess all seven aspects, but must retain enough to convey the reason for its significance.

City of Lomita

The City of Lomita General Plan (1998) includes the following policy regarding cultural resources:

> **Cultural Resources Management:** "This regulation requires that, should archaeological or paleontological resources be uncovered during excavation and grading activities, all work would cease until appropriate salvage measures are established Appendix K of the CEQA Guidelines shall be followed for excavation monitoring and salvage work that may be necessary. The Conservation Element indicates those areas with a "high potential" for cultural sensitivity. Notification that resources have been encountered (notification may come from field monitors, construction crews, etc. Salvage will be undertaken pursuant to Appendix K requirements outlined in CEQA".

City of Rolling Hills Estates

The City of Rolling Hills Estates General Plan Conservation Element contains the following goals and policies pertaining to cultural resources:

Goal 3: Promote the preservation of cultural, historical and natural resources within the City.

> Policy 3.1 Implement General Plan guidelines for the protection of sites of paleontological, archaeological, historical or culturally valuable significance.
>
> > 3.1.1 Implementation Measure: New development in areas designated as having a high cultural sensitivity will be required to have archaeological surveys and on-site monitoring when deemed necessary. All development shall be subject to the provisions of Appendix K in the CEQA Law and Guidelines.

The City of Rolling Hills Estates Cultural Heritage Commission Ordinance provides criteria for the designation of "landmarks" and "landmark districts" per Los Angeles Municipal Code Section 17.38.040. A cultural resource may be designated as a landmark if it meets one of the following criteria:

A. Structures, sites or areas particularly representative of a distinct style, region or way of life;
B. Structures, sites or areas connected with a business or use which was once common but now rare;
C. Buildings and/or associated structures of greater age than surrounding structures;
D. Buildings and/or associated structures containing original materials or workmanship which are valued in themselves;

One or more of the following criteria may be considered in measuring the appropriateness of a potential landmark overlay designation:

E. Buildings and/or associated structures which are preserved or capable of being restored to their former condition;
F. Buildings and/or associated structures particularly well related to their site or area;
G. Buildings and/or associated structures expressing their function well;
H. Structures, sites or areas visible or accessible to the public;
I. Buildings and/or associated structures existing in appropriate settings (trees, walls, yard, etc.);

J. Structures, sites or areas surrounded by land use significant for preservation of the structure, site or area.

City of Los Angeles

The City of Los Angeles Cultural Heritage Commission Ordinance provides criteria for the designation of "landmarks" and "landmark districts" per Los Angeles Municipal Code Section 22.171.7. A cultural resource may be designated as a landmark if it meets one of the following criteria:

A. Is identified with important events of national, state, or local history or exemplifies significant contributions to the broad cultural, economic or social history of the nation, state, city or community;
B. Is associated with the lives of historic personages important to national, state, city, or local history; or
C. Embodies the distinctive characteristics of a style, type, period, or method of construction; or represents a notable work of a master designer, builder, or architect whose individual genius influenced his or her age.

City of Long Beach

The City of Long Beach (City) Cultural Heritage Commission Ordinance provides criteria for the designation of "landmarks" and "landmark districts" per Long Beach Municipal Code Section 2.63.050. A cultural resource may be designated as a landmark if it meets one of the following criteria:

A. It possesses a significant character interest or value attributable to the development, heritage or cultural characteristics of the city, the southern California region, the state or the nation;
B. It is the site of an historic event with a significant place in history;
C. It is associated with the life of a person or persons significant to the community, city, region or nation;
D. It portrays the environment in an era of history characterized by a distinctive architectural style;
E. It embodies those distinguishing characteristics of an architectural type or engineering specimen;
F. It is the work of a person or persons whose work has significantly influenced the development of the city of the southern California region;
G. It contains elements of design, detail, materials, or craftsmanship which represent a significant innovation;
H. It is a part of or related to a distinctive area and should be developed or presented according to a specific historical, cultural or architectural motif;
I. It represents an established and familiar visual feature of a neighborhood or community due to its unique location or specific distinguishing characteristic;
J. It is, or has been, a valuable information source important to the prehistory or history of the city, the Southern California region or the state; or
K. It is one of the few remaining examples in the city, region, state or nation possessing distinguishing characteristics of an architectural or historical type.

City of Carson

The City of Carson General Plan (2006) includes the following policy regarding cultural resources:

Parks and Recreation Element, Policy P-9.2: Encourage all development or redevelopment occurring in areas identified as a potential historic archaeological site to be surveyed for historic archaeological resources prior to initiation of site preparation for development.

Cultural Resources Records Search

In accordance with MM CUL-2, Rincon conducted a search of the California Historical Resources Information System at the South Central Coastal Information Center (SCCIC) located at California State University, Fullerton on November 15, 2017, February 5, 2019, and March 12, 2019. The search was conducted to identify previous cultural resources studies and previously recorded cultural resources within a 0.5-mile radius of the project site. As part of the record search, Rincon also reviewed the National Register of Historic Places, the California Register of Historical Resources, the California Points of Historical Interest list, the California Historical Landmarks list, the Archaeological Determinations of Eligibility list, and the California State Historic Resources Inventory list.

The SCCIC records search identified 38 previously conducted studies within a 0.5-mile radius of the project site (Table 1). Of the 38 previous studies, nine studies (LA-00083, LA-02644, LA-02882, LA-02970, LA-03707, LA-10333, LA-10524, LA-10567, and LA-11150) include portions of the project site.

Table 1. Previously Conducted Studies within 0.5-mile of the Project Site

Report Number	Author	Year	Title	Relationship to Project Site
LA-00083	Rosen, Martin	1975	Evaluation of the Archaeological Resources and Potential Impact of the Joint Outfall System's Improvements on Sewer Treatment Plants and Installation Routes for New Large Diameter Sewers, Los Angeles County	Within
LA-00359	Stickel, Gary and Jerry Howard	1976	*Final Report of a Cultural Resource Survey in Long Beach, California*	Outside
LA-02644	Wlodarski, Robert	1992	The Results of a Phase 1 Archaeological Study for the Proposed Alameda Transportation Corridor Project, Los Angeles County, California	Within
LA-02882	McKenna, Jeanette	1993	Cultural Resources Investigations, Site Inventory, Evaluations, the Cajon Pipeline Project Corridor, Los Angeles and San Bernardino Counties, CA	Within
LA-02950	Unknown	1992	Consolidated Report: Cultural Resource Studies for the Proposed Pacific Pipeline Project	Outside
LA-02970	Chamberlaine, Pat and Jean Rivers-Council	1992	Cajon Pipeline Project Draft Environmental Impact Statement/Environmental Impact Report	Within

Report Number	Author	Year	Title	Relationship to Project Site
LA-03583	Bucknam, Bonnie M.	1974	The Los Angeles Basin and Vicinity: a Gazetteer and Compilation of Archaeological Site Information	Outside
LA-03695	Maki, Mary K.	1997	Negative Phase I Archaeological Survey Harbor Hills Housing Project, Lomita, Los Angeles County, California	Outside
LA-03707	Clewlow Jr., C. William	1974	Preliminary Report of the Potential Impact on Archaeological Resources of the Proposed Gas Transmission Pipeline from Los Angeles Harbor to Yorba Linda – Southern California Gas Co.: Environmental Analysis	Within
LA-05872	Duke, Curt	2002	Cultural Resource Assessment AT&T Wireless Services Facility No. 05072A-01, Los Angeles County, California	Outside
LA-05984	Duke, Curt	2002	Cultural Resource Assessment for Pacific Bell Wireless Facility SM 011-01, County of Los Angeles, CA	Outside
LA-04985	Duke, Curt	2002	Cultural Resource Assessment for AT&T Wireless Services Facility No. D173d, Los Angeles County, CA	Outside
LA-06199	McKenna, Jeanette A.	2003	A Phase I Cultural Resources Investigation, Paleontological Overview, and Architectural Evaluation of the Cypress Street Water Reservoir, Rolling Hills Estates, Los Angeles County, California	Outside
LA-06220	Unknown	2002	Los Angeles Unified School District Proposed Expansion of Narbonne High School Located at 24300 Western Avenue in Harbor City (in the City of Los Angeles)	Outside
LA-06870	Bell, Heather	2001	NEPA Screening for Wireless Telecommunication Site-Harbor City, 24823 Western Avenue, Lomita, Los Angeles County, California	Outside
LA-07950	Harper, Caprice	2006	Archaeological Survey Report for the Interstate 105 (I-105) Dewatering Wells Beneficial Re-use of Groundwater Project, Cities of Paramount, Compton, Long Beach, and Carson, Los Angeles County, California	Outside
LA-07952	Livingstone, David, McDougall, Dennis, Goldberg, Susan and W. Nettles	2006	Trails to Rails: Transformation of a Landscape: History and Historical Archaeology of the Alameda Corridor, Volume 1	Outside

Report Number	Author	Year	Title	Relationship to Project Site
LA-07971	Tang, Bai and Josh Smallwood	2006	Seismic Retrofit of the Union Pacific Railroad (UPRR) Bridge Over Santa Fe Avenue (State Bridge No. 53C0458), on the Boundary Between the Cities of Long Beach and Carson, Los Angeles County	Outside
LA-08059	McKenna, Jeanette A. and Richard S. Shepard	2006	Results of Phase II Cultural Resources Testing Program at CA-LAN-276, CA-LAN-277, and CA-LAN-3583, Three Prehistoric Sites Identified within the Chandler Ranch/Rolling Hills Country Club Property in the Rolling Hills Estates and Torrance Areas of Los Angeles	Outside
LA-08255	Arrington, Cindy and Nancy Sikes	2006	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project State of California: Volumes I and Ii	Outside
LA-08462	Bonner, Wayne H.	2006	Cultural Resources Records Search Results and Site Visit for T-Mobile USA Candidate LA03554a (Barton Properties), 21350 South Alameda Street, Carson, Los Angeles County, California	Outside
LA-10107	McKenna, Jeanette A.	2004	Results of a Phase I Cultural Resources Investigation, Paleontological Overview, and Architectural Evaluation of the Cypress Street Water Reservoir, Rolling Hills Estates, Los Angeles County	Outside
LA-10108	McKenna, Jeanette A.	2006	Results of a Phase I Cultural Resources Investigation and Paleontological Overview of the Chandler Ranch/Rolling Hills Country Club Residential Development, Rolling Hills Estates, Los Angeles County, California	Outside
LA-10333	McKenna, Jeanette A.	2009	Cultural Resource Assessment AT&T Wireless Services Facility No. 05109a, Los Angeles County, California	Within
LA-10524	Horne, Melinda, Hamilton, M. Colleen and Susan Goldberg	2000	Alameda Corridor Project Treatment Plan for Historic Properties Discovered During Project Implementation, Second Draft. Addendum to Finding of Effect (February 21, 1995; October 27, 1998)	Within
LA-10567	Hogan, Michael, Bai “Tom” Tang, Josh Smallwood, Laura Hensley Shaker and Casey Tibbitt	2005	Identification and Evaluation of Historic Properties - West Basin Municipal Water District Harbor- South Bay Water Recycling Project Proposed Project Laterals	Within
LA-10628	McKenna, Jeanette A.	2010	Lomita Reservoir / Cypress Street Archaeological / Paleontological Monitoring	Outside

Report Number	Author	Year	Title	Relationship to Project Site
LA-11063	Losee, Carolyn	2009	Cultural Resources Analysis for Global Tower "Carson, CA" Site, 21136 Wilmington Avenue, Carson, Los Angeles County, CA 90040	Outside
LA-11094	Johnson, B.	2010	Cultural Resources Records Search for T-Mobile USA Inc., LA33771A/Schafer, 1981 E. 213th St, Carson, Los Angeles County, California 90749	Outside
LA-11150	Maxwell, Pamela	2003	West Basin Municipal Water District Harbor/South Bay Water Recycling Project	Within
LA-11227	Hudson, Jonathan	2010	Torrance Hospital, 1808 Abalone Avenue, Torrance, Los Angeles County, CA 90501	Outside
LA-11482	Racer, F.H.	1939	Camp Sites in Harbor District - F.H. Racer	Outside
LA-11551	Maxon, Patrick	2012	Phase I Cultural Resources Assessment, Juanita Millender-McDonald Carson Regional Water Recycling Facility Phase II B Expansion Project, West Basin Municipal Water District, City of Carson, Los Angeles County, California	Outside
LA-12826	Haas, Hannah and Robert Ramirez	2014	Metropolitan Water District of Southern California Palos Verdes Reservoir Upgrades Project	Outside
LA-12870	McKenna, Jeanette A.	n.d.	Cultural Resources Overview and Assessment: The City of Los Angeles, West Carson Transit Oriented District (TOD) Specific Plan Project Area, Los Angeles County, California	Outside
LA-13019	Bonner, Wayne H. and Kathleen A. Crawford	2006	Cultural Resources Records Search and Site Visit Results for T Mobile West, LLC Candidate LA33694A (ATT Switch - Torrance), 1307 Cravens Avenue, Torrance, Los Angeles County, California	Outside
LA-13149	Billet, Loma	2014	New Tower (“NT”) Submission Packet, FCC FORM 620, PROJECT NAME: Wardlow Park, Project Number: EL0238B	Outside
LA-13211	Roland, Jennifer	2016	Phase I Investigation for the Crown Castle LA33771A Antenna Installation Project, Carson, Los Angeles County, California	Outside

Source: South Central Coastal Information Center November 2017, February 2019, March 2019

Twelve previously recorded resources are located within 0.5-mile of the project site and are listed in Table 2 below. None of these resources are located within the project site. The nearest recorded cultural resource is the Palos Verdes Reservoir located approximately 60 feet from the Station 2104. Built in 1939, the reservoir was previously recommended ineligible for listing on the National Register of

Historic Places (NRHP) and the California Register of Historical Resources (CRHR) (Haas and Ramirez 2014). A prehistoric archaeological site (P-19-000281) was also mapped approximately 350 feet northeast of the Station 2109/2114. The site record states P-19-000281 was likely completely destroyed by the construction of the Palos Verdes Reservoir in 1939 (True 1960).

Table 2. Previously Recorded Resources within 0.5-mile of the Project Site

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	NRHP/CRHR Status	Relationship to Project Site
19-000191	CA-LAN-000191	Multi-component Site	Prehistoric shell midden and historic reservoir	H. Enerhart 1952; D. Brunzell 2003; R.S. Shepard 2010	Unknown	Outside
19-000277	CA-LAN-000277	Prehistoric Site	Lithic scatter	D.L. True 1960; R. Shepard 2005; J. McKenna 2006	Unknown	Outside
19-000278	CA-LAN-000278	Prehistoric Site	Habitation site with lithic scatter	D.L. True 1960	Unknown	Outside
19-000279	CA-LAN-000279	Prehistoric Site	Habitation site with lithic scatter	F.H. Racer 1939; D.L. True 1960	Unknown	Outside
19-000280	CA-LAN-000280	Prehistoric Site	Habitation site	H. Eberhart 1952; D.L. True 1960	Unknown	Outside
19-000281	CA-LAN-000281	Prehistoric Site	Habitation site	D.L. True 1960; L.L. Porras 2017	Unknown	Outside
19-003065	CA-LAN-003065H	Historic Site	Abandoned Railroad Trestle	J. Paniagua and D. Livingstone (2001)	Unknown	Outside
19-003066	CA-LAN-003066H	Historic Site	Septic Tank	J. Paniagua and D. Livingstone (2001)	Unknown	Outside
19-180782	–	Historic Building	Single Family Residence	R. Starzak (1994)	Determined ineligible for listing on the NRHP	Outside
19-187805	–	Historic Structure	Ballona Creek Flood Control Channel & Drainage System	D. Kane (2000); P. Daly (2015)	Recommended ineligible for listing on the NRHP and CRHR	Outside
19-187942	–	Historic Structure	Bridge No. 53C458	J. Smallwood (2006)	Recommended ineligible for listing on the NRHP and CRHR	Outside
19-192333	N/A	Historic Structure	Palos Verdes Reservoir	R. Ramirez 2014	Recommended ineligible for listing on the NRHP or CRHR	Outside

Source: South Central Coastal Information Center November 2017, February 2019, March 2019
NRHP = National Register of Historic Places; CRHR = California Register of Historical Resources

Native American Sacred Lands File Search

In accordance with MM CUL-2, Metropolitan undertook Native American coordination for the PCCP in early 2015 by requesting a Sacred Lands File search from the Native American Heritage Commission. The Sacred Lands File search was completed with negative results for the project site.

Field Survey

Methods

In accordance with MM CUL-5, Rincon staff Tricia Dodds performed a field survey on March 17, 2019 and Mathew Carson and Alondra Garcia performed a field survey of the project site on September 26, 2019. The survey consisted of a pedestrian survey where foot travel could be conducted safely and a windshield survey within paved roadways. During the survey, all exposed ground surfaces were inspected for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock), ecofacts (marine shell and bone), soil discoloration that might indicate the presence of a cultural midden, soil depressions, and features indicative of the former presence of structures or buildings (e.g., standing exterior walls, postholes, foundations) or historic debris (e.g., metal, glass, ceramics). The windshield survey consisted of driving the pipeline alignment to identify any potential cultural resources within or along the margins of the alignment. A windshield survey allows for an inspection of the project area where foot travel is unsafe (e.g., within high traffic roadways). A Global Positioning System was used to maintain locational accuracy throughout the pedestrian and windshield portions of the survey.

Results

No prehistoric or historic period cultural resources have been recorded within the project site and none were observed during the survey of the excavation sites or pipeline alignment. The project site has been previously developed by modern infrastructure and traverses through mixed commercial and residential space. The proposed excavation sites at Stations 1565+92, 1569+91, 1594+15, 1860, 1864, 1916, 1964, 2015, 2022, and 2049, as well as at WB-41, are paved with asphalt and/or concrete and are located within previously developed roadways or sidewalks. The proposed excavation sites at Stations 2098, 2104, and 2109/2114 extend into unpaved areas adjacent to Palos Verdes Drive East and the Palos Verdes Reservoir. All excavations are expected to remain primarily within previously disturbed soils. Although Station 2104 is located near the historic-age Palos Verdes Reservoir, the proposed project is not expected to impact the reservoir. Additionally, extant data indicate that the prehistoric archaeological site of P-19-000281, which is mapped approximately 350 feet northeast from Station 2109/2114, was destroyed by the construction of the Palos Verdes Reservoir (True 1960).

Although structures are located adjacent to the project locations, Rincon determined that a built environment evaluation is not necessary for the current project as most of the project is within the existing paved right-of-way and primarily limited to excavations and below-grade elements. The project site will also be returned to preconstruction conditions upon completion of the project indicating any indirect impacts to the surrounding environment will be temporary in nature. Thus, it is not necessary to undertake any steps required by MM CUL-1 for this project.

Discussion and Recommendations

Rincon did not identify any cultural resources within the project site as a result of the records search or pedestrian and windshield surveys. The Sacred Lands File search completed by Metropolitan did not identify any cultural resources near the project site. Three previous studies intersect portions of the current project site and no cultural resources were identified within the project site. Thus, the findings of this study are consistent with the findings of the PEIR (Metropolitan 2016). Because no archaeological resources have been identified within or immediately adjacent to the project alignment, archaeological monitoring and Native American monitoring required under MM CUL-2 is not necessary for this portion of the project. The project shall adhere to the requirements of MM CUL-3: Preconstruction Meeting for Identifying Cultural Resources by holding a preconstruction meeting that includes a discussion of identifying cultural resources during ground-disturbing activities. In addition, if cultural resources are identified during project-related ground-disturbing activities, the project shall adhere to MM CUL-4: Previously Unidentified Resources Encountered during Ground-Disturbing Activities, which requires halting construction within 50 feet of the resource until it can be evaluated by a qualified cultural resources specialist and impacts can be mitigated, if necessary.

Thank you for the opportunity to support Metropolitan with this important project. Please contact the undersigned with questions regarding this report or any other matters related to our services.

Sincerely,
Rincon Consultants, Inc.

Breana Campbell-King, MA, RPA
Senior Archaeologist

Jennifer Haddow, PhD
Principal Environmental Scientist

Attachment:
Figure 1 Project Location Map

References:

City of Los Angeles

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2017 Chapter 2.63 Cultural Heritage Commisison. Electronic document, online at https://www.laconservancy.org/sites/default/files/community_documents/Long%20Beach%20Historic%20Preservation%20Ordinance.pdf, accessed July 15, 2020.

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1998 General Plan Update – Resource Management Element. Electronic document, online at http://www.lomita.com/cityhall/government/pzbs/generalplan/resource.pdf, accessed July 15, 2020.

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2009 Ordinance No. 652. Electronic document, online at https://www.laconservancy.org/sites/default/files/community_documents/Rolling%20Hills%20Estates%20Historic%20Preservation%20Ordinance.pdf, accessed July 15, 2020.

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2017 Ordinance No. 3822. Electronic document, online at https://www.torranceca.gov/Home/ShowDocument?id=42018, accessed July 15, 2020.

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Hannah, Haas, and Robert Ramirez

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1983 Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines. Electronic document, online at http://www.nps.gov/history/local-law-Arch_Standards.htm, accessed December 6, 2011.

True, Delbert L.

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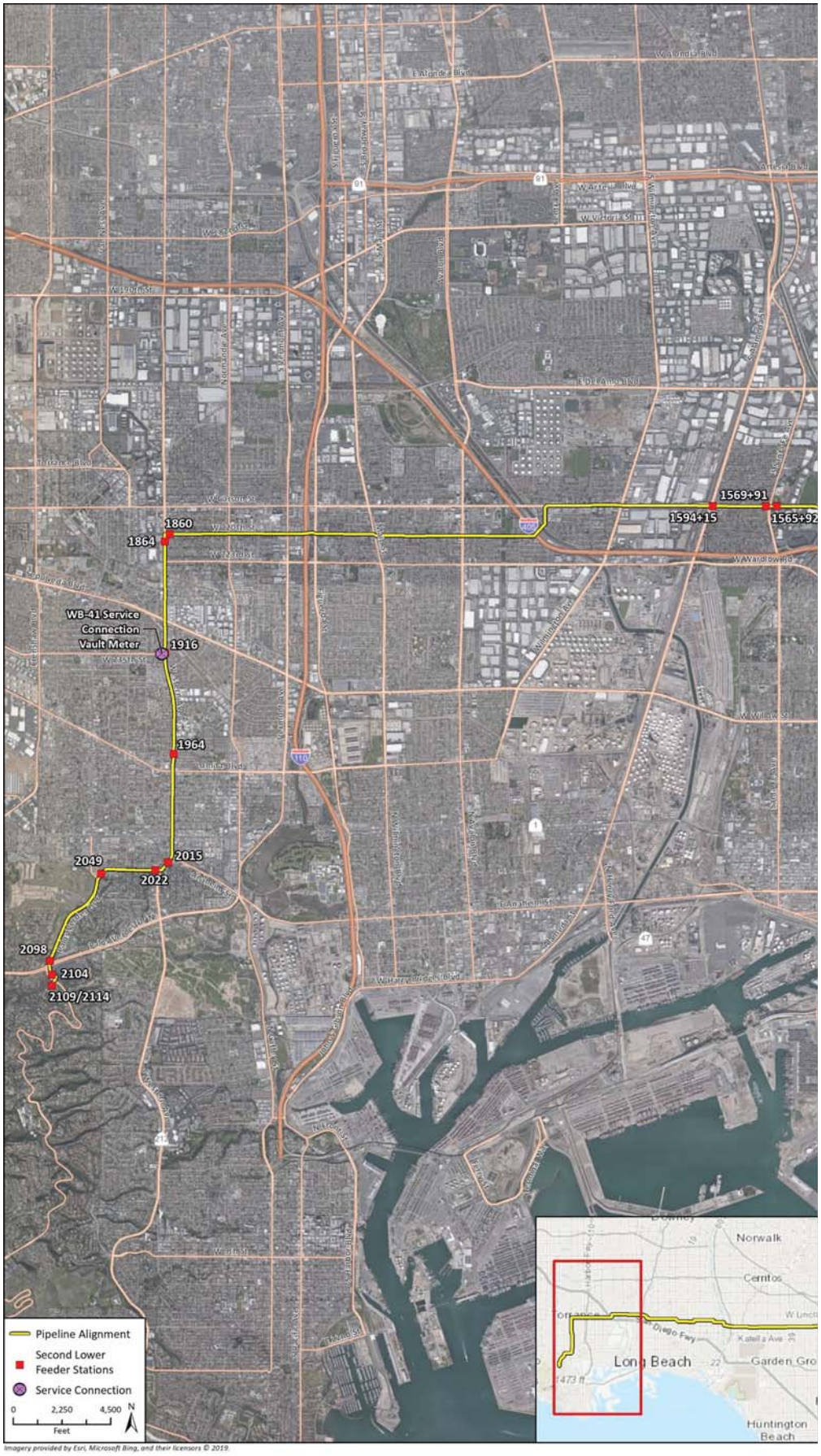
Figure 1 Project Location Map



Appendix D
Paleontological Resources Impact Mitigation Program

Prestressed Concrete Cylinder Pipe Rehabilitation Program – Second Lower Feeder Reach 3

Paleontological Resources Impact Mitigation Program

prepared for

The Metropolitan Water District of Southern California
Environmental Planning Section
700 North Alameda Street
Los Angeles, California 90012

prepared by

Rincon Consultants, Inc.
250 East 1st Street, Suite 1400
Los Angeles, California 90012

June 2020

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Acronyms and Abbreviations

CEQA	California Environmental Quality Act
CGS	California Geological Survey
NHMLAC	Natural History Museum of Los Angeles County
MM	Mitigation Measure
PCCP	Prestressed Concrete Cylinder Pipeline
PEIR	Programmatic Environmental Impact Report
PRC	Public Resource Code
PRIMP	Paleontological Resources Impact Mitigation Program
SLF	Second Lower Feeder
SVP	Society of Vertebrate Paleontology
UTM	Universal Transverse Mercator
WEAP	Worker Environmental Awareness Program

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1 Introduction

Between 1962 and 1985, 163 miles of Prestressed Concrete Cylinder Pipeline (PCCP) were installed throughout The Metropolitan Water District of Southern California's (Metropolitan) service area. Under certain subsurface conditions, PCCP lines have an elevated risk of failure compared with other types of pipe. In response to this risk of failure, in the late 1990s, Metropolitan inspected and assessed all 163 miles of PCCP within its distribution system. In 2011, Metropolitan initiated a comprehensive program of inspections to evaluate and rank PCCP lines with the highest risk of failure. The data indicate that the following five pipelines represent the highest risk: Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, Second Lower Feeder (SLF), and Sepulveda Feeder. The PCCP Rehabilitation Program (PCCP Program) was developed to rehabilitate the PCCP portions of the five subsurface water distribution pipelines (also known as feeders) that were identified as having the highest risk as described above.

A Programmatic Environmental Impact Report (PEIR) was prepared for the PCCP Program and certified by the Metropolitan Board of Directors on January 10, 2017 (SCH No. 2014121055). At the request of Metropolitan, Rincon prepared this Paleontological Resources Impact Mitigation Program (PRIMP) for the Second Lower Feeder – Reach 3 (the project) in accordance with Mitigation Measure (MM) CUL-6: Develop a Program to Mitigate Impacts on Paleontological Resources for Each Contract Package.

1.1 Project Location and Description

The proposed project, Reach 3 of the SLF, covers rehabilitation of portions of a 4.9-mile-long section of the 78-inch-diameter SLF in the cities of Los Angeles, Torrance, Lomita, Rolling Hills Estates, Carson, and Long Beach and a 300-linear-foot section of the 84-inch-diameter Sepulveda Feeder in the cities of Los Angeles and Torrance. Proposed locations for project elements have been identified, including the contractor's work and storage area, pipe access sites from which the feeder would be relined, installation of large isolation valves, below ground structures that would be improved, air-release/vacuum valves that would be relocated above grade, air-release/vacuum valves that would be improved, and the construction of a service connection (WB-41).

Ground disturbance in the project area is primarily proposed for Stations 1860, 1864, 1916, 1964, 2015, 2022, 2049, 2098, 2104, and 2109/2114, as well as WB-41. The maximum depth of excavation in these areas would be 20 feet below ground surface. Minor ground disturbance would also occur throughout the project footprint for other project elements (e.g., air-release/vacuum valve relocations). Additional improvements incorporated as part of the project include: the relocation of a vacuum valve to an above ground location within the sidewalk at Station 1565+92 (Reach 2); the relocation of an air release/vacuum valve at Station 1569+91 (Reach 2); and the replacement of an existing 16-inch valve at service connection WB-37 located at Station 1594+15 (Reach 2). All proposed excavation is along the existing pipeline alignment and ground disturbance is expected to remain primarily within disturbed soils. Existing surface improvements, such as road pavements, sidewalks, and landscaping, would be removed at each excavation area, and soils would be excavated and temporarily removed from the site to expose the existing pipeline. Once rehabilitation is complete, the excavation area would either be backfilled with soils originally excavated or backfilled with slurry, and the surface of each excavation area and surrounding work

zone would be restored to existing conditions. This would involve re-paving existing roads, repairing or replacing existing sidewalks, and replanting landscaping.

Rehabilitation activities would take approximately one year, with mobilization of equipment and traffic control setup scheduled to begin as early as October 2021. Water service shutdowns on the Second Lower and Sepulveda Feeders would begin in mid-October 2021, and the proposed project pipeline segment would be returned to service in April 2022. Traffic controls and equipment would be removed by the end of October 2022. The PCCP Program schedule is dependent on risk assessment of the pipeline, thus if inspections reveal another segment is more at risk, the repair schedule will be altered. Shutdowns are primarily scheduled during low water use times (i.e., the optimum time for pipeline shutdowns is winter months when water demand is less than during the summer months). Figure 1, Regional Location, shows the location of the project area in the region.

1.2 Purpose of the Paleontological Resources Impact Mitigation Program

The purpose of this PRIMP is to provide procedures and protocols to reduce impacts to unique paleontological resources potentially encountered during construction of the project. The PRIMP provides monitoring guidelines that must be implemented during construction, procedures to be followed if paleontological resources are discovered during construction, and the procedures for preparation, conservation and curation of recovered paleontological resources.

1.3 Regulatory Framework

Fossils are remains of ancient, often extinct organisms, and as such are a nonrenewable resource. The fossil record is a document of the evolutionary history of life on earth, and fossils can be used to understand evolutionary pattern and process, rates of evolutionary change, past environmental conditions, and the relationships among modern species (i.e., systematics). The fossil record is considered a valuable scientific and educational resource, and individual fossils are afforded protection under state and federal environmental laws, most notably by California Environmental Quality Act (CEQA) Section 15064.5. Regulations applicable to potential paleontological resources in the project area are summarized below.

1.3.1 State Regulations

Paleontological resources (i.e., fossils) are considered nonrenewable scientific resources because once destroyed, they cannot be replaced. As such, paleontological resources are afforded protection under the following state regulations:

California Environmental Quality Act

In California, unique paleontological resources, sites, and geologic features, particularly with regard to fossil localities, are afforded protection under a number of state environmental statutes, including CEQA. According to Appendix G of the State CEQA Guidelines, a lead agency must determine if the project would result in the direct or indirect destruction of a unique paleontological resource or site or unique geologic feature, and if such impacts would be significant. Public Resources Code (PRC) § 21081.6 requires the CEQA lead agency to ensure that feasible mitigation measures are implemented to reduce impacts to a less-than-significant level. CEQA does not include

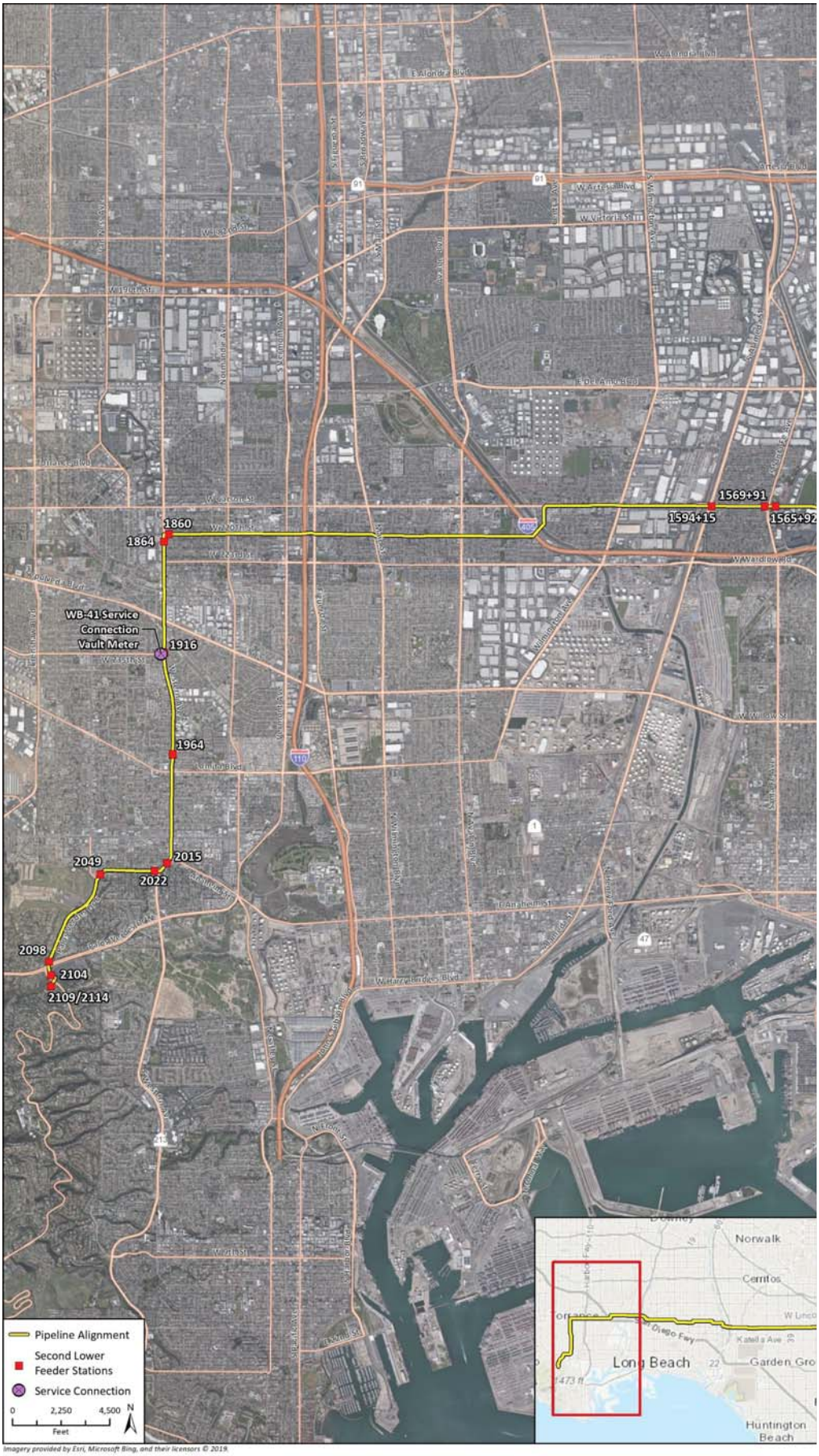
a specific definition of “unique paleontological resource or site,” nor does it establish thresholds for significance.

Public Resources Code Section 5097.5

PRC § 5097.5 prohibits excavation or removal of any vertebrate paleontological site, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands and specifies that state agencies may undertake surveys, excavations, or other operations as necessary on publicly owned lands to preserve or record paleontological resources. Public lands are defined to include lands owned by or under the jurisdiction of the state or any city, county, district, authority, or public corporation, or any agency thereof. Portions of this project fall outside Metropolitan fee property, on public lands; therefore, Metropolitan will coordinate with the appropriate public land owner and comply with this PRC section.

Violation of the previously outlined state regulations is punishable by civil and criminal penalties, including fines and/or imprisonment, and could result in the revocation of project certification and shut-down of the project at the direction of the appropriate lead agency.

Figure 1 Regional Location



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2 Background

California is divided into 11 geomorphic provinces. These provinces are "naturally defined geologic regions that display a distinct landscape or landform" (California Geological Survey [CGS] 2002). The project is located in the northern Peninsular Ranges Province within the Los Angeles Basin. The Peninsular Ranges trend northwest-southeast and extend 900 miles from the Los Angeles Basin to the tip of Baja California in Mexico. The province varies from 30 to 100 miles wide and is bounded on the east by the Colorado Desert and on the west by the coastal plain and the Gulf of California (Norris and Webb 1990). The regional geology and the geologic units mapped within the project area are described below.

2.1 Regional Geologic Setting

The project area is located in the "petroliferous" Los Angeles Basin, a northwest-trending lowland plain at the northern end of the Peninsular Ranges Province (Yerkes and Campbell 2005). The Los Angeles Basin is approximately 60 miles long and 35 miles wide and is defined by Yerkes et al. (1965) as the region bounded by the northern foothills of the Santa Monica Mountains to the north, the San Jose Hills and the Chino fault on the east, and the Santa Ana Mountains and San Joaquin Hills in the southeast. The Los Angeles Basin is underlain by a structural depression that was the site of extensive accumulation of interstratified fluvial, alluvial, floodplain, shallow marine, and deep shelf deposits on underlying Mesozoic metamorphic and granitic plutonic basement rocks. Sediment accumulation and subsidence has occurred there since the Late Cretaceous and has reached a maximum thickness of more than 20,000 feet (McCulloh and Beyer 2004; Norris and Webb 1990; Yerkes et al. 1965). During that time, transgressions and regressions (rise and fall of relative sea level) related to tectonic uplift, subsidence, and Pleistocene glaciation resulted in both marine and terrestrial sedimentary deposits throughout the Los Angeles Basin (Beyer 1995; McCulloh and Beyer 2004).

The Los Angeles Basin is composed of four structural blocks, designated the southwestern, northwestern, central, and northeastern blocks whose boundaries are formed by major fault zones (Yerkes et al. 1965). The project is located on the southwestern block, a region approximately 28 miles long and 5 to 12 miles wide and defined as bounded by the Santa Monica fault to the north and Newport-Inglewood fault to the south. Significant geologic features in that area include, the Palos Verdes Hills, which consist of low hills and mesas that rise 1,300 feet over the basin floor; the Palos Verdes Fault Zone and Gaffey syncline-anticline; and petroleum-bearing Miocene-Pliocene deposits (Harden 1998; Yerkes et al. 1965). The majority of the southwestern block is immediately underlain by the Monterey Formation, the San Pedro Formation, the Palos Verdes Sand, Quaternary non-marine terrace deposits, and Quaternary alluvial fan, flood plain, and eolian and beach sand deposits (Saucedo et al. 2003; Schoellhamer et al. 1954; Woodring et al. 1946).

2.2 Geologic Units in the Project Area

The geology of the project area is mapped at a scale of 1:100,000 by Saucedo et al. (2016). The project includes six geologic units mapped at ground surface, including younger Quaternary (Holocene to late Pleistocene) alluvium (Qya_2), younger Quaternary (Holocene to late Pleistocene) alluvial fan deposits (Qyf_2), older Quaternary (late to middle Pleistocene) alluvium (Qoa), older

Quaternary (Pleistocene) eolian deposits (Qoe), Pleistocene San Pedro Formation (Qsp, Qspl), and Miocene Monterey Formation (Tma). The surficial geologic units in the project area are described below and depicted in Figure 2, Geologic Units in the Project Area.

Younger Quaternary Alluvium (Qya_2)/Younger Quaternary Alluvial Fan Deposits (Qyf_2)

Younger Quaternary alluvium unit 2 (Qya_2) is mapped at the surface within the northeastern segment of the project area, including SLF Stations 1594+15, 1569+91, and 1565+92. Younger Quaternary alluvial fan deposits, unit 2 (Qyf_2) are mapped at the surface within the southwestern segment of the project area, near SLF Station 2049 (Saucedo et al. 2016). Holocene alluvial sediments were deposited during the latest Pleistocene to the Holocene and are composed of slightly to poorly consolidated clay, silt, sand, and silty sand. These deposits may be obscured at the surface by a slightly to moderately developed soil profile (Saucedo et al. 2016).

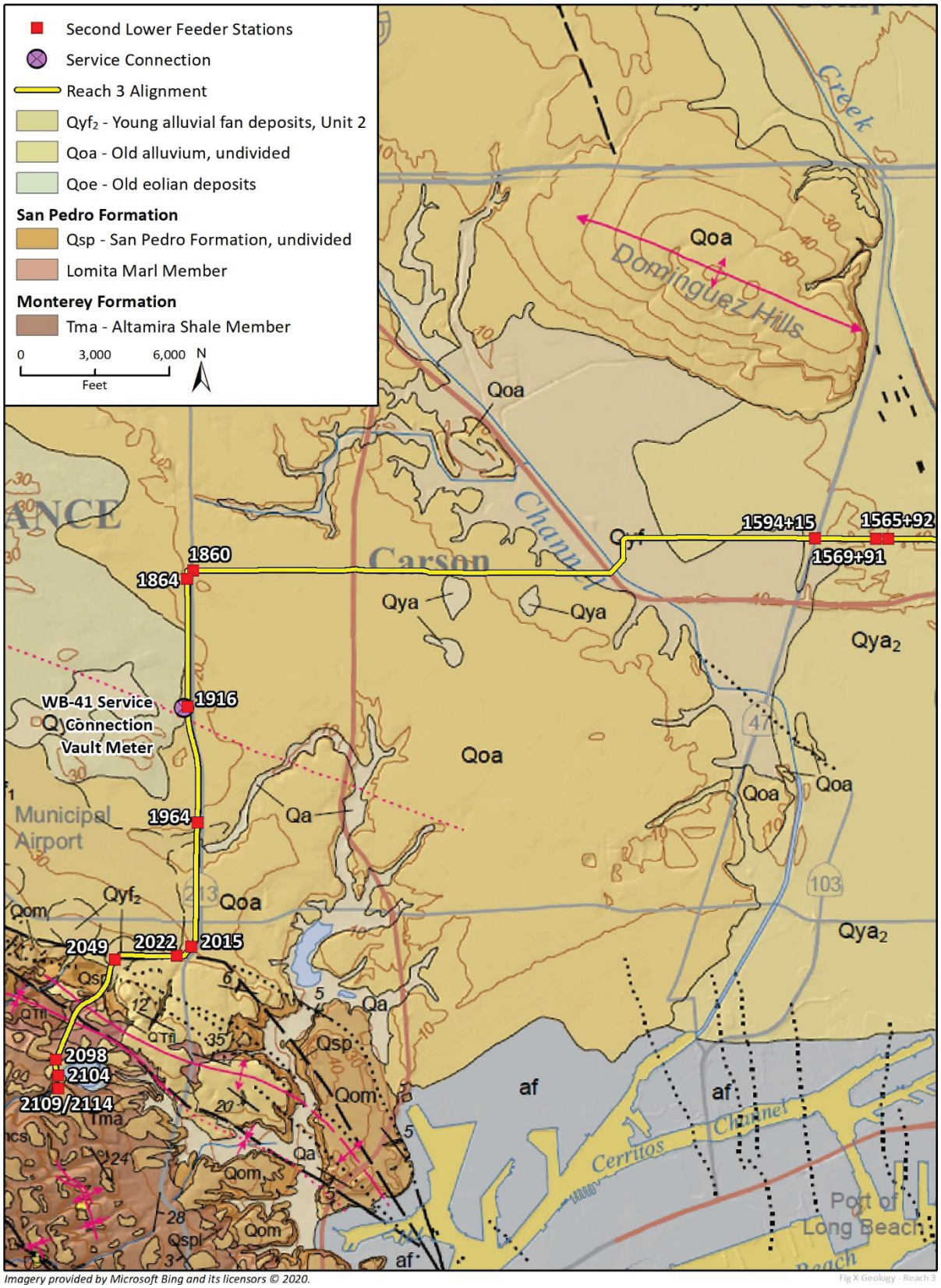
Holocene alluvial deposits at the surface are too young to preserve fossil resources but at unknown depths, sediments may transition from too young to support fossils, to early Holocene or late Pleistocene in age in which unique paleontological resources could occur. Pleistocene alluvial deposits have a well-documented record of abundant and diverse vertebrate fauna throughout California. Existing information (Department of Water Resources 1961) discusses the general range of geologic unit thicknesses in various areas of the Los Angeles Basin; however, specific information on the depth at which Holocene units mapped at the surface become old enough to preserve paleontological resources is not available. While the precise depth of older, fossil yielding deposits is unknown, it may be as few as five feet below ground surface (Maguire and Holroyd 2016; Savage 1951).

Older Quaternary Eolian Deposits (Qoe)/Older Quaternary Alluvium (Qoa)

Near the northernmost segment of the project area, between SLF Stations 1864 and 1916, older Quaternary eolian deposits (Qoe) are exposed at the surface. Locally, these Pleistocene wind-blown deposits, composed of poorly-consolidated, well-sorted, fine- to coarse-grained sand and silty sand, may be interfingered with older alluvial sediments of Pleistocene age. Older Quaternary (late to middle Pleistocene) alluvium (Qoa), which are mapped throughout most of the project area, consist of unconsolidated to moderately consolidated, poorly-sorted, gravel to coarse-grained sand, with slightly to moderately dissected surfaces and moderate soil development (Saucedo et al. 2016; Yerkes and Campbell 2005).

Alluvial sediments of Pleistocene age have a well-documented record of abundant and diverse vertebrate fauna throughout California, especially within the Los Angeles Basin. Fossil specimens of whale, sea lion, horse, ground sloth, bison, camel, mammoth, dog, pocket gopher, turtle, ray, bony fish, shark, and bird have been reported (Agenbroad 2003; Bell et al. 2004; Jefferson 1985, 1989, 1991; Maguire and Holroyd 2016; Merriam 1911; Reynolds et al. 1991; Savage 1951; Savage et al. 1954; Scott and Cox 2008; Springer et al. 2009; Tomiya et al. 2011; Wilkerson et al. 2011; Winters 1954; University of California Berkeley Museum of Paleontology [UCMP] 2018). Significant invertebrate and plant fossils have also been recovered from Pleistocene alluvial deposits, providing important paleoecologic information on the environmental setting of the Pleistocene.

Figure 2 Geologic Units in the Project Area



San Pedro Formation (Qsp, Qspl)

The Pleistocene San Pedro Formation is mapped in the Los Angeles Basin in the southwestern project area, just south of SLF Station 2049, and is divided into three formal members, from oldest to youngest: the Lomita Marl, Timms Point Silt, and San Pedro Sand (Jacobs 2005; LaFollette 2009; Woodring et al. 1946). Only the San Pedro Sand (Qsp) and Lomita Marl (Qspl) members are mapped in the project area (Yerkes and Campbell 2005). The Lomita Marl consists of unconsolidated carbonate gravel and marl, with localized induration resulting from secondary calcareous cementation. The San Pedro Sand is approximately 100 to 300 feet thick and is predominately composed of horizontally- and cross-bedded fine- to medium-grained sand, with subordinate subrounded fine to coarse pebbles, and common silt. Fossiliferous beds of marine shells are widespread, with isolated dense lens concentrations. Secondary limonite is common throughout the unit (Woodring et al. 1946; Powell and Stevens 2000).

The San Pedro Formation has yielded an abundant and diverse marine fauna within Los Angeles County. Numerous invertebrate localities have been recorded within the San Pedro Formation, which yielded several hundred different taxa of gastropods, pelecypods, scaphopods, arthropods, bryozoans, crustaceans, echinoids, and foraminifera (DeBusk and Corsetti 2011; Jacobs 2005; Powell and Stevens 2000). Mollusks are by far the most abundant fossil in the San Pedro Formation and as many as 242 species of mollusk have been recovered from one locality within the San Pedro Sand member (DeBusk and Corsetti 2011). Marine vertebrates have also been recovered from the San Pedro Formation, including whale, bony fish, rays, and sharks. In addition, terrestrial vertebrates including horse, bison, camel, saber-toothed tiger, ground sloth, elephant, rodent, turtle, and numerous specimens of birds have been discovered in the San Pedro Sand, including fossil specimens of ducks, gull, sea eagle, and quail. Between 2007 and 2008, during excavations and construction activities in the San Pedro Sand deposits near Knoll Hill and Pacific Street in San Pedro (less than five miles southeast of the project area), over 15,000 invertebrate and 450 vertebrate fossil were recovered, including specimens of bony fish, shark, ray, amphibian, snake, turtle, bird, rodent, horse, hare, rabbit, gopher, vole, deer, squirrel, and mollusk (DeBusk et al. 2009).

Monterey Formation (Tma)

The Miocene Monterey Formation is mapped in the southernmost segment of the project area, and is divided into three formal members, from oldest to youngest: the Altamira Shale, Valmonte Diatomite, and Malaga Mudstone (Saucedo et al. 2003). These Miocene deposits are typically recognized by its pale buff to white fine-grained deposits, dark brown to black siliceous laminations, and common fossils (Berndmeyer et al. 2012). Only the Altamira Shale (Tma), the thickest of the three members, is mapped in the project area and consists of siliceous shale, silty and sandy shale, cherty shale, chert, siltstone, diatomaceous shale, diatomite, phosphatic shale, and tuffaceous shale (Woodring et al. 1946; Bramlette 1946).

The Monterey Formation is well exposed along coastal California from San Francisco south to Los Angeles. Numerous vertebrate localities have been documented from the Monterey Formation, which yielded specimens of large sea turtles, whale, dolphins, sea lions, shark bones and teeth, sea cows, desmostylians, fish, birds, and many other fauna (Bramlette 1946; Harden 1998; Koch et al. 2004).

2.3 Paleontological Resource Assessment

Rincon evaluated the paleontological resource potential of the geologic units present in the project area based on the results of a paleontological locality search at the Natural History Museum of Los Angeles County (NHMLAC) and review of existing information in the primary literature on known fossils within those geologic units. Rincon reviewed geologic maps and primary literature including: Agenbroad 2003; Bell et al. 2004; CGS 2002; Jacobs 2005; Jefferson 1985, 1989, 1991; Maguire and Holroyd 2016; Merriam 1911; Powell and Stevens 2000; Reynolds et al. 1991; Saucedo et al. 2003; Savage et al. 1954; Scott and Cox 2008; Springer et al. 2009; Tomiya et al. 2011; Wilkerson et al. 2011; Winterer and Durham 1962; Winters 1954. Following the records search and literature review, Rincon assigned a paleontological sensitivity to each geologic unit within the project area.

2.3.1 Locality Search

A search of the paleontological collections records at the NHMLAC resulted in no previously recorded fossil localities within the project boundary; however, at least 11 vertebrate localities were identified within San Pedro Formation, Monterey Formation, and older Quaternary alluvial deposits in the general vicinity of the project (McLeod 2015). The NHMLAC reports several vertebrate localities, including LACM 3805, LACM 3823, and LACM 1839, were identified near the Harbor Freeway (I-110) from older Quaternary deposits. Near the intersection of Sepulveda Boulevard and Figueroa Street, approximately 1.5 miles to the east of the WB-41, LACM 3823 produced a specimen of fossil camel (*Camelops*) at a depth of 12 to 14 feet. LACM 3805 yielded fossil specimens of eagle ray (Myliobatiformes) and dolphin (Delphinidae) near the intersection of Main Street and Lomita Boulevard, less than two miles east of SLF Station 1964. To the west of the Harbor Freeway (I-110), near the intersection of Crenshaw Boulevard and 236th Street, LACM 1839 produced a fossil specimen of horse (*Equus*) at approximately 35 feet below ground surface.

NHMLAC reports four additional fossil localities within Pleistocene alluvial deposits near the southern segment of the project area. Less than a mile east of SLF Station 2098, LACM 1228 yielded fossil specimens of camel (Camelidae) and bison (*Bison*) from older alluvial deposits. Farther to the east, in Green Hills Memorial Park, LACM 3200 produced fossil specimens of ground sloth (*Paramylodon*) and bison (*Bison*). Immediately to the west of this portion of the project area, LACM 1087 and 1277 yielded various marine and terrestrial fossil specimens from Pleistocene alluvial deposits including loon (*Gavia*), geese (*Chendytes lawi* and *Chendytes milleri*), grebe (*Aechmophorus occidentalis*), sloth (Pilosa), mastodon (*Mammut americanum*), mammoth (*Mammuthus*), sea lion (*Eumetopias*), horse (*Equus occidentalis*), tapir (*Tapirus* californicus), whale (Cetacea), camels (*Tanupolama* and *Camelops*), and bison (*Bison*).

Approximately 0.2 mile southwest of SLF Station 2049, LACM 1053 and 3065 yielded several marine fossil specimens from the Lomita Marl Member, including bony fish (Teleostei), common loon (*Gavia immer*), sea cow (Hydrodarnalinae), sea lion (*Allodesmus*), and whale (Cetacea). Less than 0.25 mile west of SLF Station 2098, LACM 1099 produced fossil specimens from the Altamira Shale Member, including mackerel (*Thyrsocles*), and an extinct marine quadruped (*Desmostylus Hesperus*). Further to the southwest, south of Palos Verdes Drive North and east of Portuguese Bend Road, LACM 1098 yielded a nearly complete skull and skeleton holotype of a fossil sea lion (*Allodesmus courseni*) from the Altamira Shale Member (McLeod 2015). The results of the museum records search are summarized in Table 1.

Table 1 Museum Records Search Results

Locality No.	Geologic Unit	Age	Taxa	Depth of Recovery (below ground surface)
LACM 1839, LACM 3805, LACM 3823	Qoa	Pleistocene	Camel (*Camelops*), eagle ray (Myliobatiformes), dolphin (Delphinidae), horse (*Equus)*	12 to 35 feet
LACM 1228	Qoa	Pleistocene	Camel (Camelidae), bison (*Bison*)	Unreported
LACM 3200	Qoa	Pleistocene	Ground sloth (*Paramylodon*), bison (*Bison*)	Unreported
LACM 1087, LACM 1277	Qoa	Pleistocene	Loon (*Gavia*), geese (*Chendytes lawi* and *Chendytes milleri*), grebe (*Aechmophorus occidentalis*), sloth (Pilosa), mastodon (*Mammut americanum*), mammoth (*Mammuthus*), sealion (*Eumetopias*), horse (*Equus occidentalis*), tapir (*Tapirus californicus*), whale (Cetacea), camels (*Tanupolama* and *Camelops*), bison (*Bison*)	Unreported
LACM 1053, LACM 3065	Qspl	Pleistocene	Bony fish (Teleostei), common loon (*Gavia immer*), sea cow (Hydrodarnalinae), sea lion (*Allodesmus*), whale (Cetacea)	Unreported
LACM 1098-1099	Tma	Miocene	Snake mackerel (*Thyrsocles*), extinct marine quadruped (*Desmostylus Hesperus*), sea lion (*Allodesmus courseni*)	Unreported

Source: McLeod 2015

2.3.2 Paleontological Significance and Sensitivity

Evaluating Paleontological Significance

Guidance for evaluating paleontological significance can be found in Scott and Springer (2003). Those authors stated that significant paleontological resources include "fossil remains of large to very small aquatic and terrestrial vertebrates, remains of plants and animals previously not represented in certain portions of the stratigraphy, and fossils that might aid stratigraphic correlations, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, paleoclimatology, and the relationships of aquatic and terrestrial species" (2003:6). Furthermore, they also advised that impacts might be considered less than significant if dense concentrations of plant and/or invertebrate fossil remains were "so locally abundant that the impacts to the resources do not appreciably diminish their overall abundance or diversity" (2003:6).

More recent guidance has been developed by the Society for Vertebrate Paleontology (SVP 2010), which defines significant paleontologic resources as:

> Fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years). (p. 11)

Therefore, any identifiable vertebrate fossil remains would be considered unique under CEQA, and direct or indirect impacts on such remains would be considered significant. Identifiable invertebrate

and plant fossils would be considered unique if they meet the criteria presented above. Determinations should take into account the abundance and densities of fossil specimens or newly and previously recorded fossil localities in exposures of the rock units present at a project area.

Classifying Paleontological Sensitivity

The SVP (2010) describes sedimentary rock units as having high, low, undetermined, or no potential for containing significant nonrenewable paleontological resources. This criterion is based on rock units within which vertebrate or significant invertebrate fossils have been determined by previous studies to be present or likely to be present. While these standards were specifically written to protect vertebrate paleontological resources, all fields of paleontology have adopted these guidelines:

I. **High Potential (sensitivity).** Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered are considered to have a high potential for containing significant non-renewable fossiliferous resources. These units include but are not limited to, sedimentary formations and some volcanic formations which contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Sensitivity comprises both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, or botanical and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas which contain potentially datable organic remains older than Recent, including deposits associated with nests or middens, and areas which may contain new vertebrate deposits, traces, or trackways are also classified as significant.

II. **Low Potential (sensitivity)**. Sedimentary rock units that are potentially fossiliferous, but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well-documented and understood taphonomic, phylogenetic species and habitat ecology. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils prior to the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations. However, as excavation for construction gets underway it is possible that significant and unanticipated paleontological resources might be encountered and require a change of classification from Low to High Potential and, thus, require monitoring and mitigation if the resources are found to be significant.

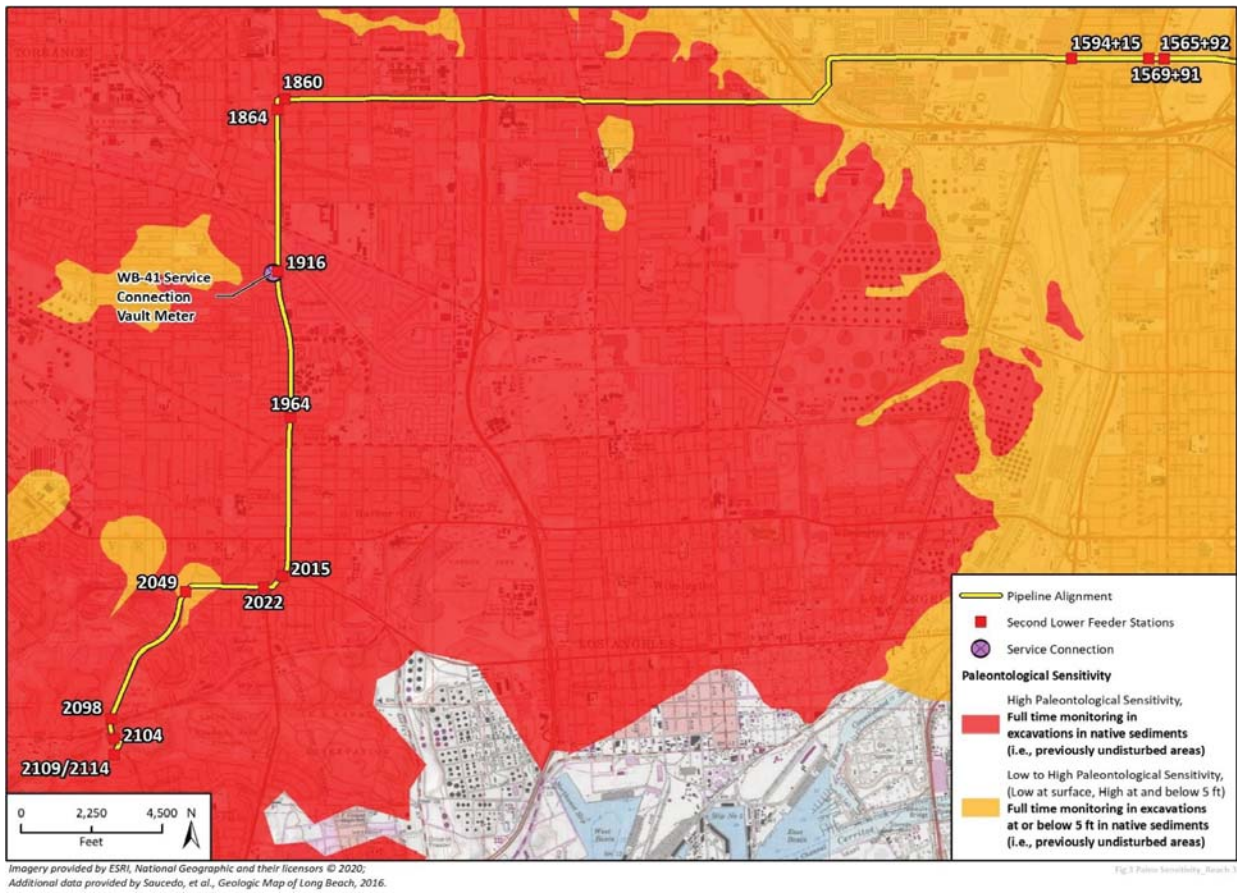
III. **Undetermined Potential (sensitivity)**. Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before programs of impact mitigation for such areas may be developed.

IV. **No Potential.** Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

2.3.3 Paleontological Resource Potential of the Project Area

Consistent with SVP (2010) resource assessment guidelines, Rincon determined the paleontological sensitivity of the project area based on a comprehensive literature review and museum locality search. The results of the study indicate that the geologic units underlying the project area have a paleontological sensitivity ranging from low to high. The older Quaternary alluvium, older Quaternary eolian deposits, San Pedro Formation, and Monterey Formation immediately underlying most of the project area are all assigned a high paleontological sensitivity because they have proven to yield vertebrate fossils near the project area and throughout the Los Angeles Basin. Holocene surficial alluvial deposits ($Qya_{2,}$ Qyf_2), underlying the northeastern project area and a small segment of the southwestern project area, have a low paleontological sensitivity at the surface because they are too young to preserve fossilized remains. At shallow depth, the Holocene alluvial deposits overlie sensitive Pleistocene age deposits across the project area. Therefore, the paleontological sensitivity of the Holocene deposits is determined to be low to high, increasing at a depth of about five feet below ground surface. Refer to Figure 3 for a map showing the paleontological sensitivity of the project area.

Figure 3 Paleontological Sensitivity of the Project Area



Imagery provided by ESRI, National Geographic and their licensors © 2020;
Additional data provided by Saucedo, et al., Geologic Map of Long Beach, 2016.

3 Paleontological Resources Impact Mitigation Program

This PRIMP complies with mitigation measure (MM) CUL-6 *Develop a Program to Mitigate Impacts on Paleontological Resources for Each Contract Package* identified in the PEIR for the PCCP Program (Metropolitan 2016), elements of SVP Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010), and Conditions of Receivership for Paleontologic Salvage Collections (SVP 1996).

3.1 Retention of a Qualified Paleontologist

Prior to the start of ground disturbance Metropolitan will retain an experienced Qualified Paleontologist to implement this PRIMP and assign a Paleontological Monitor to be present during ground disturbance within *in situ* paleontologically sensitive strata (i.e., geologic deposits that are determined to have a high paleontological sensitivity and that have not been previously disturbed). A Qualified Paleontologist is defined by the SVP standards as an individual preferably with an M.S. or Ph.D. in paleontology or geology who is experienced with paleontological procedures and techniques, who is knowledgeable in the geology of California, preferably southern California, and who has at least two years of experience as a paleontological mitigation project supervisor (SVP 2010). The Qualified Paleontologist will be responsible for the following tasks:

- **Worker Environmental Awareness Program (WEAP):** Supervise implementation of the WEAP training and conduct initial training session, or as directed by Metropolitan.
- **Implementation of PRIMP:** Ensure that the PRIMP is implemented in compliance with the approved mitigation measures and SVP (1996, 2010) standard guidelines.
- **Salvage Operations:** Be available for consultation with field monitors and Metropolitan staff on salvage operations, particularly when equipment and additional temporary monitors are needed to speed up fossil recovery.
- **Monitor Scheduling:** Coordinate and communicate with Metropolitan staff to determine the schedule for work in areas where disturbance will require a Paleontological Monitor (i.e., areas underlain by sediments that have been assigned a high paleontological sensitivity and that have not been previously disturbed).
- **Paleontological Oversight:** Directly oversee monitoring to ensure the collection of a representative sample of fossils when and if uncovered by ground-disturbing activities.
- **Locality and Site Data:** Ensure the proper documentation of associated specimen/sample data and corresponding geologic and geographic site data and the plotting of fossil/sample sites on maps.
- **Sediment Sampling:** Direct field and laboratory processing of sediment samples for microvertebrate fossils.
- **Fossil Identification:** Oversee and/or ensure the identification of fossils and the determination of significance (this may require consultation with other paleontological experts).
- **Curation:** Ensure that a proper curation facility is identified and a curation agreement is implemented. Ensure that all fossils and pertinent associated data are properly transferred to the curatorial institution.

- **Reporting:** Ensure preparation and Quality Assurance/Quality Control of the draft and final monitoring

The Paleontological Monitor(s) will be assigned by the Qualified Paleontologist and will meet the minimum qualifications per standards set forth by the SVP (2010), which include a B.S. or B.A. degree in geology or paleontology and one year of monitoring experience. The Paleontological Monitor(s) will be responsible for the following tasks.

- **WEAP Training:** Conduct initial training session in accordance with the WEAP, or as directed by Metropolitan.
- **Paleontological Monitoring:** Conduct day-to-day monitoring of all earth-moving activities in any area underlain by sediments that have been assigned a high paleontological sensitivity and that have not been previously disturbed.
- **Fossil Discoveries:** Flag newly discovered fossil sites and temporarily divert ground-disturbing equipment around the site, as necessary, until the fossil(s) has been evaluated and, if warranted, salvaged.
- **Fossil Salvage:** Salvage fossils uncovered by ground-disturbing activities.
- **Sediment Samples:** Collect potentially fossiliferous sediment samples to recover microfossils.
- **Log Construction Activity:** Document project-related ground-disturbing activities, their location, and other relevant information including a photographic record.
- **Fossil Data:** Take accurate and detailed field notes and photographs, and record associated specimen/sample and corresponding geologic and geographic site data including Universal Transverse Mercator (UTM) coordinate data.
- **Field Preparation:** Conduct initial (field) processing of fossiliferous sediment samples for microvertebrate fossils.
- **Fossil Preparation:** If directed, prepare fossils to the point of identification.
- **Reporting:** If directed, assist with the preparation of the draft and final reports.

3.2 Worker Environmental Awareness Program

Prior to construction, a WEAP presentation will be prepared and used to train site personnel prior to the start of work. The WEAP will include at a minimum the following information:

1) Review of local, state, and federal laws and regulations pertaining to paleontological resources.
2) The types of fossils that could be encountered during ground-disturbing activity.
3) Photos of example fossils for reference.
4) The paleontological monitoring that will be required during the project (including the types, depths and locations of ground-disturbing activity that will require paleontological monitoring or spot checking).
5) Instructions on the procedures to be implemented should unanticipated fossils be encountered during construction, including stopping work in the vicinity of the find and contacting a qualified professional paleontologist (Qualified Paleontologist).

In addition to these instructions, the Resident Engineer and Inspectors will also receive a list and contact info of the paleontological specialists and other environmental specialist associated with paleontological resources for this project.

3.3 Curation Agreement

Prior to the commencement of construction, Metropolitan, in coordination with the Qualified Paleontologist, should obtain a curation agreement with an accredited museum repository.

Conditions of acceptance of recovered fossils will be spelled out in a letter from the designated repository. In addition to the specimens, the repository must maintain "a complete set of GPS data, field notes, photographs, locality forms, and stratigraphic sections." Also, "specimens must be stored in a fashion that allows retrieval of specific, individual specimens by future researchers." An appropriate institution for curation of unique paleontological resources from this project area would preferentially be the NHMLAC.

3.4 Monitoring Earth Moving

Monitoring guidelines will follow procedures established by the SVP (2010). Paleontological monitoring is only required in areas that have not been previously disturbed. While it is anticipated that the majority of ground-disturbing activity would not disturb intact native geologic units due to the extensive previous development (e.g., residential, industrial, roads, etc.), project-related excavations that exceed previously disturbed areas in width or depth would require paleontological monitoring as detailed below and in Table 2.

All construction activities that disturb intact native sediments within areas of high paleontological sensitivity at the ground surface (i.e., Qoa, Qoe, Qsp, Qspl, Tma) will be monitored on a full-time basis by a qualified Paleontological Monitor. All construction activities that disturb intact native sediments at a depth greater than five feet below ground surface within areas of low-to-high paleontological sensitivity (i.e., Qya_2 and Qyf_2) will be monitored on a full-time basis by a qualified Paleontological Monitor.

Table 2 Paleontological Sensitivity Summary and Monitoring Locations of Excavation Areas

Geologic Unit(s)	Paleontological Sensitivity	Monitoring Recommendation and Duration	Excavation Areas (SLF Station #)
Quaternary younger alluvium (Qya_2 Qyf_2)	Low (surface), High (below 5 feet)	Full time in excavations below 5 feet in native sediments (i.e., previously undisturbed areas)	1594+15 (WB-37), 1569+91, 1565+92, 2049
Older Quaternary eolian deposits (Qoe)	High	Full time excavation in native sediments (i.e., previously undisturbed areas)	N/A
Older Quaternary alluvium (Qoa)	High	Full time excavation in native sediments (i.e., previously undisturbed areas)	1860, 1864, 1916, 1964, 2015, 2022, 2104, 2109/2114, WB-41
San Pedro Formation (Qsp, Qspl)	High	Full time excavation in native sediments (i.e., previously undisturbed areas)	2098
Monterey Formation (Tma)	High	Full time excavation in native sediments (i.e., previously undisturbed areas)	N/A

Full-time monitoring is defined as during 100% of earth-moving activities. If, no fossils of any kind have been discovered after 50% of excavations are complete in an excavation area, then the level of monitoring may be reduced or suspended, at the Qualified Paleontologist's discretion.

The SVP (2010) guidelines recommend paleontologists who monitor excavations must be experienced in locating and salvaging fossils and collecting necessary associated critical data. The Paleontological Monitor must be able to document the stratigraphic context of fossil discovery sites. Paleontological Monitors must be properly equipped with tools and supplies to allow rapid removal of specimens (see Section 3.5). The monitor must also be empowered to temporarily halt or redirect the excavation equipment away from fossils to be salvaged, including the implementation a 50-foot safety buffer and equipment exclusion zone around the area of a fossil discovery and salvage. The Qualified Paleontologist will consult with Metropolitan on salvage operations, particularly regarding the need for extra equipment and operator(s) to accelerate salvage operations.

Excavation methods will vary depending on the type of fossil and the nature of the surrounding matrix. Many macrofossils are easily recognized and removed by hand or with small hand tools. Some may be fragile and require treatment with a hardener before salvage. Others may require encasement within a plaster jacket. Specimens representing all or much of a skeleton may require removal as a whole or in large blocks. Such specimens typically require additional time to excavate and stabilize before removal. Construction schedules will be considered during the recovery of unique fossils, with the goal of reducing or avoiding construction delays.

After excavating the specimen or specimens, the Paleontological Monitor will assign a unique field number to each fossil specimen, fossil locality or sediment sample and record the field number and associated specimen/sample data (identification by taxon and element, sample size, etc.), corresponding geologic data (particularly lithology, stratigraphic unit, stratigraphic level within the unit, inferred age, etc.), and geographic site data (UTM coordinate location, elevation, etc.) in the field notes. Each field number and fossil/sampling site will be plotted on both a 1:24,000-scale topographic map and a measured section of the exposed stratigraphic sequence (if sufficiently exposed). Fossils will be prepared to the point of identification and identified to the lowest possible taxonomic level by a paleontologist who specializes in the appropriate taxonomic group (this may require outside consultation on fossil identifications). Specimen salvage and/or sediment sample

collection and recording of associated data will be completed as quickly as possible to minimize potential delays to excavation activities.

Immediately after the salvage of the specimen or collection of the sample(s), the Paleontological Monitor will remove all materials from the exclusion zone and notify Metropolitan of the status of the salvage operation. Upon receiving approval from Metropolitan and the Qualified Paleontologist, the Paleontological Monitor will communicate to the Construction Manager/Heavy Equipment Operator that earth moving can proceed. Provisions will be made for additional Paleontological Monitors to monitor or help in removing large or abundant fossils to reduce potential delays to excavation schedules.

3.5 Equipment and Supplies

Each Paleontological Monitor will be equipped with hand tools and supplies (e.g., geological hammer, shovel, pick, chisels, whisk broom, buckets, specimen bags, field notebook, daily monitoring report forms, pens, markers, and glue) to allow for the rapid salvage of fossil remains. Additional equipment and supplies (e.g., plaster, burlap, screens, wash tubs, hoses) for stabilizing and salvaging delicate fossil specimens and field processing of fossiliferous sediment samples will be kept on hand and made available when and if required to properly salvage fossil discoveries. The Construction Contractor may be requested to supply heavy equipment (typically a front-end loader) and an operator to assist in the rapid removal of a large fossil specimen(s) or sediment sample(s). Equipment and supplies for preparing fossil specimens, laboratory processing of screened matrix generated by field processing of sediment samples, and for temporary storage of all salvaged fossil specimens will be available via the Qualified Paleontologist.

3.6 Bulk Matrix Sampling

In accordance with MM CUL-6, bulk matrix sampling may be necessary to recover small invertebrates or microvertebrates from within sensitive Pleistocene deposits. SVP (2010) provides clear guidelines for the volume of bulk samples to be collected during construction monitoring activities. Fine-grained sedimentary horizons (e.g., mudstones and paleosols) can contain fossils that are too small to be readily visible within the sedimentary matrix and are referred to as "microvertebrates". These microvertebrates may be unique (e.g., small mammal, bird, reptile, amphibian, or fish remains) or may be associated with non-vertebrate paleoenvironmental indicators (e.g., foraminifers, small gastropods, and plant seeds) that can only be recovered through a process of bulk matrix sampling followed by screen washing through mesh screens. If indicators of potential microvertebrate fossils are found (e.g., plant debris, abundant mollusks, clay clasts, carbonate-rich paleosols, or mudstones), screening of a "test sample" (0.4 cubic yard/meter, ~600 lbs) may produce significant returns and indicate whether or not a larger sample needs to be screen washed. If a test sample returns unique fossils, a “standard sample” (4.0 cubic yards/meters, ~6,000 lbs or 2,500 kg) of matrix from each site, horizon, or paleosol should be collected and screen washed. However, the uniqueness of the microvertebrate fossils recovered may justify screen washing even larger amounts. With this possibility in mind, two standard samples (~8.0 cubic yards/meters) or more as determined by the Qualified Paleontologist should be collected when the discovery is first made and set aside in case processing of a larger sample is later determined to be necessary.

To avoid construction delays, samples of matrix may need to be removed from the project area and processed elsewhere. Chemicals (e.g., detergents, weak acids, orange oil, etc.) may be necessary to facilitate the breakdown of matrix. In some cases, the concentrate will need to be further processed using heavy liquids (e.g., zinc bromide, polytungstate, or tetrabromide) to remove mineral grains and create a concentrate enriched with microvertebrate bones and teeth. The concentrate should be directly examined under a microscope to locate and remove individual microfossils.

When warranted, sediment samples will be obtained and stored for potential future analysis by scientists. Such samples may include fine-grained sediment for pollen analysis; organic-rich sediments that may yield important scientific information on the age, paleoecology, or depositional environment of sedimentary units exposed by construction excavations; samples for paleomagnetic or radiometric analysis; and coarse sediment for clast source analysis. The Qualified Paleontologist will determine what samples should be collected during the construction excavation; however, these decisions should be made in the context of reasonable expectations that sample collection will yield valuable results that will add to the scientific record of the geologic units from which samples are collected. Reasonable expectations of positive results might include such evidence as abundant macrofossil discoveries in the immediate vicinity, the presence of abundant fragmentary fossils and lithology indicators of potentially fossiliferous units.

3.7 Laboratory Preparation and Curation

Fossil remains collected during monitoring will be sorted/picked, identified, and catalogued. Once collected, preparation of fossil specimens may involve removal of extraneous and concealing sedimentary matrix from specimens using simple hand tools (e.g., hammers, chisels, X-acto knives, brushes, dental picks, and pin vises), and stabilization with glues or consolidants (e.g., butvar). Once sorted, prepared and stabilized, individual fossils will then be identified to the lowest taxonomic level possible (e.g., class, family, genus, species). Descriptions of fossil localities, including geographic, stratigraphic, geologic, and taphonomic data, will be compiled and stored electronically for submission at the time of curation. Curation would require placement of fossils into archival specimen trays with labels containing relevant curatorial information. Field collection and preparation of fossil specimens will be performed by the Qualified Paleontologist with further preparation as needed by an accredited museum repository institution at the time of curation.

Following preparation, fossils will be temporarily stored in an appropriate storage space within the office of the Qualified Paleontologist until they can be properly accessioned at the designated curatorial institution for permanent storage. All fossil resources collected on private property are the property of the land owner. Fossils collected on public lands remain the property of the public entity responsible for those lands (i.e., State, County, City, etc.).

3.8 Report of Findings

Following the completion of paleontological monitoring for the project, a final technical report of findings will be prepared under the direction of the Qualified Paleontologist and will include the results of the paleontological monitoring. The final report will include or discuss the following (as applicable):

1) Presentation of background for the project's paleontological monitoring program.
2) Discussion of the geology and stratigraphy of units exposed during excavations.

3) Discussion of mitigation methods, including fossil treatment, and recommendations for additional work.
4) Discussion of the uniqueness and importance of salvaged fossil remains (if any).
5) Presentation of the results and findings of analyses conducted on the fossil remains (if any) including all associated locality data included as an appendix.
6) Discussion of the research questions that were resolved or raised as a result of the analyses.
7) Faunal list of any fossils collected.
8) Brief statement of the significance and relationship of the site to similar fossil localities.
9) A complete set of field notes.
10) Geological maps.
11) Stratigraphic sections.
12) Photographs.
13) A list of identified specimens, if recovered.
14) Locality data, including United States Geological Survey standard 1:24,000-scale topographic map showing each locality from which a significant fossil was collected and a measured stratigraphic section or sections, as appropriate, should be included as a *Confidential Appendix*.

The final report, together with its accompanying documents, constitutes the final objective of the PRIMP. Copies of the final report will be deposited with Metropolitan and with the designated museum repository, if applicable. Acceptance of the final report by Metropolitan and accession of any fossil remains discovered into an accredited museum repository will confirm that the project has caused less-than-significant impacts to unique paleontological resources and will signify completion of the mitigation program for the project.

4 Conclusions

As detailed above, paleontological monitoring will only be necessary when construction activity results in ground disturbances within previously undisturbed intact (native) geologic units (refer to Table 2 and Figure 3). This includes full-time monitoring for excavations of intact (native) sediments in older Quaternary alluvium, older Quaternary eolian deposits, San Pedro Formation, and Monterey Formation (i.e., SLF Stations 1860, 1864, 1916, 1964, 2015, 2022, 2098, 2104, 2109/2114, and WB-41) and when ground disturbance exceeds five feet in younger Quaternary alluvium (i.e., SLF Stations 1594+15 (WB-37), 1569+91, 1565+92, 2049). Full implementation of and compliance with the mitigation measures in this PRIMP will reduce adverse impacts to paleontological resources to a less than significant level as required under CEQA.

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Appendix E
Construction Noise Technical Report

Second Lower Feeder Reach 3 Project

Construction Noise Technical Report

December 2021 | 00501.00024.003

Prepared for:

The Metropolitan Water District of Southern California
Environmental Planning Team
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Construction Noise Technical Report

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ACRONYMS AND ABBREVIATIONS

ADT	average daily traffic
ANSI	American National Standards Institute
CadnaA	Computer Aided Noise Abatement
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
Defra	Department of Environment, Food and Rural Affairs (United Kingdom)
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	Hertz
in/sec	inches per second
kHz	kilohertz
L_{DN}	Day-Night level
L_{EQ}	equivalent sound level
Metropolitan	The Metropolitan Water District of Southern California
mPa	micro-Pascals
NSLU	noise-sensitive land use
PCCP	Prestressed Concrete Cylinder Pipeline
PEIR	Programmatic Environmental Impact Report
RCNM	Roadway Construction Noise Model
SF	Sepulveda Feeder
SLF	Second Lower Feeder
SPL	sound pressure level
S_{WL}	sound power level
USDOT	U.S. Department of Transportation

EXECUTIVE SUMMARY

This noise impact report assesses the potential acoustical impacts from construction of The Metropolitan Water District of Southern California's (Metropolitan) Second Lower Feeder Reach 3 of the Prestressed Concrete Cylinder Pipeline (PCCP) Rehabilitation Program (project). A Programmatic Environmental Impact Report (PEIR) was prepared for the PCCP Rehabilitation Program and it concluded that noise impacts from project construction would be significant and unavoidable at some locations. The PEIR, therefore, requires subsequent project-specific noise analyses to be conducted for future construction activities located in close proximity to noise-sensitive land uses (NSLUs) such as residences or schools. This report identifies ambient noise levels, construction-related noise levels at specific noise-sensitive locations (receptors), and measures that can be used to reduce noise levels (as appropriate).

The project's pipeline alignment traverses the cities of Los Angeles, Torrance, Lomita, Rolling Hills Estates, Long Beach, and Carson. The project would reline approximately 26,000 linear feet (4.9 miles) of PCCP in the Second Lower Feeder and approximately 300 linear feet in the Sepulveda Feeder with prefabricated coiled steel liner, and upgrade additional components associated with the pipeline.

Vibration from construction is not anticipated to cause significant impacts to nearby receptors.

Construction activity would generate elevated noise levels at each pipe access site and at multiple locations along the alignment for additional infrastructure improvements, such as manholes, isolation valves, and service connections. Elevated noise levels would lead to significant impacts at multiple locations during both daytime and nighttime hours. The PEIR requires the implementation of mitigation measures (MM) NOI-1 to reduce vibration levels, and MM NOI-2 through MM NOI-4 to reduce noise levels.

To comply with PEIR MM NOI-3, additional project-specific measures are required to attenuate noise levels (see Section 4.4.4 for MM NOI-3.1 through MM NOI-3.4). Mitigation measure NOI-3.1 would require construction activity to comply with the thresholds of each jurisdiction, as feasible. Mitigation measure NOI-3.2 would require noise-reduction measures for excavation at pipe access sites and for pipeline relining activities, including noise attenuation devices/modifications to construction equipment, limiting hours of operation, or erecting construction noise barriers. To reduce noise levels, MM NOI-3.3 would require setback distances for mobile operations along the pipeline alignment. Mitigation measure NOI-3.4 would require implementation of a Nighttime Construction Management Plan for proposed nighttime construction activity.

Even with implementation of project-specific measures (MM NOI-3.1 through MM NOI-3.4), construction-related noise levels may not be reduced to local standards during daytime and nighttime hours, and impacts would remain potentially significant and unavoidable. The severity of impacts, however, would be the same as that identified in the PEIR.

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1.0 INTRODUCTION

1.1 PURPOSE OF THE REPORT

In December 2016, a Programmatic Environmental Impact Report (PEIR) was prepared for The Metropolitan Water District of Southern California's (Metropolitan) Prestressed Concrete Cylinder Pipeline (PCCP) Rehabilitation Program (SCH #2014121055). The PEIR concluded that noise impacts from project construction would be significant and unavoidable at some locations. PEIR MM NOI-3 from the PEIR requires project-level noise studies to be conducted for construction activities located near noise-sensitive land uses or NSLUs (such as residences or schools).

This report satisfies the requirements of PEIR MM NOI-3 by providing project-level analysis of potential construction-related noise impacts associated with construction of Reach 3 of the Second Lower Feeder (project). The analysis identifies ambient noise levels, construction-related noise levels at specific noise-sensitive locations (receptors), and measures that can be used to reduce noise levels (as appropriate).

1.2 PROJECT DESCRIPTION

The proposed project covers rehabilitation of a 4.9-mile section of the 78-inch-diameter Second Lower Feeder in the city of Los Angeles (Los Angeles), city of Torrance (Torrance), city of Lomita (Lomita), and city of Rolling Hills Estates (Rolling Hills Estates) and a 300-linear-foot section of the 84-inch-diameter Sepulveda Feeder in Los Angeles and Torrance (see Figure 1, *Regional Location*, and Figure 2, *Project Components*).

The proposed project would reline approximately 26,000 linear feet (4.9 miles) of PCCP along the Second Lower Feeder and approximately 300 linear feet along the Sepulveda Feeder with prefabricated coiled steel liner, extending from Second Lower Feeder (SLF) Station 1860+10 (located at the intersection of Western Avenue and 220th Street in the Los Angeles) to SLF Station 2116+84 (located adjacent to the Palos Verdes Reservoir in Rolling Hills Estates) and from Sepulveda Feeder (SF) Station 2270+46 to SF Station 2273+29 (located along Western Avenue between 219th Street and 220th Street in Torrance and Los Angeles). Rehabilitation activities would occur throughout the project footprint including air release/ vacuum valve relocations, valve replacements, pumpwell air vent installations, maintenance hole enlargements, incorporation of new maintenance holes, and other minor work.

Construction within the pipelines would occur over three phases referred to as Phase 3a, Phase 3b, and Phase 3c. Each of the three phases would include a four-month shut down period (January to April 2023 for Phase 3a, January to April 2024 for Phase 3b, and January to April 2025 for Phase 3c). During these shut downs, the Second Lower Feeder would be shutoff and dewatered from Station 1475+25 (located on Bixby Road west of Long Beach Boulevard in the city of Long Beach) to Station 2116+84 (located adjacent to the Palos Verdes Reservoir in the city of Rolling Hills Estates) and the Sepulveda Feeder would be shut down and dewatered from Station 1927+65 (located on Van Ness Avenue at El Segundo Boulevard in the city of Gardena) to Station 2273+36 (located on Western at 220th Street in the city of Torrance). Construction activities would include:

- Approximately 21 months of mobilization and traffic control work, including 12 months of pipeline rehabilitation activities as follows: Beginning in December 2022, equipment would be mobilized, and traffic control would be set up. Water service shutdowns would begin in

January 2023 and the pipelines returned to service the end of April 2023. Traffic controls and equipment would be removed by the end of June 2023. In December 2023, equipment would again be mobilized, and traffic control set up. Water service shutdowns would begin in January 2024, and the pipelines returned to service in April 2024. Traffic controls and equipment would be removed by the end of June 2024. In December 2024, equipment would again be mobilized for a third time, and traffic control would be set up. Water service shutdowns would begin in January 2025 and the pipelines returned to service in April 2025. Traffic controls and equipment would be removed by the end of June 2025.

- Dewatering activities, as well as pipeline relining activities and ventilation would generally occur 24 hours per day, Monday through Sunday. Other construction activities, such as excavation, would generally be limited to 7:00 a.m. to 7:00 p.m. Monday through Friday, and on Saturdays when necessary and with prior approval of the Engineer in accordance with local cities and municipalities. Noise attenuation measures would be implemented where needed, consistent with the PEIR, and appropriate jurisdictional permits will be obtained.

- After all rehabilitation activities have been completed, for a period of five to ten days, the Second Lower Feeder and Sepulveda Feeder would be disinfected in accordance with American Water Works Association (AWWA) and American National Standards Institute (ANSI) standards. After disinfection, both feeders would be returned to service.

The following sections describe the components of the PCCP Program generally and how those components would be implemented as part of the proposed project.

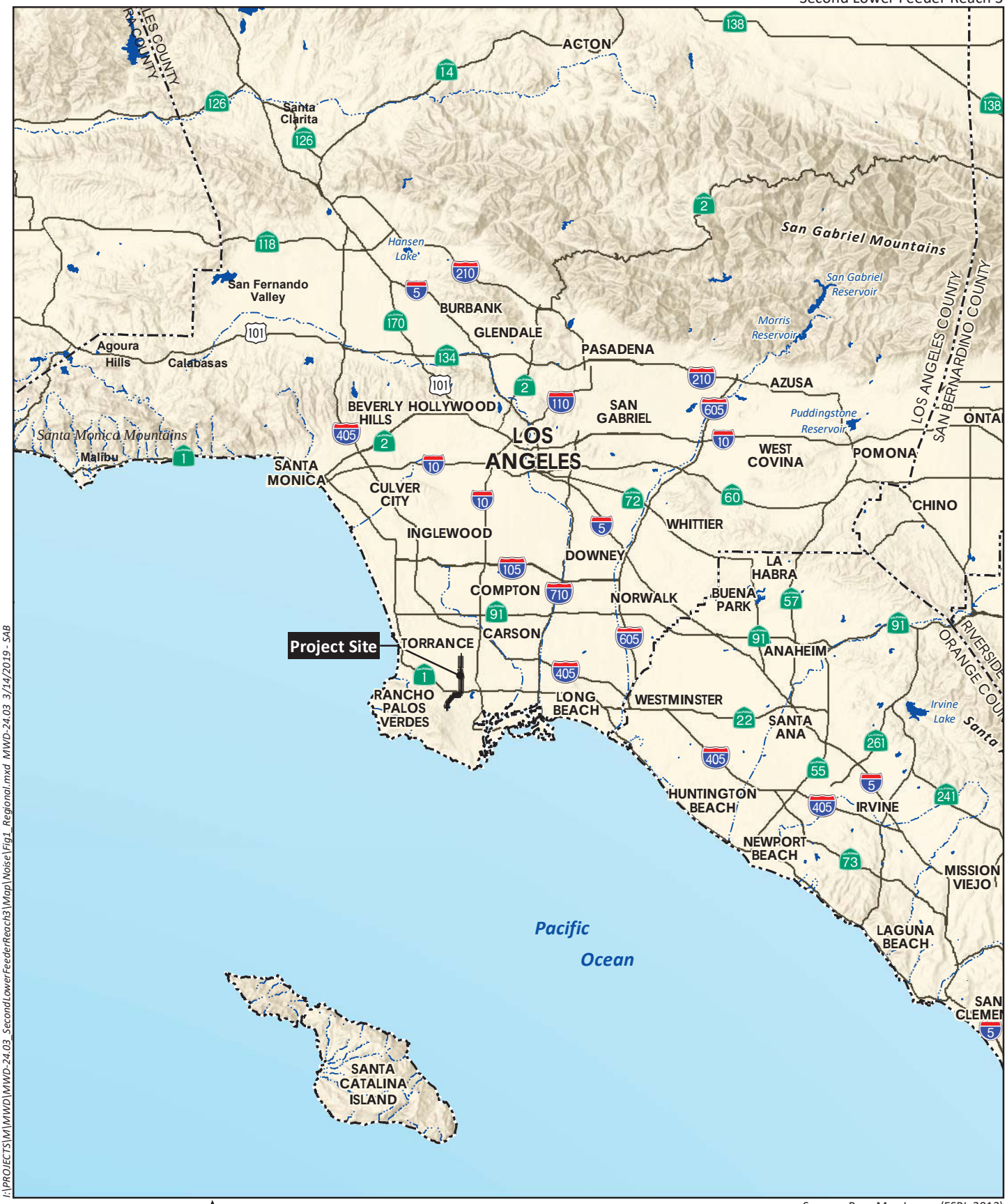
1.2.1 Project Components

As discussed in the PEIR, rehabilitation of PCCP can be categorized as primary, secondary, and associated temporary construction components. These components and the various methods needed to construct, install, and operate the pipeline are summarized below and would be used as appropriate for rehabilitation efforts under the proposed project.

- Primary components include the different methods of rehabilitation considered for segments of the pipelines under the PCCP Program. The rehabilitation method that would be used for this proposed project would be steel cylinder relining with coiled pipe.

- Secondary components include permanent appurtenant structures. These appurtenant structures include buried (underground) structures and aboveground enclosures. Buried structures include vaults that house piping such as those at interconnections and equipment such as valves, meters, service connections, and blow-offs. Above ground enclosures, typically located on sidewalks or median strips, house air release/vacuum valves and air vents.

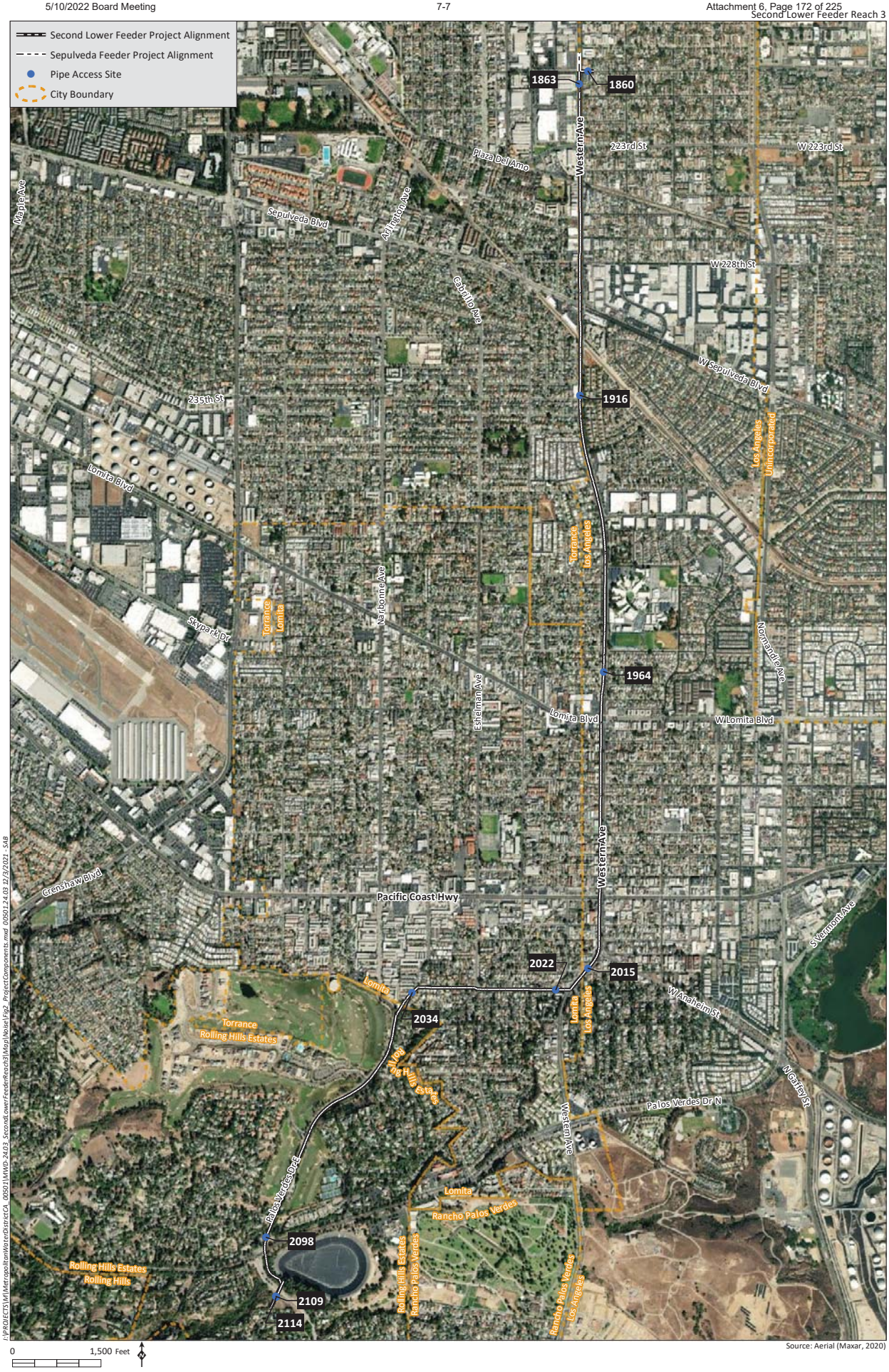
- Temporary construction components include pipe access sites, structure excavation sites, contractor work areas, and equipment staging areas.



HELIX Environmental Planning

Regional Location

Figure 1



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HELIX Environmental Planning

Project Components

Figure 2

1.2.1.1 Primary Project Components

Steel cylinder relining rehabilitation of PCCP would involve the following:

- Inserting coiled steel cylinders into the existing PCCP line;
- Expanding the coiled steel cylinder to fit properly within the PCCP interior;
- Welding the steel cylinder within the PCCP;
- Filling the annular space between the steel cylinder and existing PCCP with concrete grout; and
- Applying a cement mortar lining to the interior surface of the steel cylinder.

Most of the rehabilitation activities would occur within the existing pipeline, and site impacts would occur primarily at the pipe access sites. All the work described above would be done inside the existing pipeline and at pipe access sites along the existing pipeline alignment.

1.2.1.2 Secondary Project Components

Pipeline systems typically include equipment vaults that house water meters, isolation valves, check valves, bypass valves, back-flow preventer valves, pressure-reducing valves, pump wells, service connections, and blow-offs. The top of the structures are typically several feet below ground surface and the structures are accessed via ladders from street-level hatches or maintenance holes.

Maintenance Holes and Aboveground Enclosures

Maintenance holes typically provide access for maintenance and repairs and are spaced at regular intervals along pipelines. Existing maintenance holes would be used for ventilation, as well as for access to the interior of the pipeline for personnel, small equipment, and materials during rehabilitation of other project components (e.g., pipeline relining).

The proposed project would include the following four activities related to maintenance holes: maintenance hole enlargement, maintenance hole refurbishment, relocation of air release and vacuum valves at nine maintenance hole vaults to above-ground location, and installation of new maintenance hole sleeve outlets. Each activity is further described below.

Maintenance hole enlargement would occur at the five existing maintenance holes shown in Table 1, *Maintenance Hole Enlargement Sites*. If determined to be necessary, the five maintenance hole enlargement sites may also be used as pipe access sites. Therefore, in order to provide flexibility during construction, these sites are conservatively assumed to also be used as pipe access sites with an average excavation area of 86 feet by 34 feet.

Table 1
MAINTENANCE HOLE ENLARGEMENT SITES

Site	Location	Approximate Contractor's Work Area Dimensions (Length x Width, in feet)
SLF Sta. 1875+56	Within the center of Western Avenue, immediately south of W 223rd Street	150 x 35
SLF Sta. 1899+76	Within the east side of Western Avenue, north of Sepulveda Boulevard	200 x 40
SLF Sta. 1957+80	Within the Western Ave median adjacent to W 246th Street	20 x 40
SLF Sta. 2034+32	On the north side of 262nd Street, west of Monte Vista Avenue	40 x 15
SLF Sta. 2045+04	Within the grassy parkway on the south side of 262nd Street west of Murad Avenue	20 x 40

Note: For irregularly shaped work areas, the maximum width and length are presented in the table.
SLF = Second Lower Feeder; Sta. = Station Number

California State Water Resources Control Board regulations require that all treated water supply systems be protected from potential contamination. Air release/vacuum valves currently located in vaults along the project pipeline have a potential to introduce contaminants into the Second Lower Feeder. The purpose of these valves is to control air pressure in the mainline by automatically opening to the atmosphere to allow air into or out of the pipeline during dewatering or filling operations. Being located in underground vaults that are susceptible to flooding with rain runoff or seepage water, there is a possibility that as these valves open, they will allow water that has flooded the vault into the pipeline, thereby contaminating it with rain-runoff or seepage water pollutants. Therefore, per the aforementioned regulations, existing air release/vacuum valves in underground vaults along the project will be relocated above ground.

The relocation of air release/vacuum valves from below ground to above ground would involve running new piping from the existing valve connection point in the vault to a nearby above-ground location and installing a new valve above ground. This would require shallow trenching from the existing belowground vault to the parkway location.

For the proposed project, the trench would be approximately two feet wide and about five feet deep. The length of the trench would vary with the size of the street to be crossed, as valves would be moved from their current underground locations within the roadway to a nearby area outside the roadway. In addition, the access structures would be retrofitted with locking manhole covers, and the access structure ring would be removed.

The new above ground air release/vacuum valves would be housed in small enclosures within the public right-of-way in a median or within Metropolitan-owned property. Table 2, *Air Release/Vacuum Valve Relocation Sites*, identifies the locations where air release/vacuum valves would be relocated above ground.

Following the equipment relocation, the remaining equipment in the maintenance vaults would be repainted. Additionally, existing mortar coating would be removed, existing steel pipe coated, and new steel pipe sleeves would be installed in 24 maintenance holes and in two side outlets.

Table 2
AIR RELEASE/VACUUM VALVE RELOCATION SITES

Site	Location	Approximate Contractor's Work Area Dimensions (Length x Width, in feet)
SLF Sta. 1863+24	Within the sidewalk on the east side of Western Avenue south of 220th Street	20 x 40
SLF Sta. 1910+14	Within the Western Avenue median north of 234th Street	20 x 40
SLF Sta. 1918+31	Within the sidewalk on the west side of Western Avenue south of 235th Street	20 x 40
SLF Sta. 1934+77	Within the Western Avenue median south of 238th Street	20 x 40
SLF Sta. 1957+80	Within the Western Avenue median adjacent to W 246th Street	20 x 40
SLF Sta. 1963+48	Within the east side of Western Avenue adjacent to W 247th Place	20 x 40
SLF Sta. 2034+32	On the north side of 262nd Street, west of Monte Vista Avenue	40 x 14.5
SLF Sta. 2045+04	Within the grass parkway on the south side of 262nd Street west of Murad Avenue	20 x 40
SLF Sta. 2101+17	Within the dirt parkway on Palos Verdes Drive E south of Palos Verdes Drive N	20 x 40

Note: For irregularly shaped work areas, the maximum width and length are presented in the table.
SLF = Second Lower Feeder; Sta. = Station Number

Pumpwells and Blow-off Structures

As discussed in the PEIR, pumpwells and blow-off structures along pipelines are used to dewater the pipeline into natural creeks, channels, waterways, and storm drains when a shutdown of the pipeline is necessary. Pumpwells allow temporary pumps to be used to dewater a pipeline. Blow-offs allow gravity to dewater the pipelines. Pumpwells and blow-offs also provide access points for routine maintenance or pipeline inspection. These structures are typically located within the buried equipment vaults.

Table 2, *Pumpwell Isolation Valve Replacement and Blow-off Structure Improvement Locations*, identifies the location and improvements that would occur at the one pumpwell and three blowoff isolation structures within the project limits.

Table 3
PUMPWELL ISOLATION VALVE REPLACEMENT AND BLOW-OFF STRUCTURE IMPROVEMENT LOCATIONS

Site	Location	Improvement	Approximate Contractor's Work Area Dimensions (Length x Width, in feet)
SLF Sta. 1875+56	Within the sidewalk on the east side of Western Avenue south of 223rd Street	Install new vent stack for pump well structure	50 x 20
SLF Sta. 1920+30	Within the Western Avenue median south of W 235th Street	Modify blow-off structure	140 x 40
SLF Sta. 1961+70	Within the Western Avenue median south of W 247th Street	Modify blow-off structure	140 x 40
SLF Sta. 1973+18	Within the southbound lanes of Western Avenue on the southwest corner of Western Avenue and Lomita Boulevard	Modify blow-off structure	140 x 40

Note: For irregularly shaped work areas, the maximum width and length are presented in the table.
SLF = Second Lower Feeder; Sta. = Station Number

Isolation Valves and Flow Meters

The proposed project would involve the removal of three existing and installation of three new mainline isolation valves, including rehabilitation of the existing valve vault structures and replacement of appurtenances. The work also includes removal of two existing flow meters within the valve vault structures, and replacement of both meters within the new pipe sections. The proposed project also includes removal of one existing and installation of one new stand-alone meter within Oak Street. The three new isolation valves would require structural modifications to the existing large reinforced concrete vault structures within existing developed streets, including mechanical, electrical, instrumentation, and controls equipment. Table 4, *Sectionalizing Valve Vault and Flow Meter Vault Structures Improvement Locations*, identifies the location and improvements that would occur at the three isolation valve vaults and two flow meter vault structures within the project limits.

Table 4
SECTIONALIZING VALVE VAULT AND FLOW METER VAULT STRUCTURES
IMPROVEMENT LOCATIONS

Site	Location	Improvement	Approximate Contractor's Work Area Dimensions (Length x Width, in feet)
SLF Sta. 1859+80	Within westbound lane of 220th Street east of Western Avenue	Isolation valve and flow meter replacement, and modify existing vault structure	230 x 45
SLF Sta. 1865+41	Within the median on Western Avenue south of 220th Street and north of 221st Street	Isolation valve and flow meter replacement, and modify existing vault structure	200 x 40
SLF Sta. 2050+00	In Oak Street south of 262nd Street	Remove existing flow meter and install new flow meter	100 x 40
SLF Sta. 2270+35	Within the median on Western Avenue north of 220th Street and south of 219th Street	Isolation valve and flow meter replacement, and modify existing vault structure	200 x 40

Note: For irregularly-shaped work areas, the maximum width and length are presented in the table.
SLF = Second Lower Feeder; Sta. = Station Number

Other Improvements

In addition to the isolation valve replacements at the improvement locations previously described, multiple other isolation valves and three service connection valves would be replaced.

1.2.1.3 Temporary Construction Components

As discussed in the PEIR, the temporary construction components include pipe access sites, installation of a temporary bulkhead, vault excavation sites, contractor work areas, and equipment staging areas. The temporary construction components would be present during rehabilitation activities only. After construction, these components would be removed, and the sites would be returned to pre-construction conditions.

Bulkhead Installation

As discussed in the PEIR, bulkheads may be required along various sections of the pipelines to isolate one section of the pipeline from another and to ensure continued and reliable water supply delivery to member agencies while rehabilitation is being performed on another section of pipe. For the proposed project, one bulkhead would be installed at SLF Station 1594+20.

Contractor's Work Areas

Contractor's work areas allow for construction activities to occur safely and efficiently within a construction site. Construction activities would include excavation, shoring, pipe removal, pipeline rehabilitation, electrical panel installation, and construction support activities such as ventilation, dewatering, pipe disinfection, and refilling.

Pipe Access Sites

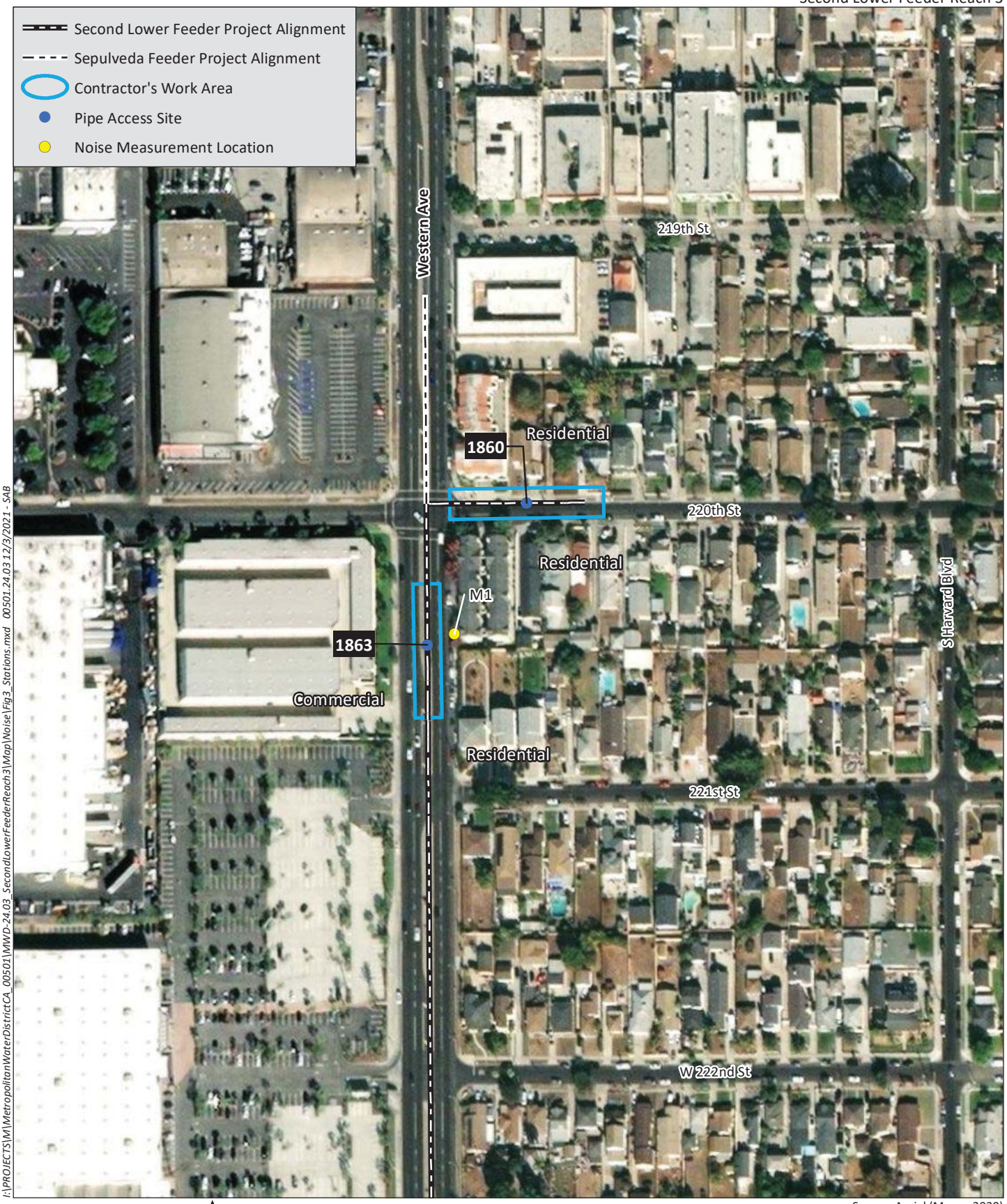
A pipe access site is defined as the entry or exit portal that exposes the underground PCCP section of the pipe or equipment vault to be rehabilitated (i.e., it is the trench from which new coiled steel cylinders, valves, and/or temporary bulkheads would be installed). Each pipe access site would be located within a contractor's work area with space to stage liner pipe prior to installation. Multiple pipe access sites would be needed to rehabilitate the pipelines and buried equipment vaults included in the PCCP Program.

Spacing of pipe access sites would vary based on a number of factors, including the horizontal and vertical bends of the pipe; the locations of valves, vaults, and other equipment; and other factors. The proposed pipe access site locations are identified in Figure 2. The pipe access sites would vary in size but would be up to 20 feet deep for the proposed project. The locations and approximate sizes of the pipe access sites are identified in Table 5, *Proposed Project Pipe Access Sites for PCCP Relining*, and shown on Figures 3a-f. As previously discussed, the five maintenance hole enlargement sites may also be used as pipe access sites. Therefore, in order to provide flexibility during construction, these sites are conservatively assumed to also be used as pipe access sites with an average excavation area of 86 feet by 34 feet.

Table 5
PROPOSED PROJECT PIPE ACCESS SITES FOR PCCP RELINING

SLF Pipe Access Site	Location	Alignment	Approximate Excavation Dimensions (Length x Width x Depth, in feet)	Approximate Contractor's Work Area Dimensions (Length x Width, in feet)	Location Type
1860	On the north side of W 220th Street, east of Western Avenue	East/West	40 x 18 x 20	230 x 45	Public ROW Roadway Utility
1863	Within the median on Western Avenue, south of 220th Street	North/South	40 x 18 x 20	200 x 40	Public ROW Roadway Utility
1916	Within the median on Western Avenue, north of W 235th Street	North/South	40 x 18 x 17	200 x 40	Public ROW Roadway Utility
1964	Within the median on Western Avenue, south of W 247th Place	North/South	40 x 18 x 18	200 x 40	Public ROW Roadway Utility
2015	Within the median on Western Avenue, north of W 261st Street	North/South	40 x 18 x 25	220 x 35	Public ROW Roadway Utility
2022	On the north side of 262nd Street, east of Cayuga Avenue	East/West	40 x 18 x 19	140 x 30	Public ROW Roadway Utility
2034	On the north side of 262nd Street, west of Monte Vista Avenue	East/West	40 x 15 x 18	140 x 30	Public ROW Roadway Utility
2098	On Palos Verdes Drive E north of Palos Verdes Drive N	North/South	40 x 13 x 21.5	215 x 30	Public ROW Roadway Utility

Second Lower Feeder Reach 3



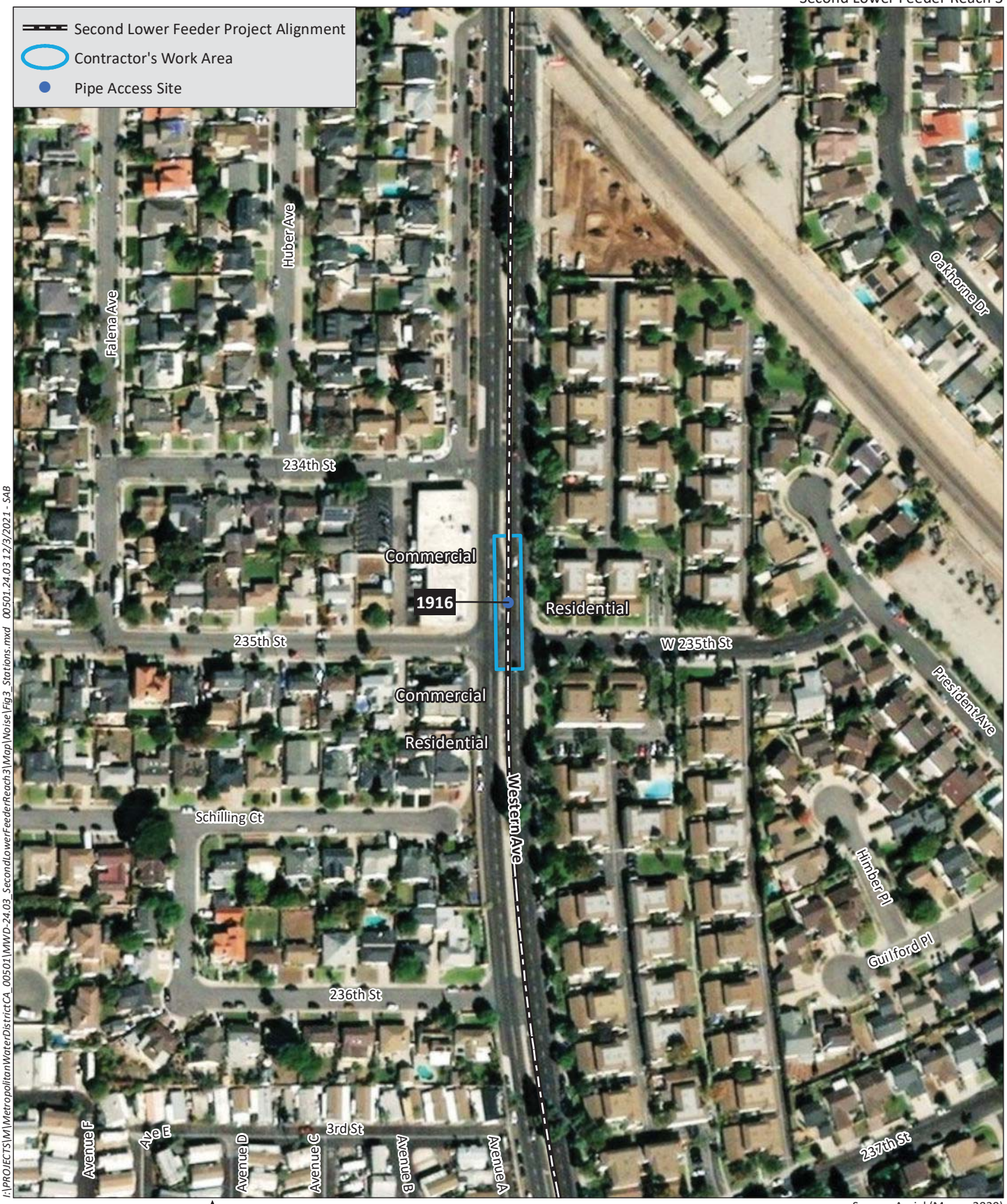
Source: Aerial (Maxar, 2020)

HELIX Environmental Planning

SLF Pipe Access Site 1860 & 1863

Figure 3a

Second Lower Feeder Reach 3



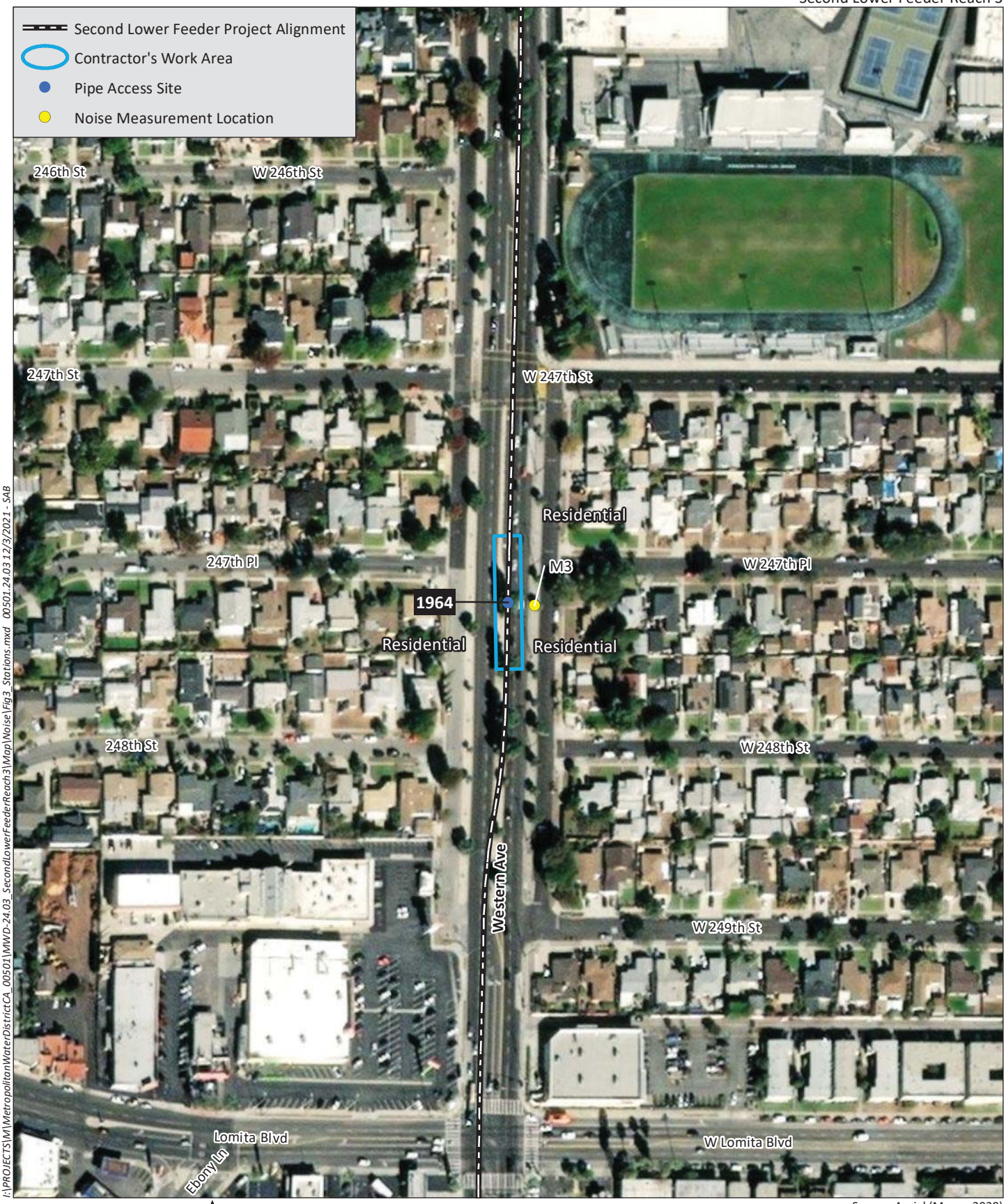
Source: Aerial (Maxar, 2020)

HELIX Environmental Planning

SLF Pipe Access Site 1916

Figure 3b

Second Lower Feeder Reach 3



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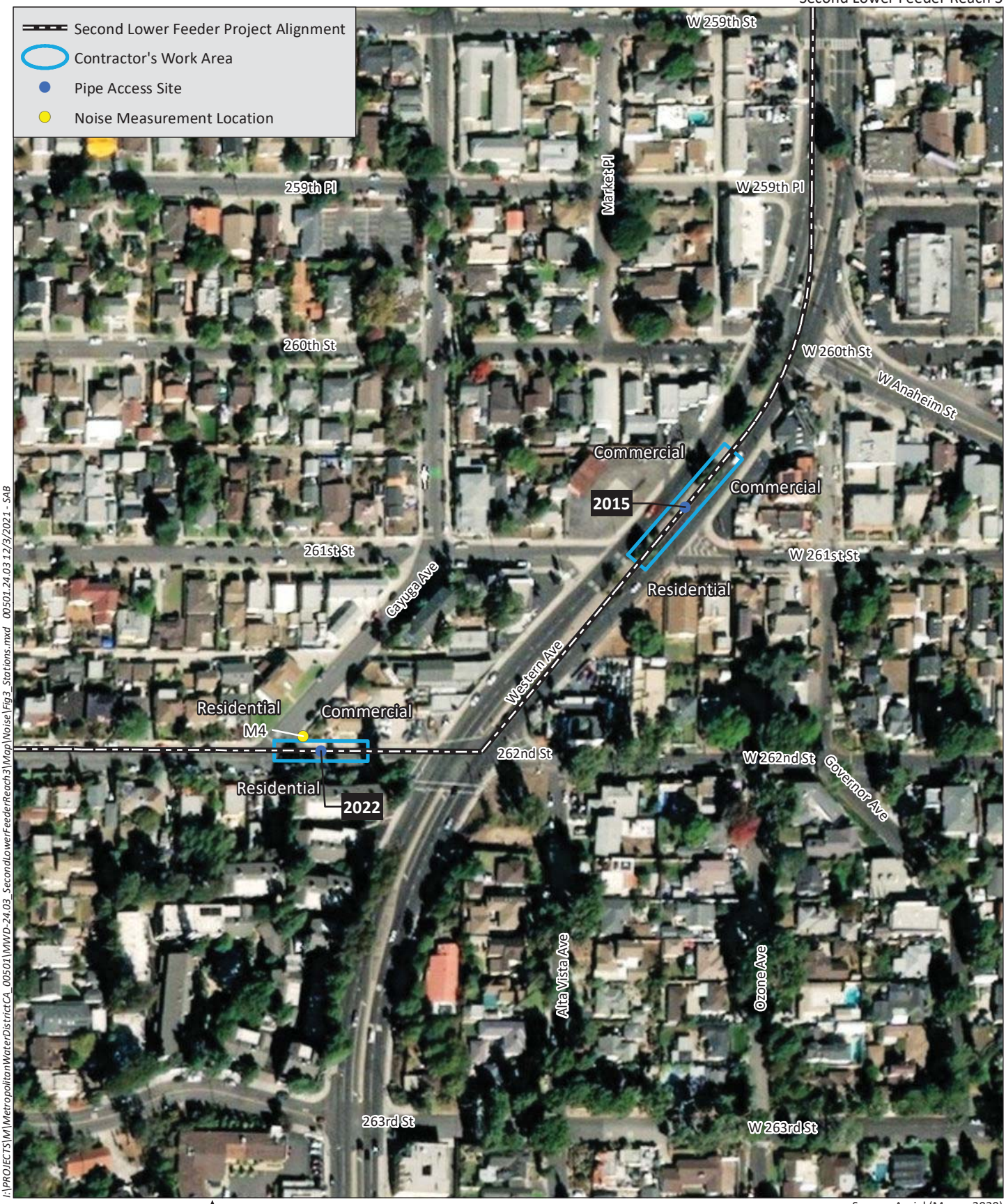
Source: Aerial (Maxar, 2020)

HELIX Environmental Planning

SLF Pipe Access Site 1964

Figure 3c

Second Lower Feeder Reach 3



Source: Aerial (Maxar, 2020)

HELIX Environmental Planning

SLF Pipe Access Site 2015 & 2022

Figure 3d

Second Lower Feeder Reach 3

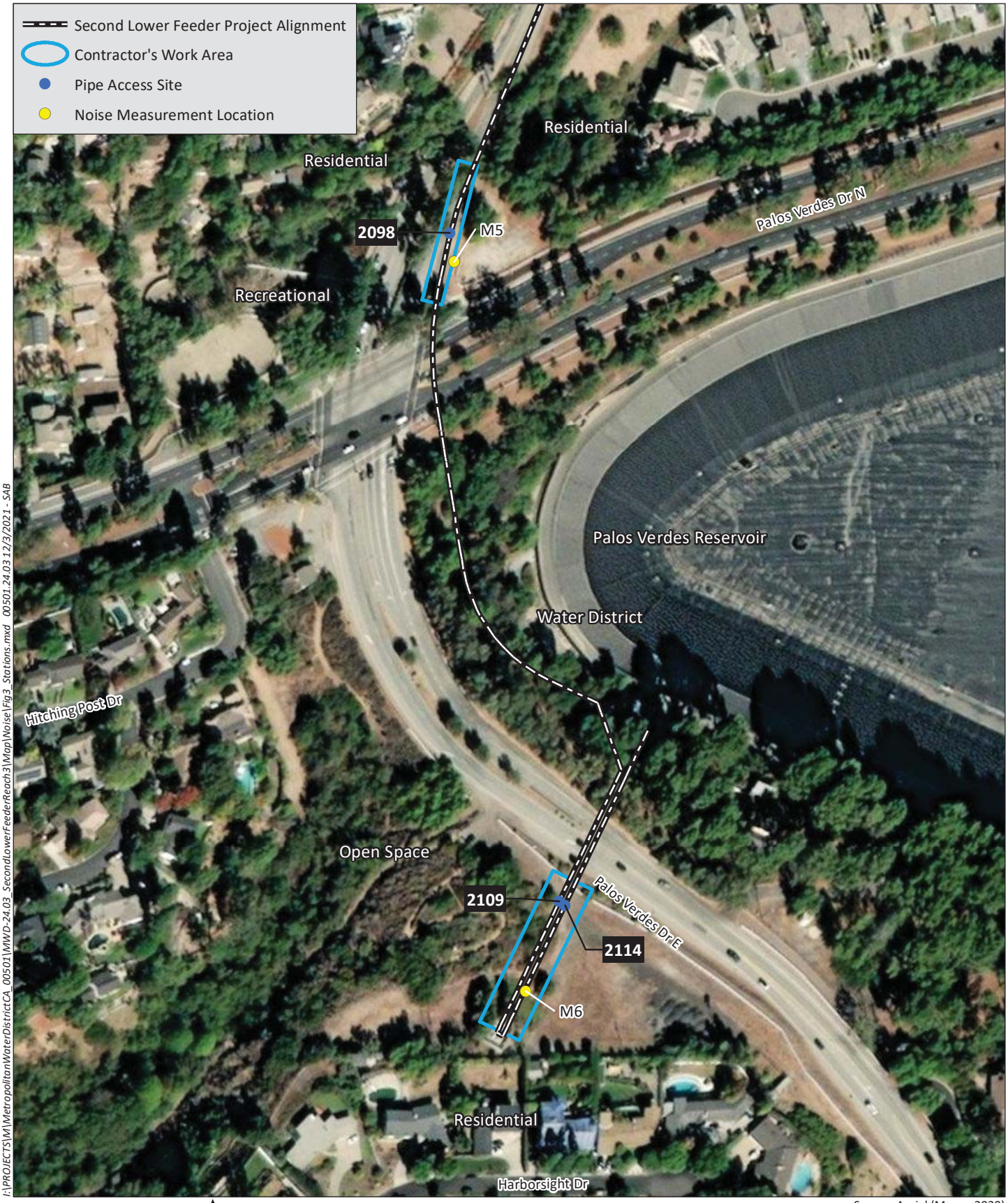
Source: Aerial (Maxar, 2020)

HELIX Environmental Planning

SLF Pipe Access Site 2034

Figure 3e

Second Lower Feeder Reach 3



I:\PROJECTS\M\MetropolitanWaterDistrictCA_00501\MWD-24.03_SecondLowerFeederReach3\Map\Noise\Fig3_Stations.mxd 00501.24.03 12/3/2021 - SAB

0 200 Feet

Source: Aerial (Maxar, 2020)

HELIX Environmental Planning

SLF Pipe Access Site 2098, 2109 & 2114

Figure 3f

SLF Pipe Access Site	Location	Alignment	Approximate Excavation Dimensions (Length x Width x Depth, in feet)	Approximate Contractor's Work Area Dimensions (Length x Width, in feet)	Location Type
2109 and 2114	Southwest of Palos Verdes Drive E	North/South	40 x 18 x 15.5	250 x 65	MWD Permanent Easement 1413-22-1 Utility

Note: For irregularly shaped work areas, the maximum width and length are presented in the table.
SLF = Second Lower Feeder; ROW = right-of-way

Existing surface improvements, such as road pavements, sidewalks, and landscaping, would be removed at each pipe access site, and soils would be excavated and temporarily removed from the site to expose the existing pipeline. Tree removal and/or trimming would be required at multiple pipe access sites, and overhead utility line relocation would be required at SLF Station 1859+80. Once rehabilitation is complete, many of the pipe access sites would have maintenance holes installed for future maintenance/repairs and the surrounding area would either be backfilled with soils originally excavated or backfilled with cement slurry, and the surface of each access site and surrounding work zone would be restored to existing conditions with the addition of maintenance hole covers in some locations. This would involve re-paving existing roads, repairing or replacing existing sidewalks, and replanting landscaping.

Pipe Access Sites Ingress/Egress

Pipe access sites within roadways would generally be accessed via the roadway; however, access to Pipe Access Sites 2109 and 2114 would require additional ingress/egress routes. Ingress to the Pipe Access Sites 2109 and 2114 would be achieved by traveling west along Palos Verdes Drive North and then south along Palos Verdes Drive East. Egress would involve a U-turn across Palos Verdes Drive East to exit the area traveling north and then east on Palos Verdes Drive North.

Additionally, ingress to the flow meter vault at SLF Station 2050, located near the southern terminus of Oak Street, would be achieved via Oak Street. Egress would either be achieved via Oak Street or from Oak Street through a Metropolitan-owned property and out to Palos Verdes Drive North.

Contractor Storage Areas

Contractor storage areas provide space to temporarily store liner pipes, construction materials such as shoring boxes and pipe bedding materials, and equipment such as excavators and dump trucks. Space within the contractor's work areas may be used as a temporary staging area; however, space limitations require that most materials and equipment be stored at a larger staging area.

The main contractor staging area would be located at an approximately 12-acre vacant lot at Los Angeles Harbor College, one mile east of the project alignment. Metropolitan would lease the site from Los Angeles Harbor College from February 2020 through January 31, 2023, with the potential for one or two 1-year extensions. In addition to storing equipment, materials, and vehicles at the site, Metropolitan would install temporary office trailers as well as security gates. Metropolitan determined through previous environmental documentation (dated November 2019) that there would be no

potential significant impacts associated with using the Los Angeles Harbor College site as contractor storage areas for the PCCP Program and are therefore not included in the analysis of this document.

Three additional staging areas are proposed along the project alignment. The first would be located in the City of Rolling Hills Estates at the northeast corner of Palos Verdes North and Palos Verdes East. At this location, the project would either use the existing dirt lot as a storage area or would create a laydown area within the street adjacent to the dirt lot. The second staging area would be located in the vacant area immediately southeast of the pipe access site at SLF Station 2109+65, southwest of Palos Verdes Drive East. The third smaller staging area would be located in the City of Torrance on the northeast corner of West 223rd Street and Abalone Avenue. This site would be primarily used for staging during the proposed valve replacement at the intersection of 220th Street and Western Avenue. At this location, existing trees and utilities would be avoided.

Upon completion of construction work on the Second Lower Feeder, the contractor storage and staging areas would be returned to their pre-construction condition, as appropriate and pursuant to any agreements. For example, if the pavement were to be damaged during staging, Metropolitan would re-pave the area.

1.3 PROGRAMMATIC ENVIRONMENTAL IMPACT REPORT

The PEIR identified that noise levels during rehabilitation activities would likely reach very high levels, generally exceeding any set noise-level restrictions. Impacts relating to the exposure of persons to or generating of noise levels in excess of standards would be significant at some locations. The PEIR concluded that implementation of PEIR MM NOI-2 through PEIR MM NOI-4 would reduce impacts, but not to a less-than-significant level.

The PEIR also concluded that vibration from construction activities would not be great enough to result in impacts on vibration-sensitive receptors at most locations. However, at some locations, excavation, concrete-sawing, and other construction activities could generate vibration levels that could affect adjacent activities, such as near performing arts centers or hospitals, or where residences are close to the excavation site. The PEIR concluded that implementation of PEIR MM NOI-1 would reduce vibration impacts to less-than-significant levels.

PEIR MM NOI-1 **Locate Excavation Sites Away from Vibration-Sensitive Uses.** A noise and vibration consultant will be retained during excavation site planning to determine if there are vibration-sensitive land uses that could be affected by construction. Whenever possible, excavation sites will then be located so that vibration impacts would not affect vibration-sensitive land uses or mitigation would be included to reduce vibration levels at vibration-sensitive land uses to less-than-significant levels.

PEIR MM NOI-2 **Locate Excavation Sites Away from Noise-Sensitive Receptors Where Feasible.** A noise consultant will be retained during excavation site planning to determine if there are sensitive receptors that could be affected by construction. Whenever possible, the excavation sites will be located in areas that would not affect sensitive receptors or where receptors can be shielded from construction noise.

PEIR MM NOI-3 **Conduct Project-Level Noise Studies at Each Excavation Site Where Noise-Sensitive Receptors Are Present.** Project-level noise studies will be required at all excavation

sites where sensitive receptors are present, as required in the planning stage by PEIR MM NOI-2. Such noise studies will identify the ambient noise levels, the receptors that would be affected, the noise levels the receptors will experience during construction, and any measures that can be used to reduce noise levels. All feasible mitigation measures identified in this noise study will be implemented.

PEIR MM NOI-4 **Locate Staging Areas Away from Noise-Sensitive Receptors or Provide Noise Attenuation.** Whenever feasible, staging areas will be located in areas that would not affect sensitive receptors or where receptors can be shielded from staging-area noise. Where possible, noise screening will include temporary noise barriers with openings in the barriers kept to the minimum necessary for access.

1.4 NOISE AND SOUND LEVEL DESCRIPTORS AND TERMINOLOGY

1.4.1 Descriptors

All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A-weighting (dBA) to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ}, with a specified duration. The Community Noise Equivalent Level (CNEL) is a 24-hour average, where noise levels during the evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dBA weighting, and noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dBA weighting. This is similar to the Day Night sound level (L_{DN}), which is a 24-hour average with an added 10 dBA weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on dBA. These metrics are used to express noise levels for both measurement and municipal regulations, as well as for land use guidelines and enforcement of noise ordinances.

1.4.2 Terminology

1.4.2.1 Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

1.4.2.2 Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

1.4.2.3 Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa). One mPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this wide range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of dBA. The threshold of hearing for the human ear is about 0 dBA, which corresponds to 20 mPa.

Because decibels are logarithmic units, SPL cannot be added or subtracted through standard arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than from one source under the same conditions. For example, if one automobile produces an SPL of 70 dBA when it passes an observer, two cars passing simultaneously would not produce 140 dBA—rather, they would combine to produce 73 dBA. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dBA louder than one source.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear can discern 1 dBA changes in sound levels, when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000 Hz–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dBA are generally not perceptible. It is widely accepted, however, that people begin to detect sound level increases of 3 dBA in typical noisy environments. Further, a 5 dBA increase is generally perceived as a distinctly noticeable increase, and a 10 dBA increase is generally perceived as a doubling of loudness.

No known studies have directly correlated the ability of a healthy human ear to discern specific levels of change in traffic noise over a 24-hour period. Many ordinances, however, specify a change of 3 CNEL as the significant impact threshold. This is based on the concept of a doubling in noise energy resulting in a 3 dBA change in noise, which is the amount of change in noise necessary for the increase to be perceptible to the average healthy human ear.

1.5 REGULATORY FRAMEWORK

1.5.1 California Noise Control Act

The California Noise Control Act is a section within the California Health and Safety Code that describes excessive noise as a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also finds that there is a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

1.5.2 Los Angeles CEQA Thresholds Guide

Los Angeles developed a CEQA Thresholds Guide (Los Angeles 2006) to establish significance thresholds for construction activities. These thresholds would be applicable to construction activities within

500 feet of a noise-sensitive use. A project would normally have a significant impact on noise levels from construction if:

- Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise-sensitive use;
- Construction activities lasting more than 10 days in a three-month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise-sensitive use; or
- Construction activities would exceed the ambient noise level by 5 dBA at a noise-sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or at any time on Sunday.

1.5.3 Torrance Municipal Code

1.5.3.1 Chapter 46.3.1, Construction of Buildings and Projects

It shall be unlawful for any person within Torrance to operate power construction tools, equipment, or engage in the performance of any outside construction or repair work on buildings, structures, or projects in or adjacent to a residential area involving the creation of noise beyond 50 dBA as measured at property lines, except between the hours of 7:30 a.m. and 6:00 p.m. Monday through Friday and 9:00 a.m. to 5:00 p.m. on Saturdays. Construction shall be prohibited on Sundays and holidays observed by City Hall.

1.5.4 Lomita Municipal Code

1.5.4.1 Chapter 4.4.04

It shall be unlawful for any person within Lomita to produce or cause to allow to be produced noise which is received on property occupied by another person within the designated region, in excess of levels shown in Table 6, *Lomita Noise Limits*.

Table 6
LOMITA NOISE LIMITS

Time Period	Residential	Commercial	Manufacturing
Day	65 dBA	75 dBA	80 dBA
Night	55 dBA	70 dBA	75 dBA

Source: City of Lomita Municipal Code Chapter 4.4.04.
dBA = A-weighted decibels

1.5.4.2 Chapter 4.4.11

It shall be unlawful for any person to operate construction equipment or power tools in the performance of any outside construction or repair work on buildings, structures, or project in or adjacent to a residential area, except between the hours of 7:00 a.m. to 6:00 p.m., Monday through Friday, except holidays, and 9:00 a.m. to 5:00 p.m. Saturday, Sunday, and holidays. During the lawful times of use, such construction equipment and power tools shall not reach a level of more than 35 dBA for a cumulative period of 15 minutes in any given hour at any receiving property line.

1.5.5 Rolling Hills Estates Municipal Code

1.5.5.1 Chapter 8.32.210, Permitted – Construction Hours and Days

Any person within Rolling Hills is permitted to operate power construction equipment or use tools for the purpose of conducting construction or repair work on buildings, structures or projects between 7:00 a.m. and 5:00 p.m. Monday through Friday and between 9:00 a.m. and 5:00 p.m. on Saturday. Construction activities are not allowed at any time on Sundays and holidays. For the purpose of this chapter, holidays shall consist of New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. Construction shall also not violate the noise standards set forth in Section 8.32.050. A variance shall be required for any type of construction which would violate these noise standards.

1.5.5.2 Chapter 8.32.050, Noise Standards – Exterior

The exterior noise levels shown in Table 7, *Rolling Hills Estates Exterior Noise Limits*, unless otherwise specifically indicated, shall apply to all receptor properties within a designated noise zone and shall constitute the ambient noise level for the purpose of establishing standards.

Table 7
ROLLING HILLS ESTATES EXTERIOR NOISE LIMITS

Time Period	Residential	Commercial	Industrial
7:00 a.m. to 10:00 p.m.	55 dBA	65 dBA	75 dBA
10:00 p.m. to 7:00 a.m.	45 dBA	55 dBA	45 dBA

Source: City of Rolling Hills Estates Municipal Code Chapter 8.32.050.
dBA = A-weighted decibels

1.5.6 Long Beach Municipal Code (Chapter 8.80, Noise)

No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity which produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity between the hours of 7:00 p.m. and 7:00 a.m. the following day on weekdays, Saturdays before 9:00 a.m., Saturdays after 6:00 p.m., and all day on Sundays, except for emergency work authorized by Long Beach. For purposes of this Section, a federal holiday shall be considered a weekday.

1.5.7 Carson Municipal Code (Chapter 5, Noise Control Ordinance)

Carson has adopted the Los Angeles County Noise Control Ordinance, with amendments to the limits on noise from construction activities. The amended construction noise restrictions are listed in Table 8, *Carson Construction Noise Restrictions*.

Table 8
CARSON CONSTRUCTION NOISE RESTRICTIONS

Time Period	Single-Family Residential	Multi-Family Residential
For Short-term operations at Residential Structures[1]		
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	75 dBA	80 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	60 dBA	64 dBA
For Long-term operations at Residential Structures[2]		
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	65 dBA	70 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	55 dBA	60 dBA

[1] Short-term is defined as non-scheduled, intermittent, short-term operation (20 days or less).
[2] Long-term is defined as repetitively scheduled and relatively long-term operation (periods of 21 days or more).
dBA = A-weighted decibels

2.0 ENVIRONMENTAL SETTING

2.1 EXISTING NOISE ENVIRONMENT

2.1.1 Project Alignment

The project relining alignment begins at SLF Station 1860+10, located near the intersection of Western Avenue and 220th Street in Los Angeles. The alignment travels approximately 220 feet west toward the intersection of Western Avenue and 220th Street. Here it turns both north on Western Avenue for 300 feet along the Sepulveda Feeder and south on Western Avenue for three miles along the Second Lower Feeder in Los Angeles and Torrance to 262nd Street in Lomita. The alignment then travels west for 0.5 mile along 262nd Street to the intersection with Oak Street where it turns off to Palos Verdes Drive East and travels approximately one mile before it turns off to Metropolitan's existing weir structure located west of Palos Verdes Drive East in Rolling Hills Estates. The alignment then turns back to cross Palos Verdes Drive East to end at SLF Station 2116+84 adjacent to Palos Verdes Reservoir.

Land uses surrounding the northern portion of the pipeline alignment, along Western Avenue, consist mainly of single-family and multi-family residences and commercial properties, as well as churches and a library. Narbonne High School is located adjacent to the pipeline alignment on the eastern side of Western Avenue between West 242nd Place and 247th Street. Land uses surrounding the southern portion of the pipeline alignment consist mainly of single-family residences, as well as a country club, an equestrian park, and recreational trails.

The locations of the various pipe access sites are described in Table 9, *Pipe Access Site Noise-sensitive Land Uses.*

Table 9
PIPE ACCESS SITE NOISE-SENSITIVE LAND USES

SLF Pipe Access Site	Approximate Location of Station	Nearby Noise-sensitive Land Uses (NSLUs)	Approximate Distance to Closest NSLU
1860	North side of W 220th Street, east of Western Avenue	Single-family and multi-family residences	10 feet
1863	Within the median on Western Avenue, south of 220th Street	Single-family and multi-family residences	40 feet
1916	Within the median on Western Avenue, north of W 235th Street	Single-family and multi-family residences	40 feet
1964	Within the median on Western Avenue, south of W 247th Place	Single-family residences	100 feet
2015	Within the median on Western Avenue, north of W 261st Street	Single-family residences	90 feet
2022	North side of 262nd Street, east of Cayuga Avenue	Single-family and multi-family residences	20 feet
2034	North side of 262nd Street, west of Monte Vista Avenue	Single-family residences	20 feet
2098	On Palos Verdes Drive E north of Palos Verdes Drive N.	Park; single-family residences	130 feet
2109 and 2114	Southwest side of Palos Verdes Drive E	Single-family residences	200 feet

2.1.2 Noise-Sensitive Land Uses

Noise-sensitive land uses (NSLUs) are land uses that may be subject to stress and/or interference from excessive noise, including residences, hospitals, schools, hotels, resorts, libraries, sensitive wildlife habitat, or similar facilities where quiet is an important attribute of the environment. Noise receptors are individual locations that may be affected by noise. In general, the pipeline alignment is located within roadways in urbanized residential and commercial areas. NSLUs in the project vicinity include residences, a school, churches, a library, and equestrian uses.

Most construction work would occur at the pipe access sites. NSLUs surrounding these sites are summarized in Table 8. Refer to Figures 3a through 3f, for the pipe access site locations and surrounding NSLUs.

2.1.3 Vibration-Sensitive Land Uses

Land uses in which ground-borne vibration could potentially interfere with operations or equipment, such as research, manufacturing, hospitals, and university research operations are considered vibration-sensitive (Federal Transit Administration [FTA] 2006). The degree of sensitivity depends on the specific equipment that would be affected by the ground-borne vibration. Excessive levels of ground-borne vibration of either a regular or intermittent nature can result in annoyance to land uses such as residences and buildings where people sleep such as hotels, hospitals, and dormitories. Vibration-sensitive land uses in the vicinity of the pipe access sites are the single-family and multi-family residences identified in Table 7.

2.1.4 Existing Noise Conditions

Site visits along the alignment route were conducted on Friday, December 7, 2018. Ambient noise measurements were conducted at or near six proposed pipe access site locations. These sites were chosen based on the noise generation anticipated to occur at these locations during pipe access excavation activities. Ambient noise measurements ranged from 57.3 to 76.1 dBA L_{EQ}. Roadway traffic was the primary noise source at the six measurement locations. The measured noise levels and nearby land uses are shown in Table 10, *Site Survey Noise Measurement Results,* and on Figures 3a-f.[1] See Appendix A, *Site Survey Measurement Sheets*, for survey notes.

Table 10
SITE SURVEY NOISE MEASUREMENT RESULTS

Site	Location	Time	Nearby Land Uses	Measurement (dBA L_{EQ})
M1	SLF Sta. 1863	11:24 a.m.	Commercial/industrial; multi-family residential	73.7
M2	SLF Sta. 1897	11:05 a.m.	Commercial; single-family residential	76.1
M3	SLF Sta. 1964	10:42 a.m.	Single-family residential	72.3
M4	SLF Sta. 2022	10:18 a.m.	Single-family and multi-family residential	62.3
M5	SLF Sta. 2098	9:51 a.m.	Disturbed land/landscaping; recreational (equestrian park); single-family residential	68.0
M6	SLF Sta. 2114	7:36 a.m.	Disturbed land/landscaping; recreational (open space trails); single-family residential	57.3

Note: Refer to Appendix A for site survey sheets
SLF = Second Lower Feeder; dBA = A-weighted decibels; L_{EQ} = equivalent sound level

3.0 ANALYSIS, METHODOLOGY, AND ASSUMPTIONS

3.1 METHODOLOGY

3.1.1 Ambient Noise Survey

The following equipment was used to measure existing noise levels along the project alignment:

- Larson Davis LxT Noise Meter
- Larson Davis Model CA250 Calibrator
- Windscreen and tripod for the sound level meter

The sound level meter was field-calibrated immediately prior to the noise measurements to ensure accuracy. All sound level measurements conducted and presented in this report were made with a

[1] The noise measurement conducted at SLF Sta. 1897 was done prior to finalization of the pipe access site locations. Because there is no pipe access planned at SLF Sta. 1897, this noise measurement location is not depicted on a figure.

sound level meter that conforms to the ANSI specifications for sound level meters (ANSI SI.4-1983 R2006). All instruments were maintained with National Institute of Standards and Technology traceable calibration per the manufacturers' standards.

3.1.2 Noise Modeling Software

Modeling of the exterior noise environment for this report was accomplished using a computer noise model: Computer Aided Noise Abatement (CadnaA) version 2019. CadnaA is a model-based computer program developed by *DataKustik* for predicting noise impacts in a wide variety of conditions. CadnaA assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project-related information, such as noise source data, barriers, structures, and topography to create a detailed model, and uses the most up-to-date calculation standards to predict outdoor noise impacts.

Project construction noise was also analyzed using the Roadway Construction Noise Model (RCNM; USDOT 2008), which utilizes estimates of sound levels from standard construction equipment.

3.2 ASSUMPTIONS

3.2.1 Pipeline Relining Construction Phases and Noise Sources

Construction would require the use of equipment throughout the site for the full term of construction. Table 11, *Construction Assumptions*, summarizes the key noise-generating construction equipment and activities analyzed in this report. Exact planning information cannot be known at this stage in project design. Therefore, equipment types and completion times are estimates and may vary due to differing site conditions.

Table 11
CONSTRUCTION ASSUMPTIONS

Construction Activity	Equipment Types
Pipe Access Site Excavation	Excavator, Dump Truck
Pipeline Relining	Generator, grouting mixer, welder, crane
Ventilation	Generator, Blower, Welder
Maintenance Hole Replacement and Blow-off Structure Improvements	Jackhammer, Welder
Valve Relocation and Replacement	Backhoe, Concrete Saw, Handheld Tools
Dewatering	Generator

Construction equipment may not be used for the entirety of a given hour. Table 12, *Construction Equipment Use Per Hour*, identifies percentages used as a basis for construction equipment noise modeling.

Table 12
CONSTRUCTION EQUIPMENT USE PER HOUR

Typical Equipment	Percentage Used per Hour
Backhoe	50
Excavator	40
Generator	100
Crane or Excavator used as crane	75
Dump Truck	20
Blower/Fan	100
Jackhammer	50
Concrete Saw	100
Grouting Plant and Pump	100
Welding Rig	100

3.2.2 Equipment Noise Levels

Table 13, *Construction Equipment Noise Data*, presents the calculated Sound Power Levels (S_{WL}) for typical equipment used for pipeline relining. This table includes data from the site measurements, the Federal Highway Administration (FHWA) table of construction equipment noise levels (FHWA 2007), and the United Kingdom's Department for Environment, Food and Rural Affairs (Defra) construction noise database (Defra 2005). The calculated S_{WL} are a measure of the total acoustic power radiated from a given sound source; they do not incorporate a distance component.

Table 13
CONSTRUCTION EQUIPMENT NOISE DATA[1]

Source	One-octave Center Band Frequency (Hertz)									Overall A-weighted Value (dBA)
	31.5	63	125	250	500	1,000	2,000	4,000	8,000	
Excavator with Steel Plates	-	63.0	78.3	77.9	77.0	75.3	72.9	69.5	64.7	80.3
Crane	116.7	111.8	103.7	102.9	98.7	96.6	93.5	88.7	80.7	102.0
Annular Grouting Mixer	98.7	113.6	97.8	103.5	104.1	106.5	103.8	98.1	90.3	110.1
Dump Truck	110.3	113.2	115.4	105	103.6	104	101.9	97.4	90	108.9
Concrete Saw	109.7	106.7	123.7	115.7	114.7	114.7	116.7	120.7	119.7	125.3
Jackhammer	124.5	117.7	117.8	115.7	108.3	107.8	110.7	112.9	111.7	118.3
Welder	100.3	95.2	92.7	87.8	88.9	90.9	86.7	82.6	80.7	94.3
Blower/Fan	105.3	106.7	102.5	99.4	95.8	95.5	91.1	85.6	81.4	99.8

Source: FHWA 2007, Defra 2005, and on-site measurements.
[1] All source data for equipment noise presented as Sound Power levels (S_{WL}).

3.2.3 Site-Specific Information

The distances to nearby NSLUs and noise barriers, if needed, were used in the CadnaA noise model or RCNM to determine expected noise levels. These distances are based on the approximate center of the pipeline, station, or typical utilization location for construction equipment. Eleven pipe access sites are to be used during construction.

3.2.4 Vehicular Traffic

Construction would require the use of additional trips for worker vehicles and hauling of materials. The total number of vehicles in use for each site will vary, depending on the nature of the work, time of day, and exact needs of the contractor as construction progresses. A conservative estimate for average daily project traffic (ADT) for each pipe access site work area would be 64 passenger vehicle trips and 40 truck trips, for a total 104 ADT (Linscott, Law & Greenspan, Engineers [LLG] 2019).

3.3 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

Based on Appendix G of the CEQA Guidelines and noise regulations of local jurisdictions, implementation of the project would result in a significant adverse impact if it would:

Threshold 1: *Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies.*

Impacts would be significant if operation of the project would generate noise levels above the standards specified in the Los Angeles, Torrance, Lomita, Rolling Hills Estates, Long Beach, and Carson General Plans or Noise Ordinances. Impacts would be significant if construction would expose nearby receptors to noise levels above the levels set in Threshold 4 below.

Threshold 2: *Expose persons to or generation of excessive ground-borne vibration or ground-borne noise levels.*

Excessive ground-borne vibration is defined as equal to or more than 0.2 inch per second (in/sec) peak particle velocity (PPV). Construction activities within 200 feet and pile driving within 600 feet of a vibration-sensitive use would be potentially disruptive to vibration-sensitive operations (Caltrans 2013).

Threshold 3: *Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.*

Impacts would be significant if operation of the project would permanently increase ambient noise levels above the standards specified in the Los Angeles, Torrance, Lomita, Rolling Hills Estates, Long Beach, and Carson General Plans or Noise Ordinances.

Threshold 4: *Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.*

A temporary or periodic increase in ambient noise levels due to construction would be considered significant if:

a. Within the Angeles, noise generated from construction activity exceeds 5 dBA above ambient noise levels for construction lasting more than 10 days in a three-month period (Los Angeles 2006). Ambient noise conditions can be determined by the Presumed Ambient Noise Levels set forth in the Los Angeles Municipal Code. Exhibit I.1-3 in the Los Angeles CEQA Guidelines states that the Municipal Code's presumed ambient noise levels for residential zones is 50 dBA during the day and 40 dBA at night. Therefore, impacts would be significant if noise from construction exceeds noise levels of 55 dBA L_{EQ} during the day or 45 dBA L_{EQ} during the night at a noise-sensitive use;

b. Within Torrance, noise from construction activity exceeds 50 dBA between the hours of 6:00 p.m. and 7:30 a.m. on weekdays, Saturdays before 9:00 a.m. and after 5:00 p.m., and all day on Sundays;

c. Within Lomita, noise from construction exceeds the limits as shown in Table 6, or if construction occurs between the hours of 6:00 p.m. and 7:00 a.m. on weekdays, or before 9:00 a.m. and after 5:00 p.m. on Saturdays, Sundays, or Holidays. It must be noted that Lomita's 35 dBA maximum noise level for construction equipment and power tools, as measured at any receiving property line, is particularly stringent (refer to Section 1.5.4.2). For example, a noise level of 35 dBA is comparable to a soft whisper. Because the 35 dBA standard would be physically infeasible for the project to achieve, the analysis in this report focuses on compliance with Lomita's property line noise limits, as shown in Table 5;

d. Within Rolling Hills Estates, noise from construction exceeds the limits as shown in Table 7, or if construction occurs between the hours of 5:00 p.m. and 7:00 a.m. on weekdays, Saturdays before 9:00 a.m. and after 5:00 p.m., or at any time on Sundays;

e. Within Long Beach, construction noise is generated between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, Saturdays before 9:00 a.m. and after 6:00 p.m., and all day on Sundays; or

f. Within Carson, noise from construction activity exceeds the limits as shown in Table 8.

***Threshold 5*:** *For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public use airport or private airstrip, expose people residing or working in the project area to excessive noise*.

Impacts would be significant if the project would expose people (including temporary construction workers) to excessive noise from aircrafts using nearby public airports or private airstrips.

4.0 IMPACTS

4.1 ISSUE 1: EXCESSIVE NOISE LEVELS

Would operation of the project expose persons to or generate noise levels in excess of standards established by local jurisdictions?

Excessive noise levels due to construction of the project are described under Section 4.4 below. The project involves the relining of an existing underground pipeline, and no new permanent operational noise-generating components would be introduced. Operation of the project would therefore not generate or expose persons to excessive noise levels, and impacts would be less than significant.

4.2 ISSUE 2: EXCESSIVE VIBRATION

Would the project expose persons to or generate excessive ground-borne vibration or noise levels?

Numerous pipe access sites would be within 200 feet of single-family and multi-family residences, with the nearest sensitive use living area approximately 30 feet from Pipe Access Site 1860. PEIR MM NOI-1

has been implemented to locate pipe access sites away from vibration-sensitive uses to the extent feasible. The greatest source of vibration would be from compaction of the soil following relining activities and prior to final paving of each site. Due to the size of the pipe access sites, a small vibratory plate compactor or tamping rammer would likely be used. These are handheld units and would have no measurable vibration beyond 10 to 15 feet. Impacts from excessive vibration would therefore be less than significant.

4.3 ISSUE 3: PERMANENT INCREASE IN AMBIENT NOISE LEVELS

Would the project cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

As noted in Section 4.1 above, operation of the project would not result in noise-generating components that would cause a substantial permanent increase in ambient noise levels. No impact would occur.

4.4 ISSUE 4: TEMPORARY INCREASE IN AMBIENT NOISE

Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

4.4.1 Daytime Construction Operations

4.4.1.1 Pipe Access Sites

Initial construction work to access the PCCP would require excavation at the pipe access sites within Los Angeles, Torrance, Lomita, and Rolling Hills Estates. The five maintenance hole enlargement sites may also be used as pipe access sites. Initial excavation at pipe access sites would require the use of a single excavator and dump truck to deposit soil. These would be used simultaneously and represent the loudest equipment use for short-term construction at the access sites. Noise impacts vary by jurisdiction. Significance criteria for short-term construction were assessed at each pipe access site and are provided in Table 14, *Pipe Access Site Construction Noise*. Noise levels from the combined use of an excavator and dump truck would be elevated at nearby NSLUs at all pipe access sites. Torrance does not set daytime construction noise level limits in its municipal code; therefore, provided that construction excavation activities are conducted between the hours of 7:30 a.m. and 6:00 p.m. on weekdays and between 9:00 a.m. and 5:00 p.m. on Saturdays, impacts would be less than significant. Table 14 also provides noise levels with the incorporation of temporary 12-foot noise barriers, and the resulting noise levels with the inclusions of the barriers. As shown, noise levels at all access sites would remain above applicable thresholds even with use of a 12-foot barrier. A 12-foot barrier would be the maximum feasible barrier height, given the spatial restrictions of the pipe access sites.

Table 14
PIPE ACCESS SITE CONSTRUCTION NOISE

Site	NSLU Jurisdiction	NSLU Type	NSLU Distance	Threshold at NSLU (dBA L_{EQ} [1 hour])	No Barrier		12-foot Barrier	
					Modeled Noise Levels (dBA L_{EQ} [1 hour])	Exceed Standard at NSLU?	Modeled Noise Levels (dBA L_{EQ} [1 hour])	Exceed Standard at NSLU?
Pipe Access Sites								
1860	Los Angeles	Single-family and multi-family residences	10 feet	55	89.1	Yes	85.7	Yes
1863	Los Angeles	Single-family and multi-family residences	40 feet	55	77.1	Yes	73.7	Yes
1916	Los Angeles/ Torrance	Single-family and multi-family residences	40 feet	55 / NA	77.1	Yes / NA	73.7	Yes / NA
1964	Los Angeles	Single-family residences	100 feet	55	69.1	Yes	65.7	Yes
2015	Los Angeles/ Lomita	Single-family residences	90 feet	55 / 65	70.0	Yes	66.6	Yes
2022	Lomita	Single-family and multi-family residences	20 feet	65	83.1	Yes	79.7	Yes
2034	Lomita	Single-family residences	20 feet	65	83.1	Yes	79.7	Yes
2098	Rolling Hills Estates	Park; single-family residences	130 feet	55	66.8	Yes	63.4	Yes
2109 and 2114	Rolling Hills Estates	Single-family residences	200 feet	55	63.1	Yes	59.7	Yes
Maintenance Hole Enlargement Sites (Potential Pipe Access Sites)								
SLF Sta. 1875+56	Los Angeles	Single-family residences	50 feet	55	75.1	Yes	71.7	Yes
SLF Sta. 1899+76	Torrance	Single-family residences	60 feet	NA	73.5	NA	70.1	NA
SLF Sta. 1957+80	Los Angeles	School/Single-family residences	50 feet	55	75.1	Yes	71.7	Yes
SLF Sta. 2034+32	Lomita	Single-family residences	20 feet	65	83.1	Yes	79.7	Yes
SLF Sta. 2045+04	Lomita	Single-family residences	10 feet	65	89.1	Yes	85.7	Yes

NSLU = Noise Sensitive Land Use; dBA = A-weighted decibels; L_{EQ} = equivalent sound level
NA = not applicable (Torrance does not have daytime noise level limits for construction activities)

4.4.1.2 Pipeline Relining Activity

Following the initial excavation of each pipe access site, relining work would be conducted within the excavated area within Los Angeles, Torrance, Lomita, and Rolling Hills Estates. Noise generating equipment used for this stage of construction includes a generator, grouting mixer, welder, and crane, and would be located at street level. The loudest equipment types would be a grouting mixer and a generator in use simultaneously.

Noise impacts vary by jurisdiction. Significance criteria for long-term construction were assessed at each excavation location and are provided in Table 15, *Relining Activity Site Construction Noise*. Noise levels from the combined use of a generator and grouting mixer would exceed the thresholds at nearby NSLUs at all pipe access sites. Torrance does not set daytime construction noise level limits in its municipal code; therefore, provided that pipeline relining activities are conducted between the hours of 7:30 a.m. and 6:00 p.m. on weekdays and between 9:00 a.m. and 5:00 p.m. on Saturdays, impacts would be less than significant. Table 15 also provides noise levels with the incorporation of temporary 8-foot and 12-foot noise barriers, and the resulting noise levels with the inclusions of the barriers. As shown, the incorporation of an 8-foot barrier would reduce noise levels to within thresholds at Pipe Access Site 2015 (for noise in Lomita). With a 12-foot barrier, noise from work at Pipe Access Sites 1964, 2098, 2109, and 2114 would be reduced to within thresholds.

Table 15
RELINING ACTIVITY SITE CONSTRUCTION NOISE

Site	NSLU Jurisdiction	NSLU Type	NSLU Distance	Threshold at NSLU (dBA L_{EQ} [1 hour])[1]	No Barrier		8-foot Barrier[2]		12-foot Barrier[2]	
					Noise Levels (dBA L_{EQ} [one hour])	Exceed Standard at NSLU?	Noise Levels (dBA L_{EQ} [one hour])	Exceed Standard at NSLU?	Noise Levels (dBA L_{EQ} [one hour])	Exceed Standard at NSLU?
Pipe Access Sites										
1860	Los Angeles	Single-family and multi-family residences	10 feet	55	92.4	Yes	74.8	Yes	71.5	Yes
1863	Los Angeles	Single-family and multi-family residences	40 feet	55	80.4	Yes	68.6	Yes	62.0	Yes
1916	Los Angeles/ Torrance	Single-family and multi-family residences	40 feet	55 / NA	80.4	Yes	68.6	Yes / NA	62.0	Yes / NA
1964	Los Angeles	Single-family residences	100 feet	55	72.2	Yes	61.3	Yes	54.6	No
2015	Los Angeles/ Lomita	Single-family residences	90 feet	55 / 65	73.2	Yes	62.1	Yes / No[3]	55.5	Yes / No[3]
2022	Lomita	Single-family and multi-family residences	20 feet	65	86.4	Yes	73.0	Yes	66.9	Yes
2034	Lomita	Single-family residences	20 feet	65	86.4	Yes	73.0	Yes	73.0	Yes
2098	Rolling Hills Estates	Park; single-family residences	130 feet	55	69.9	Yes	59.1	Yes	52.5	No
2109 and 2114	Rolling Hills Estates	Single-family residences	200 feet	55	66.0	Yes	55.5	Yes	48.8	No
Maintenance Hole Enlargement Sites (Potential Pipe Access Sites)										
SLF Sta. 1875+56	Los Angeles	Single-family residences	50 feet	55	78.4	Yes	67.0	Yes	60.3	Yes
SLF Sta. 1899+76	Torrance	Single-family residences	60 feet	NA	76.8	NA	65.6	NA	58.9	NA

Site	NSLU Jurisdiction	NSLU Type	NSLU Distance	Threshold at NSLU (dBA L_{EQ} [1 hour])[1]	No Barrier		8-foot Barrier[2]		12-foot Barrier[2]	
					Noise Levels (dBA L_{EQ} [one hour])	Exceed Standard at NSLU?	Noise Levels (dBA L_{EQ} [one hour])	Exceed Standard at NSLU?	Noise Levels (dBA L_{EQ} [one hour])	Exceed Standard at NSLU?
SLF Sta. 1957+80	Los Angeles	School/Single-family residences	50 feet	55	78.4	Yes	67.0	Yes	60.3	Yes
SLF Sta. 2034+32	Lomita	Single-family residences	20 feet	65	86.4	Yes	73.0	Yes	66.9	Yes
SLF Sta. 2045+04	Lomita	Single-family residences	10 feet	65	92.4	Yes	74.8	Yes	71.5	Yes

[1] Relining activity would fall under the Los Angeles standard for construction activity lasting more than 10 days in a three-month period, which is 5 dBA above the 50 dBA ambient noise levels presumed for a residential neighborhood.

[2] Barrier is assumed to be 8 feet from the noise source.

[3] Noise from relining activities at this station would exceed noise thresholds for Los Angeles, but not those for Lomita.

NSLU = Noise Sensitive Land Use; dBA = A-weighted decibels; L_{EQ} = equivalent sound level

NA = not applicable (Torrance does not have noise level limits for construction activities)

4.4.1.3 Ventilation

Ventilation and access to support relining work would be conducted along the project alignment within the Los Angeles, Torrance, Lomita, and Rolling Hills Estates at manhole locations, to provide adequate air supply and access for workers and equipment. Expected noise sources at these locations include the use of a fan/blower for ventilation, a generator for power, and a welder for relining activities.

Noise calculations for ventilation activities include the use of a generator, blower, and welder. Together, this equipment generates 80 dBA at approximately 15 feet. Because ventilation equipment would potentially move to different locations along the pipeline alignment as construction proceeds, calculation of noise levels at specific receptor locations is not possible at this time. Instead, the setback distances needed to meet Los Angeles', Lomita's, and Rolling Hills Estates' noise thresholds are provided in Table 16, *Ventilation Location Setback Distances*. Distances are provided without barriers and with the incorporation of 6-foot and 8-foot barriers located 8 feet from the noise-generating equipment.

Table 16
VENTILATION LOCATION SETBACK DISTANCES

Jurisdiction	Threshold at NSLU (dBA L_{EQ} [1 hour]) [1]	Land Use Type	Distance Within Which Noise Levels Would Exceed Threshold		
			No Barrier	With 6-foot Barrier[2]	With 8-foot Barrier[2]
Los Angeles	55	Residential	265 feet	110 feet	70 feet
Torrance	No Limit	Residential	NA	NA	NA
Lomita	65	Residential	90 feet	33 feet	20 feet
	75	Commercial	30 feet	11 feet	6 feet
Rolling Hills Estates	55	Residential	265 feet	110 feet	70 feet
	65	Commercial	90 feet	33 feet	20 feet

Note: Ventilation activity assumes the use of a generator, blower, and welder.

[1] Ventilation activity would fall under the Los Angeles limit for construction activity lasting more than 10 days in a three-month period is 5 dBA above the 50 dBA ambient noise levels presumed for a residential neighborhood.

[2] Barrier is assumed to be approximately 8 feet from the noise source.

NSLU = Noise Sensitive Land Use; dBA = A-weighted decibels; L_{EQ} = equivalent sound level

NA = not applicable (the Torrance does not have noise level limits for construction activities)

Ventilation activities conducted within the setback distances from NSLUs in the Los Angeles, Lomita, and Rolling Hills Estates would result in a potentially significant impact. Torrance does not set daytime construction noise level standards in its municipal code, and impacts would therefore be less than significant when conducted between the hours of 7:30 a.m. and 6:00 p.m. on weekdays and between 9:00 a.m. and 5:00 p.m. on Saturdays.

4.4.1.4 Maintenance Hole Refurbishment and Blow-Off Structure Improvements

Refurbishment would be required for 24 maintenance holes, two side outlets, one pumpwell structure, and three blow-off structures within Los Angeles, Torrance, Lomita, and Rolling Hills Estates. A jackhammer would be the loudest equipment type and would be required for access to the manholes, outlets, blow-off structures, and pumpwell structure.

A jackhammer in use for 50 percent of an hour would generate 80 dBA at approximately 100 feet. Because equipment would potentially move to different locations along the pipeline alignment as

construction proceeds, noise levels at specific receptor locations is not possible at this time. Instead, the setback distances needed to meet Los Angeles', Lomita's, and Rolling Hills Estates' noise thresholds are provided in Table 17, *Jackhammer Setback Distances*. Distances are provided without barriers, and with the incorporation of a 6-foot barrier located 8 feet from the noise-generating equipment.

Table 17
JACKHAMMER SETBACK DISTANCES

Jurisdiction	Threshold at NSLU (dBA L_{EQ} [1 hour]) [1]	Land Use Type	Distance Within Which Noise Levels Would Exceed Threshold	
			No Barrier	With 6-foot Barrier[2]
Los Angeles	60	Residential	1,000 feet	180 feet
Torrance	No Limit	Residential	NA	NA
Lomita	65	Residential	550 feet	100 feet
	75	Commercial	180 feet	32 feet
Rolling Hills Estates	55	Residential	1,750 feet	325 feet
	65	Commercial	550 feet	100 feet

[1] Jackhammer use would fall under the Los Angeles standard for construction activity lasting more than one day, but less than 10 days in a three-month period is 10 dBA above the 50 dBA ambient noise levels presumed for a residential neighborhood.
[2] Barrier is assumed to be approximately 8 feet from noise source.
NSLU = Noise Sensitive Land Use; dBA = A-weighted decibels; L_{EQ} = equivalent sound level
NA = not applicable (Torrance does not have noise level limits for construction activities)

Jackhammer use within the setback distances from NSLUs in Los Angeles, Lomita, and Rolling Hills Estates would result in a potentially significant impact. Torrance does not set daytime construction noise level standards in its municipal code, and impacts would therefore be less than significant when conducted between the hours of 7:30 a.m. and 6:00 p.m. on weekdays and between 9:00 a.m. and 5:00 p.m. on Saturdays.

4.4.1.5 Valve Relocation and Replacement

Relocation of the underground air release/vacuum valves from below ground to above ground would involve running new piping from the existing valve connection point in the vault to a nearby above-ground location and installing a new vault above ground. This would require shallow trenching from the existing below-ground vault to a parkway location. Shallow trenching would require the short-term use of a concrete saw and backhoe. Similarly, the replacement of and improvements to isolation valves, flow meters, other isolation valves, and service connections would also require shallow trenching, which would require a backhoe and concrete saw. Valve relocation and replacement work is anticipated to be required within Los Angeles, Torrance, Lomita, Rolling Hills Estates, Long Beach, and Carson.

A backhoe in use for 50 percent of an hour would generate 65 dBA within approximately 150 feet and a concrete saw in continuous use for one hour would generate 100 dBA within approximately 20 feet. Because these pieces of equipment would be used at numerous and variable locations along the pipeline alignment, noise levels at specific receptors are not provided. Instead, the setback distances needed to meet Los Angeles', Lomita's, Rolling Hills Estates', and Carson's exterior noise thresholds at land uses located in proximity to anticipated work sites are provided in Table 18, *Backhoe Setback Distances,* and Table 19, *Concrete* Saw *Setback Distances*. Due to the short-term use of a backhoe and the mobile nature of its use, a temporary sound barrier would not likely be used. Distances for the

concrete saw, however, are provided without barriers and with the incorporation of a 6-foot barrier located 8 feet from the noise-generating equipment.

Table 18
BACKHOE SETBACK DISTANCES

Jurisdiction	Threshold at NSLU (dBA L_{EQ} [1 hour])	Land Use Type	Distance Within Which Noise Levels Would Exceed Threshold
Los Angeles	60[1]	Residential	270 feet
Torrance	No Limit	Residential	NA
Lomita	65	Residential	150 feet
	75	Commercial	48 feet
Rolling Hills Estates	55	Residential	480 feet
	65	Commercial	150 feet
Long Beach	No Limit	Residential	NA
Carson	75[2]	Single-family Residential	48 feet
	80[3]	Multi-family Residential	27 feet

[1] Backhoe use would fall under the Los Angeles standard for construction activity lasting more than one day, but less than 10 days in a three-month period is 10 dBA above the 50 dBA ambient noise levels presumed for a residential neighborhood.

[2] Backhoe use would fall under the Carson definition of nonscheduled, intermittent, short-term operation, with a 75 dBA L_{EQ} standard for single-family residences.

[3] Backhoe use would fall under the Carson definition of nonscheduled, intermittent, short-term operation, with an 80 dBA L_{EQ} standard for multi-family-family residences.

NSLU = Noise Sensitive Land Use; dBA = A-weighted decibels; L_{EQ} = equivalent sound level

NA = not applicable (Torrance and Long Beach do not set daytime noise level limits for construction activities in their municipal codes)

Table 19
CONCRETE SAW SETBACK DISTANCES

Jurisdiction	Threshold at NSLU (dBA L_{EQ} [1 hour])	Land Use Type	Distance Within Which Noise Levels Would Exceed Threshold	
			No Barrier	With 6-foot Barrier[1]
Los Angeles	60[2]	Residential	2,000 feet	300 feet
Torrance	No Limit	Residential	NA	NA
Lomita	65	Residential	1,150 feet	160 feet
	75	Commercial	350 feet	50 feet
Rolling Hills Estates	55	Residential	3,500 feet	500 feet
	65	Commercial	1,150 feet	160 feet
Long Beach	No Limit	Residential	NA	NA
Carson	75[3]	Single-family Residential	350 feet	50 feet
	80[4]	Multi-family residential	200 feet	30 feet

1 Barrier is assumed to be approximately 8 feet from noise source.
2 Concrete saw use would fall under the Los Angeles standard for construction activity lasting more than one day, but less than 10 days in a three-month period is 10 dBA above the 50 dBA ambient noise levels presumed for a residential neighborhood.
3 Concrete saw use would fall under the Carson definition of nonscheduled, intermittent, short-term operation, with a 75 dBA L_{EQ} standard for single-family residences.
4 Concrete saw use would fall under the Carson definition of nonscheduled, intermittent, short-term operation, with an 80 dBA L_{EQ} standard for multi-family-family residences.
NSLU = Noise Sensitive Land Use; dBA = A-weighted decibels; L_{EQ} = equivalent sound level
NA = not applicable (Torrance and Long Beach do not set daytime noise level limits for construction activities in their municipal codes)

Backhoe or concrete saw use within the setback distances from NSLUs in Los Angeles, Lomita, Rolling Hills Estates, and Carson would result in a potentially significant impact. Torrance does not set daytime construction noise level standards in its municipal code, and impacts would therefore be less than significant when conducted between the hours of 7:30 a.m. and 6:00 p.m. on weekdays and between 9:00 a.m. and 5:00 p.m. on Saturdays. Similarly, Long Beach does not set daytime construction noise level standards in its municipal code, and impacts would therefore be less than significant when conducted between the hours of 7:00 a.m. and 7:00 p.m. on weekdays and between 9:00 a.m. and 6:00 p.m. on Saturdays.

4.4.1.6 Dewatering

Dewatering would be required prior to excavation and relining activity. The exact dewatering locations are not known at this time, but may occur within Los Angeles, Torrance, Lomita, Rolling Hills Estates, Long Beach, and Carson. Dewatering would require the use of a submersible pump and generator to power the pump. The only audible equipment would be the generator. Dewatering would occur 24 hours per day for up to seven days.

A generator in continuous use for one hour would generate 75 dBA within approximately 12 feet. Because equipment would potentially move to different locations along the pipeline alignment as dewatering proceeds, calculation of noise levels at specific receptor locations is not possible at this time. Instead, the setback distances needed to meet Los Angeles', Lomita's, Rolling Hills Estates', and Carson's

noise thresholds are provided in Table 20, *Generator Setback Distances*. Distances are provided without barriers, and with the incorporation of a 6-foot barrier located 8 feet from the noise-generating equipment.

A generator used within the setback distances from NSLUs in Los Angeles, Lomita, Rolling Hills Estates, and Carson would result in a potentially significant impact. Torrance does not set daytime construction noise level limits in its municipal code, and impacts would therefore be less than significant provided that it is conducted between the hours of 7:30 a.m. and 6:00 p.m. on weekdays and between 9:00 a.m. and 5:00 p.m. on Saturdays. Similarly, Long Beach does not set daytime construction noise level standards in its municipal code, and impacts would therefore be less than significant when conducted between the hours of 7:00 a.m. and 7:00 p.m. on weekdays and between 9:00 a.m. and 6:00 p.m. on Saturdays.

Table 20
GENERATOR SETBACK DISTANCES

Jurisdiction	Threshold at NSLU (dBA L_{EQ} [1 hour])	Land Use Type	Distance Within Which Noise Levels Would Exceed Threshold	
			No Barrier	With 6-Foot Barrier[1]
Angeles	60[2]	Residential	75 feet	25 feet
Torrance	No Limit	Residential	NA	NA
Lomita	65	Residential	40 feet	14 feet
	75	Commercial	12 feet	5 feet
Rolling Hills Estates	55	Residential	120 feet	45 feet
	65	Commercial	40 feet	14 feet
Long Beach	No Limit	Residential	NA	NA
Carson	75[3]	Single-family Residential	12 feet	5 feet
	80[4]	Multi-family residential	7 feet	3 feet

1 Barrier is assumed to be approximately 8 feet from noise source.
2 Generator use would fall under the Los Angeles standard for construction activity lasting more than one day, but less than 10 days in a three-month period is 10 dBA above the 50 dBA ambient noise levels presumed for a residential neighborhood.
3 Generator use would fall under the Carson definition of nonscheduled, intermittent, short-term operation, with a 75 dBA L_{EQ} standard for single-family residences.
4 Generator use would fall under the Carson definition of nonscheduled, intermittent, short-term operation, with an 80 dBA LEQ standard for multi-family-family residences.
NSLU = Noise Sensitive Land Use; dBA = A-weighted decibels; L_{EQ} = equivalent sound level
NA = not applicable (Torrance and Long Beach do not have noise level limits for construction activities)

4.4.2 Nighttime Construction Operations

The noise-producing construction activities that would require nighttime work would be dewatering, pipeline relining, and ventilation to support relining work. While pipeline relining and ventilation would occur only within Los Angeles, Torrance, Lomita, and Rolling Hills Estates, dewatering may occur within these four cities as well as within Long Beach and Carson. In the City of Los Angeles CEQA Thresholds Guide, nighttime hours are defined as between 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, and at any time on Sunday. Nighttime construction noise is limited to 45 dBA for residential zones in Los Angeles, which is 5 dBA above the 40 dBA nighttime

ambient noise level presumed for residential zones. In the Torrance Municipal Code, nighttime hours are defined as between 6:00 p.m. and 7:30 a.m. Monday through Friday, before 9:00 a.m. and after 5:00 p.m. on Saturday, and at any time on Sunday. Nighttime construction noise is limited to 50 dBA for residential zones in Torrance. In the Lomita Municipal Code, nighttime hours are defined as between the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday, and before 9:00 a.m. and after 5:00 p.m. Saturday, Sunday, and Holidays. In the Rolling Hills Estates Municipal Code, nighttime hours are defined as between 5:00 p.m. and 7:00 a.m. Monday through Friday, before 9:00 a.m. and after 5:00 p.m. on Saturday, and at any time on Sunday. In the Long Beach Municipal Code, nighttime hours are defined as between 7:00 p.m. and 7:00 a.m. on weekdays, before 9:00 a.m. and after 6:00 p.m. on Saturdays, and all day on Sundays. In the Carson Municipal Code, nighttime hours are defined as between 8:00 p.m. and 7:00 a.m. or any time on Sundays or holidays. Nighttime noise limits in Carson are shown above in Table 7.

Dewatering would involve the use of a submersible pump that would not be audible and a generator. Dewatering would take place for approximately four to seven days at each dewatering location. Exceedances of nighttime limits for dewatering activities are shown with and without barriers in Table 21, *Generator Setback Distances – Nighttime Hours*. For relining activities, exceedances of nighttime noise limits with and without barriers are shown in Table 22, *Relining Activity Site Construction Noise – Nighttime Hours*. For the use of ventilation equipment to support nighttime relining activities, exceedances of nighttime thresholds are shown with and without barriers in Table 23, *Ventilation Location Setback Distances – Nighttime Hours*.

Table 21
GENERATOR SETBACK DISTANCES – NIGHTTIME HOURS

Jurisdiction	Threshold at NSLU (dBA L_{EQ} [1 hour])	Land Use Type	Distance Within Which Noise Levels Would Exceed Threshold	
			No Barrier	6-foot Barrier[1]
Los Angeles	45	Residential	380 feet	135 feet
Torrance	50	Residential	215 feet	80 feet
Lomita	No construction allowed	Residential	NA	NA
	No construction allowed	Commercial	NA	NA
Rolling Hills Estates	No construction allowed	Residential	NA	NA
	No construction allowed	Commercial	NA	NA
Long Beach	No construction allowed	Residential	NA	NA
Carson	60[2]	Single-family Residential	65 feet	25 feet
	64[3]	Multi-family Residential	45 feet	15 feet

[1] Barrier is assumed to be approximately 8 feet from the noise source.
[2] Generator use would fall under the Carson definition of nonscheduled, intermittent, short-term operation, with a 60 dBA L_{EQ} standard for single-family residences.
[3] Generator use would fall under the Carson definition of nonscheduled, intermittent, short-term operation, with a 64 dBA L_{EQ} standard for multi-family-family residences.
NA = not applicable.
NSLU = Noise Sensitive Land Use; dBA = A-weighted decibels; L_{EQ} = equivalent sound level

Table 22
RELINING ACTIVITY SITE CONSTRUCTION NOISE – NIGHTTIME HOURS

Site	NSLU Jurisdiction	NSLU Type	NSLU Distance	Threshold at NSLU (dBA L_{EQ} [1 hour]) [1]	No Barrier		8-foot Barrier[1]		12-foot Barrier[1]	
					Noise Levels (dBA L_{EQ} [one hour])	Exceed Standard at NSLU?	Noise Levels (dBA L_{EQ} [one hour])	Exceed Standard at NSLU?	Noise Levels (dBA L_{EQ} [one hour])	Exceed Standard at NSLU?
Pipe Access Sites										
1860	Los Angeles	Single-family and multi-family residences	10 feet	45	92.4	Yes	74.8	Yes	71.5	Yes
1863	Los Angeles	Single-family and multi-family residences	40 feet	45	80.4	Yes	68.6	Yes	62.0	Yes
1916	Los Angeles/ Torrance	Single-family and multi-family residences	40 feet	45 / 50	80.4	Yes	68.6	Yes	62.0	Yes
1964	Los Angeles	Single-family residences	100 feet	45	72.2	Yes	61.3	Yes	54.6	Yes
2015	Los Angeles/ Lomita	Single-family residences	90 feet	45 / No construction allowed	73.2	Yes / NA	62.1	Yes / NA	55.5	Yes / NA
2022	Lomita	Single-family and multi-family residences	20 feet	No construction allowed	86.4	NA	73.0	NA	66.9	NA
2034	Lomita	Single-family residences	20 feet	No construction allowed	86.4	Yes	73.0	Yes	73.0	Yes
2098	Rolling Hills Estates	Park; single-family residences	130 feet	No construction allowed	69.9	NA	59.1	NA	52.5	NA
2109 and 2114	Rolling Hills Estates	Single-family residences	200 feet	No construction allowed	66.0	NA	55.5	NA	48.8	NA

Site	NSLU Jurisdiction	NSLU Type	NSLU Distance	Threshold at NSLU (dBA L_{EQ} [1 hour]) [1]	No Barrier		8-foot Barrier[1]		12-foot Barrier[1]	
					Noise Levels (dBA L_{EQ} [one hour])	Exceed Standard at NSLU?	Noise Levels (dBA L_{EQ} [one hour])	Exceed Standard at NSLU?	Noise Levels (dBA L_{EQ} [one hour])	Exceed Standard at NSLU?
Maintenance Hole Enlargement Sites (Potential Pipe Access Sites)										
SLF Sta. 1875+56	Los Angeles	Single-family residences	50 feet	45	78.4	Yes	67.0	Yes	60.3	Yes
SLF Sta. 1899+76	Torrance	Single-family residences	60 feet	50	76.8	Yes	65.6	Yes	58.9	Yes
SLF Sta. 1957+80	Los Angeles	School/Single-family residences	50 feet	45	78.4	Yes	67.0	Yes	60.3	Yes
SLF Sta. 2034+32	Lomita	Single-family residences	20 feet	No construction allowed	86.4	Yes	73.0	Yes	66.9	Yes
SLF Sta. 2045+04	Lomita	Single-family residences	10 feet	No construction allowed	92.4	Yes	74.8	Yes	71.5	Yes

[1] Barrier is assumed to be 8 feet from the noise source.
NSLU = Noise Sensitive Land Use; dBA = A-weighted decibels; L_{EQ} = equivalent sound level; NA = not applicable

Table 23
VENTILATION LOCATION SETBACK DISTANCES – NIGHTTIME HOURS

Jurisdiction	Threshold at NSLU (dBA L_{EQ} [1 hour])	Land Use Type	Distance Within Which Noise Levels Would Exceed Threshold	
			No Barrier	With 8-foot Barrier[1]
Los Angeles	45	Residential	850 feet	170 feet
Torrance	50	Residential	500 feet	95 feet
Lomita	No construction allowed	Residential	NA	NA
	No construction allowed	Commercial	NA	NA
Rolling Hills Estates	No construction allowed	Residential	NA	NA
	No construction allowed	Commercial	NA	NA

Note: Ventilation activity assumes the use of a generator, blower, and welder.
[1] Barrier is assumed to be approximately 8 feet from the noise source.
NSLU = Noise Sensitive Land Use; dBA = A-weighted decibels; L_{EQ} = equivalent sound level; NA = not applicable

4.4.2.1 Additional Potential Nighttime Construction Activities

The proposed valve replacement at Service Connection T-08, located at SLF STA 1902+95 near the intersection of Western Avenue and Sepulveda Boulevard, and modifications to a blow-off structure, located at STA 1973+18 near the intersection of Western Avenue and Lomita Boulevard, may require nighttime work to minimize traffic effects at these major intersections. Construction work associated with improvements to Service Connection T-08 would occur as close as 200 feet from a residential NSLU within Torrance, where nighttime construction work is limited to 50 dBA L_{EQ} (1-hour). Improvements would involve construction activities similar to those described in Section 4.4.1.5 (trenching using a concrete saw and backhoe). At 200 feet, a backhoe would generate a noise level of 62.5 dBA L_{EQ} and a concrete saw would generate a noise level of 77.6 dBA L_{EQ}. As discussed in Section 4.4.1.5, due to the short-term and mobile nature of the use of a backhoe, a barrier would likely not be used, and noise levels would exceed the Torrance nighttime noise limit of 50 dBA L_{EQ} (1-hour). For use of concrete saw, a 6-foot barrier would attenuate noise levels to approximately 60 dBA L_{EQ}, and noise levels at the nearby residential NSLUs would exceed the 50-dBA L_{EQ} (1-hour) nighttime noise limit for Torrance.

Construction work associated with modifications to the blow-off structure at SLF STA 1973+18 would occur as close as 120 feet from a residential NSLU within Los Angeles, where nighttime construction work is limited to 45 dBA L_{EQ} (1-hour). Blow-off structure modifications would require the use of a jackhammer, as described in Section 4.4.1.4. At 120 feet, a jackhammer would generate a noise level of 78.3 dBA L_{EQ}. With a 6-foot barrier, noise levels would be reduced to approximately 63 dBA L_{EQ}, and noise levels at the nearby residential NSLUs would exceed the 45-dBA L_{EQ} (1-hour) nighttime noise limit for Los Angeles.

4.4.3 Construction Traffic

As described in Section 3.2.4, construction would add a maximum of 104 daily trips per pipe access site to nearby roadways. This would consist of 64 passenger vehicles and 40 trucks per day, or approximately 8 vehicles and 4 trucks during a peak hour. A general rule of thumb is that a doubling of traffic would cause a doubling in sound energy (a 3-dBA increase), which would be perceptible and, therefore, a significant increase.

Because of the location of the pipe access sites, construction traffic would be required on local streets. An additional 104 vehicle trips over the course of a day would represent less than a doubling in trips and therefore would not be expected to cause a doubling in noise. Furthermore, it is unlikely that 104 trips would be needed for extended periods of time, and overall construction noise impacts would be temporary. The addition of construction traffic would be less than significant, and no mitigation is required.

4.4.4 Mitigation Measures

The project would be required to comply with PEIR MM NOI-2, PEIR MM NOI-3, and PEIR MM NOI-4 to reduce noise levels, as feasible. To comply with PEIR MM NOI-3, the following additional project measures shall be implemented:

MM NOI-3.1 **Construction Exterior Noise Level Standards.** Construction noise from project construction activities shall comply with the daytime and nighttime thresholds and hours specified by Los Angeles, Torrance, Lomita, Rolling Hills Estates, Long Beach, and Carson for sensitive receptors to the maximum extent feasible.

Within Los Angeles, daytime construction activities lasting more than one day and less than 10 days in a three-month period shall comply with the 60 dBA L_{EQ} standard for residential zones. Daytime construction activities lasting more than 10 days in a three-month period shall comply with the 55 dBA L_{EQ} standard for residential zones. Nighttime (9:00 p.m. to 7:00 a.m. on weekdays, before 8:00 a.m. and after 6:00 p.m. on Saturday, and any time on Sunday) shall comply with the 45 dBA L_{EQ} standard for residential zones.

Within Torrance, construction activities shall occur only between 7:30 a.m. and 6:00 p.m. Monday through Friday and between 9:00 a.m. and 5:00 p.m. on Saturdays. If construction occurs outside these hours, noise levels shall not exceed 50 dBA as measured at property lines.

Within Lomita, construction activities shall occur only between 7:00 a.m. and 6:00 p.m. Monday through Friday and between 9:00 a.m. and 5:00 p.m. on Saturdays, Sundays, and Holidays. In addition, daytime construction noise shall comply with the 65 dBA standard for residential land uses and the 75 dBA standard for commercial land uses.

Within Rolling Hill Estates, construction activities shall occur only between 7:00 a.m. and 5:00 p.m. Monday through Friday and between 9:00 a.m. and 5:00 p.m. on Saturdays. In addition, daytime construction noise shall comply with the 55 dBA standard for residential land uses and the 65 dBA standard for commercial uses.

MM NOI-3.2 **Noise Reduction Measures for Pipe Access Site Excavation and Relining Activities**. Measures to reduce noise levels to below a level of significance may include the use of noise barriers, noise attenuation devices/modifications to construction equipment, limiting hours of operation, or a combination of these measures.

For excavation activities at all proposed pipe access sites, a 12-foot barrier shall be required to reduce noise levels.

For pipeline relining activities at all proposed pipe access sites, a 12-foot barrier shall be required to reduce noise levels.

If a temporary barrier is used, all barriers shall be solid and constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove or close butted seams and must be at least ¾-inch thick or have a surface density of at least 3.5 pounds per square foot. Sheet metal of 18 gauge (minimum) may be used if it meets the other criteria and is properly supported and stiffened so that it does not rattle or create noise itself from vibration or wind. Noise blankets, hoods, or covers also may be used, provided they are appropriately implemented to provide the required sound attenuation. The noise control barrier enclosures should be of an elongated "U" shape, with the elongated sides parallel to the pipeline.

MM NOI-3.3 **Setback Distances for Mobile Operations (Ventilators, Manholes, Valves).** For construction operations that would occur at movable locations along the pipeline alignment, the following setback distances and/or barriers shall be necessary to maintain noise levels to within local standards for residential land uses in Los Angeles, Torrance, Lomita, Rolling Hills Estates, Long Beach and Carson, and for commercial land uses in the Lomita and Rolling Hills Estates. Setback distances and/or barriers shall be used to the extent feasible.

Daytime

For ventilation activities, equipment shall be set back outside of the distances within which noise levels would exceed thresholds, as presented in Table 15 of this noise report, for Los Angeles, Lomita, and Rolling Hills Estates.

For the continuous use of a jackhammer during a single hour, equipment shall be setback outside of the distances within which noise levels would exceed thresholds, as presented in Table 16 of this noise report, for Los Angeles, Lomita, and Rolling Hills Estates.

For use of a backhoe, equipment shall be setback outside of the distances within which noise levels would exceed thresholds, as presented in Table 17 of this noise report, for Los Angeles, Lomita, Rolling Hills Estates, and Carson.

For the continuous use of a concrete saw during a single hour, equipment shall be setback outside of the distances within which noise levels would exceed thresholds, as presented in Table 18 of this noise report, for Los Angeles, Lomita, Rolling Hills Estates, Carson.

For the continuous use of a generator during a single hour, equipment shall be setback outside of the distances within which noise levels would exceed thresholds, as presented in Table 19 of this noise report, for Los Angeles, Lomita, Rolling Hills Estates, and Carson.

Nighttime

For the continuous use of a generator during a single hour at night, equipment shall be setback outside of the distances within which noise levels would exceed thresholds, as presented in Table 20 of this noise report, for Los Angeles, Torrance, and Carson.

For nighttime ventilation activities, equipment shall be setback outside of the distances within which noise levels would exceed thresholds, as presented in Table 22 of this noise report, for Los Angeles and Torrance.

MM NOI-3.4 **Nighttime Construction Management Plan.** The project specifications shall require preparation of a Nighttime Construction Management Plan prior to the onset of construction. The plan shall describe measures to reduce noise levels for any nighttime work that may occur. Specific measures to reduce construction noise may include:

- Placement of noise-generating equipment as far as feasible from noise-sensitive land uses.
- Utilization of enclosures or other barriers for equipment to reduce noise levels.
    - If work at Service Connection T-08 using a concrete saw occurs during nighttime hours, a 6-foot noise barrier shall be required between the equipment and residential land uses to reduce noise levels.
    - If work at the blow-off structure located at SLF STA 1973+18 using a jackhammer occurs during nighttime hours, a 6-foot noise barrier shall be required between the equipment and residential land uses to reduce noise levels.
- Construction equipment properly outfitted and maintained with manufacturer-recommended noise-reduction devices.
- Diesel equipment operated with closed engine doors and equipped with factory-recommended mufflers.
- Written notification to residents within 100 feet of the project's property line, provided a minimum of one week prior to nighttime construction activity. Notification to include a description of activities anticipated, expected dates and hours for construction, and contact information with details of a complaint and response procedure.

4.4.5 Significance After Mitigation

4.4.5.1 Daytime Construction Operations

Impacts from pipe access site excavation would remain significant at all pipe access sites with the use of a 12-foot barrier. Impacts from relining activities would remain significant at all pipe access sites except for Pipe Access Sites 1964, 2098, 2109, and 2114 with the use of a 12-foot barrier. Impacts associated with pipe access site excavation and relining are therefore considered significant and unavoidable. As

noted in Section 1.3, however, impacts would be consistent with those identified in the PEIR. For activities that would occur at various, movable locations along the pipeline alignment, provided the setback distances with or without inclusion of barriers as described in MM NOI-3.3 and listed in Tables 15 through 19 are maintained, impacts would be reduced to less-than-significant levels.

4.4.5.2 Nighttime Construction Operations

Noise levels from nighttime relining activities at all pipe access sites within Los Angeles and Torrance would exceed respective nighttime standards at nearby NSLUs, and impacts would be significant and unavoidable; however, impacts would be consistent with those identified in the PEIR. Similarly, noise levels from nighttime work at Service Connection T-08 in Torrance and at the blow-off structure located at SLF STA 1973+18 in Los Angeles would exceed respective nighttime standards at nearby NSLUs, even with the use of temporary barriers, and impacts would be significant and unavoidable; however, these impacts too would be consistent with those identified in the PEIR. Impacts associated with dewatering and ventilation activities within Los Angeles, Torrance, and Carson would be less than significant after mitigation, which involves maintaining the setback distances depicted in Tables 21 and 23. If dewatering or ventilation activities occur within these setback distances, impacts would be significant.

The use of temporary noise barriers during nighttime dewatering, relining, and ventilation activities would reduce noise levels at nearby NSLUs within Lomita, Rolling Hills Estates, and Long Beach; however, because Lomita, Rolling Hills Estates, and Long Beach do not allow nighttime construction, noise impacts associated with construction between the hours of 6:00 p.m. and 7:00 a.m. on weekdays, before 9:00 a.m. and after 5:00 p.m. on Saturdays, Sundays, and Holidays in Lomita, between the hours of 5:00 p.m. and 7:00 a.m. on weekdays, before 9:00 a.m. and after 5:00 p.m. on Saturdays, or any time on Sundays in Rolling Hills Estates, or between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, before 9:00 a.m. and after 6:00 p.m. on Saturdays, or any time on Sundays in Long Beach would be significant and unavoidable. As noted in Section 1.3, however, impacts would be consistent with those identified in the PEIR.

4.5 ISSUE 5: AIRPORT NOISE EXPOSURE

Would the project expose people residing or working in the project area to excessive noise from a nearby public use airport or private airstrip?

The project proposes the relining of an underground pipeline, and no housing or permanent workers would result from the project. Additionally, construction workers would wear noise safety gear as required by the federal Occupational Safety and Health Administration that would also serve as protection from any airport noise exposure. No impacts from airport noise exposure would occur.

5.0 LIST OF PREPARERS

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6.0 REFERENCES

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Appendix A

Site Survey Measurement Sheets

Site Survey

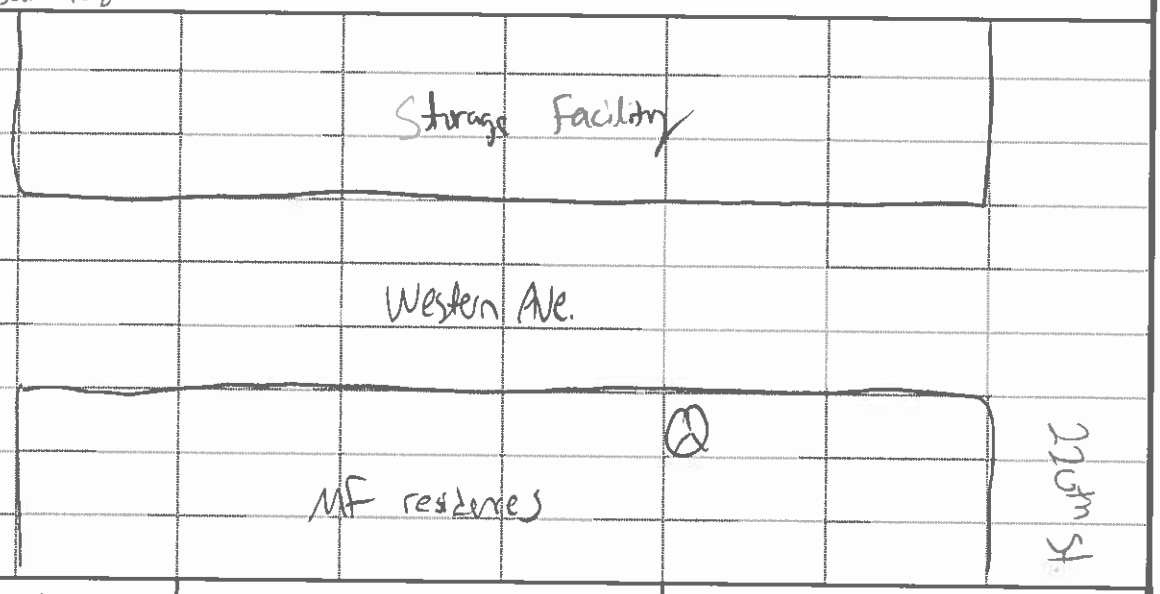
Job # MWD - 24.03	Project Name: PCCP Reach 3		
Date: 12/7/18	Site #: 1863	Engineer: HTG	
Address: along eastern edge of Western Ave between 221st and 220th			
Meter: LD LXT	Serial #: 1741	Calibrator: LD CAL150	Serial #: 1544

Notes: Clear

Traffic along Western Ave dominant noise source

Data: 108

Sketch:



Temp: 67° F	Wind Spd: 3 mph	Humidity: 48 %
Start of Measurement: 11:24 am	End of Measurement: 11:34 am	73.7 dBA L_{EQ}

Cars (tally per 5 cars)	Medium Trucks (MT)	Heavy Trucks (HT)

Noise Measurement for Information Only

No Through Roadways

No Calibration Analysis Will Be Provided

Site Survey

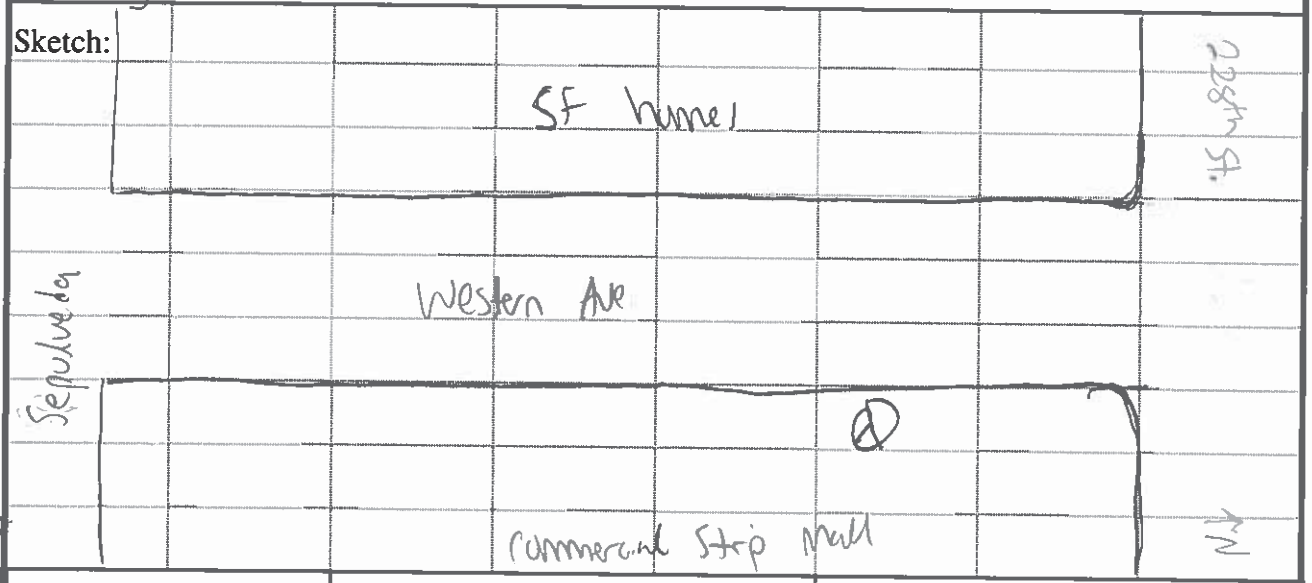
Job # MWD-24.03	Project Name: PCCP Reach 3		
Date: 12/7/18	Site #: 1897	Engineer: HTS	
Address: along eastern side of Western Ave, North of Sepulveda			
Meter: LD LxT	Serial #: 1741	Calibrator: LD CA250	Serial #: 1544

Notes: Clear

Traffic along Western dominant noise source

Date: 107

Sketch:



Temp: 64°F	Wind Spd: 3 mph	Humidity: 50 %
Start of Measurement: 11:05 am	End of Measurement: 11:15 am	76.1 dBA L_{EQ}

Cars (tally per 5 cars)	Medium Trucks (MT)	Heavy Trucks (HT)

Noise Measurement for Information Only

No Through Roadways

No Calibration Analysis Will Be Provided

Site Survey

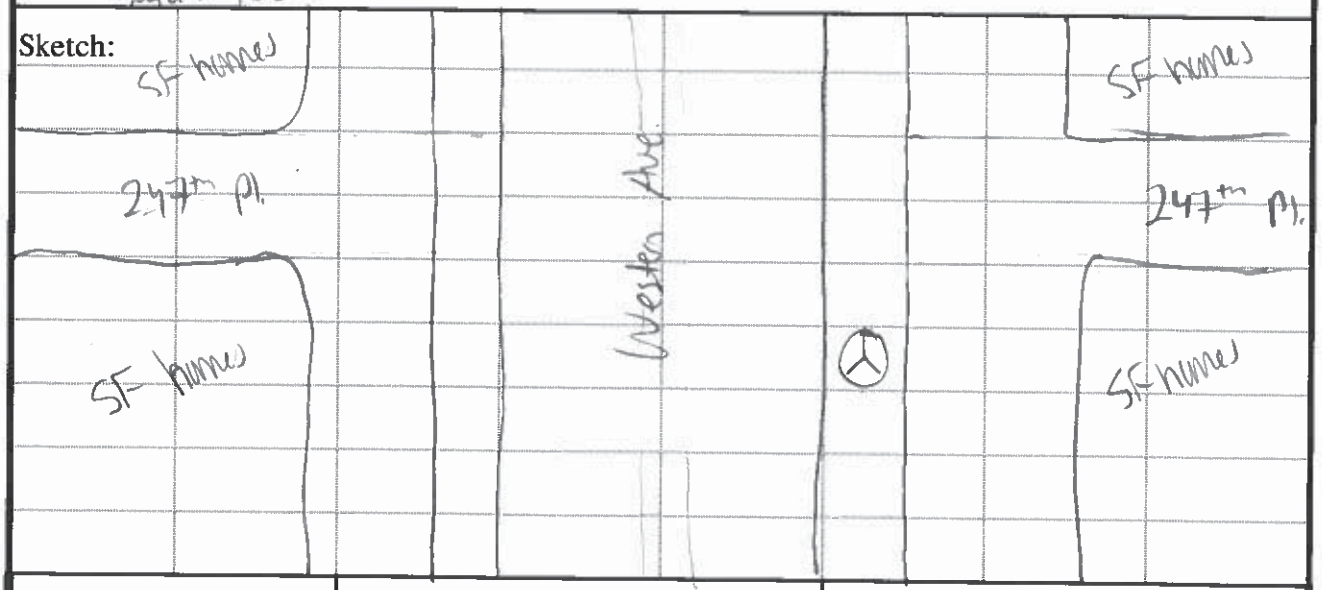
Job # MWD-24.03	Project Name: PCCP Reach 3		
Date: 12/7/18	Site #: 1964	Engineer: HTS	
Address: Along eastern side of Western Ave, just south of 247th Place			
Meter: LD LXT	Serial #: 1741	Calibrator: LD CA250	Serial #: 1544

Notes: Clear

Traffic on Western Ave main noise source

Data: 106

Sketch:



Temp: 64°F	Wind Spd: 3 mph	Humidity: 54 %
Start of Measurement: 10:42 am	End of Measurement: 10:52 am	72.3 dBA L_{EQ}

Cars (tally per 5 cars)	Medium Trucks (MT)	Heavy Trucks (HT)

Noise Measurement for Information Only

No Through Roadways

No Calibration Analysis Will Be Provided

Site Survey

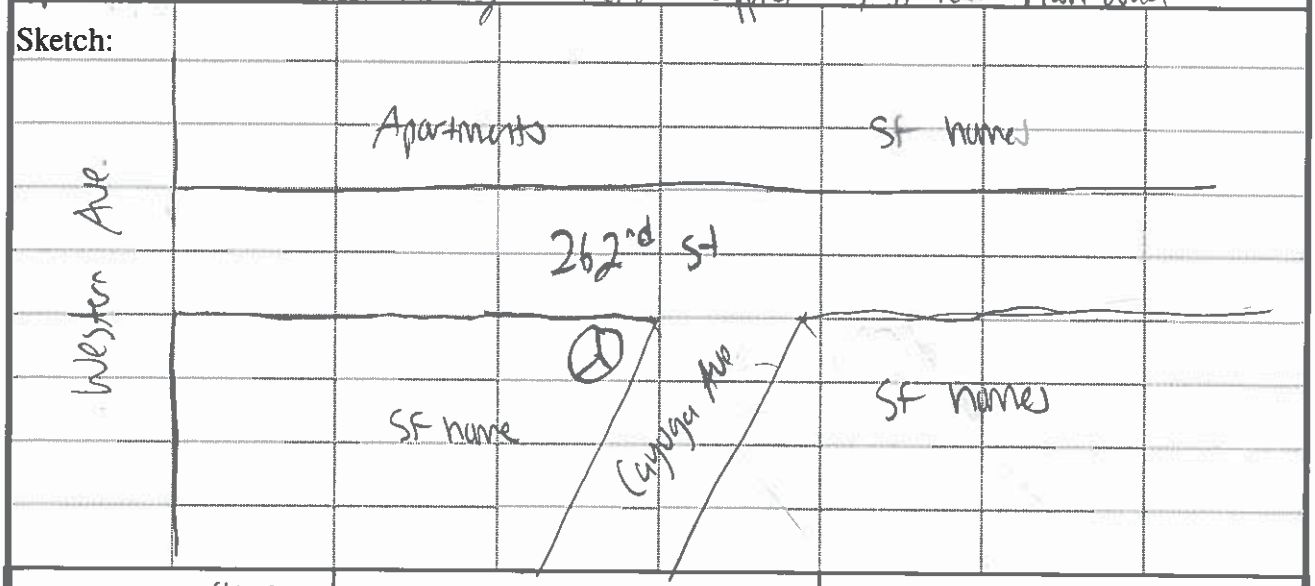
Job # MWD-24.03	Project Name: PCCP Reach 3		
Date: 12/7/18	Site #: 2022	Engineer: HTS	
Address: Intersection of 262nd St and Cayuga Avenue			
Meter: LD LxT	Serial #: 1741	Calibrator: LD CAL50	Serial #: 1544

Notes: Clear - Data: 105

Traffic noise along western end 262nd St ; distant landscaping equipment

Short (3ft) stone wall nearby — meter approx 7-8 feet from wall

Sketch:



Temp: 64°F	Wind Spd: 0 mph	Humidity: 56 %
Start of Measurement: 10:18 am	End of Measurement: 10:28 am	62.3 dBA L_{EQ}

Cars (tally per 5 cars)	Medium Trucks (MT)	Heavy Trucks (HT)

Noise Measurement for Information Only

No Through Roadways

No Calibration Analysis Will Be Provided

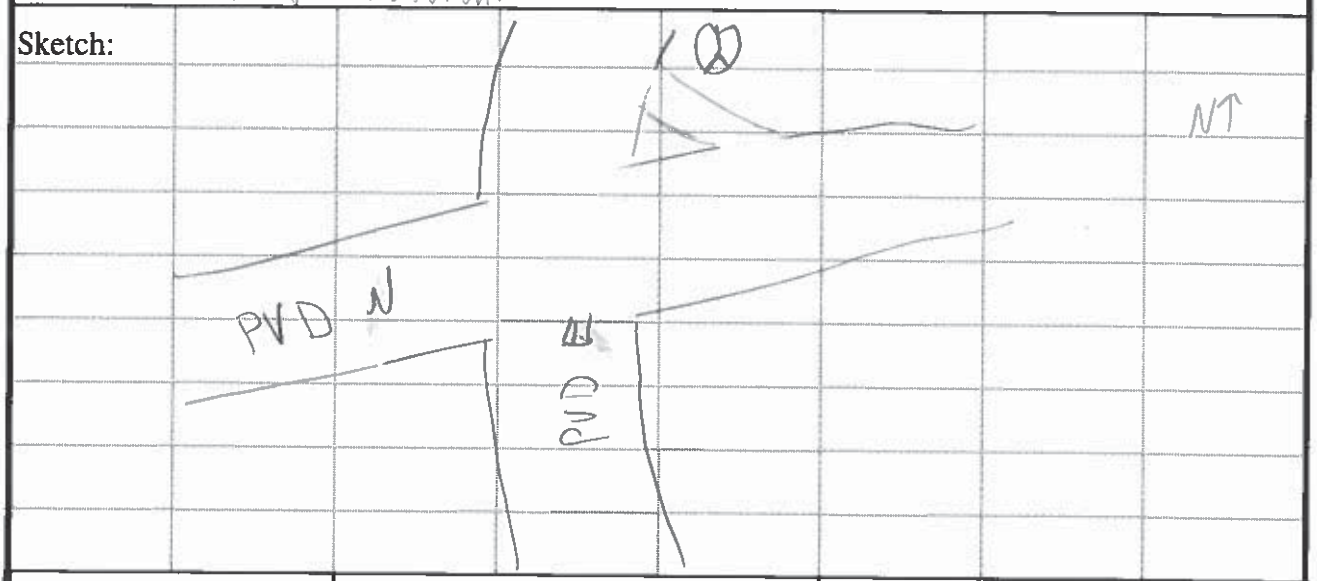
Site Survey

Job # MND-2403	Project Name: PCCP Beacon 3		
Date: 12/7/18	Site #: 2098	Engineer: HTS	
Address: Northeastern corner of Palos Verdes Dr. N and Palos Verdes Dr. E			
Meter: LD LXT	Serial #: 1741	Calibrator: LD CA250	Serial #: 1544

Notes: Clear — Data: 104

Traffic dominant noise source; distant tree trimming noise last 2 minutes of Measurement.

Sketch:



Temp: 61°F	Wind Spd: 5	mph	Humidity: 61	%	
Start of Measurement: 9:51 am	End of Measurement: 10:01 am		68.0	dBA L_{EQ}	

Cars (tally per 5 cars)	Medium Trucks (MT)	Heavy Trucks (HT)

Noise Measurement for Information Only

No Through Roadways

No Calibration Analysis Will Be Provided

Site Survey

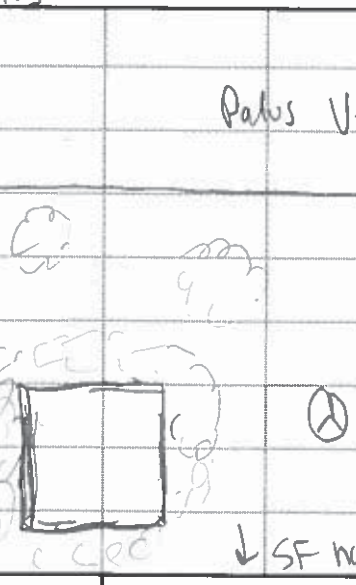
Job # MWD-24.03	Project Name: PCCP Reach 3		
Date: 12/7/18	Site #: 2111	Engineer: HTS	
Address: —			
Meter: LD LxT	Serial #: 1741	Calibrator: LD CAL250	Serial #: 1544

Notes: Clear

Dominant noise source: traffic on Palos Verdes Drive East

Data: 103

Sketch:



Temp: 53° F	Wind Spd: 4 mph	Humidity: 77 %
Start of Measurement: 7:36 am	End of Measurement: 7:46 am	57.3 dBA L_{EQ}

Cars (tally per 5 cars)	Medium Trucks (MT)	Heavy Trucks (HT)

Noise Measurement for Information Only

No Through Roadways

No Calibration Analysis Will Be Provided

FINAL

Programmatic Environmental Impact Report for the

Prestressed Concrete Cylinder Pipe Rehabilitation Program

SCH No. 2014121055

DECEMBER 2016

The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, California 90012

Metropolitan Report No. 1527

1459

Prestressed Concrete Cylinder Pipe Rehabilitation Program Final Programmatic Environmental Impact Report

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December 2016

ICF International. 2016. Prestressed Concrete Cylinder Pipe Rehabilitation Program Final Programmatic Environmental Impact Report. December. (ICF 52.14.) Irvine, CA. Prepared for Metropolitan Water District of Southern California, Los Angeles, California.

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Acronyms and Abbreviations

AQMP	air quality management plan
ALUP	airport land use plan
AWWA	American Water Works Association
AB	Assembly Bill
dBA	A-weighted decibels
BMPs	best management practices
BAU	business-as-usual
ARB	California Air Resources Board
CAAQS	California Ambient Air Quality Standards
CBC	California Building Code
CCR	California Code of Regulations
DOC	California Department of Conservation
CDFW	California Department of Fish and Wildlife
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
Cal/OSHA	California Division of Occupational Safety and Health
CalEEMod	California Emissions Estimator Model
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CRHR	California Register of Historical Resources
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CO	carbon monoxide
CAA	Clean Air Act
CWA	Clean Water Act
Central Basin	Coastal Plain of Los Angeles Groundwater Basin
CFR	Code of Federal Regulations
CE	Commuter Express
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMA	Congestion Management Agency
CMP	Congestion Management Program
CMPHS	Congestion Management Program Highway System
dB	decibels

DPM	diesel exhaust particulate matter
DAMP	Drainage Area Master Plan
EC-PCCP	embedded-cylinder prestressed concrete pipe
EDR	Environmental Data Resources
EIR	environmental impact report
EO	Executive Order
FMMP	Farmland Mapping and Monitoring Program
FESA	federal Endangered Species Act
Construction General Permit	General Permit for Stormwater Discharges Associated with Construction Activity
GWP	global warming potential
GHG	greenhouse gas
HCP	Habitat Conservation Plan
HCM	Highway Capacity Manual
HFCs	hydrofluorocarbons
IPCC	Intergovernmental Panel on Climate Change
ICU	Intersection Capacity Utilization
I	Interstate
I-105	Interstate 105
I-110	Interstate 110
I-15	Interstate 15
I-210	Interstate 210
I-215	Interstate 215
I-405	Interstate 405
I-5	Interstate 5
I-605	Interstate 605
I-710	Interstate 710
kWh	kilowatts per hour
Pb	lead
LOS	level of service
LC-PCCP	lined-cylinder prestressed concrete pipe
LIP	Local Implementation Plan
LST	localized significance threshold
LBT	Long Beach Transit
MTA	Los Angeles County Metropolitan Transportation Authority
LADOT	Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power

LID	Low-Impact Development
MEP	maximum extent practicable
CH_4	methane
MPO	Metropolitan Planning Organization
Metropolitan	Metropolitan Water District of Southern California
$\mu g/m^3$	micrograms per cubic meter
MBTA	Migratory Bird Treaty Act
$MMTCO_2e$	million metric tons of carbon dioxide
MSHCP	Multi-species Habitat Conservation Plan
MS4 Permit	Municipal Separate Storm Sewer Systems
MWDOC	Municipal Water District of Orange County
NAAQS	National Ambient Air Quality Standards
NCP	National Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRHP	National Register of Historic Places
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NO	nitric oxide
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
N_2O	nitrous oxide
NOC	Notice of Completion
NOI	Notice of Intent
NOP	Notice of Preparation
OCTA	Orange County Transportation Authority
OCWD	Orange County Water District
O_3	ozone
ppm	part per million
PM10	particulate matter 10 microns or less in diameter
PM2.5	particulate matter 2.5 microns or less in diameter
ppb	parts per billion
ppm	parts per million
PFCs	perfluorocarbons
psi	pound per square inch
PCS	Pressure Control Structure

PCCP	Pre-Stressed Concrete Cylinder Pipe
proposed program	Prestressed Concrete Cylinder Pipe Rehabilitation Program
Important Farmland	Prime Farmland, Unique Farmland, or Farmland of Statewide Importance
PEIR	Program Environmental Impact Report
PRC	Public Resources Code
ROG	reactive organic gas
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
RCRA	Resource Conservation and Recovery Act
Diemer Plant	Robert B. Diemer Water Treatment Plant
Omnitrans	San Bernardino County Public Transit
SRA	Seismic Response Area
SB	Senate Bill
SRAs	source receptor area
Basin	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SCAG	Southern California Association of Governments
SUSMP	Standard Urban Stormwater Management Plan
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SR	State Route
SR-118	State Route 118
SR-133	State Route 133
SR-241	State Route 241
SR-261	State Route 261
SR-27	State Route 27
SR-55	State Route 55
SR-57	State Route 57
SR-83	State Route 83
SR-90	State Route 90
SR-91	State Route 91
SWP	State Water Project
SWRCB	State Water Resources Control Board
SWPPP	Stormwater Pollution Prevention Plan
SO_2	sulfur dioxide
SF_6	sulphur hexafluoride

TT	Torrance Transit
TMDL	total maximum daily load
TAC	toxic air contaminant
TIA	Traffic Impact Analysis
EPA	U.S. Environmental Protection Agency
US-101	U.S. Highway 101
VMT	vehicle miles traveled
VOC	volatile organic compounds
WDRs	waste discharge requirements
WPCP	Water Pollution Control Plan
Basin Plan	water quality control plan
WQMP	water quality management plan

Chapter 1
Summary

1.1 Introduction

This chapter provides a summary of this Programmatic Environmental Impact Report (PEIR) for implementation of the Metropolitan Water District of Southern California's (Metropolitan) proposed Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program (proposed Program).[1] Metropolitan is the lead agency under the California Environmental Quality Act (CEQA). This PEIR has been prepared in accordance with CEQA (Public Resources Code [PRC] Section 21000 et seq.) and the Guidelines for Implementation of CEQA (State CEQA Guidelines) published by the Public Resources Agency of the State of California (California Code of Regulations [CCR], Title 14, Section 15000 et seq.).

This chapter highlights the major areas of importance in the environmental analysis for the proposed program ~~project~~ as required by State CEQA Guidelines Section 15123. It provides a brief description of the proposed program, a description of objectives and features of the proposed program, and a discussion of alternatives to the proposed program. In addition, this chapter includes a table summarizing: (1) the direct impacts that would occur from implementation of the proposed program; (2) the level of impact significance before mitigation; (3) the recommended mitigation measures that would avoid or reduce significant environmental impacts; (4) the level of impact significance after mitigation measures are implemented; and (5) whether or not additional environmental analysis is necessary before the program components can proceed to construction.

1.2 Program Description

Between 1962 and 1985, 163 miles of PCCP were installed throughout Metropolitan's service area. Under certain subsurface conditions, PCCP lines have an elevated risk of failure compared with other types of pipe. In response to this risk of failure, in the late 1990s, Metropolitan developed a program to inspect and assess all 163 miles of PCCP within its distribution system. In 2011, Metropolitan initiated a comprehensive program of inspections to evaluate and rank PCCP lines with the highest risk of failure. The data indicate that the following five pipelines represent the highest risk: Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, Second Lower Feeder, and Sepulveda Feeder.

Under the proposed program, Metropolitan would rehabilitate subsurface water distribution pipelines (also known as feeders[2]). Metropolitan is proposing to rehabilitate the PCCP portions of the five pipelines within its service area that were identified as having the highest risk as described above.

[1] The Notice of Preparation described this document as ~~was for~~ a combined PEIR and project-level EIR for the Second Lower Feeder. The project-level analysis is no longer a part of this PEIR. Project-level analysis will be provided at a later date.

[2] A feeder and a pipeline are equivalent. Unless referring to the formal name, *pipeline* will be used throughout this document.

1.2.1 Program Objectives

The proposed program is designed to maintain the reliability of Metropolitan's distribution system. The proposed program would minimize risks associated with failures by proactively rehabilitating each portion of PCCP, starting with the pipes that show the greatest risk of failure. This would help Metropolitan avoid possible unplanned system outages, thereby increasing service reliability for all customers within Metropolitan's service area.

The following are the objectives of the proposed ~~project and~~ program.

- Reduce the risk of unplanned outages
- Extend the service life of the pipelines
- Perform the rehabilitation work in a cost-effective manner
- Minimize the effects of rehabilitation efforts on Member Agency deliveries
- Minimize the loss of hydraulic capacity due to rehabilitation
- Improve system operational and emergency flexibility

1.2.2 Location

The proposed program would rehabilitate subsurface water distribution pipelines, which are located primarily in Metropolitan-owned rights-of-way and existing public roads. The pipelines that would be rehabilitated extend through the following cities and counties.

Allen-McColloch Pipeline

- Anaheim
- Irvine
- Lake Forest
- Mission Viejo
- Orange
- Tustin
- Yorba Linda

Calabasas Feeder

- Calabasas
- Hidden Hills
- Los Angeles

Rialto Pipeline

- Claremont
- Fontana
- La Verne
- Rancho Cucamonga
- Rialto
- San Bernardino
- San Dimas
- Upland
- Unincorporated San Bernardino County

Second Lower Feeder

- Anaheim
- Buena Park
- Carson
- Cypress
- Lakewood
- Lomita
- Long Beach
- Los Alamitos
- Los Angeles
- Placentia
- Rolling Hills Estates
- Torrance
- Yorba Linda
- Unincorporated Los Angeles County
- Unincorporated Orange County

Sepulveda Feeder

- Culver City
- Gardena
- Hawthorne
- Inglewood
- Los Angeles
- Torrance

1.2.3 Components

This section briefly describes the multiple components that compose the proposed program. More details for each of the components can be found in Chapter 3, *Program Description*. The proposed program consists primarily of pipeline rehabilitation and rehabilitation of other facilities along the pipeline, such as equipment vaults, valves, and other appurtenances. For pipelines, the term "rehabilitation" is used to describe either relining of the pipe or installation of supplemental or relocated lines. For vaults, valves, and other appurtenant structures, the term "rehabilitation" is used to describe either refurbishment or replacement.

The proposed program would consist primarily of rehabilitating the PCCP portions of the pipelines by lining them with steel. New liner segments would be inserted into existing PCCP pipelines by cutting into the existing pipelines, moving the new liner segments into position to reline the PCCP sections, and welding together the new liner segments. The cut sections of the PCCP would be encased in concrete after the new liner segments are welded together.

In some cases, it may be necessary to relocate existing PCCP with welded steel pipe in lieu of using steel liners to rehabilitate the PCCP. Portions of the PCCP would be left in place and new steel pipeline segments would be used. Relocation would involve excavating an open trench along the length of the existing pipeline or in an appropriate location in the vicinity of the existing pipeline, placing bedding for the new pipe to sit upon, and installing the new pipe. The dimensions of the open trench and the amount of soil that would be excavated would correspond to the depth and diameter of the new pipe. After installation the pipe trench is backfilled and the surface is restored.

Pipeline systems typically include equipment vaults that house water meters, isolation valves, check valves, bypass valves, back-flow preventer valves, and pressure-reducing valves. Equipment vaults are buried rectangular concrete structures that can be accessed from street level to perform maintenance and repairs. Existing vaults and the equipment inside them would be upgraded as part of the rehabilitation work.

Manholes typically provide access for maintenance and repairs and are spaced at regular intervals along the pipelines. The proposed program would retain the existing manholes and construct new manholes as needed to maintain access to buried vault structures and to the pipeline.

Air release/vacuum valves allow air into or out of the pipeline during dewatering or filling of pipe to control air pressure in the pipe. As part of the program, below-ground air valves along the pipeline would be relocated above ground to prevent potential cross-connection. Pumpwells and blowoff structures would be used to dewater pipelines prior to rehabilitation, some of which would be new. These would also be located within the underground equipment vaults. Electrical panels would be provided as part of the program, located in small enclosures along the pipelines.

1.3 Scope of the PEIR

1.3.1 Environmental Issue Areas Evaluated

The proposed program was initially evaluated through the Initial Study Checklist (Appendix A). The environmental analyses in Sections 4.2 through 4.14 include a detailed discussion and impact determination for the issue areas that were determined to have a potentially significant impact in the Initial Study Checklist. Metropolitan determined that a PEIR was necessary to address these potentially significant issues. The environmental issue areas for the proposed program evaluated in this PEIR include:

- Aesthetics
- Agriculture
- Air quality
- Biological resources
- Cultural resources
- Geology and soils
- Greenhouse gas emissions
- Hazards and hazardous materials
- Hydrology and water quality
- Land use and planning
- Noise
- Recreation
- Transportation and traffic
- Utilities and service systems

1.3.2 Program-Level Analysis

A program-level analysis generally evaluates the broad environmental effects of the program with the understanding that additional project-specific environmental review may be required for particular projects covered under the program. A project-specific environmental review is typically performed at the time projects are proposed for implementation and construction. A project-level analysis generally includes the necessary construction information and analyzes the specific environmental effects of the project elements.

This PEIR evaluates the rehabilitation activities of the five PCCP pipelines at a program level because design-specific information for each pipeline is not currently known and the timing of the individual rehabilitation efforts is still to be determined. Enough information is known, however, to evaluate the broad environmental effects of activities that could occur. In most cases, typical construction scenarios have been defined for the individual rehabilitation scenarios, allowing analysis of typical impacts that would result during rehabilitation. This PEIR identifies potential impacts of rehabilitation as follows.

- Impacts that can be known at the time of analysis and that would be less than significant under the typical construction scenarios. Where this is the case, no mitigation would be necessary and no further analysis would be needed before rehabilitation takes place, as long as that rehabilitation is consistent with the typical construction scenarios.
- Impacts that can be known at the time of analysis and would be significant under the typical construction scenarios, but where mitigation is available to reduce these impacts to less-than-significant levels. Where this is the case, no further analysis would be needed before rehabilitation takes place, as long as the rehabilitation is consistent with the typical construction scenarios and the identified mitigation is implemented as part of the rehabilitation.

- Impacts that can be known at the time of analysis and would be significant under the typical construction scenarios, but where mitigation is not available or mitigation could not reduce these impacts to less-than-significant levels. Where this is the case, no further analysis would be needed before rehabilitation takes place, as long as the rehabilitation is consistent with the typical construction scenarios and any identified mitigation is implemented as part of the rehabilitation.
- Impacts that cannot be known at the time of analysis (due to insufficient construction information) or where the location, timing, or severity of the impacts cannot be known. Where this is the case project specific ~~additional~~ environmental analysis may ~~will~~ be necessary before rehabilitation can take place, which would be documented in the appropriate project-level CEQA document(s). This PEIR identifies the additional analysis that may ~~would~~ be necessary.

1.4 Areas of Known Controversy

Metropolitan circulated a Notice of Preparation (NOP) and Initial Study Checklist to various agencies and other interested parties to disclose the proposed program and scope the environmental topics to be analyzed in this PEIR. As a result of the scoping period, several letters, emails, and correspondence were received that highlighted common topics. These topics are listed below. See Chapter 2, *Introduction*, for a summary of comments received during the NOP scoping period and where they are addressed within this PEIR.

- Concerns regarding traffic and circulation during rehabilitation activities as a result of activities primarily occurring within streets and public rights-of-way.
- Concerns regarding air quality during rehabilitation activities as a result of multiple pieces of construction equipment running at the same time and the concurrent overlap of rehabilitation activities.
- Concerns regarding noise during rehabilitation activities as a result of the use of large equipment and possible 24-hour construction.
- Concerns regarding sensitive habitat and species as a result of potential disturbance during rehabilitation activities.

Metropolitan filed a Notice of Completion (NOC) and circulated the Draft PEIR on September 1, 2016, starting the required 45-day comment period. Metropolitan received one letter after the comment period closed and no new areas of controversy were identified. (See Chapter 9, *Comment on Draft PEIR and Responses*.)

1.5 Alternatives Considered and Issues to be Resolved

Alternatives are analyzed in Chapter 5, *Alternatives*, of this PEIR. The objective of the alternatives analysis is to consider a reasonable range of potentially feasible alternatives to foster informed decision-making and public participation. The proposed PCCP Rehabilitation Program includes various methods of rehabilitation, including relining with collapsible pipe, relining with non-

collapsible pipe, and replacing the piping. A number of alternatives were previously identified and subjected to screening analysis as part of the inspection, evaluation, and ranking process. All of the alternatives for the proposed program were rejected as infeasible and would not meet the basic proposed program objectives, especially the primary objective to reduce the risk of pipeline failure.

As required by CEQA, a No Program Alternative is evaluated in the alternatives analysis for the PEIR. This evaluation compares the impacts of the proposed program to those that would occur if no rehabilitation program was approved. Under the No Program Alternative, rehabilitation would still need to occur because the pipelines and feeders would continue to age. Metropolitan would need to prevent failures through localized and as-needed improvements, but under the No Program Alternative these activities would not occur as part of a planned program. Much of this rehabilitation would thus occur as "urgent repairs" because of the lack of a systematic planning offered by the proposed program.

Because the No Program Alternative would eventually require the same types of repairs and rehabilitation of the five pipelines as the proposed program, and because these repairs would occur without preplanning and scheduling and often as urgent repairs, the ability to locate excavations and other rehabilitation work in a manner that avoids impacts may be lessened. Therefore, impacts under the No Program Alternative would be the same or greater than the impacts of the proposed program.

1.6 Summary of Environmental Impacts

Table 1-1 provides a summary of the environmental impacts that could result from implementation of the proposed program, and feasible mitigation measures that could reduce or avoid environmental impacts. For each impact, Table 1-1 identifies the significance of the impact prior to and following implementation of mitigation measures.

Table 1-1. Potential Impacts of Proposed PCCP Rehabilitation Program

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
4.1 Aesthetics				
Threshold AES-A: Have a Substantial Adverse Effect on a Scenic Vista	Less than significant	None	Less than significant	No
Threshold AES-B: Substantially Damage Scenic Resources, Including, but not Limited to, Trees, Rock Outcroppings, and Historic Buildings within a State Scenic Highway	Less than significant	None	Less than significant	No
Threshold AES-C: Substantially Degrade the Existing Visual Character or Quality of the Site and Its Surroundings	Less than significant	None	Less than significant	No
Threshold AES-D: Create a New Source of Substantial Light or Glare that Would Adversely Affect Day or Nighttime Views in the Area	Significant	**MM AES-1:** In order to prevent impacts related to spillover lighting into light-sensitive land uses, all safety and security lighting at construction work areas and staging areas will be directed downward and shielded to avoid light spilling over into residential areas.	Less than significant	No

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
4.2 Agriculture and Forestry Resources[3]				
Threshold AGR-A: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland) to Non-Agricultural Use	Less than significant	None	Less than significant	No
Threshold AGR-E: Involve Other Changes in the Existing Environment that, Because of Their Location or Nature, Could Result in the Conversion of Farmland to Non-Agricultural Use	Less than significant	None	Less than significant	No
4.3 Air Quality				
Threshold AQ-A: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan	Significant	**MM AIR-1:** All off-road diesel-powered construction equipment greater than 50 horsepower will meet Tier 4 emission standards. All construction equipment will be outfitted with ARB best available control technology devices. Any emissions-control device used by the contractor will achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by ARB regulations. A copy of each unit's certified tier specification, best available control technology	Significant and unavoidable	Yes

[3] CEQA thresholds b, c, and d for agriculture and forestry resources were determined to be less than significant in the Initial Study and were not addressed in this PEIR.

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		documentation, and ARB or SCAQMD operating permit will be provided to Metropolitan's Construction Inspector at the time of mobilization of each applicable unit of equipment.		
Threshold AQ-B: Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation	Significant	**MM AIR-1:** (see above)	Significant and unavoidable	Yes
Threshold AQ-C: Result in a Cumulatively Considerable Net Increase in Any Criteria Pollutant for Which the Region Is in Non-Attainment under an Applicable Federal or State Ambient Air Quality Standard	Significant	**MM AIR-1:** (see above)	Significant and unavoidable	Yes
Threshold AQ-D: Expose Sensitive Receptors to Substantial Pollutant Concentrations	Significant	**MM AIR-1:** (see above)	Significant and unavoidable	Yes
4.4 Biological Resources				
Threshold BIO-A: Have a Substantial Adverse Effect, either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations or	Potentially significant; to be determined at project level	**MM BIO-1, Take of Special-Status Species:** For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 300 feet of unpaved	Potentially significant and unavoidable; to be determined at project level	Yes, for projects that would require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service		areas (except for landscaped developed areas) and that contain special-status species, a qualified biologist will visit the site ~~to determine if any special-status species have the potential to occur on the site~~. If the biologist determines that special-status species may occur, preconstruction surveys for special-status plants and/or wildlife will be completed prior to any construction and consultation with the appropriate resource agency will occur (U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife), if necessary, to determine measures to address impacts such as avoidance, minimization, restoration, or compensation. **MM BIO-2, Impacts on Nesting Birds:** For any projects within the program that require vegetation removal during the nesting season for sensitive species protected by the Migratory Bird Treaty Act and California Fish and Game Code Section 3513, including street trees and other landscaping, a qualified biologist will inspect the vegetation to be removed no more than 10 days prior to tree/vegetation removal to determine whether nesting birds are present. If a nest is found, the biologist will determine the site-specific measures necessary to avoid disturbing the nest until nesting activity has ceased~~, including avoidance of the nest and establishment of an adequate buffer~~.		unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas).

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		~~Construction within the buffer area will not occur until the biologist has verified that nesting activity has ceased.~~ Nothing in this mitigation measure precludes the use of deterrent measures to prevent bird nesting.		
Threshold BIO-B: Have a Substantial Adverse Effect on Any Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans, Policies, or Regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service	Potentially significant; to be determined at project level	**MM BIO-3, Adverse Impacts on Riparian Habitat:** For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (except for landscaped developed areas) which contain riparian vegetation, a qualified biologist will visit the site to conduct pre-construction surveys ~~determine if any riparian habitat is present at the site~~. If the biologist determines that riparian vegetation is present, then habitat areas will be mapped and flagged for avoidance, or other measures will be taken, including applying for appropriate regulatory permits, as required ~~to protect the habitat, as appropriate~~. **MM BIO-4: Adverse Impacts on Sensitive Natural Communities:** Removal of or adverse impacts on sensitive natural communities will be minimized for rehabilitation projects in the program, except in accordance with	Potentially significant and unavoidable; to be determined at project level	Yes, for projects that would require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (except for landscaped developed areas)

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		adopted HCPs/NCCPs to which Metropolitan is a party for covered areas and covered activities. For such covered activities, Metropolitan will coordinate with the appropriate resource agencies and Metropolitan's contractors will adhere to all requirements in the applicable plan. For any activities not covered by an adopted HCP/NCCP, the following shall apply: For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (except for landscaped developed areas) and that contain sensitive natural communities, a qualified biologist will conduct pre-construction surveys ~~visit the site to determine if any sensitive natural communities may be present at the site. If the biologist determines that such communities may be present, preconstruction surveys~~ for sensitive natural communities will be required prior to any construction. These surveys will be conducted by a qualified biologist within 100 feet of ground-disturbing activities. If sensitive natural communities are located during the surveys, then habitat areas will be mapped and flagged for		

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		avoidance, or other measures will be taken including applying for appropriate regulatory permits, as required ~~to protect the habitat~~.		
Threshold BIO-C: Have a Substantial Adverse Effect on Federally Protected Wetlands, as Defined by Section 404 of the Clean Water Act, through Direct Removal, Filling, Hydrological Interruption, or Other Means	Potentially significant; to be determined at project level	**MM BIO-5, Adverse Impacts on Wetlands:** For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (including large landscaped areas, parks, and golf courses), which contain wetlands, a qualified biologist will visit the site to conduct pre-construction surveys ~~determine if wetlands may be present at the site~~. If the biologist determines that wetlands may be present, preconstruction wetlands jurisdictional delineations will be ~~required~~ performed prior to any construction. These delineations will be conducted by a qualified biologist within 100 feet of ground-disturbing activities. Any jurisdictional wetlands located during the delineations will be mapped and flagged for avoidance or other measures may be taken, including applying for appropriate regulatory permits, as required ~~or other measures will be taken to protect the habitat, as necessary~~.	Potentially significant and unavoidable; to be determined at project level	Yes, for projects that would require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (except for landscaped developed areas).
Threshold BIO-D:	Potentially significant; to	**MM BIO-6, Impacts on Wildlife**	Potentially significant	Yes, for projects

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
Interfere Substantially with the Movement of Any Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors or Impede the Use of Native Wildlife Nursery Sites	be determined at project level	**Movement:** For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas), a qualified biologist will ~~visit the site to~~ determine if any identifiable wildlife movement corridors are present at the site. If the biologist determines that such corridors are present, then wildlife movement corridors will be mapped, flagged, and avoided, or other measures will be taken to protect wildlife movement, as appropriate.	and unavoidable; to be determined at project level	that would require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas)
Threshold BIO-E: Conflict with Any Local Policies or Ordinances Protecting Biological Resources, Such as a Tree Preservation Policy or Ordinance	Potentially significant	**MM BIO-7, Conflicts with Local Policies Related to Biological Resources:** For any projects within the program that require vegetation removal, Metropolitan will determine if there are any applicable local policies related to biological resources and, if so, coordinate ~~consult~~ with the affected jurisdiction, as necessary, to determine appropriate requirements for vegetation removal and replacement. The contractor will be required to comply with any applicable requirements. Nothing in this mitigation will require the contractor to make improvements beyond the	Less than significant	No

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		existing condition prior to construction.		
Threshold BIO-F: Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan	Potentially significant; to be determined at project level	To be determined at project level.	Potentially significant and unavoidable; to be determined at project level	Yes, for project within the covered areas of an HCP or NCCP
4.5 Cultural Resources				
Threshold CUL-A: Cause a Substantial Adverse Change in the Significance of a Historical Resource	Potentially significant	**MM CUL-1, Historic Resources Protection Program:** To avoid impacts on built environment (historic) resources, prior to any rehabilitation involving excavation or concrete cutting, a qualified cultural resource specialist ~~an architectural historian~~ will ~~be retained to~~ determine whether there are any identified or eligible historical resources present and whether ~~to determine if~~ proposed construction activities could adversely affect these resources. If any resources could be adversely affected by construction, ~~the excavation site will be moved or other~~ measures will be taken ~~used~~ to prevent adverse impacts on the resource, as determined by the qualified cultural resource specialist ~~architectural historian~~.	Less than significant	Yes, for projects involving excavation or concrete cutting
Threshold CUL-B: Cause a Substantial Adverse Change in the Significance of an Archaeological	Potentially significant	**MM CUL-2, Avoidance or Monitoring of Archaeological Sites:** To avoid impacts on archaeological sites, prior to construction of any program element, such as pipeline alignments,	Less than significant	Yes

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
Resource		construction staging areas, laydown areas, or relocation of pipelines in new alignments, a new record search will be conducted to determine if additional sites or resources have been recorded on or adjacent to the proposed construction section. Reports will be examined to determine the condition of each site when recorded, if the site has been evaluated, and if destruction of the site is documented. Following this review, recorded archaeological sites that are within the pipeline route will be surveyed and their present conditions assessed (see MM CUL-4). Archaeological monitoring will be required during construction-related ground-disturbing activities if within the recorded area of a significant or potentially significant site and for a 50-foot buffer beyond the site boundary. A Native American monitor may be present if the site is prehistoric. If archaeological materials are discovered during monitoring, procedures outlined in MM CUL-~~4~~3 will be implemented. If it can be demonstrated that the site has been destroyed by previous construction or other actions and there is no potential for other buried parts of the site within the construction area, or if the site has been evaluated and determined not eligible for the CRHR, then monitoring will not be required. **MM CUL-3, Preconstruction Meeting for Identifying Cultural Resources:**		

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		To avoid impacts on previously unidentified cultural resources, all construction personnel will attend a preconstruction meeting that includes a discussion of cultural resources. The meeting will inform construction personnel on how to identify potential cultural resources during ground-disturbing activities and what to do if such potential resources are encountered. **MM CUL-4, Previously Unidentified Resources Encountered during Ground-disturbing Activities:** In the event that any potentially significant cultural resources are unexpectedly encountered during construction, work will be immediately halted and the discovery shall be protected in place. The contractor will halt construction within 50 feet of the exposed resource until a qualified cultural resources specialist evaluates the discovery. If the qualified cultural resources specialist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. This additional work may include avoidance, testing, and evaluation or data recovery excavation. Work shall be prohibited in the restricted area until Metropolitan provides written authorization.		

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		MM CUL-5, Archaeological Survey of Non-Pipeline Areas: Prior to rehabilitation activities of any program element each area will be subject to pedestrian survey for archaeological resources by a professional archaeologist retained by Metropolitan if ground-disturbing activities are slated to occur. If archaeological sites are recorded or found in these affected areas, the sites will be avoided to the greatest extent feasible. If a site cannot be avoided, site testing and evaluation by a professional archaeologist will be required. This may require test excavations, artifact analysis, evaluation for the CRHR and review by SHPO, and possibly data recovery excavation and reporting.		
Threshold CUL-C: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geologic Feature	Potentially significant	**MM CUL-6, Develop a Program to Mitigate Impacts on Paleontological Resources for Each Contract Package:** In order to avoid impacts on paleontological resources, the following mitigation program will be implemented for each contract package. This mitigation program will be conducted by a qualified professional paleontologist and will be consistent with the provisions of CEQA. This program will include the following: 1. Assessment of site-specific excavation areas to determine those areas that may be designated	Less than significant	Yes

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		as highly sensitive for unique paleontological resources to be monitored during ground disturbance. 2. ~~Development of a monitoring plan for these designated areas. Paleontological~~ In these designated areas, if any, paleontological resources monitors qualified to Society of Vertebrate Paleontology standards will be equipped to salvage fossils as they are unearthed and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitoring may be reduced or eliminated if some of the potentially fossiliferous units are determined upon exposure and examination by qualified paleontological resources personnel to have low potential to contain fossil resources. Also in these designated areas, all unique paleontological resources, if any, will be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates. 3. ~~Preparation of all unique paleontological resources to a point of identification and permanent preservation, including washing of sediments to recover~~		

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		~~small invertebrates and vertebrates. Identification and curation of unique~~ Unique paleontological resources, if any, will be identified and curated into an established, accredited museum repository ~~will be required~~. 4. Preparation of a report of findings including a summary of field work and laboratory methods, an overview of the program work area geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. If the monitoring efforts produced fossils, a copy of the report will also be submitted to the designated museum repository.		
4.6 Geology and Soils[4]				
Threshold GEO-A.I: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Rupture of a Known Earthquake Fault	Less than significant	None	Less than significant	No
Threshold GEO-A.II: Expose People or Structures to Potential	Less than significant	None	Less than significant	No

[4] CEQA threshold e for geology and soils was determined to be less than significant in the Initial Study and were not addressed in this PEIR.

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Strong Seismic Groundshaking				
Threshold GEO-A.III: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Seismically Related Ground Failure, Including Liquefaction	Less than significant	None	Less than significant	No
Threshold GEO-A.IV: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Landslides	Less than significant	None	Less than significant	No
Threshold GEO-B: Result in Substantial Soil Erosion or the Loss of Topsoil	Less than significant	None	Less than significant	No
Threshold GEO-C: Be Located on a Geologic Unit or Soil that Is Unstable, or that Would Become Unstable as a Result of the Project, and Potentially Result in On- or Off-Site Landslide, Lateral Spreading, Subsidence, Liquefaction, or Collapse	Less than significant	None	Less than significant	No

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
Threshold GEO-D: Be Located on Expansive Soil, Creating Substantial Risks to Life or Property	Less than significant	None	Less than significant	No
4.7 Greenhouse Gas Emissions				
Threshold GHG-A: Generate Greenhouse Gas Emissions, either Directly or Indirectly, that May Have a Significant Impact on the Environment	Significant	**MM-AIR-1:** (see above, under 4.3, Air Quality)	Significant and unavoidable	Yes
Threshold GHG-B: Conflict with Any Applicable Plan, Policy, or Regulation of an Agency Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases	Less than significant	None	Less than significant	No
4.8 Hazards and Hazardous Materials				
Threshold HAZ-A: Create a Significant Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials	Less than significant	None	Less than significant	No
Threshold HAZ-B: Create a Significant Hazard to the Public or the Environment through Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into	Less than significant	None	Less than significant	No

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
the Environment				
Threshold HAZ-C: Emit Hazardous Emissions or Involve Handling Hazardous or Acutely Hazardous Materials, Substances, or Waste within 0.25 Mile of an Existing or Proposed School	Potentially significant	**MM HAZ-1, Project-Level Hazardous Materials Sites Assessment Prior to Construction Activities:** To avoid exposure of construction workers, the public, or the environment to previously identified hazardous materials, during design, qualified Metropolitan staff or consultant(s) ~~will retain a professional environmental consultant~~ specializing in hazardous materials impact assessment will ~~to~~ conduct a project-level analysis to determine if there are existing hazardous materials sites in the vicinity of the construction site and potential for existing hazardous materials sites to affect construction. This assessment will consist of a search for environmental-related information present in publicly accessible databases. The information will be reviewed to determine if the construction footprint or adjacent properties are listed in the databases. If the construction footprint or adjacent properties are listed in the databases, qualified Metropolitan staff or consultant(s) ~~the professional environmental consultant~~ will determine the potential risk to construction workers, the public, or the environment from rehabilitation activities and identify all necessary avoidance, abatement, remediation, cleanup, disposal, monitoring,	Less than significant	Yes

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		reporting, notifications, and/or other measures to prevent significant impacts. **MM HAZ-2: Encountering Unreported Hazardous Materials:** To avoid exposure of construction workers, the public, or the environment to unreported hazardous materials in the soil, contractors will be required to inspect any site to be used for excavation, work zones, staging, or other rehabilitation-related activities prior to beginning construction. If odiferous, stained, or discolored soil is encountered, qualified Metropolitan staff or consultant(s) ~~a professional environmental consultant~~ specializing in the identification and handling of hazardous materials will be retained to assess the site. Identification of possible hazardous materials would typically involve soil samples and laboratory analysis. The suspect soil will be isolated, covered, and avoided by construction personnel until analytical results are reviewed by qualified personnel. Soils identified as hazardous or contaminated will be handled, transported, and treated in accordance with all federal, state, and local existing hazardous materials regulations ~~and based the professional environmental consultant's direction~~. **MM HAZ-3, Engineering Controls and Best Management Practices during Construction:** To minimize human		

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		exposure to potential contaminants, during construction contractors will employ the use of engineering controls and BMPs. Engineering controls and construction BMPs will include, but are not limited to, the following: • Contractor employees working on site handling hazardous materials on contaminated media will be certified in the Occupational Health and Safety Administration's 40-hour Hazardous Waste Operations and Emergency Response training. • Contractors will water or mist soil as it is being excavated and stockpiled or loaded onto transportation trucks. **MM HAZ-4, Encountering Contaminated Groundwater:** To avoid exposure of construction workers, the public, or the environment to contaminated groundwater, suspect water removed from excavation areas (but not including dewatering of the pipelines themselves) will be tested by a qualified laboratory ~~professional environmental consultant~~ specializing in the identification ~~and handling~~ of hazardous materials ~~and classified as hazardous or non-hazardous based on laboratory results~~. If groundwater is considered hazardous, Metropolitan will notify the Regional Water Quality Control Board and local Environmental Health agencies regarding assessment		

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		and remediation requirements.		
Threshold HAZ-D: Be Located on a Site That Is Included on a List of Hazardous Materials Sites and, as a Result, Create a Significant Hazard to the Public or the Environment	Potentially significant	**MM HAZ-1:** (see above). **MM HAZ-2:** (see above). **MM HAZ-3:** (see above). **MM HAZ-4:** (see above).	Less than significant	Yes
Threshold HAZ-E: For a Project Located within an Airport Land Use Plan or, Where Such Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport, Result in a Safety Hazard for People Residing or Working in the Project Area	Potentially significant	**MM HAZ-5, Construction Activities within Runway Protection Zones:** During the design phase for any projects in the program within the runway protection zones for Long Beach Municipal Airport or Van Nuys Airport (even where all construction would be accessed from outside the runway protection zones), project engineers will coordinate with the management of Long Beach Municipal Airport (Second Lower Feeder) or Van Nuys Airport (Sepulveda Feeder), as appropriate, to determine the methods of construction that will be necessary to avoid impacts on airport operations and safety. All operations and safety requirements of the airports will be incorporated into the construction design packages. All necessary requirements will be implemented during construction. **MM HAZ-6, Aboveground Elements in Runway Protection Zones:** To avoid airport operations and safety impacts, no permanent aboveground elements of the proposed program,	Less than significant	No

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		such as manhole covers, valve boxes, or electrical panels, will be located within runway protection zones (at Long Beach Municipal Airport for the Second Lower Feeder and Van Nuys Airport for the Sepulveda Feeder) without prior approval of the management of the appropriate airport.		
Threshold HAZ-F: For a Project within the Vicinity of a Private Airstrip, Result in a Safety Hazard for People Residing or Working in the Project Area	No impacts	None	No impacts	No

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
Threshold HAZ-G: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan	Potentially significant	**MM HAZ-7, Maintaining Emergency/Evacuation Routes:** To avoid impacts on emergency/evacuation routes, excavation sites will typically not be placed in roadways that serve as designated emergency/evacuation routes. If such streets cannot be avoided, the contractor will work with the local jurisdiction responsible for the emergency/evacuation routes to maintain adequate capacity. This will be accomplished by utilizing unused portions of the street right-of-way for travel lanes (such as temporarily prohibiting parking, restriping medians or parkway space, or detouring bike lanes) or by detouring the emergency/evacuation route to other roadways during construction. If detours are necessary, appropriate notification of emergency personnel and temporary signage will be used to direct emergency/evacuation traffic during construction.	Less than significant	No

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
Threshold HAZ-H: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Wildland Fires, Including Areas where Wildlands Are Adjacent to Urbanized Areas or where Residences Are Intermixed with Wildlands	Less than significant	None	Less than significant	No
4.9 Hydrology and Water Quality[5]				
Threshold WQ-A: Violate Any Water Quality Standards or Waste Discharge Requirements	Less than significant	None	Less than significant	No
Threshold WQ-C: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including through the Alteration of the Course of a Stream or River, in a Manner that Would Result in Substantial Erosion or Siltation On or Off Site	Less than significant	None	Less than significant	No

[5] CEQA thresholds b, g, h, and i for hydrology and water quality were determined to be less than significant in the Initial Study and were not addressed in this PEIR.

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
Threshold WQ-D: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including through the Alteration of the Course of a Stream or River, or Substantially Increase the Rate or Amount of Surface Runoff in a Manner That Would Result in Flooding On or Off Site	Potentially significant	**MM HYD-1, Implementation of a Grading and Drainage Plan:** Prior to construction of aboveground project facilities, Metropolitan will prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in flooding, erosion, or sedimentation potential in accordance with applicable regulations and in coordination with ~~requirements for~~ the county and/or the city in which the facility would be located. The ~~In accordance with local requirements, the~~ plan will identify and implement best management practices and other measures to ensure that potential increases in stormwater flows and erosion are minimized.	Less than significant	No
Threshold WQ-E: Create or Contribute Runoff Water that Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems or Provide Substantial Additional Sources of Polluted Runoff	Less than significant	None	Less than significant	No
Threshold WQ-J: Expose People or Structures to Inundation by Seiche, Tsunami, or Mudflow	Less than significant	None	Less than significant	No

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
4.10 Land Use[6]				
Threshold LU-A: Physically Divide an Established Community	Less than significant	None	Less than significant	No
Threshold LU-B: Conflict with Applicable Land Use Plan, Policy, or Regulation of an Agency with Jurisdiction over the Project Adopted for the Purpose of Avoiding or Mitigating an Environmental Effect	Less than significant	None	Less than significant	No
4.11 Noise				
Threshold NOI-A: Expose Persons to or Generate Noise Levels in Excess of Standards Established in the Local General Plan or Noise Ordinance or Applicable Standards of Other Agencies	Potentially significant; to be determined at project level	**MM NOI-2, Locate Excavation Sites Away From Noise-Sensitive Receptors ~~Receivers~~ Where Feasible:** A noise consultant will be retained during excavation site planning to determine if there are sensitive receptors ~~receivers~~ that could be affected by construction. Whenever possible, the excavation sites will be located in areas that would not affect sensitive receptors ~~receivers~~ or where receptors ~~receivers~~ can be shielded from construction noise. **MM NOI-3, Conduct Project-Level Noise Studies at Each Excavation Site Where Noise-Sensitive Receptors ~~Receivers~~ Are Present:** Project-level noise studies will be required at all	~~Potentially significant~~ Significant and unavoidable; locations to be determined at project level	Yes

[6] For threshold c for land use, see Threshold BIO-F in Section 4.4, *Biological Resources*.

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		excavation sites where sensitive receptors ~~receivers~~ are present, as required in the planning stage by MM NOI-2. Such noise studies will identify the ambient noise levels, the receptors ~~number of receivers~~ that would be affected, the noise levels the receptors ~~receivers~~ will experience during construction, and any measures that can be used to reduce noise levels. ~~Mitigation~~ All feasible mitigation measures identified in this noise study will be implemented. ~~and the amount of noise reduction that would occur with implementation of these measures.~~ **MM NOI-4, Locate Staging Areas Away from Noise-Sensitive Receptors ~~Receivers~~ or Provide Noise Attenuation:** Whenever feasible ~~possible~~, staging areas will be located in areas that would not affect sensitive receptors ~~receivers~~ or where receptors ~~receivers~~ can be shielded from staging-area noise. Where possible, noise ~~Noise~~ screening will include temporary noise barriers with openings in the barriers kept to the minimum necessary for access.		
Threshold NOI-B: Expose Persons to or Generate Excessive Groundborne Vibration or Groundborne Noise Levels	Potentially significant; to be determined at project level	**MM NOI-1, Locate Excavation Sites Away From Vibration-Sensitive Uses:** A noise and vibration consultant will be retained during excavation site planning to determine if there are vibration-sensitive land uses that could be affected by construction. Whenever	Less than significant	Yes

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		possible, excavation ~~Excavation~~ sites will then be located so that vibration impacts would not affect vibration-sensitive land uses or mitigation would be included to reduce vibration levels at vibration-sensitive land uses to less-than-significant levels.		
Threshold NOI-C: Result in a Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity, Above Levels Existing without the Project	No impact	None	No impact	No
Threshold NOI-D: Result in a Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity, Above Levels Existing without the Project	Potentially significant; to be determined at project level	**MM NOI-2:** (see above). **MM NOI-3:** (see above). **MM NOI-4:** (see above).	~~Potentially significant~~ Significant and unavoidable; locations to be determined at project level	Yes
Threshold NOI-E: For a Project Located within an Airport Land Use Plan or, Where Such a Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport, Expose People Residing or Working in the Project Area to Excessive Noise Levels	Less than significant	None	Less than significant	No
Threshold NOI-F: For a Project within the Vicinity	No impact	None	No impact	No

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
of a Private Airstrip, Expose People Residing or Working in the Project Area to Excessive Noise Levels				
4.12 Recreation				
Threshold REC-A: Increase the Use of Existing Neighborhood and Regional Parks or Other Recreational Facilities Such That Substantial Physical Deterioration of the Facilities Would Occur or Be Accelerated	Less than Significant	None .	Less than significant	No
Threshold REC-B: Include Recreational Facilities or Require the Construction or Expansion of Recreational Facilities, Which Might Have an Adverse Physical Effect on the Environment	No impact	None	No impact	No
4.13 Transportation and Traffic				
Threshold TRA-A: Conflict with an Applicable Plan, Ordinance, or Policy that Establishes Measures of Effectiveness for the Performance of the Circulation System, Taking into Account All Modes of Transportation, Including Mass Transit and Non-	Potentially significant; to be determined at project level	**MM TRA-1, Excavation Siting to Minimize Traffic Impacts:** Excavation sites would be located to avoid traffic impacts to the maximum extent feasible ~~possible~~, considering the logistical requirements for pipeline rehabilitation (e.g., adequate spacing, pipeline logistics) and other impacts such as habitat and noise. To the maximum extent feasible ~~possible~~, the	~~Potentially significant~~ Significant and unavoidable; locations to be determined at project level	Yes

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
Motorized Travel, and Relevant Components of the Circulation System, Including, but not Limited to, Intersections, Streets, Highways and Freeways, and Pedestrian and Bicycle Paths		following will be considered when locating excavation sites. • Whenever feasible ~~possible~~, where an off-road excavation site is available that would not result in other significant environmental impacts (e.g., to habitat, land uses), the off-road location will be used. • Whenever feasible ~~possible~~, excavation sites in roadways will be situated within medians where available, especially if the medians are not used for left-turn lanes and do not include large street trees or other features that would be difficult to restore after rehabilitation. • Whenever feasible ~~possible~~, excavation sites will be situated where the existing number of travel lanes can be maintained by temporarily removing parking (where adequate parking is available in the local area), temporarily relocating bike lanes to adjacent roadways, or temporarily restriping to provide narrower lanes (where they can be safely accommodated). • Whenever feasible ~~possible~~, excavation sites will be situated so that adequate access to adjacent properties can be maintained, including left-turn entrances. • Whenever feasible ~~possible~~,		

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		excavation sites will be situated so that bicycle and pedestrian circulation can be safely maintained, either by use of barriers or other safety features, or by providing alternative bicycle and pedestrian routes, with appropriate signage. Where feasible, siting ~~Siting~~ excavation near heavily used pedestrian areas, such as around schools, hospitals, and transit stops, will be avoided. Where feasible, siting ~~Siting~~ excavation in areas designated as safe routes to school will be avoided, or alternative routes will be developed in coordination ~~by working~~ with the local jurisdictions and school districts and providing appropriate signage, notification, and traffic controls. **MM TRA-2, Construction Traffic Control Plans:** Metropolitan and/or its contractors will coordinate with the counties of Los Angeles, Orange, and San Bernardino as well as each local jurisdiction through which the pipelines travels (see tables above) to develop construction traffic control measures and procedures prior to the start of construction on each project. Measures to reduce temporary construction traffic and transportation impacts on city streets may include, but not be limited to, the following: • Development of traffic control		

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		plans in coordination with local jurisdictions. The traffic control plans will be implemented and revised, as necessary and applicable. • Provision of advance written notification of construction activities to residences and businesses around each construction site. • Identification of travel routes and establishment of optimal arrival and departure times to minimize conflicts with residents, schools, and businesses, as feasible to minimize conflicts. • Provisions to detour pedestrians and bicyclists from ~~for~~ project activities ~~impacts~~ near or ~~/~~on the sidewalks and bike lanes. • Implementation of safety measures, such as signs, flaggers, cones, signage, and advance notice, as appropriate. • Covering of all open trenches when not in use or at the end of each work day, as applicable. **MM TRA-3, Maintaining Adequate Parking:** Whenever feasible ~~possible~~, excavation work zones and construction staging areas will not be sited in such a way that they result in inadequate availability of parking for adjacent land uses. If work zones or staging areas are planned for parking		

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
		areas, a parking study will be completed by a qualified traffic consultant prior to construction to identify if adequate parking would be available locally.		
Threshold TRA-B: Conflict with an Applicable Congestion Management Program, Including, but not Limited to, Level-of-Service Standards and Travel Demand Measures or Other Standards Established by the County Congestion Management Agency for Designated Roads or Highways	Less than significant	None	Less than significant	No
Threshold TRA-C: Result in a Change in Air Traffic Patterns, Including either an Increase in Traffic Levels or a Change in Location that Would Result in Substantial Safety Risks	Potentially significant	**MM HAZ-5:** (see above in 4.8, Hazards and Hazardous Materials). **MM HAZ-6:** (see above in 4.8, Hazards and Hazardous Materials).	Less than significant	No
Threshold TRA-D: Substantially Increase Hazards Due to a Design Feature or Incompatible Uses	Potentially significant	**MM TRA-2:** (see above).	Less than significant	No
Threshold TRA-E: Result in Inadequate Emergency Access	Potentially significant	**MM HAZ-7:** (see above in 4.8, Hazards and Hazardous Materials).	Less than significant	No

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
Threshold TRA-F: Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities or Otherwise Decrease the Performance or Safety of Such Facilities	Potentially significant	**MM TRA-1:** (see above). **MM TRA-2:** (see above).	Less than significant	Yes
4.14 Utilities and Service Systems				
Threshold UTIL-A: Exceed Wastewater Treatment Requirements of the Applicable Regional Water Quality Control Board	Less than significant	None	Less than significant	No
Threshold UTIL-B: Require or Result in the Construction of New Water or Wastewater Treatment Facilities or the Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects	No impact	None	No impact	No
Threshold UTIL-C: Require or Result in the Construction of New Stormwater Drainage Facilities or the Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects	No impact	None	No impact	No

Threshold	Significance Before Mitigation	Mitigation Measure(s)	Significance After Mitigation	Is additional analysis necessary at project level?
Threshold UTIL-D: Have Sufficient Water Supplies Available to Serve the Project from Existing Entitlements and Resources, or Are New and Expanded Entitlements Needed	No impact	None	No impact	No
Threshold UTIL-E: Result in a Determination by the Wastewater Treatment Provider that Serves or May Serve the Project that it Has Adequate Capacity to Serve the Project's Projected Demand in Addition to its Existing Commitments	No impact	None	No impact	No
Threshold UTIL-F: Be Served by a Landfill with Sufficient Permitted Capacity to Accommodate the Project's Solid Waste Disposal Needs	Less than significant	None	Less than significant	No
Threshold UTIL-G: Comply with Federal, State, and Local Statutes and Regulations Related to Solid Waste	Less than significant	None	Less than significant	No
4.15 Energy Conservation				
Threshold ENE-A: Use Energy in an Inefficient, Wasteful, or Unnecessary Manner	Less than significant	None	Less than significant	No

Chapter 2
Introduction

2.1 Purpose of the PEIR

This Programmatic Environmental Impact Report (PEIR) assesses the potential environmental effects of the Prestressed Concrete Cylinder Pipe Rehabilitation Program (proposed program). This PEIR has been prepared in accordance with the California Environmental Quality Act (CEQA) of 1970 (Public Resources Code [PRC] Section 21000 et seq.) and the Guidelines for Implementation of CEQA (State CEQA Guidelines) published by the Public Resources Agency of the state of California (California Code of Regulations [CCR], Title 14, Section 15000 et seq.). The Metropolitan Water District of Southern California (Metropolitan) is the Lead Agency under CEQA (PRC Section 21067, as amended), is responsible for the preparation of the PEIR, and will use this document to objectively review and assess the proposed program prior to approval or disapproval.

This PEIR is intended to: (1) inform decision-makers and the public about the potentially significant environmental effects of the proposed activities; (2) identify the ways that significant environmental effects can be avoided or reduced; (3) prevent significant, avoidable damage to the environment by requiring changes in the proposed program through the use of alternatives or mitigation measures, to the extent that Metropolitan determines the changes to be feasible, and (4) identify what additional project-level analysis will be necessary in later environmental documents (State CEQA Guidelines Section 15002; PRC Section 21002.1).

2.2 Scope of the PEIR

Metropolitan prepared an Initial Study for the proposed program (Appendix A).[1] The Initial Study indicated that the proposed program would result in less-than-significant impacts on the following environmental issue areas.

- Mineral resources
- Population and housing
- Public services

These issue areas do not require additional analysis in this PEIR.

The Initial Study indicated that significant impacts may occur with respect to the environmental issue areas for the proposed program that are listed below; these issue areas are analyzed in detail in this PEIR (Chapter 4, *Environmental Analysis*).

[1] The Notice of Preparation described this document as a combined PEIR and project-level EIR for the Second Lower Feeder. The project-level analysis is no longer a part of this PEIR. Project-level analysis will be provided at a later date.

- Aesthetics
- Agriculture
- Air quality
- Biological resources
- Cultural resources
- Geology and soils
- Greenhouse gas emissions
- Hazards and hazardous materials
- Hydrology and water quality
- Land use and planning
- Noise
- Recreation
- Transportation and traffic
- Utilities and service systems

One additional topic, energy conservation, was not addressed in the Initial Study and is also included in this PEIR.

On December 18 ~~17~~, 2014, Metropolitan circulated a Notice of Preparation (NOP) to responsible agencies and other interested parties. The Initial Study and NOP are included in Appendix A, and comment letters received on the NOP are included in Appendix B of this document. The topics in the comment letters and where they are addressed are summarized in Table 2-1.

Table 2-1. Summary of NOP Comments

Topic	Chapter Addressed
Transportation impacts during rehabilitation work	**Section 4.13, Transportation and Traffic** The typical construction scenarios are identified and the types of transportation impacts that would occur are evaluated. Requirements for construction traffic management plans are included in mitigation.
Impacts on listed, candidate, or sensitive species	**Section 4.4, Biological Resources** Biological resources within the program area, potential impacts, and Metropolitan's standard measures to minimize potential impacts on such resources are detailed.
Impacts on waters of the United States or jurisdictional wetlands	**Section 4.4, Biological Resources** **Section 4.9, Hydrology and Water Quality** Waters of the United States or jurisdictional wetlands within the program area, potential impacts, and Metropolitan's standard measures to minimize potential impacts on such resources are detailed.
Impacts related to air quality during rehabilitation work	**Section 4.3, Air Quality** Existing air quality conditions, anticipated emissions for typical construction scenarios, and measures to reduce potential impacts related to air quality are detailed.
General sequencing and timing of rehabilitation work and potential disruption of water service	**Chapter 3, Program Description** To the extent information is known, general sequencing of rehabilitation work is discussed. In all cases in which disruptions to service would be required, Metropolitan will coordinate with affected agencies in advance of shutdowns to ensure adequate service is maintained.

Topic	Chapter Addressed
Impacts on existing aboveground and subsurface infrastructure	**Chapter 3, Program Description** To the extent information is known, potential impacts related to existing aboveground and subsurface infrastructure are described. Also, Section 4.9, *Hydrology and Water Quality*; Section 4.14, *Utilities and Service Systems*; and Section 4.13, *Transportation and Traffic*, discuss potential impacts on infrastructure, and mitigation is identified when necessary.
Impacts on emergency service providers during rehabilitation work	**Section 4.8, Hazards and Hazardous Materials** **Section 4.13, Transportation and Traffic** Impacts and mitigation measures related to the timely provision of emergency services are discussed.

2.3 Format of the PEIR

This PEIR is organized as follows.

- **Chapter 1, *Summary*.** The summary includes a brief program description and a summary of environmental impacts and proposed mitigation measures that would reduce or avoid impacts determined to be significant, discussion of alternatives considered, description of areas of controversy known to the Lead Agency, and any issues to be resolved, including the choice among alternatives or how to mitigate significant impacts (State CEQA Guidelines Section 15123).
- **Chapter 2, *Introduction*.** This chapter describes the scope and purpose of the PEIR, provides a brief summary of the CEQA process, and establishes the document format.
- **Chapter 3, *Program Description*.** This chapter provides a description of Metropolitan, the location of the proposed program pipelines, the objectives of the proposed program, and proposed program features.
- **Chapter 4, *Environmental Impact Analysis*.** This chapter constitutes the main body of the PEIR and includes the detailed impact analysis for each environmental issue. The issue areas analyzed in this chapter include those listed in Section 2.2, *Scope of the PEIR*. For each issue area, Sections 4.1 to 4.14 include a discussion of methods of analysis, existing conditions, the thresholds identified for the determination of significant impacts, and an evaluation of the impacts associated with the proposed program. Where the impact analysis demonstrates the potential for the proposed program to have a significant impact on the environment, mitigation measures are provided that would minimize the significant effects. The PEIR indicates if the proposed mitigation measures would reduce impacts to less-than-significant levels. The cumulative impacts that would result from implementation of the proposed program in combination with other past, present, and reasonably foreseeable or probable future projects are discussed in each resource section. If additional analysis is necessary to identify site-specific environmental impacts, identify mitigation, or determine whether environmental impacts could be reduced to less-than-significant levels, the PEIR identifies that additional environmental analysis will be necessary at the project level.
- **Chapter 5, *Alternatives*.** This chapter provides a description of alternatives to the proposed program and an evaluation of their potential to reduce or avoid the proposed program's significant impacts.

- **Chapter 6, *Other CEQA Considerations*.** This chapter discusses additional topics required by CEQA, including unavoidable adverse impacts, growth inducement, and irreversible environmental changes.
- **Chapter 7, *References*.** This chapter includes a listing of applicable reference materials.
- **Chapter 8, *List of Preparers***. This chapter includes a list of individuals involved in the preparation of the PEIR, including Lead Agency staff and consultants.
- **Chapter 9, *Comment on Draft PEIR and Responses***. This chapter includes the comments received during the comment period of the Draft PEIR and the responses to the comments.

Changes were made to this Final PEIR after it was circulated during the comment period for clarification. These changes are indicated by underlined text (for additions) and strike-out text (for deletions). None of these changes were significant and do not require recirculation of the PEIR for public review.

Chapter 3
Program Description

3.1 Introduction

The Metropolitan Water District of Southern California (Metropolitan), the lead agency under the California Environmental Quality Act (CEQA), is proposing various rehabilitation activities under the proposed Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program (proposed program). Under this proposed program, Metropolitan would rehabilitate the PCCP portions of the following five buried water distribution pipelines (also known as feeders) within its service area.

- Allen-McColloch Pipeline
- Calabasas Feeder
- Rialto Pipeline
- Second Lower Feeder
- Sepulveda Feeder

Rehabilitation would occur at various locations along approximately 100 miles of the Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, Second Lower Feeder, and Sepulveda Feeder combined. This program-level environmental impact report (PEIR) analyzes the potential environmental impacts that would result from rehabilitation activities to occur along all five of the feeders.

This chapter provides an overview of Metropolitan and its service area, the objectives of the proposed program, the location of the activities that would be conducted as part of the proposed program, and key components of the proposed program.

3.2 Metropolitan and the Service Area

Metropolitan is a regional wholesaler that delivers water to 26 member agencies—14 cities, 11 municipal water districts, and one county water authority—which in turn provide drinking water to about 19 million people in Southern California. Collectively, the member agencies serve the residences and businesses of more than 300 cities and numerous unincorporated communities spread over a service area that includes 5,200 square miles of Los Angeles, Orange, San Bernardino, Riverside, San Diego, and Ventura counties.

Metropolitan was established in 1928 under an act of the California legislature to build and operate the Colorado River Aqueduct, which extends 242 miles from Lake Havasu on the California-Arizona border to Metropolitan's Lake Mathews reservoir in western Riverside County. In 1960, Metropolitan, along with 30 other public agencies, signed a long-term contract to enable construction of the 444-mile California Aqueduct, which extends from Northern California's Sacramento-San Joaquin Delta to several Southern California reservoirs, including Lake Silverwood, Lake Perris, and Lake Castaic. The California Aqueduct is owned and operated by the Department of Water Resources and currently provides water to Metropolitan and others under contract.

In addition to its two primary sources, Metropolitan's water sources include local supplies from groundwater storage agreements and water transfer arrangements with other water suppliers and users. Supplies from the Colorado River, Northern California, and local sources may vary substantially from year to year.

Metropolitan conveys more than 1.5 billion gallons of potable water to its member agencies per day through an extensive system of reservoirs and distribution facilities throughout its service area. The major facilities within Metropolitan's conveyance, treatment, and distribution system are summarized below.

- **Colorado River Aqueduct** – 242 miles of conduits, siphons, tunnels, and canals
- **Pumping plants** – five pumping plants, including Whitsett Intake (lift 291 feet); Gene (303 feet); Iron Mountain (144 feet); Eagle Mountain (438 feet); and Julian Hinds (441 feet)
- **Water treatment plants** – five water treatment plants, including the Joseph E. Jensen plant (Granada Hills), Robert A. Skinner plant (north of Temecula), F.E. Weymouth plant (La Verne), Robert B. Diemer plant (Yorba Linda), and Henry J. Mills plant (Riverside)
- **Conveyance and Distribution pipelines** – 830 miles of pipeline extending throughout the service area
- **Reservoirs** – 10 water storage reservoirs, including Diamond Valley Lake (near Hemet), Etiwanda (Riverside), Lake Mathews (Riverside), Lake Skinner (north of Temecula), Copper Basin and Gene Wash (desert region), Live Oak Reservoir (La Verne), Garvey Reservoir (Monterey Park), Palos Verdes Reservoir (Rolling Hills), and Orange County (Brea)
- **Hydroelectric plants** – 16 hydroelectric plants at various locations throughout the service area

3.3 Program Need

Metropolitan's water distribution system comprises over 830 miles of buried pipelines constructed of various materials, including steel, cast iron, reinforced concrete, and PCCP. Between 1962 and 1985, 163 miles of PCCP lines, ranging in size from 42 to 201 inches in diameter, were installed throughout Metropolitan's service area. The pipelines are generally located within Metropolitan-owned and public rights-of-way in both dense urban areas and remote rural regions.

PCCP is a composite-walled pipe that contains a steel cylinder that is spirally wound with high-strength steel prestressing wire. The wire is wrapped around a cement slurry bed and is then coated with cement mortar, which serves as a finished outer surface. PCCP has been used by water utilities in North America since the early 1940s and began to see widespread use in municipal, industrial, and irrigation systems in the 1960s.

Beginning in the early 1970s, an increasing number of PCCP failures were observed throughout the United States. Studies found that under certain conditions, PCCP lines may have a reduced service life and elevated risk of failure versus other types of pipe because of the potential of its prestressing wires to deteriorate, corrode, and eventually break. PCCP failures can occur without warning, and such failures can be catastrophic, compromising system reliability and resulting in unplanned major repairs, significant costs from service interruptions and repair work, and potential third-party damages.

Beginning in the late 1990s, Metropolitan initiated a program to inspect and assess the condition of all of its PCCP lines on a regular basis using state-of-the-art inspection techniques. Under this inspection program, all 27 PCCP lines within the distribution system were inspected every 3 to 7 years in order to gain information about the pipelines' baseline condition, to track prestressing wire breakage over time, and to identify distressed PCCP segments that require immediate repair. The inspection data were then used to assess the pipeline condition using industry-recognized risk factors such as wire breaks, repair history, internal pipe pressure, stray current from third parties, and location. Based on the results of the inspections, Metropolitan rated each of its 27 PCCP lines and then prioritized the pipelines based on need of rehabilitation. The following five PCCP lines were identified as having the highest need for rehabilitation: Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, Second Lower Feeder, and Sepulveda Feeder.

In September 2011, Metropolitan's Board authorized initiation of the PCCP Rehabilitation Program in order to develop a comprehensive, long-term plan for repair of Metropolitan's at-risk PCCP feeders. There were several drivers for the creation of this program: (1) the increasing number of failures of PCCP lines within the water industry, along with recognition of the risks associated with these failures; (2) trends of PCCP deterioration within Metropolitan's distribution system, based on monitoring data collected over a 14-year period; and (3) Metropolitan's experience with expensive, urgent repairs on PCCP lines. Based on this experience and on a risk assessment of Metropolitan's PCCP lines, staff concluded that approximately 100 miles of PCCP will have a reduced service life and need to be rehabilitated, especially in comparison with pipelines made of other materials.

3.4 Program Objectives

CEQA requires that an EIR include a statement of the objectives of the proposed action (State CEQA Guidelines 15124). The objectives of the proposed program are to:

- Reduce the risk of unplanned outages
- Extend the service life of the pipelines
- Perform the rehabilitation work in a cost-effective manner
- Minimize the effects of rehabilitation efforts on Member Agency deliveries
- Minimize the loss of hydraulic capacity due to rehabilitation
- Improve system operational and emergency flexibility

3.5 Program Locations

This section describes the general location and current condition of the five pipelines that would be rehabilitated as part of the proposed program. General characteristics and locations of the pipelines are summarized in **Table 3-1**, **Figure 3-1** shows the regional location of all pipeline alignments, and **Figures 3-2a through 3-2e** show the individual pipeline locations. Additional details regarding the environmental setting of each pipeline can be found in Section 4.0, *Introduction to Environmental Analysis*, and in the respective resource sections (Sections 4.1 through 4.14).

3.6 Program Components

Components involved in rehabilitation of PCCP can be categorized as primary, secondary, and associated temporary construction components. These components and the various methods needed to construct, install, and operate the components are summarized below and would be used as appropriate for rehabilitation of all five pipelines.

- Primary components include the different methods of rehabilitation considered for segments of the pipelines under the proposed program. These rehabilitation methods include steel cylinder relining with collapsed pipe, steel pipe sliplining with non-collapsed pipe, and replacement or new pipe construction.
- Secondary components include permanent appurtenant structures. These appurtenant structures are common to each of the five pipelines and can be further divided into buried (underground) structures and above-ground enclosures. Buried structures include vaults that house piping such as those at interconnections and equipment such as valves and meters. Above-ground enclosures, typically located on sidewalk median strips, house back-flow preventer valves and air vents. New vaults with new equipment would be constructed and existing appurtenant structures, including their equipment, would be rehabilitated as necessary.
- Temporary construction components include pipe portals, bulkhead, vault excavation sites, contractor work areas, and equipment staging areas.

3.6.1 Primary Components

3.6.1.1 Steel Cylinder Relining With Collapsed Pipe

Steel cylinder relining rehabilitation of PCCP would involve the following.

- Inserting collapsed steel cylinders into the existing PCCP line
- Expanding the collapsed cylinder into round to fill the PCCP pipe interior
- Welding the cylinder within the PCCP
- Filling the annular space between the steel cylinder and existing PCCP with concrete grout
- Applying a cement mortar to the interior surface of the steel cylinder

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THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Figure 3-1
Regional Vicinity Map
Metropolitan Water District PCCP Rehabilitation Program

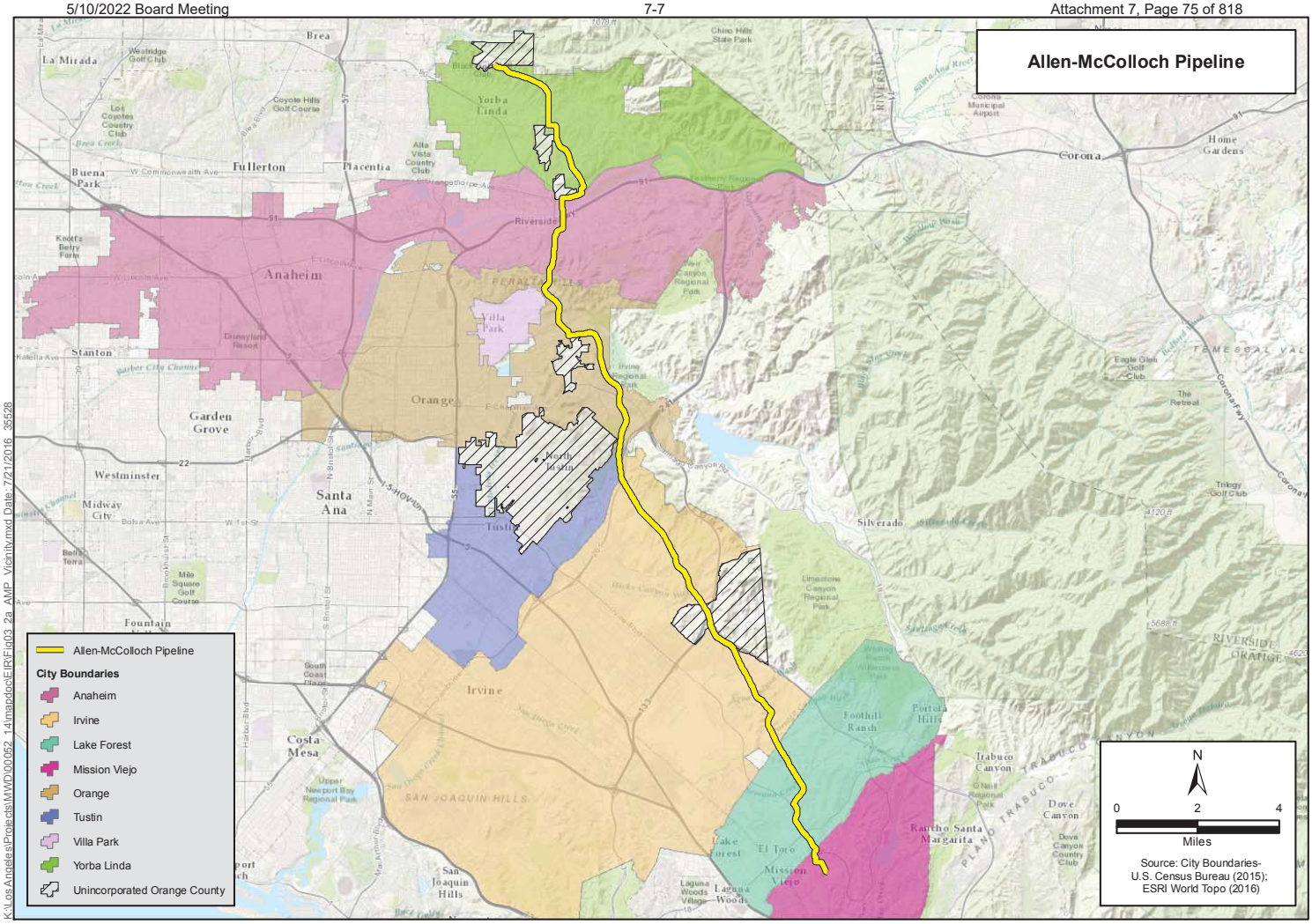

Figure 3-2a
Allen-McColloch Pipeline
Metropolitan Water District PCCP Rehabilitation Program

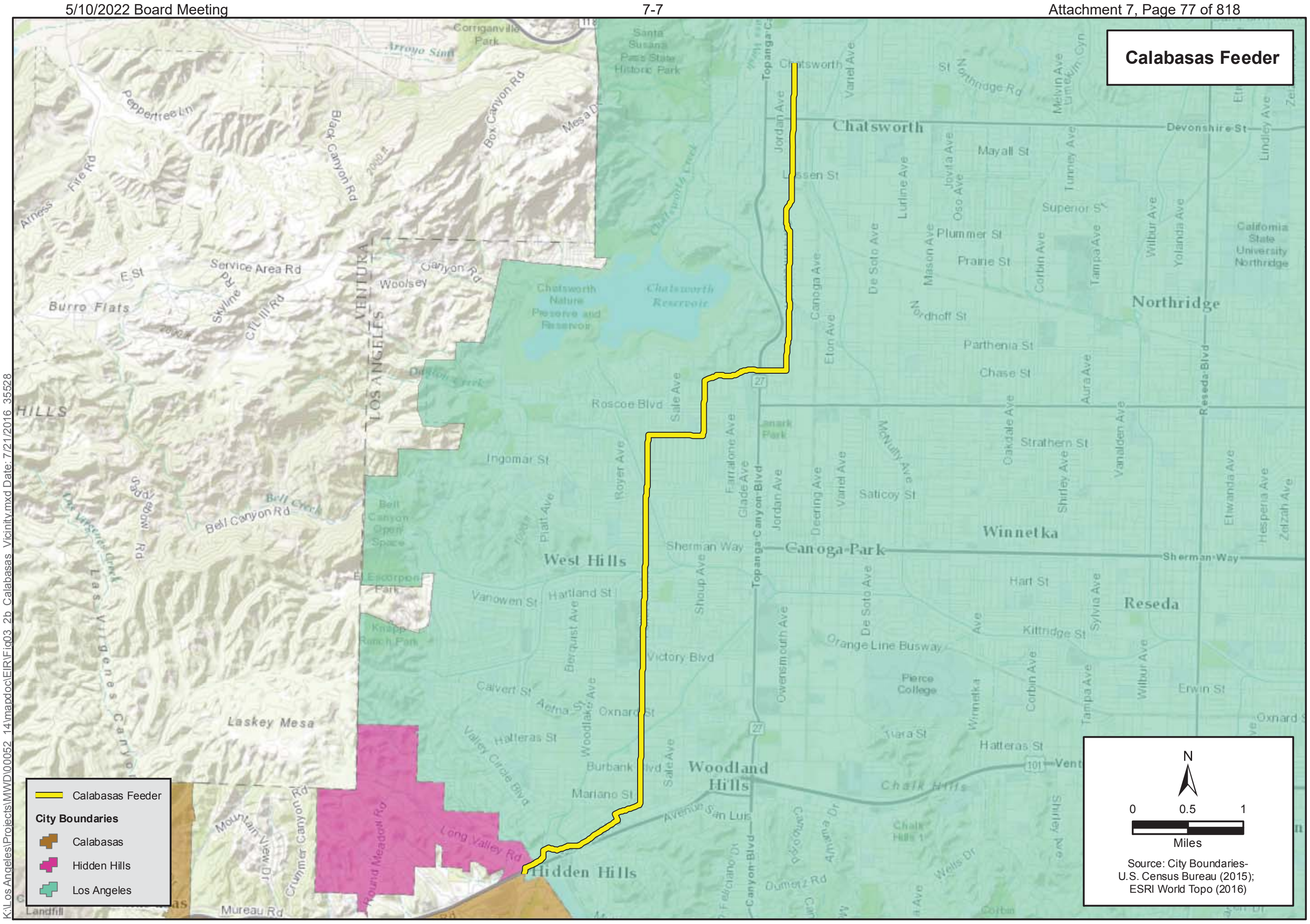

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Figure 3-2b
Calabasas Feeder
Metropolitan Water District PCCP Rehabilitation Program

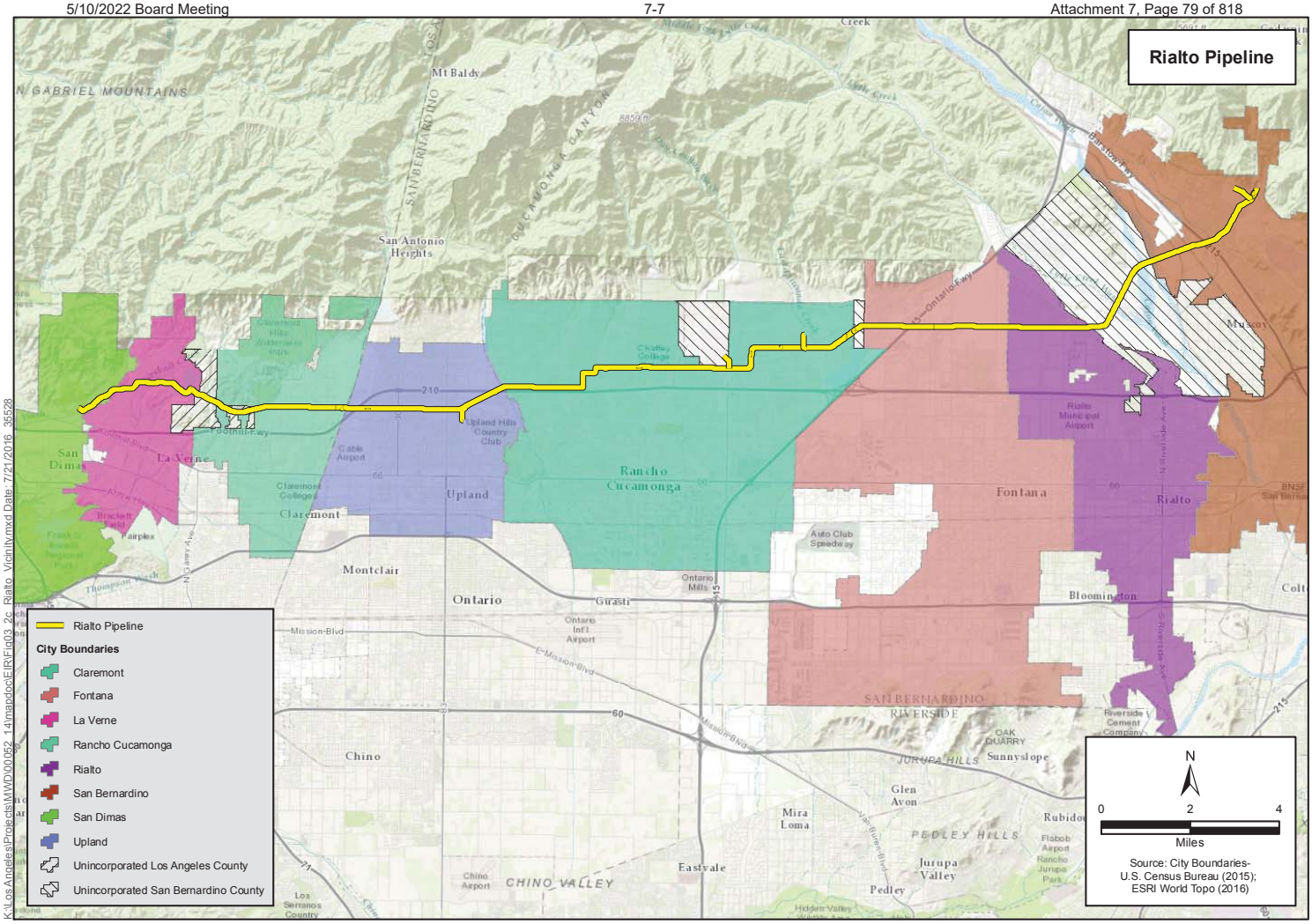

Figure 3-2c
Rialto Pipeline
Metropolitan Water District PCCP Rehabilitation Program

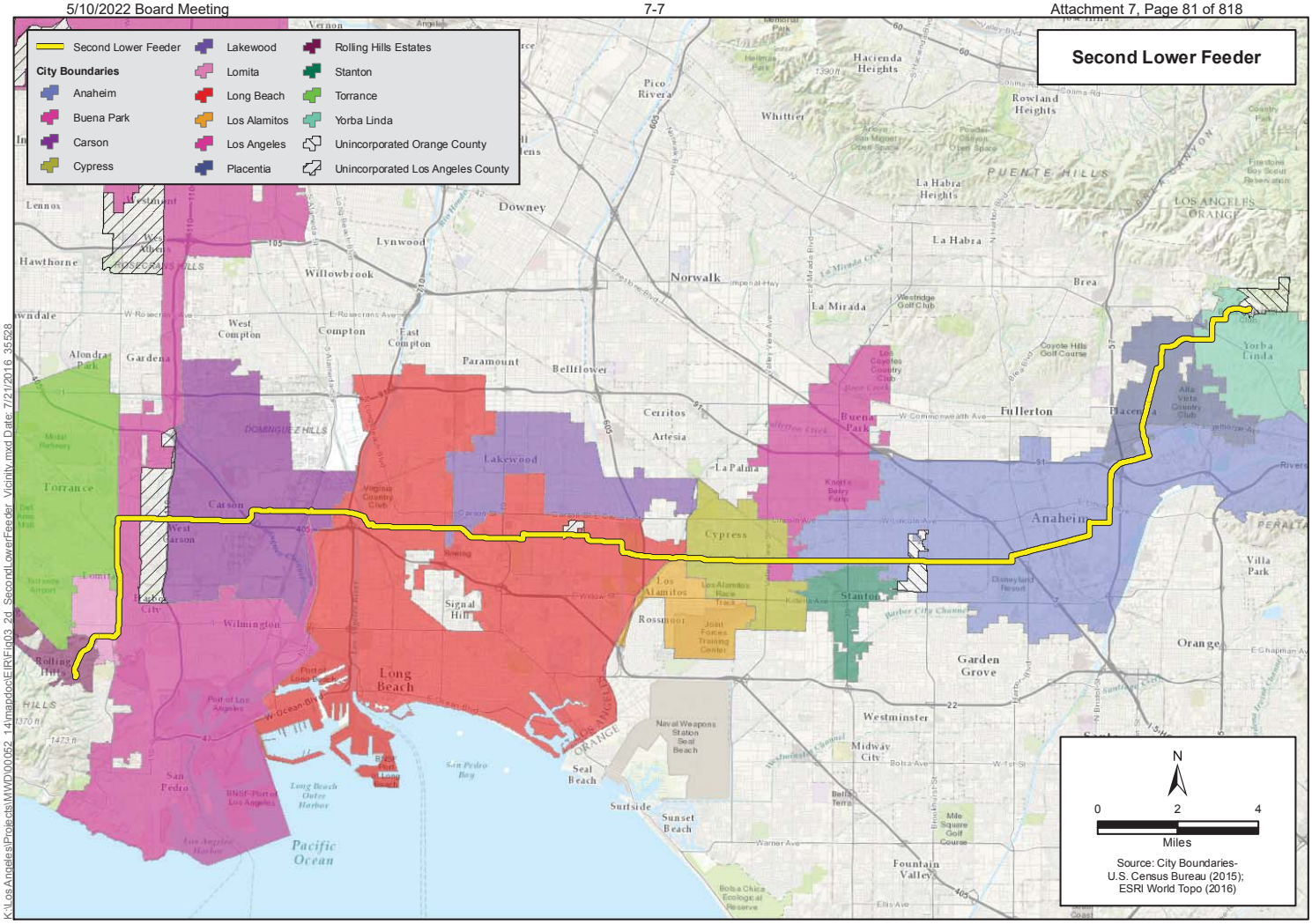

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Figure 3-2d
Second Lower Feeder
Metropolitan Water District PCCP Rehabilitation Program

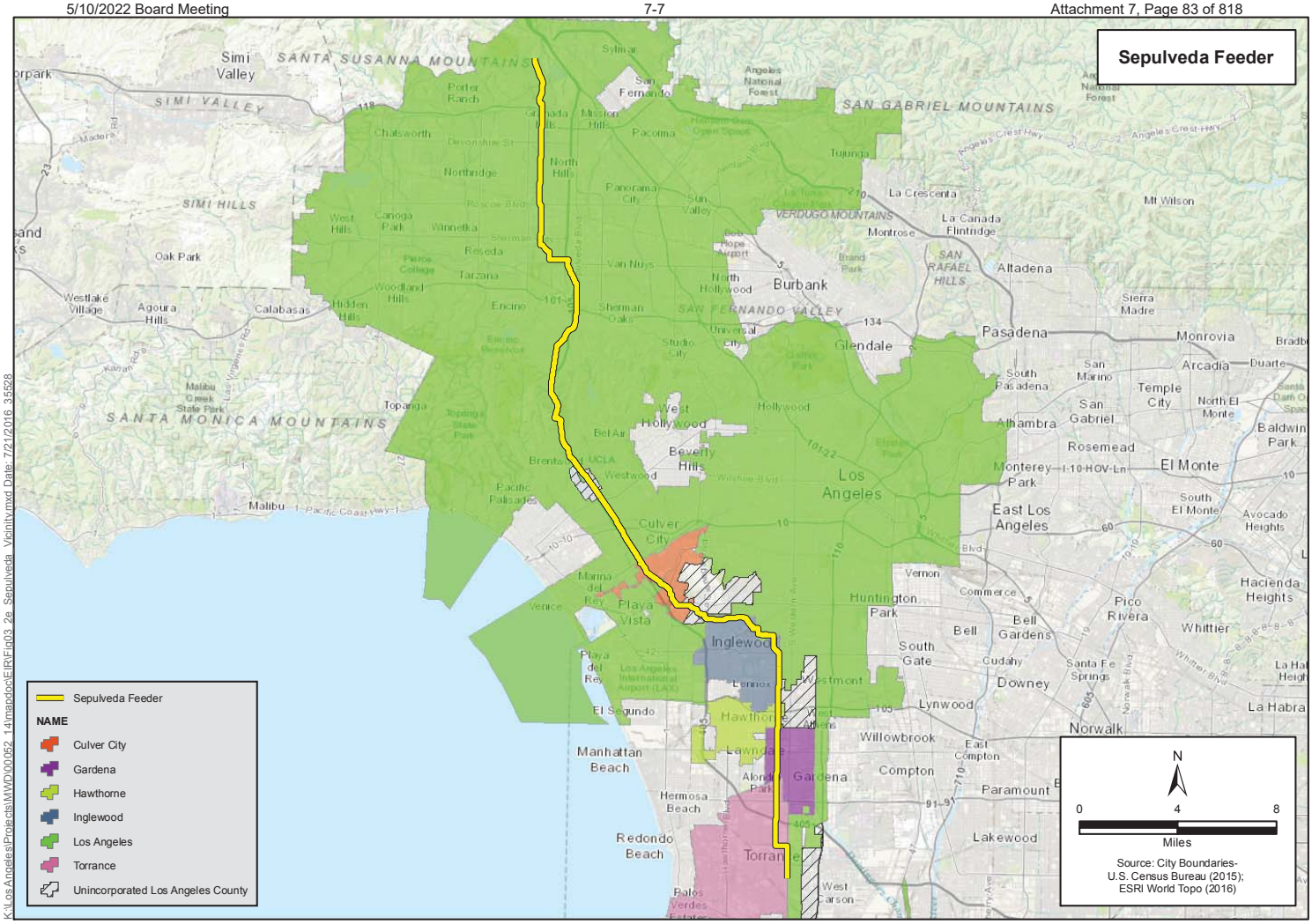

Figure 3-2e
Sepulveda Feeder
Metropolitan Water District PCCP Rehabilitation Program

Table 3-1. Summary of Proposed Program Pipelines

Pipeline	Construction Year	Total Length (miles)	Length of PCCP (miles)	Starting Location	Terminus Location	Counties	Cities
Allen-McColloch Pipeline	1970	26	9	Diemer Water Treatment Plant, City of Yorba Linda	El Toro Water District El Toro Reservoir, City of Mission Viejo	Orange	Anaheim, Irvine, Lake Forest, Mission Viejo, Orange, Tustin, and Yorba Linda
Calabasas Feeder	1975	9.3	9.3	West Valley Feeder No. 2, City of Los Angeles	Las Virgenes Municipal Water District Service Connection, City of Calabasas	Los Angeles	Calabasas, Hidden Hills, and Los Angeles
Rialto Pipeline	1970	30	16	California Department of Water Resources' Devil Canyon Facility, City of San Bernardino	San Dimas Power Plant Control Structure, City of San Dimas	Los Angeles, San Bernardino	Claremont, Fontana, La Verne, Rancho Cucamonga, Rialto, San Bernardino, San Dimas, and Upland
Second Lower Feeder	1966	39	30	Diemer Water Treatment Plant, City of Yorba Linda	Palos Verdes Reservoir, City of Rolling Hills Estates	Orange, Los Angeles	Anaheim, Buena Park, Carson, Cypress, Lakewood, Lomita, Long Beach, Los Alamitos, Los Angeles, Placentia, Rolling Hills Estates, Torrance, and Yorba Linda
Sepulveda Feeder	1970	42	37	Jensen Water Treatment Plant, City of Los Angeles	Second Lower Feeder Interconnection, City of Torrance	Los Angeles	Culver City, Gardena, Hawthorne, Inglewood, Los Angeles, and Torrance

The steel cylinder liner would be designed as a stand-alone pipeline that can accommodate full internal and external pressures on the line. The steel cylinder liner would only be slightly smaller than the existing PCCP line.

This method is best suited for pipe rehabilitation of long pipe reaches with varying pipe diameters resulting from previous repairs. Most of the construction activities occur within the pipe and site impacts occur primarily at the entry and exit portals to the pipeline. **Figures 3-3 and 3-4** show the steel lining that would be inserted into the existing PCCP. All of this work would be done inside the existing pipeline and at excavation sites along the existing pipeline alignment.

Figure 3-3. Collapsed Steel Pipe Section

3.6.1.2 Steel Pipe Sliplining with Non-Collapsed Pipe

Steel pipe sliplining rehabilitation of PCCP with non-collapsed pipe is similar to steel cylinder relining with collapsed pipe, but does not include installing and expanding collapsed pipe. Instead, it involves inserting full sections of cement-mortar-lined welded steel pipe into the existing PCCP line, welding adjoining pipe sections together, filling the annular space between the steel pipe and existing PCCP with concrete grout, and applying a cement mortar of the interior pipe surface at the welded joints. The steel pipe would be designed as a stand-alone pipeline that can accommodate full internal and external pressures on the line. The interior diameter of the steel pipe with sliplining would be smaller than the existing PCCP line and also slightly smaller than pipes relined with collapsed pipe. This method is less labor intensive than steel cylinder relining with collapsed pipe

and best suited for pipe rehabilitation of single pipe segments or shorter pipe reaches. Similar to steel cylinder relining with collapsed pipe, most of the construction activity would occur within the pipe and site impacts would occur primarily at the entry and exit portals to the pipelines.

Figure 3-4. Steel Sliplining with Non-Collapsed Pipe in Progress

3.6.1.3 New Pipe Replacement

New pipe may be constructed to replace an individual pipe segment or a new pipeline alignment in locations where the existing PCCP line cannot be rehabilitated with steel liners due to construction constraints, additional capacity requirements, or operational constraints. The new pipe would be sized to accommodate needed flows. Only two pipelines may require new or parallel pipe replacement.

- Allen-McColloch Pipeline in limited areas of Anaheim, Tustin, Irvine, Lake Forest, and Mission Viejo
- Second Lower Feeder in limited areas of Yorba Linda, Placentia, and Anaheim
- Rialto Pipeline in limited areas of Claremont, Fontana, La Verne, Rancho Cucamonga, Rialto, San Bernardino, San Dimas, and Upland

New pipe would generally be constructed via open trench methods and would involve laying 20- to 40-foot-long full sections of cement-mortar-lined and coated welded steel pipe. The open trench depths would be based on the depth of the existing pipeline (the pipe trenches for the Second Lower Feeder, for example, would be excavated to depths of 20 to 40 feet), and open trench widths would generally be sized to be a few feet wider than the pipe diameter (the additional width allows shoring

installation and proper pipe placement, backfilling, and compaction activities to take place). After installation of the new pipe, the trench is backfilled with soils that were previously removed, and the surface is restored. Due to its higher cost, installation of new pipe would only be considered where other methods are determined to be ineffectual.

Where possible, the existing PCCP line would be kept in service until the new pipe is completely constructed and operational. Upon completion of the tie-ins to the new pipe, pipe flows would be diverted to the newly constructed pipe and the existing PCCP line would likely be abandoned and taken out of service.

3.6.2 Secondary Components

Pipeline systems typically include equipment vaults that house water meters, isolation valves, check valves, bypass valves, back-flow preventer valves, and pressure-reducing valves, pump wells, and blow-offs. Valves are typically used in pipelines to regulate, throttle, and control flow or pressure, to prevent back-flow, and to relieve excess pressure or vacuum or to dewater the pipeline. Meters are typically used to monitor, measure, and control water usage in a water distribution system.

Equipment vaults are buried rectangular concrete structures that can be accessed from street level to perform maintenance and repairs. Vaults sizes would vary; for analysis purposes they are assumed to be 33 feet wide by 57 feet long by 28 feet high to house valves as large as 120 inches in diameter. (Many vaults would be smaller.) The top of the structure is typically several feet below ground surface and the structures are accessed via ladders from street-level hatches or manholes. **Figure 3-5** shows a typical buried equipment vault. Above-ground enclosures housing electrical panels are typically located along the sidewalk within the public right-of-way.

3.6.2.1 Buried Equipment Vaults

Existing vaults and the equipment inside them would be upgraded as part of the rehabilitation work. This could include modifying or enlarging the existing vault structure or building a new adjacent vault structure. Once the new vault is constructed and new equipment is installed, aged and deteriorated vaults may be demolished.

New vaults are planned to be added to the existing pipelines as part of the proposed program. These new vaults would require excavation around the existing pipeline. Once rehabilitation is complete, the excavation site would be backfilled with slurry, originally excavated soils would be properly disposed of off site, and the surface would be restored to existing conditions. This would involve repaving existing roads and replacing existing sidewalks.

3.6.2.2 Manholes and Above-Ground Enclosures

Manholes typically provide access for maintenance and repairs and are spaced at regular intervals along the pipelines. The proposed program would retain the existing manholes and construct new manholes as needed to maintain access to buried vault structures and to the pipeline. Existing manholes would be used for ventilation and for access to the interior of the pipeline for personnel, small equipment, and materials during rehabilitation of other program components (e.g., pipeline relining). New manholes would be installed at other planned locations.

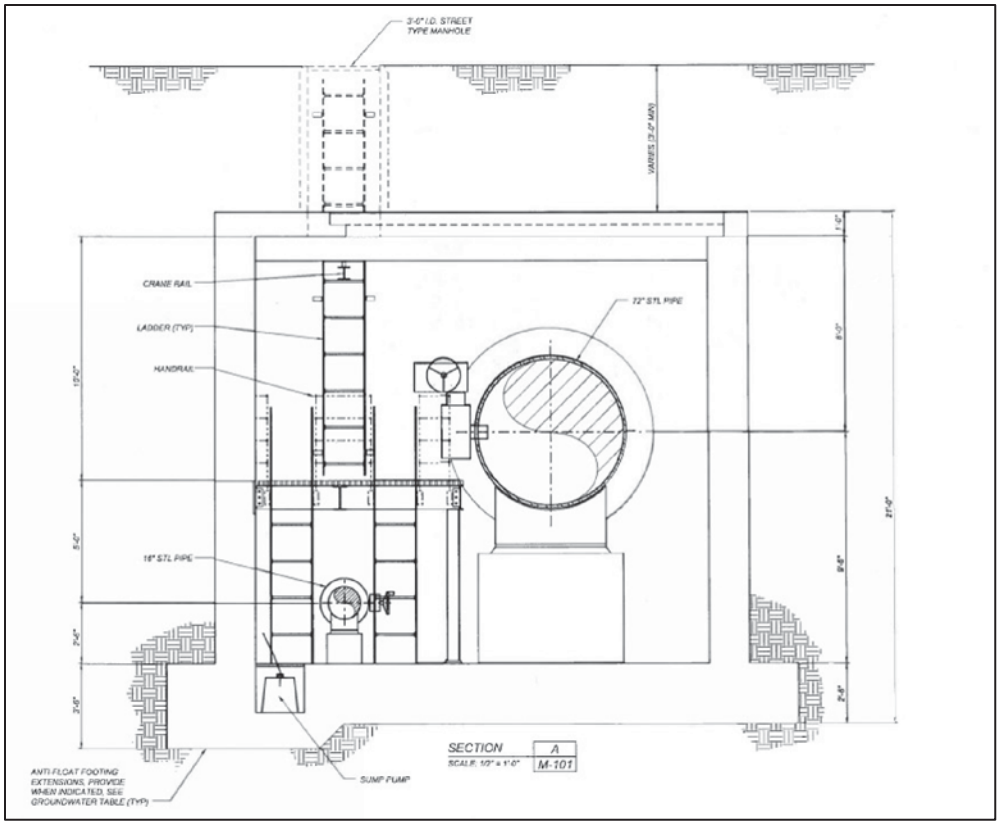

Figure 3-5. Valve Vault

The California Department of Public Health requires that all treated water supply systems be protected from potential contamination through air release and vacuum valves. Air release/vacuum valves allow air into or out of the pipeline during dewatering or filling of pipe to control air pressure in the pipe. These facilities are typically located in above-ground facilities, so any existing below-ground air release/vacuum valve assemblies along the pipeline would be relocated above ground. The relocation from below ground to above ground would require shallow trenching from the existing below-ground vault to a location along the sidewalk. For the purposes of this analysis, the trench is assumed to be approximately 24 inches wide and about 4 feet deep. The length of the trench would vary with the size of the street to be crossed. The new air valves would be located in small enclosures along the sidewalk and within the public-right-of way. **Figure 3-6** shows a typical above-ground valve enclosure.

Electrical panels that provide power to equipment from within the buried equipment vaults would be located within small above-ground enclosures along sidewalks. The size of the electrical panels would vary; for analysis purposes they are assumed to be approximately 8 to 10 feet high and approximately 3 feet wide. New electrical panels would be constructed as needed. In remote areas, telemetry equipment to communicate billing information from meters and information from other monitoring equipment to Metropolitan headquarters may also be installed. Vent stacks to vent air pressure from buried structures would also be rehabilitated or constructed as needed.

Figure 3-6. Typical Above-ground Valve Enclosure

3.6.2.3 Pumpwells and Blow-off Structures

Pumpwells and blow-off structures along pipelines are used to dewater the pipeline quickly into natural creeks, channels, waterways, and storm drains when a shutdown of the pipeline is necessary. Pumpwells allow temporary pumps to be placed to dewater a pipeline. Blow-offs allow gravity to dewater the pipelines. Pumpwells and blow-offs also provide access points for routine maintenance or pipeline inspection. These structures are typically located within the buried equipment vaults. In some cases, additional pumpwells and blow-off structures may be constructed during pipeline rehabilitation.

3.6.3 Temporary Construction Components

The following components would be present during rehabilitation only. After construction, these components would be removed and the sites returned to pre-construction conditions.

3.6.3.1 Contractor's Work Areas

The contractor's work area allows for construction activities to occur safely and efficiently within a construction site. These activities include excavation, shoring, pipe removal, pipeline rehabilitation, electrical panel installation, and construction support activities such as ventilation, dewatering, pipe disinfection, and refilling. The contractor's work area would be defined in the construction contract

drawings and would vary in size depending on existing constraints, such as road width and local traffic, and construction methods and equipment.

3.6.3.2 Excavation Areas

An excavation area is defined as the entry or exit portal that exposes the underground PCCP section of the pipe or equipment vault to be rehabilitated. It is the trench in which new pipe would be installed. Multiple excavation areas would be needed to rehabilitate the pipelines and buried equipment vaults included in the proposed program. Excavation areas would vary in size. For analysis purposes excavation areas are assumed to be approximately 20 feet wide and 50 feet long. Existing surface improvements, such as road pavements, sidewalks, and landscaping, would be removed at each excavation area, and soils would be excavated and temporarily removed from the site to expose the existing pipeline. Excavation areas are assumed to be approximately 15 to 20 feet deep; however, these dimensions would vary site-to-site based upon the size and depth of the pipe or vault to be rehabilitated. Other potential constraints include interferences with existing third-party utilities and soil conditions and depth to groundwater.

Spacing of excavation areas would also vary. For purposes of analysis, excavation areas are assumed to be spaced approximately 1,500 feet apart along the existing pipeline alignment (or approximately three per mile). Actual excavation area spacing would be determined by the number of horizontal and vertical bends within the existing alignment and in many cases would be more than 1,500 feet. Once rehabilitation is complete, the excavation area would be backfilled with soils originally excavated, and the surface of each excavation area and surrounding work zone would be restored to existing conditions. This would involve re-paving existing roads, replacing or repairing existing sidewalks, and replanting landscaping.

3.6.3.3 Staging Areas

Staging areas would be established to provide space to store pipes or liners, construction materials such as shoring boxes and pipe bedding materials, and equipment such as excavators and dump trucks. The staging area would also be used for the contractor trailer and worker parking. Typically, staging areas would be located adjacent to the contractor's work areas; however, potential space limitations could require that they be located farther away. Generally, staging areas would also accommodate existing surface improvements (e.g., trees) and require little modification.

The sizes of a staging area would be dependent upon proximity to the proposed program component, land leasing fees, contractor work methods, land uses in the vicinity, and the services the staging area would provide. Staging areas may be located on Metropolitan fee property or on private or public property. Agreements would be negotiated with the appropriate parties as necessary prior to establishing a staging area. Upon completion of construction work, the staging areas would be returned to their existing condition, as appropriate and pursuant to any agreements. For example, if the staging area was previously paved and the pavement was damaged during staging, Metropolitan would re-pave the area.

3.7 Program Coordination Activities

3.7.1 Construction Activities

Pipeline construction activities can be compared to a moving assembly line. The first step would be dividing the pipeline project into manageable lengths. For a pipeline where certain portions are to remain in service during construction, these lengths would be determined by the locations of existing or new isolation valves and pipeline bulkheads. These isolation valves and bulkheads would be used to isolate or stop water flows in sections of pipeline for repair, maintenance, or safety purposes. Each of the program pipelines has several isolation valves at strategic locations along the pipeline alignments.

The remaining construction activities are listed below. In a typical project, there would be multiple construction contracts, depending on the activity being performed.

- Mobilization of contractor's construction equipment
- Procurement and fabrication of equipment and piping
- Site preparation, including installation of temporary fencing and traffic controls
- Pre-construction survey, including locating and relocating third-party utilities to prevent accidental damage
- Trenching of entry and exit pipe portals and new pipeline alignments
- Pipeline relining and/or installation of new pipe construction
- Site excavation for equipment vaults and equipment vault rehabilitation, including installation of new valves, meters, and other appurtenant equipment
- Backfilling of the excavations and testing
- Site restoration

Most of the PCCP rehabilitation activities would take place along the existing pipeline alignments in urban areas, within Metropolitan-owned and public rights-of-way. Metropolitan would coordinate with its member agencies as needed (identified in sidebar) prior to and during rehabilitation activities, thus reducing the potential for a service interruption. In addition, prior to the commencement of construction activities, Metropolitan would coordinate with each affected local jurisdiction to minimize or mitigate noise and traffic conflicts during construction work hours as they may vary according to jurisdiction. Working with the local jurisdictions, Metropolitan would submit a traffic control plan, which would be approved by the respective jurisdiction.

Where possible, construction activities would occur during daytime hours, Monday through Friday and potentially Saturday. However, in order to prevent significant water delivery interruptions, accommodate a request from an affected jurisdiction, or expedite rehabilitation, it is likely that construction activities on some construction reaches would occur outside the hours allowed by local regulations. ~~could proceed outside of the normal daytime hours (i.e., during the nighttime or on Sundays). For this program-level analysis, only daytime, Monday through Friday, construction is analyzed, because impacts related to weekend and nighttime work would be site-specific. Therefore, any projects requiring work on weekends or at night would require additional environmental analysis and documentation prior to construction.~~

Protection and/or relocation work for existing utilities may be needed in some locations to avoid construction interferences and provide an adequate work area for rehabilitation activities. Metropolitan would work with utility owners to coordinate such activity on a case-by-case basis, depending on the particular circumstances of the program component.

Key construction activities are described below. Metropolitan would implement a number of environmental commitments as part of each activity as referenced below, where appropriate, and as fully described and detailed in Section 3.9, *Environmental Commitments*.

3.7.2 Pre-Construction and Post-Construction Activities

Procurement of valves and piping materials are considered long-lead items that are started prior to issuing a construction contract for pipeline rehabilitation. Some of the custom-designed valves would be procured directly by Metropolitan from valve suppliers, while off-the-shelf catalog valves would be procured by the construction contractor. The valves would be fabricated off site and shipped by truck or rail. Valves fabricated overseas may be shipped by vessel. Steel pipe liner would be procured from pipe suppliers by Metropolitan or by the construction contractor. The steel liner would be fabricated off site and shipped by truck or rail.[1]

Pre-construction and post-construction activities include the mobilization and demobilization of the contractor's forces and equipment necessary for performing the required work. Mobilization includes all activities and associated costs for transportation of the contractor's personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary general facilities for the contractor's operations at the site; and premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable. Demobilization includes all activities and costs for transportation of personnel, equipment, and supplies not required or included in the contract from the site, including the disassembly, removal, and site cleanup of offices, buildings, and other facilities assembled on the site specifically for this contract.

3.7.3 Site Preparation

Each program component would first require site preparation. This would include establishing specific work zones, placing temporary fencing and signage around the construction work zones, and establishing local and regional staging areas for storing construction equipment and materials. Procedures described in approved Temporary Construction Permits would also be implemented at this time. These would include requirements for directing traffic, establishing traffic detours,

[1] At this time, fabrication is anticipated to occur in Adelanto, California and in Mexico.

establishing and installing signage for new temporary speed limits, and placing traffic control signs to ensure safe vehicular, pedestrian, and bicycle traffic during rehabilitation activities. Traffic control measures would remain in place until site restoration is complete. Because much of the PCCP rehabilitation activities would take place along the existing pipeline alignments in urban areas, within Metropolitan-owned and public rights-of-way, features such as pavements, sidewalks, and vegetation would be removed as part of site preparation work.

3.7.4 Excavation Areas

Excavation to access the existing pipeline would be the first major construction activity for pipeline rehabilitation and for rehabilitation of the equipment vault structures. In most cases, steel shoring would be placed within the excavated area to minimize the size of the excavation area. The depth of the excavation site depends on the program component as detailed in Section 3.6.1, *Primary Components*. Soils removed as part of excavation may be stockpiled within the footprint of the program component and reused or trucked to and stored at one of the staging areas. Soils identified as hazardous or contaminated would be handled, transported, and treated per all federal, state, and local existing hazardous materials regulations.

As part of this activity, third-party utilities would be identified and relocated, if necessary, and groundwater dewatering, if required, would occur. Water removed from the excavation would be tested prior to discharge into either existing stormwater drains or flood control facilities or disposed of off site in accordance with applicable laws and regulations.

3.7.5 Rehabilitation Activities

3.7.5.1 Steel Cylinder Relining with Collapsed Pipe and Steel Pipe Sliplining with Non-Collapsed Pipe

After the pipe has been isolated and dewatered, access to the pipeline would be made through the excavation areas. Within an excavation area, specialized saws would be used to cut out a section of the existing PCCP to create an entry portion that would be used to provide access to the pipe being rehabilitated. The cut portion would be removed from the excavation area by crane.

For all confined space work, blowers and fans would be needed to maintain safe subsurface working conditions. These blowers and fans would be set up around the site of the existing buried structures within the street once site preparation occurred, as described above.

For steel cylinder relining with collapsed pipe, new collapsed steel liners would be lowered into the excavation site, compressed using steel bands, and then inserted into the pipeline entry portal by crane. Customized pipe carrier equipment would be used to slide the steel liner into its final position inside the existing pipeline. Once the liner is placed, the bands would be cut and the steel liner would be expanded into circular pipe and welded in place. (For steel pipe sliplining with non-collapsed pipe, welding is only necessary at pipe section ends.) After welding, grouting would take place by injecting grout into the space between the existing pipeline and the new liner. Mortar lining then occurs by spraying mortar on the inside of the steel liner for protection.

After mortar lining is applied, all construction workers, equipment, and materials would be removed and the pipe cleaned of all debris and rinsed with water. Rinse water would be collected, filtered to remove solids, treated as necessary to meet regulatory requirements, and then discharged from the

pipe to stormwater piping or channels. Once rehabilitation is complete, Metropolitan would restore service to its customers.

3.7.5.2 New Pipeline Replacement

Pipeline replacement would involve removing existing pipe and installing new pipe. New pipe construction is needed in locations where existing pipe cannot be rehabilitated with steel liners due to construction constraints, hydraulic capacity requirements, or operational constraints. The new pipe would be sized to accommodate needed flows and would generally be constructed in a new alignment that is parallel to the existing pipe.

For new pipeline replacement, the pipeline would first be divided into manageable lengths. Pipeline construction would then proceed as follows.

1. Backhoes or excavators would be used to excavate a pipeline trench, with the bottom of the trench extending 2 to 3 feet below the existing pipe.
2. The excavation would be shored with vertical walls in congested urban areas, or sloped without shoring in open areas.
3. The existing pipe would be then demolished and removed.
4. The bottom of the excavation would be prepared with bedding material.
5. The new pipe would be installed using a crane or large excavator.
6. Each pipe section would be welded to each other.
7. After welding, the new pipe may be encased in concrete, as applicable.
8. The trench would be backfilled with cement slurry, sand backfill, native material, or a combination thereof.
9. The line would then be disinfected and put into service.

The site would then be restored to its preconstruction condition, and any excess materials would be removed and hauled off site.

3.7.5.3 Pipeline Isolation for Rehabilitation Activities

Preventing water flow in sections of pipeline for maintenance or safety purposes would be accomplished using isolation valves or temporary bulkheads. Regarding isolation valves, each pipeline has several isolation valves at strategic locations along the pipeline alignment that can be used to isolate or stop water flows. These isolation valves are normally left open; however, when repairs or maintenance of a pipeline are needed, the isolation valves would be shut to stop the flow of water.

In some circumstances, when shorter sections of pipeline need to be isolated to allow continued service to member agencies, temporary pipeline bulkheads would be installed instead. Bulkheads work similarly to isolation valves, but instead of shutting off flow using a mechanical device, a physical structure or partition composed of steel plates welded to the liner interior is installed to stop water flow. Bulkheads may be required along various sections of the pipelines to isolate one section of the pipeline from another and to ensure continued and reliable water supply delivery to member agencies while rehabilitation is being performed on another section of pipe. Bulkheads would be installed temporarily and may be required to stay in place up to 6 months while the

relining work is being completed. Temporary bulkheads would be removed once rehabilitation has been completed.

The actual dimensions of the bulkhead excavation site would be similar to that of an excavation to an access portal for pipe relining or sliplining. Once the bulkhead is installed, the original soil that was removed to access the pipeline and insert the bulkhead would be backfilled. The surface of each bulkhead location and surrounding excavation area would then be restored to its pre-construction conditions. In some locations, temporary site restoration would remain in place until the bulkhead is removed. Thereafter, permanent surface restoration would be completed. A manhole may be installed at some locations to provide access to the pipeline after rehabilitation. Some bulkhead sites would remain open so that other program components could be rehabilitated. At other locations, soils would be backfilled and covered once the bulkhead was in place.

3.7.5.4 Equipment Vaults

Similar to pipe relining and sliplining rehabilitation, access to existing equipment vaults would be accomplished through the excavation areas after the pipe has been isolated and dewatered. Within an excavation area, the concrete lid of the existing vault would be lifted and the existing equipment would be removed and replaced. For rehabilitation of smaller equipment, excavation may not be required and equipment could be replaced by access through existing manholes.

Construction of new equipment vault structures would require larger and deeper excavations in order to shore the excavation and construction vaults using reinforced concrete materials. The vault structure would be constructed first and then the equipment would be installed, using large cranes. In some cases, existing vaults would be demolished.

For demolition of the existing vault structures, Metropolitan would follow standard demolition guidelines, including the following.

- No stockpiling of demolition debris would be allowed on site.
- Removal and disposal of all material would be performed in accordance with federal, state, and local laws governing waste disposal.
- Blasting would not be permitted.
- All demolition requirements (including removal of driveways, pavement, sidewalks, or curbs) would be included in the final design phase.
- A list of salvage items would be prepared and reviewed by Metropolitan during final design.

3.7.5.5 Air Release and Vacuum Valves

In the locations requiring air valves to be relocated above ground, construction workers would remove existing air valves and associated appurtenance structures. They would identify on-site utilities and relocate them during rehabilitation, as required. Trenching would then occur from the location of the existing air valve, across the existing road, to an existing sidewalk. The trench would be covered with large plates at night when construction is not occurring to allow cars to use the existing road. At the location on the sidewalk, a new air valve would be installed and enclosed in a metal box, which would sit on a new concrete pad. The trench would contain a pipeline of less than 12 inches in diameter extending from the existing manhole to the new air valve location on the sidewalk.

3.7.6 Site Restoration

Once rehabilitation of a program component is complete, if excavation was required, the following site restoration activities would be performed.

- The excavation site would be backfilled and compacted and the ground surface would be restored to its prior conditions. Previously excavated materials would be used for backfill, where appropriate.
- Excess excavation materials would be hauled off site nearby to project sites requiring imported fill or to landfills.
- Salvage items would be returned to Metropolitan.
- Remaining items would be removed from the footprint of the program component or the staging areas and disposed of.
- Landscaping would be replaced and restored to pre-construction conditions.
- Traffic control measures would be removed after site restoration activities are complete.

Site restoration would also include restoration of existing roads or sidewalks damaged during rehabilitation activities. This could involve patching discrete locations that were opened to access the pipeline or air valve, or it could involve curb-to-curb pavement of larger sections of existing roads. The decision for the type and size of re-paving would be made during discussions with local jurisdictions about traffic control measures. Once rehabilitation of a specific contract package or section of pipeline is complete, staging areas would also be restored to pre-existing conditions.

3.7.7 Construction Equipment and Hauling

Construction equipment required for various proposed program components is listed in **Table 3-2**.

Program equipment and debris hauling would utilize the pipeline right-of-way to get to adjacent surface streets, and then continue to main arterial routes. Depending on the pipeline, average hauling distance is anticipated to be approximately 20 miles.

The total number of vehicles in use would likely vary. Approximately two daily truck trips would be required for site preparation and excavation and site restoration. Eight daily truck trips would be required for rehabilitation of the pipeline, air valves, and valves. While some variation may occur in actual numbers, types, or frequency of use of vehicles during the work, anticipated truck usage is estimated to be the following.

- Four dump trucks (2 trips per day each for a total of 8 trips per day)
- Six semi-trucks with trailers (2 trips per day each for a total of 12 trips per day)
- Four water trucks (8 trips per day each for a total of 32 trips per day)
- Twenty-four pick-up trucks (4 trips per day each for a total of 96 trips per day)

Table 3-2. Common Construction Equipment Needed for Rehabilitation

Equipment	Program Component					
	Excavation Site for Pipeline Relining	Bulkhead	Staging Area*	Pipeline Replacement/ Parallel Piping	Vault Structure/ Meter Manhole	Air Valve Relocation
Asphalt Paver	X	X	X	X	X	
Backhoe Loader	X		X	X		X
Confined Space Blower/Fan Ventilation Fan		X	X	X		X
Crane	X	X	X	X	X	
Delivery Trucks	X	X	X	X	X	X
Drum Roller Compactor	X		X	X		
Compactor (soils/asphalt)	X	X	X	X	X	X
End Dump Truck	X	X	X	X	X	X
Excavator	X	X	X	X	X	
Flat Bed Truck	X		X	X		
Fork Lift	X		X	X	X	
Front End Loader	X	X	X	X	X	
Maintenance Utility Truck with Mounted Crane			X	X	X	X
Pneumatic Tools	X	X	X	X	X	X
Slip Lining Cart	X		X	X		
Street Sweeper	X	X	X	X	X	X
Water Truck	X	X	X	X	X	
Welding equipment	X	X	X		X	
Concrete Saw	X				X	
Concrete Coring Machine	X				X	X
Transit Mixed Concrete Truck	X				X	
Concrete Pump	X	X	X	X	X	X
Generator	X	X	X	X	X	X
Compressor	X	X	X	X	X	X

** The equipment identified for staging areas would be stored at any one of the staging areas.*

3.8 Rehabilitation Sequence and Phasing

The PCCP rehabilitation program is designed to be completed over an approximately 20-year period. The proposed program would be planned to provide considerable flexibility in the sequence of implementation. Factors such as pipeline risk, water supply availability, regional and local demands, operational restrictions, and individual member agency capabilities would change throughout the life of the planned 20-year program. Flexibility to alter the planned rehabilitation sequence in response to changing factors would be an essential element of the proposed program.

In general, pipelines with the highest risk of a reduced service life would be rehabilitated first. Sections of the pipeline of significant length and without service connections to member agencies would also be prioritized over those that would cause more potential water delivery interruptions. It is anticipated that rehabilitation would be scheduled during months with low water demand (i.e., late fall, winter, early spring). Final prioritization of phasing for rehabilitation activities would consider the following.

- Condition of the PCCP lines: Metropolitan will continue to monitor and assess the condition of its PCCP lines on a yearly basis. Changes in relative risk between pipeline segments may result in the need to alter the planned rehabilitation sequence or timing.
- Metropolitan's available sources of supply: There is a large variation in wet versus dry year water supply availability. Water supply availability has significant impacts on how Metropolitan operates its overall system.
- Operational Restrictions: Metropolitan's water delivery system comprises a number of interconnected pipelines. Operational restrictions or work in some areas will affect the ability to shut down others.
- System Demand: Metropolitan's system demands vary, as its member agencies manage their own water systems and supplies. Rehabilitation sequence or timing may be adjusted due to high or low demands within certain portions of the system.
- Local Disruptions: Coordinating with cities to avoid conflicts with other public improvement projects, moratoriums, community events, and seasonal events as well as local business disruptions.
- Member Agency Considerations: Coordinating with member agencies to determine the length of any required outage to their service connections.

Due to overall system constraints, some feeders cannot be rehabilitated at the same time as others. Multiple pipelines may be rehabilitated concurrently. Rehabilitation can also alternate between pipelines based on their prioritization.

Other factors to improve flexibility would also be considered, including the following.

- Preparing much of the design up-front, so that multiple contract packages would be available for construction at any given time if adjustments are needed.
- Issuing construction contracts that involve multiple excavation sites that may be constructed concurrently or sequentially depending on water supply demands, requirements from jurisdictions, and construction constraints.

- Implementing multiple construction contracts at the same time.
- Reprioritizing construction contracts from different pipelines and making them interchangeable between feeders, depending on the proposed program needs. For example, a construction contract may be implemented on the Second Lower Feeder and a subsequent construction contract may then be completed on the Sepulveda Feeder.

In terms of the specific activities for each pipeline, each pipeline would be divided into sections determined by the location of isolation valves and/or bulkheads. Additional isolation valves and bulkheads may be added to minimize potential interruptions of water delivery to member agencies while the pipeline is being rehabilitated. For example, the Second Lower Feeder is proposed to be divided into multiple segments. These sections can be hydraulically isolated, one at a time, which would allow for rehabilitation activities to take place within one segment of pipeline while water deliveries continue in other sections. The length of the pipeline within each contract package would vary, depending upon the distance between isolation valves and bulkheads. Constructability variables, such as the number and the degree of pipe angles at horizontal and vertical turning point locations, would be adjusted as needed based on other factors such as conflicts with other underground utilities, traffic control, and proximity to sensitive receptors.

In terms of schedule, the length of each pipeline within a contract package would primarily dictate the duration of various rehabilitation activities**.** Once the pipeline has been divided into sections, the period to complete each section would also vary depending on the length of the section, but generally, all activities on a section would be completed within one shutdown season (fall through spring). Sections may overlap with one another, and several rehabilitation activities within a single contract package could be completed simultaneously. Different sections may also overlap in order to expedite construction and minimize any potential service interruptions. **Table 3-3** summarizes program components, expected range of duration, and considerations associated with the maximum duration. These durations include site preparation and excavation, pipeline isolation and dewatering (including bulkhead construction if needed), rehabilitation of PCCP, isolation valve vault structures, valves, and site restoration. Durations are estimates and timeframes could be shortened or expanded depending on construction constraints, requests from various jurisdictions, and unforeseen impacts.

It is anticipated that approximately 14,300 linear feet of pipeline can be rehabilitated within a 9-month period.

Table 3-3. Program Components Average Durations

Project Component	Approximate Duration	Duration Considerations
Primary Components		
Steel cylinder relining with collapsed pipe	6–9 months	• Steel liner segments can be installed at a rate of 200 linear feet per day. • Welding and testing can occur at a rate of 120 linear feet per day. • Grouting can occur at a rate of 600 feet per day. • Cement mortar lining can occur at a rate of 500 feet per day (field applied).
Steel pipe sliplining with non-collapsed pipe	6–9 months	• Steel liner segments can be installed at a rate of 200 linear feet per day. • Welding and testing can occur at a rate of 180 linear feet per day. • Grouting can occur at a rate of 600 feet per day. • Cement mortar lining can occur at a rate of 1000 feet per day (shop applied)
New pipe replacement (segment)	12 months	• 9,000 feet. • Depends on location and construction constraints.
Secondary Components		
Buried equipment vaults	6 months	• Could be concurrent with pipeline relining
Manholes & above-ground enclosures: air release/vacuum valves, vent stacks, meter cabinets/ electrical panels	4 weeks	• Rehabilitation of air release valves could occur during the rehabilitation of existing PCCP pipe. However, when necessary, rehabilitation could also be separate and independent in location and time from slip-line or new pipe installation.
Pumpwells & blowoff structures	1 month	• Could be concurrent with pipeline relining
Temporary Construction Components		
Contractor's work areas	12 months	• Depends on the final start and completion date of a construction package.
Excavation areas	6–9 months	• Up to 4 months for each excavation site
Staging areas	12 months	• Depends on the final start and completion date of a construction package.
Program Coordination Activities		
Pre-construction activities	3 month	• Includes procurement & mobilization
Site Preparation	1 month	• Some concurrent activities
Site Restoration & demobilization	3 months	• Most sites less; some concurrent activities

3.9 Environmental Commitments

Metropolitan or its contractors would implement the environmental commitments listed below during rehabilitation activities. These commitments are incorporated into the proposed program.

- Rehabilitation activities would generally occur during daytime hours. Construction at night may be necessary to respond to pipeline operational issues, to address traffic related concerns, or to implement shutdown and refill periods, or at the request of the jurisdiction. To expedite construction, as allowed by or in coordination with the local affected jurisdiction(s), construction may occur on Saturdays. Generally construction is not expected to take place on Sundays or on holidays.
- Rehabilitation activities would comply with South Coast Air Management District's Rule 403 to minimize fugitive dust, construction traffic, and particulate matter releases.
- Rehabilitation activities would incorporate water quality Best Management Practices, including a Stormwater Pollution Prevention Plan, as applicable, for sediment and erosion control, pollutant treatment, outlet protection, and general site management.
- A Spill Emergency Response Plan would be prepared prior to the start of construction and be responsible for ensuring that hazardous materials and waste are handled, stored, and disposed of in accordance with applicable federal and state laws and regulations. All materials and fuels within the staging areas and excavation sites/work zones would be stored in a manner that reduces the potential for spills.
- A traffic control plan would be prepared and implemented in coordination with the affected local government jurisdictions. The traffic control plan would include safety measures such as posting of signs identifying excavation sites, work zones, and staging areas and utilizing flagmen to direct vehicle traffic.
- Each of the excavation sites/work areas and staging areas would be fenced and screened.

Chapter 4
Environmental Analysis

4.0.1 Introduction

This chapter introduces the resource sections, which contain the various impact analyses, and discusses the organization of the Programmatic Environmental Impact Report (PEIR) and terminology used throughout the PEIR. It explains the overall methodology used to analyze impacts, along with the methodology for the cumulative analysis. This section also summarizes the permits that may be required for implementation of the program components. Finally, it provides a general regional setting to orient the readers prior to reading the resource-specific sections.

4.0.2 Environmental Analysis Scope and Organization

4.0.2.1 Resource Sections

As previously discussed in Chapter 2, *Introduction*, Sections 4.1 through 4.14 contain a discussion on the potentially significant impacts of the proposed program. Each of these sections corresponds with a specific resource area. To assist the reader in comparing information about the various environmental issues, each resource chapter is organized in the following manner.

- **Existing Conditions.** Describes the existing or baseline conditions in the study areas for the proposed program.
- **Regulatory Framework.** Provides the federal, state, regional, and local regulations that apply to the proposed program.
- **Thresholds and Methodology.** Identifies the thresholds for determining whether a significant impact would occur with implementation of the proposed program, based on California Environmental Quality Act (CEQA) guidance and, in some cases, resource-specific guidance. Describes the methods used for the analysis of impacts and any assumptions that were made in the analysis of impacts.
- **Impacts Analysis.** Presents the evaluation of impacts that would result from implementation of the proposed program, and any mitigation measures that would be necessary to reduce these impacts. Includes the analysis of significant cumulative impacts for each environmental resource area, evaluated by considering the impacts of the proposed program when combined with impacts of other projects and programs within the resource study area.

The impact analysis compares the proposed program to the existing conditions, also known as the CEQA baseline.

When considering the existing conditions and impacts for each resource, enough information is sometimes available to make a determination of whether or not there would be significant impacts and whether there is mitigation available to reduce these impacts to less-than-significant levels. In other cases, however, the lack of specific construction sites and methods means that specific impacts of the proposed program cannot be determined, and supplemental environmental documentation

will be necessary once these projects are further defined. The need for supplemental environmental analysis is identified in the analysis of the proposed program, where appropriate.

In most cases, the analysis of each resource is organized geographically. For the alignments in the proposed program, the analysis is organized starting at the water origin to the alignment termination.

4.0.2.2 Methodology and Terminology Used in the Analysis

In evaluating the potential impacts of the proposed program, the level of significance is determined by applying the thresholds of significance presented in each resource area. The proposed program was initially evaluated through the Initial Study Checklist (Appendix A). Impacts on resources were designated as having no impact, a less-than-significant impact, or a potentially significant impact. The environmental analyses in Sections 4.1 through 4.14 include a detailed discussion and final impact determination for the proposed program that were determined to have a potentially significant impact in the Initial Study Checklist.

To determine significance, the proposed program is compared to a baseline condition. The difference between the proposed program and the baseline is then compared to a threshold to determine if the difference is significant. Section 15125 of the State CEQA Guidelines requires that an EIR include a description of the physical environmental conditions in the vicinity of a proposed action that exists at the time the Notice of Preparation is published. This environmental setting will normally serve as the baseline by which the lead agency determines whether an impact is significant. The lead agency may also consider a baseline condition that better reflects fluctuations resulting from cyclical trends, such as drought and wet weather. The baseline to which the proposed program is compared is described in each resource section to determine the significance of impacts.

The following terms are used to describe each impact in each resource section.

- **No impact.** A designation of no impact is given when no adverse changes in the environment are expected.
- **Less-than-significant impact.** A less-than-significant impact is identified when the proposed project or proposed program would cause no substantial adverse change in the environment (i.e., the impact would not reach the threshold of significance).
- **Significant impact.** A significant (but mitigable or avoidable) impact is identified when the proposed project or proposed program would create a substantial or potentially substantial adverse change in any of the physical conditions within the affected resource area. Such an impact would exceed the applicable significance threshold established by CEQA, but would be reduced to a less-than-significant level by application of one or more mitigation measures.

  In some cases this may be described as a potentially significant impact, if the level of impact cannot be known at this program level because insufficient information is available about the location or timing of construction. However, with this level of impact, implementation of the identified mitigation measure would reduce the impact to a less-than-significant level regardless of location or timing, as long as the construction methods used were consistent with the typical construction scenarios described in the analysis.
- **Mitigation.** Mitigation refers to measures that would be implemented to avoid or lessen potentially significant impacts. Mitigation includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing the impact by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.

Mitigation measures would be required as conditions of plan approval and would be monitored to ensure compliance and implementation.

- **Significant unavoidable impact.** A significant unavoidable impact is identified when an impact that would cause a substantial adverse effect on the environment could not be reduced to a less-than-significant level through any feasible mitigation measure(s).

  In some cases this determination is made because there is not sufficient information available at the program level to ensure that mitigation could reduce the impact to a less-than-significant level. In such cases, the impacts are considered to be potentially significant and unavoidable~~,~~ and additional analysis and CEQA documentation would be required once project-level information is available.

- **Residual impact.** Residual impact is the level of impact after the implementation of mitigation measures. The residual impacts would be expressed as no impact, less-than-significant impact, significant impact reduced to less than significant by mitigation, or significant and unavoidable impact, as defined above.

It should be noted that in most cases, the analysis of impacts is focused on those that would occur during construction only. Because the proposed program includes rehabilitation of existing pipelines, with most of the components located underground, once construction is complete, the rehabilitated pipeline would operate in the same manner as in the existing condition, but with a lower risk of failure and with additional valves and other components that would improve functionality of the system. With the exception of the addition of small utility boxes housing located above ground, generally within public rights-of-way, the post-rehabilitated condition would be identical to the existing (baseline) condition. There would be minimal impacts related to operation of the program.

4.0.3 Cumulative Analysis Methodology

The State CEQA Guidelines define cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (State CEQA Guidelines Section 15355). According to State CEQA Guidelines Section 15130, an EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively significant. A cumulative impact analysis must include either: (1) a list of past, present, and reasonably anticipated future projects ("list approach"); or (2) a summary of projections contained in adopted plans designed to evaluate regional or area-wide conditions ("plan approach"). A cumulative impact analysis considers the collective impacts posed by individual plans and

projects. Cumulative impacts can result from individually minor, but collectively substantial, impacts taking place within a study area and/or over a period of time.

At the program level, the list approach is not possible because the specific location and timing of construction is not known, so the potential for the impacts of the proposed program components to combine with other specific projects is not known. Instead, this document uses a plan approach, looking at ongoing and planned growth patterns in the vicinity of the feeders to identify where there would be the potential for program component impacts to combine with other construction impacts to result in cumulative impacts.

4.0.4 Permits and Approvals

Federal, state, and local agencies may rely on information in this PEIR to inform them in their decision-making regarding issuance of specific permits related to construction or operation. This PEIR identifies federal, state, and local permits and authorizations that would be required prior to construction for future projects in the proposed program, as well as the agencies that the Metropolitan Water District of Southern California (Metropolitan) will likely need to coordinate with regarding these future projects. These may include:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- California Air Resources Board portable equipment registration and/or South Coast Air Quality Management District permit to operate for construction equipment
- California Department of Fish and Wildlife
- California Department of Transportation, Districts 7, 8, and 12 encroachment permits
- California Division of Occupational Safety and Health Tunnel Safety Order compliance
- Permits and traffic control plans from local jurisdictions
- Conformance with applicable State Water Resources Control Board National Pollutant Discharge Elimination System and/or Municipal Separate Storm Sewer System requirements
- Review and approval by Long Beach Airport, Van Nuys Airport, and the Federal Aviation Administration
- Orange County Flood Control District, Los Angeles County Flood Control District, and San Bernardino County Flood Control District permits

4.0.5 Regional Environmental Setting

The proposed program is located in multiple Southern California jurisdictions and topographies. This section provides a brief overview of the regional setting of the various pipelines to orient the reader. Specific characteristics of the environmental setting relevant to the impact analysis are described in the resource sections that follow this chapter.

The proposed program extends through numerous cities and counties. Because these pipelines are located primarily within Metropolitan-owned rights-of-way and public roads, the general plan land use designations are typically related to Public Services, Utilities, or Open Space. However, the general plan land use designations also include, but are not limited to, General Commercial,

Residential, Limited Manufacturing, Business Park, Recreation, and Public Facilities. California Government Code Section 53091 exempts Metropolitan, as a regional public water purveyor and utility, from local zoning and building ordinances. Zoning designations are typically related to Public Services, Utilities, or Open Space. However, the zoning designations also include, but are not limited to, Commercial Recreation, Residential (various densities), Light Manufacturing, Public Facilities, and Office.

4.0.5.1 Allen-McColloch Pipeline

The Allen-McColloch Pipeline was constructed in 1979 by the Municipal Water District of Orange County (MWDOC), and Metropolitan took ownership of the pipeline in 1995. The 26-mile pipeline extends from the Robert Diemer Water Treatment Plant's Finished Water Reservoir to the El Toro Reservoir in the city of Mission Viejo. It serves MWDOC and its retail agencies, including Irvine Ranch Water District, Santa Margarita Water District, El Toro Water District, and Moulton Niguel Water District.

There are two primary portions of the pipeline: the northern 17-mile steel pipe portion, which extends from Yorba Linda to Irvine, and the 9-mile southern prestressed concrete cylinder pipe (PCCP) portion, which extends from Irvine to Mission Viejo. The PCCP portion varies in diameter from 54 to 78 inches. The PCCP portion of the Allen-McColloch Pipeline begins just north of Rattlesnake Reservoir in the city of Irvine and continues in a southeasterly direction for approximately 6 miles. It travels under private extensions of Jeffrey Road, Bee Canyon Access Road, the State Route 133 (SR-133) toll road, ramps connecting to the State Route 241 (SR-241) toll road, and Portola Parkway. The majority of this part of the alignment passes through agricultural or undeveloped foothills of the Santa Ana Mountains within Metropolitan's permanent right-of-way. The nearest residences to this part of the pipeline occur in Irvine to the southeast of the SR-133/SR-241 interchange. These residences are within 0.1 mile of the Allen-McColloch Pipeline alignment and are part of the Portola Springs development. After the pipeline extends under Portola Parkway, it continues in a southeasterly direction through undeveloped land before extending under Alton Parkway and into the city of Lake Forest adjacent to light industrial and commercial land uses. It extends under Bake Parkway, traveling adjacent to residential land uses and under Serrano Creek. The Allen-McColloch Pipeline then bears southwest along Canada Road, through residential land uses, and under Lake Forest Drive, where it continues south under Old Trabuco Road and Trabuco Road adjacent to El Toro Cemetery. It continues along Trabuco Road approximately 1 mile, adjacent to residential land uses, and extends under Aliso Creek and into the city of Mission Viejo. Once in Mission Viejo, the Allen-McColloch Pipeline bears southward adjacent to residences and crosses Los Alisos Boulevard along Metropolitan's right-of-way before entering into the La Gloriela Road public right-of-way. The pipeline alignment then continues until it reaches its terminus at the El Toro Reservoir.

4.0.5.2 Calabasas Feeder

The Calabasas Feeder was constructed in 1975. It is a 9.3-mile-long, 54-inch-diameter pipeline made almost entirely of PCCP. The Calabasas Feeder is located in the western San Fernando Valley almost completely within the city of Los Angeles. It delivers State Water Project supply from the Joseph Jensen Water Treatment Plant to the cities of Agoura Hills, Calabasas, Hidden Hills, and Westlake Village, as well as to areas of unincorporated western Los Angeles County. The northern connection point for the Calabasas Feeder is the West Valley Feeder No. 2 in the Chatsworth neighborhood of

the city of Los Angeles. The pipeline extends south and west to the Las Virgenes Municipal Water District's service connection LV-02 in the city of Calabasas.

The pipeline alignment begins at West Valley Feeder No. 2 under the intersection of Chatsworth Street and Owensmouth Avenue. Neighboring land uses are primarily residential with light industrial development as the alignment approaches the Canoga Park neighborhood. Once the alignment reaches Chase Street, it bears west within the public right-of-way adjacent to single-family residences and extends under Topanga Canyon Road. Following the Chase Street right-of-way, the pipeline extends in a southwesterly direction until it reaches Shoup Avenue.

The pipeline follows the right-of-way along Shoup Avenue and Roscoe Boulevard. At Strathern Street, the alignment bears west for 0.5 mile, passing adjacent to single-family residences and Capistrano Avenue Elementary School.

As the alignment continues southward, the pipeline extends under the Dayton Creek flood control channel near the Fallbrook Avenue/Saticoy Street intersection. The pipeline continues southbound within the Fallbrook Avenue right-of-way adjacent to residences and a small number of commercial buildings. It extends under Sherman Way and crosses under the Bell Creek flood control channel before continuing southward adjacent to a mix of residential and commercial uses, including the Fallbrook Center commercial development between Vanowen Street and Victory Boulevard.

South of Victory Boulevard, the pipeline alignment remains in the Fallbrook Avenue right-of-way next to residences interspersed with low-intensity commercial development before extending under the Calabasas Creek flood control channel. The alignment ultimately reaches the Ventura Boulevard right-of-way adjacent to commercial development and U.S. Highway 101 (US-101) for approximately 0.5 mile before rejoining Leonora Drive. A steel portion of the Calabasas Feeder crosses under Valley Circle Boulevard. The pipeline is again composed of PCCP where the alignment parallels Long Valley Road and the US-101 northbound on-ramp underneath land occupied by a private nursery. Approximately 0.2 mile west of Valley Circle Boulevard, the Calabasas Feeder crosses under US-101 into the city of Calabasas and the Las Virgenes Municipal Water District's service connection LV-02.

4.0.5.3 Rialto Pipeline

The Rialto Pipeline was placed into service in 1975 and is approximately 30 miles long, approximately 16 miles of which is PCCP. The Rialto Pipeline delivers water from east to west in San Bernardino and Los Angeles counties. From the east, the pipeline alignment begins at the second afterbay of the California Department of Water Resources' Devil Canyon Facility, located in the city of San Bernardino. This pipeline extends to the west and terminates at the San Dimas Power Plant Control Structure.

Within the Rialto Pipeline, the pipeline material and inside diameter changes five times from east to west: 7.8 miles of 96-inch PCCP, 3.8 miles of 120-inch PCCP, 3.2 miles of 120-inch steel pipeline, 1.4 miles of 96-inch steel pipeline, and then 1.9 miles of 96-inch PCCP. From the Devil Canyon Facility, an approximately 8.5-mile welded steel section of the 120-inch pipeline proceeds in a southwesterly direction before bearing due west within the Lytle Creek floodplain, passing by residential uses and light industrial facilities in the cities of Rialto and Fontana. Just beyond the Etiwanda turnout where the Etiwanda Pipeline branches in a southwesterly direction from the Rialto Pipeline, the pipeline changes to PCCP composition as it extends west.

From near the Etiwanda turnout, the Rialto Pipeline extends westward under Interstate 15 (I-15) and follows a utility corridor near the northern edge of a residential subdivision. The Rialto Pipeline then moves in a southwesterly direction across an undeveloped floodplain into the city of Rancho Cucamonga and through a single-family residential area, where it follows a wide pedestrian pathway to the south of Crescenta Way. Once the pipeline reaches Wilson Avenue, it turns west and crosses under the Etiwanda Creek Flood Control Channel adjacent to residences and the Cucamonga Valley Water District Lloyd W. Michaels Water Treatment Plant.

The Rialto Pipeline continues westward along 24th Street under the landscaped parkway on the south side of Wilson Avenue and bears southbound at Bluegrass Avenue before extending west again beneath the school grounds of John L. Golden Elementary. The pipeline alignment continues westward within the Banyan Street public right-of-way, passing adjacent to Day Creek Park, residential subdivisions, the Day Canyon Wash, and Los Osos High School. After crossing underneath the Merlot Court cul-de-sac and Haven Avenue, the alignment follows parallel to the Alta Loma stormwater retention basin. The pipeline alignment bears southbound and remains within the Archibald Avenue right-of-way for 0.1 mile, turning west again along a 0.3-mile undeveloped linear corridor. The alignment bears south at Amethyst Avenue and then west below an undeveloped linear corridor, the north part of Beryl Park, and Highland Avenue. Once the alignment reaches Cucamonga Creek, it moves southwesterly, leaving the city of Rancho Cucamonga's boundaries and entering unincorporated San Bernardino County.

The Rialto Pipeline crosses under Interstate 210 (I-210) in a southwesterly direction and extends under commercial development parking lots before reaching the Campus Avenue right-of-way. From the corner of Campus Avenue and 19th Street, a 4.5-mile westward stretch of welded steel pipeline extends under public rights-of-way, crossing under I-210 at 18th Street and into the city of Claremont. Approximately 1.7 miles into the city of Claremont, a PCCP segment extends under the Thompson Creek Equestrian and Bicycle Trail before crossing under Thompson Creek and extending in a northwesterly direction along the undeveloped hillsides along and extending from Webb Canyon Road. The alignment traverses foothill residential development and reaches the Live Oak Reservoir in the city of La Verne.

Once the alignment goes around the Live Oak Reservoir, it crosses under foothill residential development, Puddingstone Channel, and San Dimas Canyon Road in the city of San Dimas. The Rialto Pipeline alignment follows the San Dimas Canyon Road right-of-way for the remaining 0.8-mile stretch to the San Dimas Power Plant Control Structure.

4.0.5.4 Second Lower Feeder

The Second Lower Feeder was constructed in 1967. The 39-mile pipeline extends from the Robert Diemer Water Treatment Plant's Finished Water Reservoir to the Palos Verdes Reservoir in Rolling Hills Estates. It serves Metropolitan and its retail agencies, including Southern California Water Company, City of La Palma, City of Long Beach, Lakewood Water Department, City of Signal Hill, Cal Water Service Company, Los Angeles Department of Water and Power, Los Angeles County Flood Control, and City of Torrance.

Approximately 30 miles of the Second Lower Feeder was constructed of PCCP, with pipeline diameters ranging from 78 to 84 inches. Nearly 2 miles of the PCCP segment has already been rehabilitated, leaving 28 miles still needing rehabilitation or replacement. Approximately 9 miles of the Second Lower Feeder is composed of 84-inch cement mortar-lined and coated-steel pipe.

The Second Lower Feeder crosses beneath the following major freeways and transportation corridors, from east to west: Imperial Highway, the Alameda Corridor rail lines, Burlington Northern Santa Fe Railway, Metrolink, Interstate 605 (I-605), Long Beach Municipal Airport, the Los Angeles County Metropolitan Transportation Authority's Blue Line (rail), Interstate 710 (I-710), Interstate 405 (I-405), Interstate 110 (I-110), the Union Pacific Railroad, and Western Avenue.

The majority of the land above the Second Lower Feeder alignment is urban, including residential, commercial, industrial, and institutional uses, with several schools, parks, and golf courses located adjacent to the pipeline right-of-way. It also crosses portions of the Long Beach Airport. The pipeline crosses Carbon Canyon Channel (multiple times), Coyote Creek, the San Gabriel River, the Los Angeles River, and the Dominguez Channel.

The Second Lower Feeder alignment begins at the Diemer Plant, crossing Metropolitan property and then the Black Gold Golf Course in Yorba Linda. Through Yorba Linda, the land uses are primarily residential along its alignment under Wabash Avenue, Prospect Avenue, and Bastanchury Road, with some light industrial/warehousing and retail commercial uses present. Along Bastanchury Road the Second Lower Feeder crosses into Placentia. The land uses in Placentia along Bastanchury Road, Brookhaven Avenue, Yorba Linda Boulevard, Angelina Drive, Kramer Boulevard, and Community Drive are a mixture of residential, commercial, and schools.

On entering Anaheim, the existing steel-lined pipe section begins, using easements in alleyways, and then following Miraloma Avenue, Sunkist Street, South Street, State College Boulevard, Vermont Avenue, Disneyland Drive, and Ball Road, with commercial, industrial/warehousing, residential, schools, and parks located adjacent to the alignment.

The PCCP portion of the Second Lower Feeder begins again along Ball Road near Magnolia Street, with a similar mixture of land uses. The alignment continues along Ball Road into Cypress, through a small portion of Los Alamitos, and into Long Beach, past mostly residential, commercial, and park uses. Here, Ball Road becomes Wardlow Road and the alignment passes along the edges of a large regional park and crosses the San Gabriel River. After crossing the river, the alignment passes through an almost entirely residential area, on Keynote Street, Iroquois Avenue, and Conant Street, with limited local commercial uses. At Clark Avenue in Long Beach, the alignment turns south and then quickly west along the edge of Skylinks Golf Course and across a portion of the Long Beach Airport.

On the west side of the airport, the alignment is located in Bixby Road, passing a mixture of commercial, industrial/warehouse, residential, school, and park land uses. The alignment passes north and west around the edge of Los Cerritos Park and then follows Del Mar Avenue for a short distance before crossing the Los Angeles River near Carson Street, with a mix of land uses.

On Carson Street the alignment enters the city of Carson, passing through a mixture of residential, commercial, and industrial/warehousing, turning south on Acarus Avenue and then crossing the Dominguez Channel and I-405, turning west again on 220th Street. Along 220th Street, the land uses are primarily residential, with limited commercial and other uses.

When the alignment on 220th Street crosses I-110, it enters an unincorporated area of Los Angeles County and then the city of Los Angeles, with a wide mix of urban land uses. At Western Avenue, the alignment turns south, with similar mixed uses. At 262nd Street, the Second Lower Feeder turns west and enters the city of Lomita, which is primarily residential along the alignment. The alignment turns south on Oak Street and enters the city of Rolling Hills Estates, continuing on Palos Verdes

Drive. In Rolling Hills Estates, the land uses are primarily residential, parks, and golf courses. The Second Lower Feeder alignment terminates at the Palo Verdes Reservoir.

4.0.5.5 Sepulveda Feeder

The Sepulveda Feeder was constructed in the 1970s and is located in Los Angeles County. It is 42 miles long. Approximately 2 miles of the PCCP segment has already been rehabilitated, leaving 35 miles still needing rehabilitation or replacement. This pipeline begins at the Joseph Jensen Water Treatment Plant in the Granada Hills neighborhood of the city of Los Angeles and ends at the Second Lower Feeder Interconnection in the city of Torrance.

The starting point for the Sepulveda Feeder is the connection to the Jensen Plant effluent conduit. From this point, the pipeline continues southward for approximately 2.1 miles under residences and portions of the Knollwood Golf Course to the interconnection to West Valley Feeder No. 1, located at the intersection of Hayvenhurst Avenue and Rinaldi Street. This portion of the pipeline is a 150-inch-diameter PCCP pipeline and is entirely within the city of Los Angeles neighborhood of Granada Hills.

From the West Valley Feeder No. 1 Interconnection, the pipeline continues south along Hayvenhurst Avenue under the State Route 118 (SR-118) overpass for approximately 1 mile to Chatsworth Street before transitioning to a 96-inch-diameter pipeline. The pipeline then continues south within the Hayvenhurst Avenue right-of-way to a 54-inch sectionalizing valve located near the intersection of Roscoe Boulevard and Hayvenhurst Avenue.

The Sepulveda Feeder continues south in residential neighborhoods within the Hayvenhurst Avenue right-of-way, southeast beneath the south end of Van Nuys Airport, east along Vanowen Street, south along Valjean Avenue, and east along Haynes Street, extending under I-405.

Once across I-405, the pipeline alignment travels south along Blucher Avenue, then southeast along the east side of I-405 to a 54-inch-diameter sectionalizing valve near Peach Avenue and Hatteras Street. The pipeline continues south and follows the Sepulveda Boulevard right-of-way until it reaches Valley Vista Boulevard before crossing to the western side of I-405. It then continues south until it reaches Valley Meadows Road before crossing under residential properties and an undeveloped hillsides area. The alignment parallels the western side of I-405 and transitions to 97-inch-diameter welded steel pipe approximately 340 feet before reaching the Sepulveda Canyon Pressure Control Facility.

From the Sepulveda Canyon Pressure Control Facility, the 97-inch-diameter welded steel pipe travels approximately 520 feet before transitioning to 96-inch-diameter PCCP and continues southeastward to cross to the eastern side of I-405. The pipeline then continues south within the Sepulveda Boulevard right-of-way and crosses to the west side of I-405 near the intersection of Sepulveda Boulevard and Moraga Drive. It continues southeastward, alongside the west side of the I-405 right-of-way, until just north of the West Los Angeles Veterans Administration campus near Chenault Street, where it crosses I-405 again. The pipeline continues in a southeasterly direction on Sepulveda Boulevard to the Santa Monica Feeder Interconnection located near the intersection of Sepulveda Boulevard and Ohio Avenue in West Los Angeles. From the Santa Monica Feeder Interconnection, the pipeline is composed of PCCP until Missouri Avenue, when it changes to a 97-inch-diameter welded steel pipe. The pipeline continues in a southeasterly direction for 3.1 miles to the Venice Pressure Control Structure (PCS) and Hydroelectric Plant in Culver City.

From the Venice PCS, a 94-inch-diameter steel segment of the pipeline continues southeastward to the Ballona Pressure Relief Structure near the intersection of Lucerne Avenue and Sepulveda Boulevard in the city of Los Angeles. It then extends under the Ballona Creek flood control channel, where it crosses back into Culver City. The Sepulveda Feeder continues in a southeasterly direction through Culver City, changing to a 96-inch-diameter PCCP pipeline near the Slauson Avenue/Hannum Avenue intersection. It extends under State Route 90 (SR-90) before bearing eastward adjacent to commercial properties in the Fox Hills neighborhood of Culver City.

The Sepulveda Feeder continues under the public right-of-way adjacent to residences along 61st Street through the unincorporated Ladera Heights area, and it crosses into the city of Inglewood under La Cienega Boulevard near Fairview Boulevard. The alignment follows Fairview Boulevard for approximately 1 mile, passing by primarily residences before reaching a 54-inch sectionalizing valve near the intersection of Fairview Boulevard and Overhill Drive. From the sectionalizing valve, the 96-inch-diameter PCCP section bears east on Fairview Boulevard then southeast on Gay Street until meeting and following Florence Avenue, where the Sepulveda Feeder passes into the city of Los Angeles. The pipeline bears south within the Victoria Avenue right-of-way, then heads east on 76th Street for 0.6 mile.

At 5th Avenue, the Sepulveda Feeder crosses back into the city of Inglewood and bears south, passing adjacent to residences and Freeman Elementary School. The alignment passes under a park before trending southeast on Byrd Avenue and bearing south on Van Ness Avenue. The alignment travels south along Van Ness Avenue, crossing under Interstate 105 (I-105), for approximately 3 miles to a 42-inch sectionalizing valve by El Segundo Boulevard. From the sectionalizing valve, the alignment continues south, crossing within or adjacent to the jurisdictions of Inglewood, the city of Los Angeles, the unincorporated Los Angeles County communities of Westmont and West Athens, and the cities of Hawthorne, Gardena, and Torrance.

The Sepulveda Feeder reduces its size from 96-inch-diameter PCCP to 84-inch-diameter PCCP at the sectionalizing valve near El Segundo Boulevard. At Del Amo Boulevard, the pipeline follows the public right-of-way to the east and bears south on Western Avenue. The alignment travels approximately 1.2 miles on Western Avenue to a 42-inch sectionalizing valve near 219th Street before connecting with the Second Lower Feeder on 220th Street. From this juncture, flows can continue along the Second Lower Feeder, southward through the Oak Street PCS and into the second inlet of the Palos Verdes Reservoir or eastward into the Second Lower Feeder toward the Carbon Creek PCS and toward Orange County.

Section 4.1
Aesthetics

4.1.1 Introduction

This section describes the existing conditions for aesthetics, the regulatory framework associated with aesthetics, the impacts on aesthetics that would result from the proposed program, and the mitigation measures that would reduce these impacts. As noted in the Initial Study, the proposed program would have potentially significant aesthetics impacts.

4.1.2 Existing Conditions

The study area for aesthetics is the area that is visible from the pipeline easements or rights-of-way, called the *viewshed*. The approximate viewsheds for each pipeline are shown in Figures 4.1-1 through 4.1-5. These approximate viewsheds represent the views from the closest adjacent development or areas within 0.5 mile from the pipeline location, whichever is narrower. (Note: The pipelines themselves are underground but, during rehabilitation, construction would be visible above ground; therefore, the surface area above the pipelines and areas that can view this surface area are considered the viewshed or study area for aesthetics. Intervening topography and landscaping were not considered for this program-level analysis.)

The following section describes the aesthetic setting in the areas surrounding the proposed program. Aesthetic elements considered in the discussion include the following.

- In areas with dense development, viewing distances are limited to the immediate surroundings, while in more open areas viewing distances are increased.
- In urban and heavily populated areas, the number of viewers is high, while rural settings have fewer viewers.
- In urban areas, major roadways tend to be well lit at night, while open spaces and/or rural areas are not.

4.1.2.1 Allen-McColloch Pipeline

The existing Allen-McColloch Pipeline travels underground through portions of unincorporated Orange County, and the cities of Yorba Linda, Anaheim, Orange, Tustin, Irvine, Lake Forest, and Mission Viejo. The entire Allen-McColloch Pipeline is underground, with the only components visible being access manhole covers, valve boxes, and other minor elements.

The Allen-McColloch Pipeline alignment originates at Metropolitan's Diemer facility and travels southeast under the Black Gold Golf Club course and the foothills of the Chino State Park. It continues generally south through Anaheim and passes through mostly residential and commercial land uses, with denser residential development north of State Route 91 (SR-91) in Yorba Linda. The pipeline continues in a southeast direction through the city of Orange, with mixed land use to the west (newer residential, commercial, and some industrial buildings) and Santiago Oaks Regional Park to the east. It then continues southeast and runs alongside residential development in Tustin

immediately to the west and under the northern end of Peters Canyon Regional Park. Between Jamboree Road and State Route 133 (SR-133), the Allen-McColloch Pipeline traverses vacant land with varied topography through Limestone Canyon Regional Park and the Loma Ridge foothills. In this stretch, the alignment line runs just east of Rattlesnake Reservoir. It then travels through vacant land with very sparse development between State Route 241 (SR-241) and Alton Parkway, with the exception of newer residential development west of the alignment just north of Portola Parkway. Topography also varies in this area. From Alton Parkway to Bake Parkway, the pipeline passes through an area with industrial land uses for approximately 0.5 mile. Mostly residential land uses surround the Allen-McColloch Pipeline from Bake Parkway until it reaches its southern terminus. Notable non-residential land uses in this stretch include El Toro Memorial Park adjacent to and east of the pipeline's alignment along Trabuco Road and Old Trabuco Road south of Lake Forest Drive. The southern terminus of the Allen-McColloch Pipeline is in Lake Forest at the El Toro Reservoir.

Scenic Resources

Table 4.1-1 describes designated scenic resources within the study area of the Allen-McColloch Pipeline. Designated scenic resources listed below were identified in the general plans for each jurisdiction.

Table 4.1-1. Designated Scenic Resources within the Allen-McColloch Pipeline Study Area

Jurisdiction	Scenic Resource
County of Orange	None (Orange County 2014).
City of Yorba Linda	None (City of Yorba Linda 1993).
City of Anaheim	None (City of Anaheim 2004).
City of Orange	None (City of Orange 2010), but see discussion of Santiago Canyon Road and Jamboree Road as County-designated viewscape corridors in *Scenic Highways*, below.
Tustin	Jamboree Road is identified as an Existing Landscape Corridor and Scenic Resource from Edinger Avenue to the southwest to the Tustin city limits to the northeast (City of Tustin 2013). The Allen-McColloch Pipeline is under Jamboree Road between Patriot Way and Pioneer Road in this area.
Irvine	Jeffrey Road is classified as a local scenic roadway (City of Irvine 2012). The Allen-McColloch Pipeline alignment crosses under Jeffrey Road between Portola Parkway and SR-241.
Lake Forest	None (City of Lake Forest 1994), but see discussion of El Toro Road as a County-designated landscape corridor in *Scenic Highways*, below.
Mission Viejo	None (City of Mission Viejo 2013).

Scenic Highways

Scenic highways are designated by the State of California to protect and enhance the natural scenic beauty of California highways and adjacent corridors, through special conservation treatment (Caltrans 2016a). A portion of SR-91, from State Route 55 (SR-55) to the Anaheim city limits, is designated as a State Scenic Highway (Caltrans 2016b). The Allen-McColloch Pipeline crosses under the freeway approximately 0.2 mile east of Imperial Highway in this area.

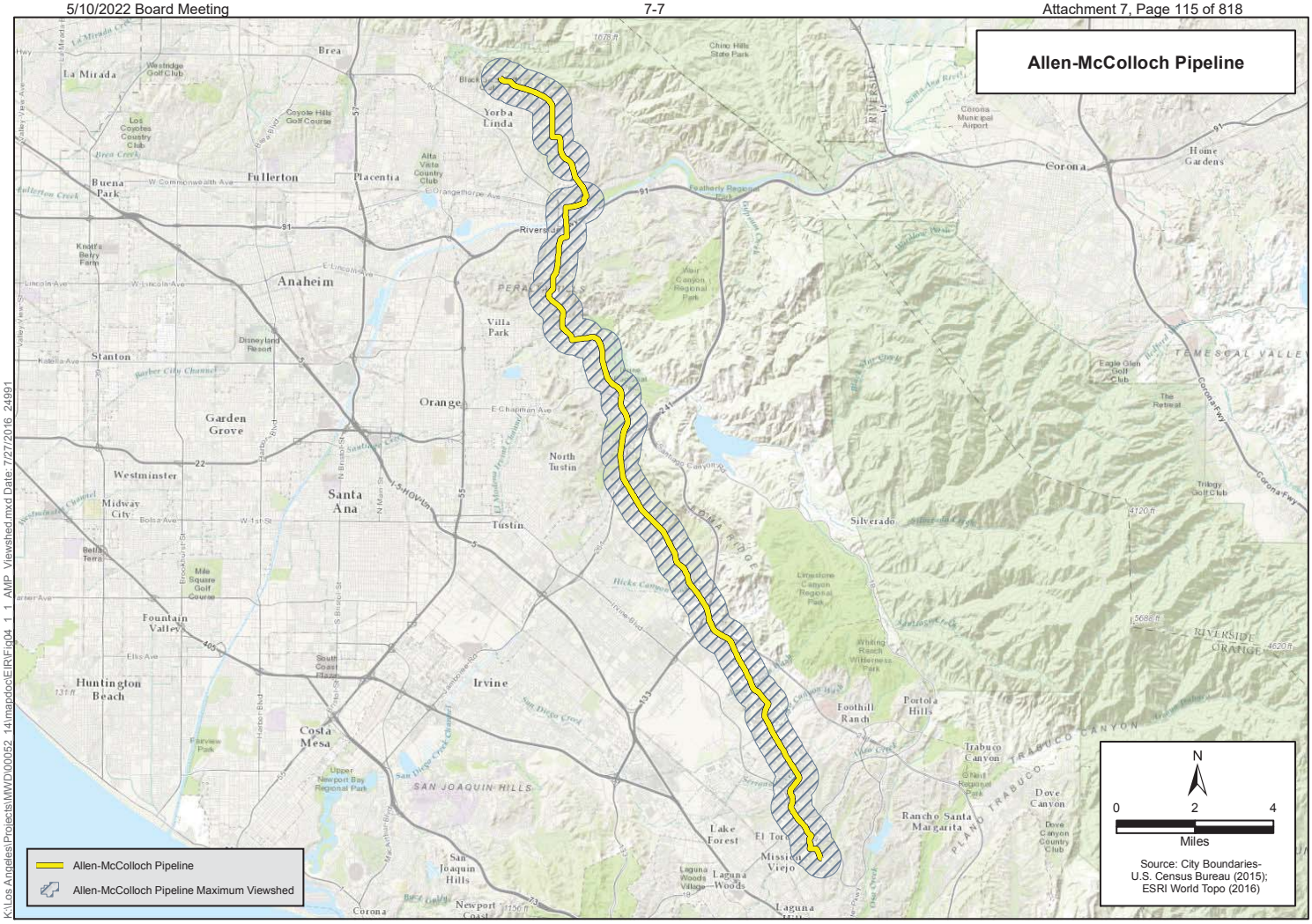

Figure 4.1-1
Allen-McColloch Pipeline Viewshed
Metropolitan Water District PCCP Rehabilitation Program

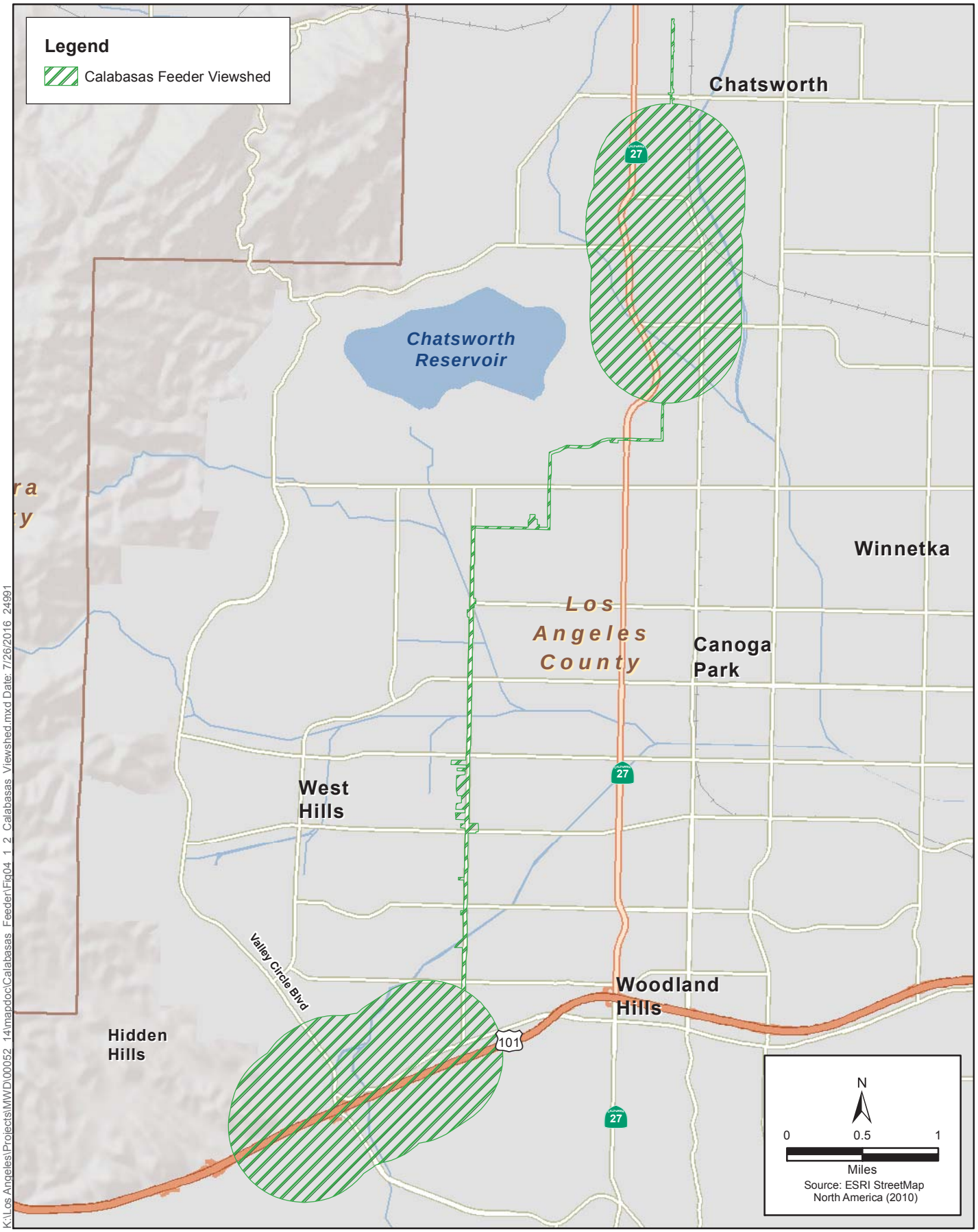

Figure 4.1-2
Calabasas Feeder Viewshed
Metropolitan PCCP Program

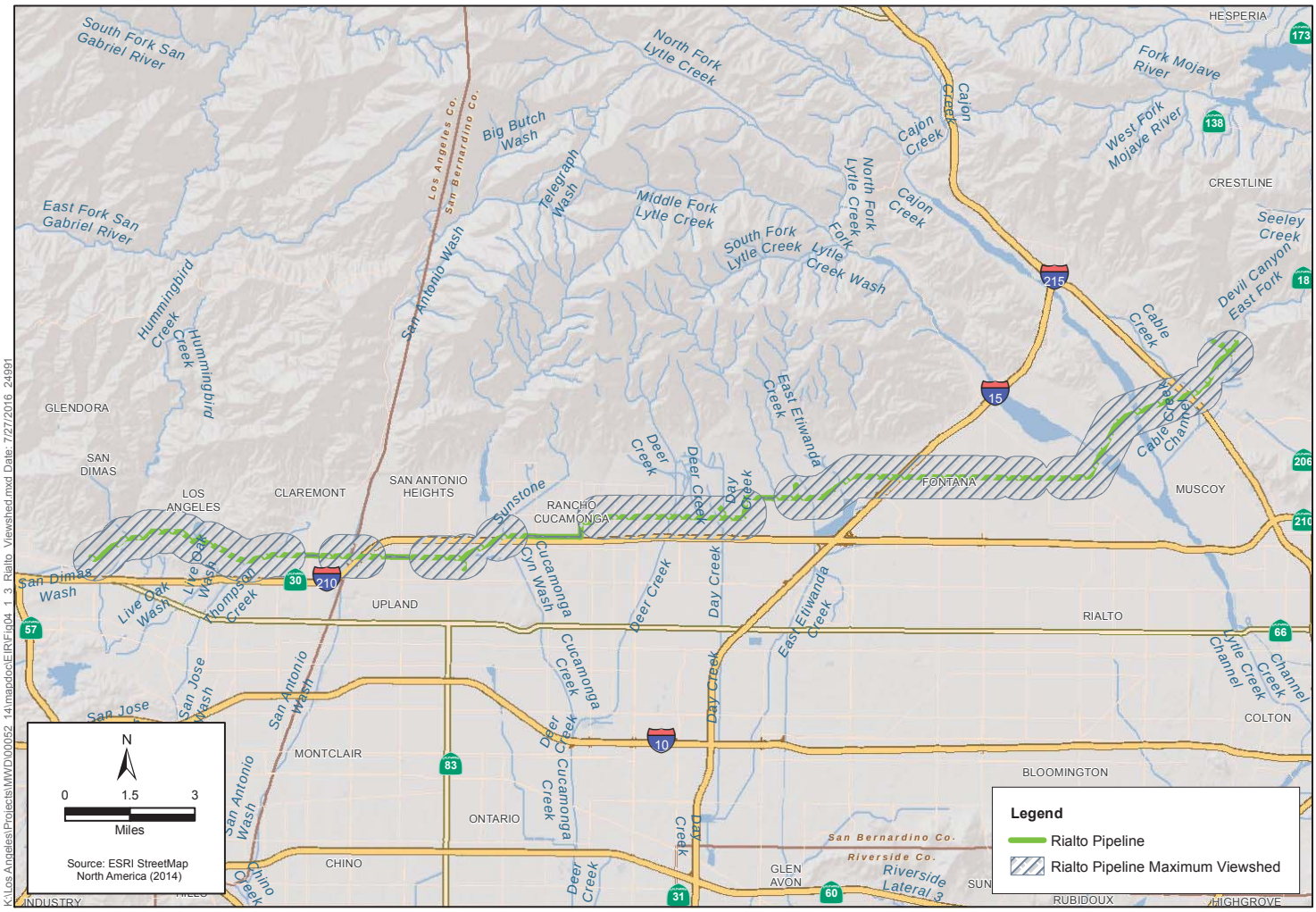

Figure 4.1-3
Rialto Pipeline Viewshed
Metropolitan PCCP Program

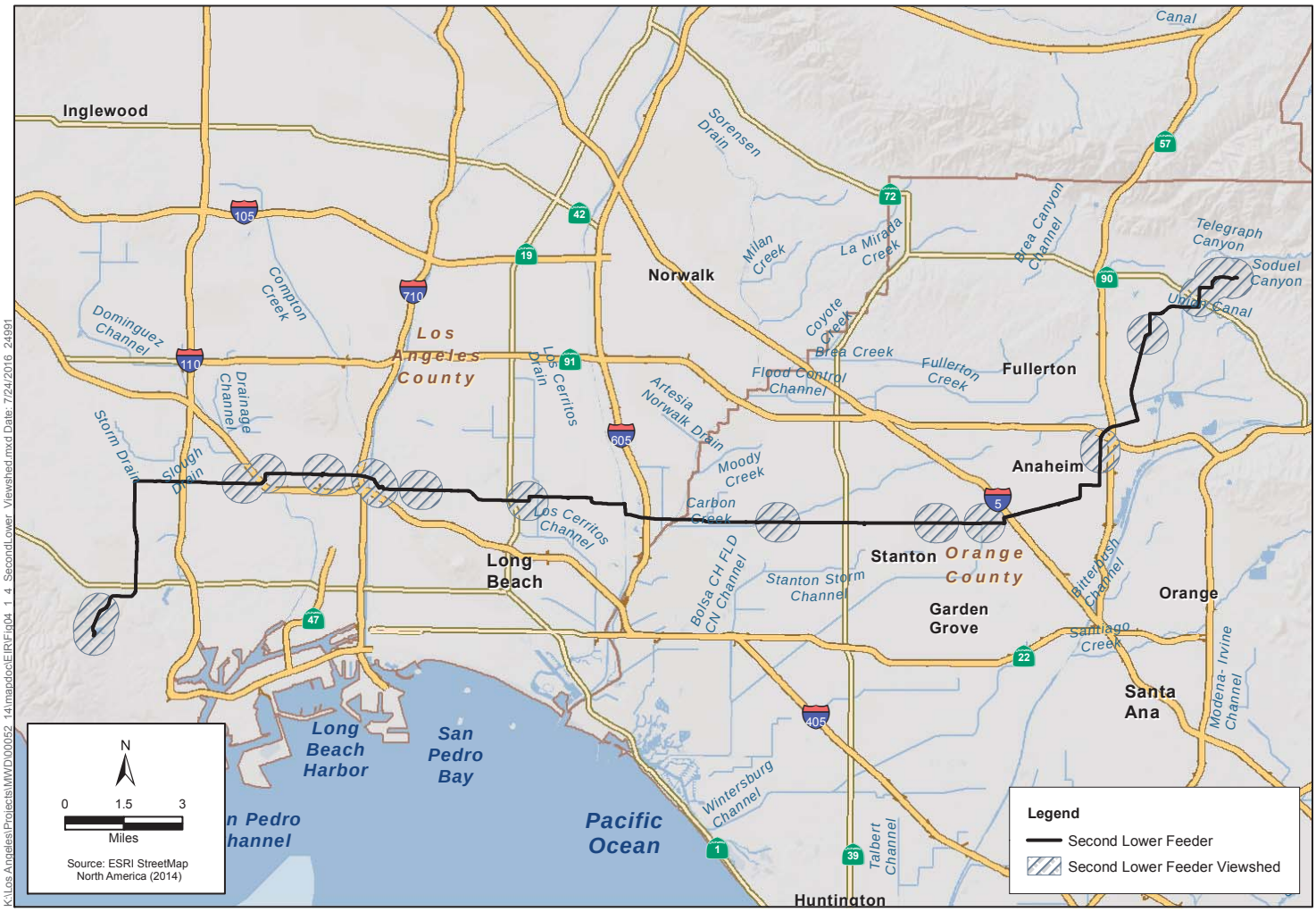

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Figure 4.1-4
Second Lower Feeder Viewshed
Metropolitan PCCP Program

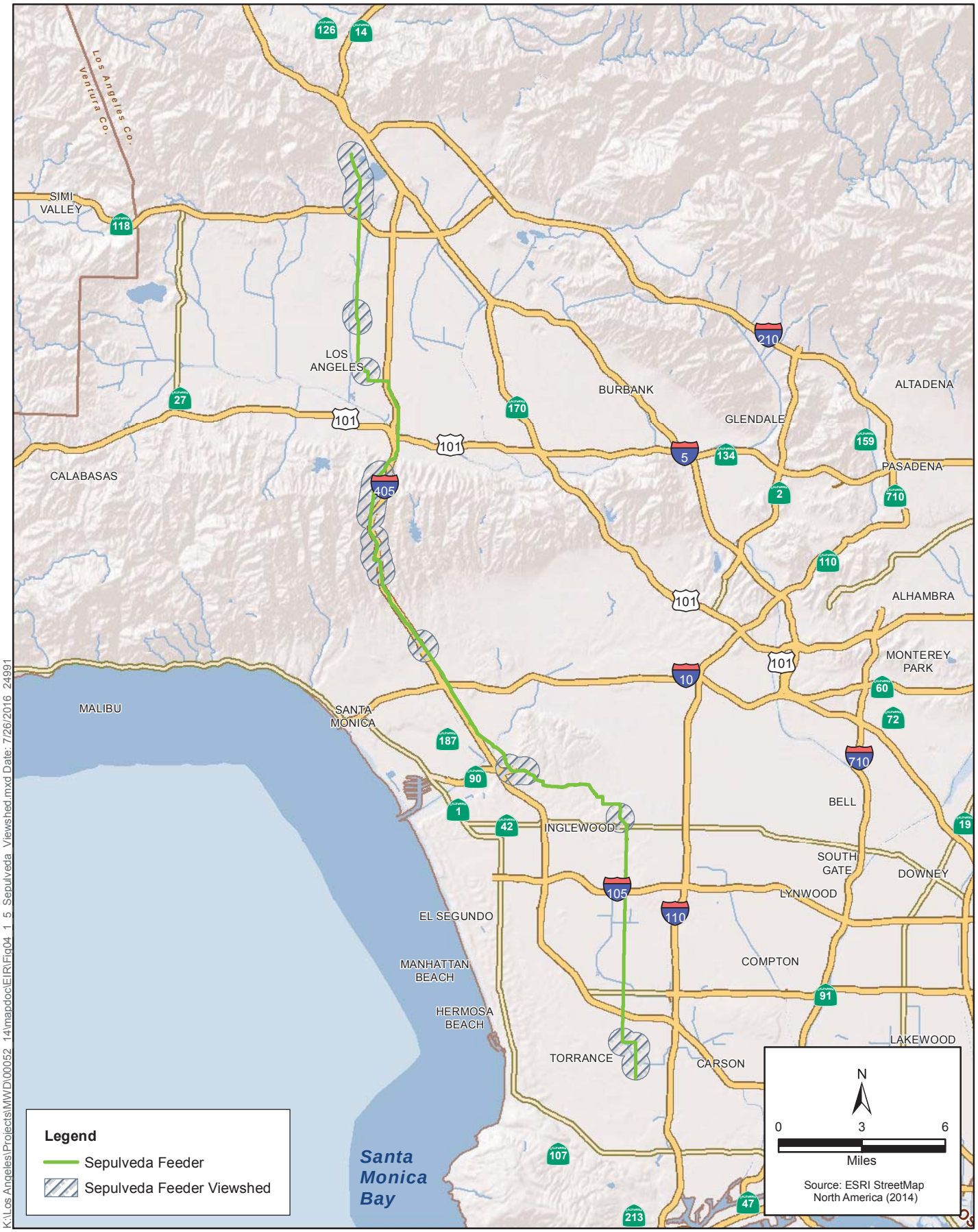

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Figure 4.1-5
Sepulveda Feeder Viewshed
Metropolitan PCCP Program

As part of the County of Orange General Plan's Transportation Element, the County has designated scenic highways in two categories: viewscape corridors and landscape corridors. A *viewscape corridor* is defined as having unique or unusual scenic resources and aesthetic values. A *landscape corridor* traverses developed or developing areas and has been designated for special treatment to provide a pleasant driving environment as well as community enhancement (Orange County 2014). Two viewscape corridors intersect at Santiago Canyon Road and Jamboree Road in the city of Orange. The Allen-McColloch Pipeline alignment passes under this intersection. In Lake Forest, El Toro Road is designated as a landscape corridor. The Allen-McColloch Pipeline crosses under El Toro Road (Orange County 2016).

4.1.2.2 Calabasas Feeder

The Calabasas Feeder travels mostly through a portion of the city of Los Angeles, and just barely through portions of Hidden Hills and Calabasas. The entire Calabasas Feeder is underground, with the only components visible being access manhole covers, valve boxes, and other minor elements.

For most of its route, the Calabasas Feeder is under city streets, passing through residential areas. Topography along the pipeline's route is generally flat. It originates in the Chatsworth neighborhood of the city of Los Angeles in a residential area and runs generally south. There are commercial land uses at some intersections and industrial land uses south of Lassen Street. Near the intersection of Fallbrook Avenue and Hatteras Street, the Calabasas Feeder crosses under the Arroyo Calabasas, which is in a concrete channel at this location. Just north of U.S. Highway 101 (US-101), the alignment turns west. There are more commercial land uses in this portion of the alignment, especially along Ventura Boulevard. Near Valley Circle Boulevard just north of US-101, the Calabasas Feeder goes through a densely vegetated area that is occupied by a nursery/tree farm. Here the feeder runs along the north side of US-101 for a short distance, barely entering the city of Hidden Hills, before turning south, under the freeway, ending just inside the boundary of the city of Calabasas.

Scenic Resources

Table 4.1-2 describes designated scenic resources in the study area for the Calabasas Feeder.

Table 4.1-2. Designated Scenic Resources within the Calabasas Feeder Study Area

Jurisdiction	Scenic Resource
City of Los Angeles	US-101 is designated a scenic corridor from Valley Circle Boulevard to the west and Woodlake Avenue to the east (City of Los Angeles 2016). The southern end of the Calabasas Feeder runs parallel to and under US-101.
City of Hidden Hills	None (City of Hidden Hills 1995).
City of Calabasas	US-101 is designated a scenic corridor from Valley Circle Boulevard to the east to the Calabasas city limits to the west (City of Calabasas 2015). The southern terminus of the Calabasas Feeder crosses under US-101 just west of Valley Circle Boulevard.

Scenic Highways

There are no state-designated scenic highways in the study area for the Calabasas Feeder. See Table 4.1-2 for the designation of US-101 as a scenic corridor by local jurisdictions.

4.1.2.3 Rialto Pipeline

The Rialto Pipeline travels through portions of the cities of San Bernardino, Rialto, Fontana, Rancho Cucamonga, Upland, Claremont, La Verne, and San Dimas, and through unincorporated portions of San Bernardino and Los Angeles counties. The pipeline route is near the base of the San Bernardino Mountains, crossing under many of the creeks and washes that drain from these mountains. The topography is relatively flat along the majority of the route, except for the westernmost portion in La Verne and San Dimas, where it is within the foothills. Much of the alignment is near the edge of the expanding urban environment.

The Rialto Pipeline originates in the Devil Canyon area in the foothills of the San Bernardino National Forest in the city of San Bernardino. It runs southwest through a residential area of San Bernardino. Heading west, it crosses under Interstate 215 (I-215) and a small industrial area before traversing the wide Cajon Wash, which is mostly open space with some areas used for mining. This wide wash is in an unincorporated part of San Bernardino County. On the west side of the wash, the Rialto Pipeline enters the city of Rialto and passes under a small industrial area and then an area with a mixture of adjacent land uses, including residential, industrial/warehousing, and a park at the corner of West Casa Grande Drive and Alder Avenue.

After crossing under Mango Avenue, the alignment enters the city of Fontana and traverses an open space area, with small amounts of residential land uses, until it crosses under Interstate 15 (I-15). West of I-15, the Rialto Pipeline follows a corridor of open space with transmission lines. While this corridor is bordered by a few residential neighborhoods, most of the surrounding area is open space created by creeks and washes. Within this stretch of the alignment, the Rialto Pipeline is partially in the city of Rancho Cucamonga and partially in unincorporated San Bernardino County. Eventually, the alignment leaves the transmission line corridor and travels through an area that includes a mix of land uses, including open space, residential neighborhoods, Cucamonga Water District facilities, parks, elementary schools, Los Osos High School, and Chaffey College. When the alignment crosses under Cucamonga Creek, it enters the city of Upland.

The Rialto Pipeline now turns slightly south under the creek and Interstate 210 (I-210), passing by a mining operation and then traveling under a commercial mall. It then turns west again, passing through a mostly residential area, until it again crosses under I-210, and under San Antonio Creek. At this point, it enters the city of Claremont.

West of San Antonio Creek, the Rialto Pipeline alignment is bordered by a mixture of land uses. Although this area is primarily residential, there are other land uses mixed in, including wastewater treatment facilities, small-scale farming, and a park. When the pipeline gets to the western edge of Claremont, it enters an area dominated by open space with a few residences in unincorporated Los Angeles County. It then enters the city of La Verne, passing under residential communities, primarily using open space corridors. It crosses under several golf courses and enters the city of San Dimas, before terminating near the intersection of Sycamore Canyon Road and San Dimas Canyon Road.

Scenic Resources

Table 4.1-3 describes designated scenic resources in the study area for the Rialto Pipeline.

Table 4.1-3. Designated Scenic Resources within the Rialto Pipeline Study Area

Jurisdiction	Scenic Resource
City of San Bernardino	None (City of San Bernardino 2005).
San Bernardino County	None (San Bernardino County 2014).
City of Rialto	None (City of Rialto 2010).
City of Fontana	None (City of Fontana 2003).
City of Rancho Cucamonga	Etiwanda, Haven, and Archibald Avenues are designated as View Corridors (City of Rancho Cucamonga 2010). The Rialto Pipeline crosses under each of these roadways.
City of Upland	None (City of Upland 2015).
City of Claremont	None (City of Claremont 2009).
Los Angeles County	None (Los Angeles County 2015).
City La Verne	Wheeler Avenue is designated as a Scenic Corridor from Baseline Road to Golden Hills Road (City of La Verne 1999). The Rialto Pipeline runs from just north of Birdie Drive to just north of Via Arroyo. San Dimas Canyon Road is designated as a Scenic Corridor from I-210 to the northern city limits (City of La Verne 1999). The Rialto Pipeline runs under San Dimas Canyon Road from just north of Terrebonne Avenue to Sycamore Canyon Road.
San Dimas	None (City of San Dimas 1991).

Scenic Highways

There are no state-designated scenic highways in the study area for the Calabasas Feeder. See Table 4.1-3 for the designation of local view corridors and scenic corridors in Rancho Cucamonga and La Verne.

4.1.2.4 Second Lower Feeder

The Second Lower Feeder travels through portions of the cities of Yorba Linda, Placentia, Anaheim, Buena Park, Cypress, Lomita, Long Beach, Lakewood, Carson, Los Angeles, Torrance, Los Alamitos, and Rolling Hills Estates, and unincorporated areas of Orange and Los Angeles counties.

The Second Lower Feeder originates at Metropolitan's Diemer facility in unincorporated Orange County and travels southwest into Yorba Linda, under the westernmost part of the Black Gold Golf Club. It then travels through mostly residential areas, with some commercial land uses and a large school at the corner of Bastanchury Road and Rose Drive. The pipeline continues generally south and west through the city of Placentia with a similar mixture of mostly residential neighborhoods with some commercial uses. It passes El Dorado High School on Brookhaven Avenue south of Bastanchury Road and Kraemer Middle School on Angelina Drive south of Alta Vista Street.

When the Second Lower Feeder crosses Crowther Avenue, it enters the City of Anaheim, and the land uses become more industrial. The alignment continues south and west, crossing under the State

Route 57 (SR-57) and SR-91 interchange. South of this point, it enters a mostly residential area again with a few commercial uses. The alignment passes by Pioneer Park along Sunkist Street between La Palma Avenue and Underhill Avenue and Boysen Park at the southwest corner of State College Boulevard and Vermont Avenue. After crossing under Interstate 5 (I-5), the pipeline turns west for several miles under Ball Road. This stretch has a mixture of land uses, including residential neighborhoods, commercial uses, Gilbert High School, and Magnolia High School.

The Second Lower Feeder crosses briefly into the city of Buena Park under Ball Road between Fremont Street and Holder Street, where it is bordered by residential uses. The alignment then enters the city of Cypress. Through Cypress the land uses are mostly residential, with a few commercial areas at intersections and small parks and schools. After crossing briefly into the city of Los Alamitos, between Bloomfield Street and Coyote Creek, which is residential and commercial, the pipeline enters the city of Long Beach. At the Coyote Creek channel, the alignment passes under the Coyote Creek Bikeway.

In Long Beach, the Second Lower Feeder alignment is bordered by residential uses west of Coyote Creek, and then passes under the El Dorado Regional Park and the San Gabriel River. It then traverses an area that is almost entirely residential before reaching Clark Avenue, where it passes a small park and the Skylinks Golf Course, and then passes under a portion of the Long Beach Airport (though not under any runways). West of the airport, the land uses are mostly residential again with a small amount of commercial uses and several schools. Near the west edge of Long Beach, the pipeline goes under Los Cerritos Park, the Los Angeles River Bike Path, the Los Angeles River, and I-710 before entering the city of Carson.

In Carson, the Second Lower Feeder passes through a variety of land uses, including commercial, residential, and large-scale warehousing and industrial uses. It also crosses under a railyard, the Wilmington Channel, and Interstate 405 (I-405). Crossing Interstate 110 (I-110), the pipeline crosses briefly into an area of unincorporated Los Angeles County and then into the city of Los Angeles. On the western boundary of the city, the pipeline turns south on Western Avenue and borders the city of Torrance, with mostly residential land uses on the Los Angeles side and large-scale industrial/warehousing on the Torrance side. South of 242nd Place, the pipeline passes by Narbonne High School. Here, the pipeline is bordered by the city of Lomita on the west, though it is still in the city of Los Angeles, in a primarily residential area. The pipeline turns first southwest, and then west on 262nd Street and enters into the city of Lomita, traveling through a residential area. When it turns south again on Oak Street and Palos Verdes Drive East, it enters the city of Rolling Hills Estates. The land uses in this area include residential, surface mining, golf courses, parks, and a reservoir. There are also hiking and equestrian trails along the roadways in this area. The Second Lower Feeder terminates just west of the Palos Verdes Reservoir.

Topography along the Second Lower Feeder is generally flat, with exception of the area immediately surrounding its northeastern and southwestern ends.

Scenic Resources

Table 4.1-4 describes designated scenic resources in the study area for the Second Lower Feeder.

Table 4.1-4. Designated Scenic Resources within the Second Lower Feeder Study Area

Jurisdiction	Scenic Resource
County of Orange	None (Orange County 2014).
City of Yorba Linda	None (City of Yorba Linda 1993).
City of Anaheim	None (City of Anaheim 2004).
City of Buena Park	None (City of Buena Park 2010).
City of Cypress	None (City of Cypress 2001).
City of Los Alamitos	None (City of Los Alamitos 2015).
City of Long Beach	None (City of Long Beach 2013; City of Long Beach 2005).
City of Lakewood	None (City of Lakewood 1996).
City of Carson	None (City of Carson 2006).
County of Los Angeles	None (Los Angeles County 2015).
City of Los Angeles	None (City of Los Angeles 2016).
City of Torrance	None (City of Torrance 2010).
City of Lomita	None (City of Lomita 1998).
City of Placentia	None (City of Placentia 1982).
City of Rolling Hills Estates	Palos Verde Drive East and Palos Verdes Drive North are considered scenic corridors. Near its southwestern terminus, the Second Lower Feeder is under Palos Verdes Drive East and crosses Palos Verdes Drive North (City of Rolling Hills Estates 1992).

Scenic Highways

There are no state-designated scenic highways in the study area for the Second Lower Feeder. See Table 4.1-4 for the designation of local scenic corridors in Rolling Hills Estates.

4.1.2.5 Sepulveda Feeder

The Sepulveda Feeder travels through portions of the cities Los Angeles, Culver City, Inglewood, Hawthorne, Gardena, and Torrance, and unincorporated portions of Los Angeles County.

The Sepulveda Feeder originates at the Metropolitan facility in Granada Hills in the city of Los Angeles and heads south through residential land uses and along the easternmost portion of the Knollwood Golf Course. The feeder line then merges onto Hayvenhurst Avenue heading south and travels along dense residential land uses until it reaches Chase Street in the community of North Hills, where it passes a sparsely developed sod farm, adjacent and to the east, and an industrial area to the west. South of Roscoe Boulevard, the Sepulveda Feeder travels alongside the Van Nuys Airport to the east, with industrial land use to the west. The pipeline then heads southeast under Sepulveda Boulevard on the eastern side of I-405. Residential land use dominates the landscape east of Sepulveda Boulevard with commercial uses on the west. The Sepulveda Feeder crosses under I-405 in the Sherman Oaks community. The feeder line continues south through hills with varying

topography surrounded by residential development until it reaches Mulholland Drive. South of Mulholland Drive, the Sepulveda Feeder travels under the hills of the Westridge-Canyonback Wilderness Park (adjacent to I-405). As it heads southeast beyond the Westridge-Canyonback Wilderness Park, the pipeline passes under mixed land uses with some residential and commercial land uses, as well as the Los Angeles National Cemetery along Sepulveda Boulevard. South of Ohio Avenue, the pipeline is surrounded primarily by commercial land uses until it reaches Exposition Boulevard, where the land uses are a mixture of residential and commercial.

From Venice Boulevard to Canterbury Drive in Culver City, land use is predominantly commercial with small areas of residential land use. Heading southeast beyond Canterbury Drive, the Sepulveda Feeder travels through mostly residential areas with some commercial properties at major intersections in the city of Inglewood. At Florence Avenue and West Boulevard, the pipeline is just north of the Inglewood Park Cemetery and continues briefly to the east and then south through residential areas, with commercial properties at major intersections. South of Interstate 105 (I-105), the pipeline passes through commercial and industrial land uses to the west and the Chester Washington Golf Course to the east along Van Ness Avenue in the city of Hawthorne. South of El Segundo Boulevard, in the cities of Gardena and later Torrance, land uses consist of a mixture of residential, commercial, and industrial until the feeder line reaches the area south of I-405. This area consists of large industrial sites, including a tank farm on the west side of Van Ness Avenue. The Sepulveda Feeder then heads east briefly before traveling under Western Avenue going south until it reaches its terminus under 220th Street. This area consists of residential land uses on the eastern side of Western Avenue and commercial uses on the west.

Topography along the Sepulveda Feeder is generally flat, with the exception of the elevated areas south of Ventura Boulevard and north of Wilshire Boulevard.

Scenic Resources

Table 4.1-5 describes designated scenic resources in the study area for the Sepulveda Feeder.

Table 4.1-5. Designated Scenic Resources within the Sepulveda Feeder Study Area

City	Scenic Resource
City of Los Angeles	None (City of Los Angeles 2016).
County of Los Angeles	None (Los Angeles County 2015).
City of Culver City	None (City of Culver City 1996).
City of Inglewood	None (City of Inglewood 1992).
City of Hawthorne	None (City of Hawthorne 1989).
City of Gardena	None (City of Gardena 2006).
City of Torrance	None (City of Torrance 2010).

Scenic Highways

There are no state-designated scenic highways in the study area for the Sepulveda Feeder.

4.1.3 Regulatory Framework

This section describes the plans, policies, and regulations related to aesthetics that are applicable to the proposed program.

4.1.3.1 Federal

There are no federal regulations related to aesthetics applicable to the program.

4.1.3.2 State

State Scenic Highway Program

The California Department of Transportation (Caltrans) manages the State Scenic Highway Program, providing guidance and assisting local government agencies, community organizations, and citizens with the process to officially designate scenic highways. The State Scenic Highway Program is intended to "establish the State's responsibility for the protection and enhancement of California's natural scenic beauty by identifying those portions of the State highway system which, together with adjacent scenic corridors, require special conservation treatment" (Caltrans 2008).

As described in Section 4.1.2.1, the Allen-McColloch Pipeline study area includes one designated state scenic highway. There are no additional state scenic highways in the study areas for any of the other pipelines in the proposed program.

4.1.3.3 Local

Table 4.1-6 lists the applicable aesthetics regulations for the proposed program.

Table 4.1-6. Applicable Aesthetics Regulations for Proposed Program

Title of Plan, Policy, Regulation (date)	Applicable Regulation
Allen-McColloch Pipeline	
Orange County General Plan, Transportation Element (Orange County 2014)	**Scenic Highway Plan Goal 1:** Preserve and enhance unique or special aesthetic and visual resources through sensitive highway design and the regulation of development within the scenic corridor. **Objective 1.3:** Preserve established scenic highways in order to protect the existing scenic qualities of these corridors. [Applicable to SR-91] **Objective 1.5:** Develop the roadway portion of the scenic corridors in a manner that recognizes the natural scenic resources of the corridor and is sensitive to them to the maximum extent feasible. [Applicable to Santiago Canyon Road, Jamboree Road, and El Toro Road] *None of the policies under these goals and objectives are applicable to the proposed program.*
City of Tustin General Plan (City of Tustin 2013)	*Although the City of Tustin General Plan has identified Jamboree Road as an existing landscape corridor and scenic resource, it does not include any applicable policies related this resource.*

Title of Plan, Policy, Regulation (date)	Applicable Regulation
City of Irvine General Plan, Land Use Element, (City of Irvine 2012)	*Although the Irvine General Plan has identified Jeffrey Road as a local scenic roadway, it does not include any applicable policies related this resource.*
Calabasas Feeder	
City of Los Angeles Mobility Plan 2035 (City of Los Angeles 2016)	**Policy 2.16, Scenic Highways**: Ensure that future modifications to any scenic highway do not impact the unique identity or characteristic of that scenic highway. [Applicable to US-101] **Scenic Highways Guideline 3c:** Outstanding specimens of existing trees and plants located within public right-of-way of a scenic highway shall be retained to the maximum extent feasible within the same public right-of-way.
City of Calabasas General Plan, Community Design Element (City of Calabasas 2015)	**Policy IX-44:** Preserve large areas of natural hillsides and other dominant natural environmental features visible from the Ventura Freeway [US-101].
Rialto Pipeline	
City of Rancho Cucamonga General Plan (City of Rancho Cucamonga 2010)	*Although the City of Rancho Cucamonga General Plan has identified Etiwanda, Haven, and Archibald Avenues as designated view corridors, it does not include any applicable policies related to this resource.*
City of La Verne General Plan, Resources Element (City of La Verne 1999)	**Goal 3:** Protect and promote our scenic vistas and routes [applicable to Wheeler Avenue] **Policy 3.1:** Preserve our scenic vistas. **Implementation Measure 3.1c:** Encourage the preservation of the existing native plan and heritage resources in our city.
Second Lower Feeder	
City of Rolling Hills Estate General Plan, Conservation Element	**Policy 5.3:** Preserve the existing rural road character of Palos Verdes Drive North by maintaining the roadway's designation as a scenic corridor/roadway part of a peninsula wide loop.
Sepulveda Feeder	
None	

4.1.4 Thresholds and Methodology

4.1.4.1 Thresholds of Significance

Table 4.1-7 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to aesthetics. These thresholds are addressed in the PEIR.

Table 4.1-7. CEQA Thresholds for Aesthetics

Threshold *Would the proposed program:*	
a.	Have a substantial adverse effect on a scenic vista?
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
c.	Substantially degrade the existing visual character or quality of the site and its surroundings?
d.	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

4.1.4.2 Methodology

Scenic Resources

As documented in Section 4.1.2, this PEIR identifies known scenic resources within the study area (viewshed) of the pipeline alignments. (CEQA requires the analysis of adverse effects on "scenic vistas" but does not define the term *scenic vista*. For this analysis, *scenic vistas* are defined as views of scenic resources identified in local planning documents, such as general plans.) For this program-level analysis, the potential for impacts to occur on any of these scenic resources during rehabilitation anywhere along the pipeline is evaluated. Examples of these impacts are removal of street landscaping, blocking of views of a scenic resource, or incompatible nighttime lighting levels during construction. (As part of the program, Metropolitan's contractors would be required to restore landscaping to pre-construction conditions; see Section 3.7.6, *Site Restoration*.) The only permanent changes to the visible condition would be the addition of above-ground valve boxes and electrical panels. The potential impacts of these permanent changes on identified scenic resources are considered.

The locations of construction staging areas has not been determined at this time, and would depend on the availability of suitable land in proximity to construction sites when individual rehabilitation projects are implemented. In some cases, these staging areas may be outside the study area for this program. The types of impacts on scenic resources that could occur during the time these staging areas are being utilized are identified in this analysis. The need for mitigation and/or further analysis once the locations of staging areas are known is also identified.

As part of the program, Metropolitan has agreed to implement the following environmental commitment related to these aesthetics, and this commitment is considered part of the program for analysis purposes.

- Each of the excavation sites/work zones and staging areas would be fenced and screened.

Scenic Highways

As documented in Section 4.1.2, this PEIR identifies state scenic highways within the study area of the pipeline alignments. For this program-level analysis, the potential for impacts to occur on views from these scenic highways during rehabilitation anywhere along the pipeline is evaluated. Examples of these impacts are removal of street landscaping, blocking of views from scenic highways, or incompatible nighttime lighting levels during construction. (As part of the program,

Metropolitan's contractors would be required to restore landscaping to pre-construction conditions; see Section 3.7.6, *Site Restoration*.) The only permanent changes to the visible condition would be the addition of above-ground valve boxes and electrical panels. The potential impacts of these permanent changes on identified scenic resources are considered.

The locations of construction staging areas have not been determined at this time, as discussed above. The types of impacts on scenic highways that could occur during the time these staging areas are being utilized are identified in this analysis. The need for mitigation and/or further analysis once the locations of staging areas are known is also identified.

As part of the program, Metropolitan has agreed to implement an environmental commitment to fence and screen excavation sites/work zones and staging areas, and this is considered part of the program for analysis purposes.

Visual Character and Quality

Section 4.1.2 describes the general visual character and quality of the study areas along the pipelines. Only minimal permanent changes would be visible along the pipelines after rehabilitation is complete because the pipelines and most of the secondary components are underground. Only new above-ground valve boxes and electrical panels would be visible. The potential for these permanent features to affect visual character and quality are addressed in this analysis, along with the temporary impacts on visual character and quality. The potential for temporary impacts on visual character and quality near construction staging areas is also evaluated.

Light and Glare

Section 4.1.2 identifies general lighting conditions along the pipelines. Although nighttime work may be required for some projects within the PCCP program, this program-level analysis assumes only daytime work (see Section 3.7.1, *Construction Activities*). ~~(Any projects requiring nighttime work would require supplemental environmental analysis and documentation to determine the location and severity of impacts.)~~ The only nighttime lighting assumed to be part of the program for this analysis is temporary security lighting at excavation sites and at construction staging areas. The potential impacts from such lighting are evaluated in this document. No new permanent lighting would be included in the proposed program.

4.1.5 Impacts Analysis

4.1.5.1 Program Analysis

Threshold AES-A: Have a Substantial Adverse Effect on a Scenic Vista

The proposed program pipeline rehabilitation would occur at various locations along approximately 100 miles of the Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, Second Lower Feeder, and Sepulveda Feeder combined. As discussed in Section 4.1.2, *Existing Conditions*, the study areas for the Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, and Second Lower Feeder all traverse local scenic resources at the specified locations and, in the case of the Allen-McColloch Pipeline, also traverse a State Scenic Highway (as designated by Caltrans). As such, there is potential

for the proposed program to affect scenic resources at these locations and result in aesthetic impacts. (No scenic resources were identified in the Sepulveda Feeder study area.)

Construction

Aesthetic impacts related to the proposed program are most likely to occur only during construction because most program elements are underground and out of public view. Multiple excavation areas would be needed to rehabilitate pipelines and buried equipment vaults. Excavation footprints are expected to be approximately 20 feet wide and 50 feet long, and existing surface improvements, such as road pavements, sidewalks, and landscaping, would be removed at each excavation area to facilitate construction activities. Where new pipeline replacement would occur along portions of the Allen-McColloch Pipeline and the Second Lower Feeder, rehabilitation would involve excavating trenches, installing new pipe, backfilling the trench, and restoring the site to preconstruction conditions. The existing pipeline would either be demolished and removed or abandoned in place. Excavation areas and pipeline replacement areas are expected to be fenced and screened during rehabilitation activities. Excavation and pipeline replacement locations are currently unknown, but if situated within a scenic resource area, the removal of surface improvements and/or fencing (creating a visual obstruction) around work areas could result in potential aesthetic impacts.

In addition to excavation and pipeline replacement locations, staging areas would be established to provide storage space for construction materials and equipment, and to provide space for contractor trailers and parking. Ideally, staging areas would be close to work areas, but space limitations may require them to be located farther away. The size of a staging area would vary depending on several factors, including proximity to the work area, land leasing fees, contractor work methods, land uses in the vicinity, and services the staging area would provide. Staging area locations are also unknown and, if situated within a scenic resource area, could result in potential aesthetic impacts due to potential removal of surface improvements and/or the fencing surrounding the staging area perimeter.

Although rehabilitation and staging areas have the potential to result in aesthetic impacts during construction, these impacts would be temporary (occurring only during the construction phase). Furthermore, site restoration would be required to restore work areas to pre-construction conditions, including backfilling excavation areas, replacing and restoring landscaping, and restoring existing roads or sidewalks damaged during rehabilitation activities. As a result, potential impacts would be less than significant.

Post-Construction

Permanent visible changes after construction would be expected to result in only minimal impacts because only new manhole covers, air release/vacuum valves, and electrical panels would be visible above ground. Air release/vacuum valves would be located in a small enclosure, less than 5 feet tall and 5 feet wide, along the sidewalk and within the public right-of-way. Electrical panels would also be located within small enclosures approximately 8 to 10 feet high and approximately 3 feet wide, with a telemetry pole of a maximum height of 20 feet. As with work and staging areas, locations of valves and electrical panels are unknown. If any of these above-ground structures are located within a scenic resource area, their impacts would be expected to be less than significant on scenic resources or vistas due to their negligible footprint and the fact that they would likely be placed intermittently and not grouped together.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold AES-B: Substantially Damage Scenic Resources, Including, but Not Limited to, Trees, Rock Outcroppings, and Historic Buildings within a State Scenic Highway

As discussed in the Section 4.1.2.1, the Allen-McColloch Pipeline crosses under SR-91, which is designated as a state scenic highway. Consequently, there is potential for the proposed program to affect scenic resources within this area.

Construction

Although the Allen-McColloch Pipeline crosses under SR-91, it is not expected that rehabilitation activities would result in substantial damage to scenic resources along the highway. Potential work areas and staging areas during construction would only be used temporarily. Furthermore, site restoration would be required to restore work areas to pre-construction conditions, including the replacement and restoration of any landscaping potentially affected by the rehabilitation activities. As such, the proposed program construction activities would not substantially damage a scenic resource within a state scenic highway. Impacts would be less than significant.

Post-Construction

After rehabilitation is complete, only small program components would potentially be visible from SR-91 (manhole covers, valve boxes, and electrical panels). Such small components would not result in substantial damage to scenic resources along a designated state scenic highway. Impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold AES-C: Substantially Degrade the Existing Visual Character or Quality of the Site and Its Surroundings

Construction

As discussed under Impact AES-A, construction activities have the potential to affect scenic resources and therefore have the potential to contribute to the degradation of the existing visual character and quality of the site and the immediate surroundings. During construction, vehicles,

equipment, stockpiled material, and other elements could be observed by viewers near the proposed program work areas and staging areas. However, potential work and staging area impacts would only be temporary and short term. Therefore, the proposed program construction activities would not substantially degrade the existing visual character or quality of a site or its surroundings. Impacts would be less than significant.

Post-Construction

Permanent visible changes after construction would be expected to result in only minimal impacts related to new manhole covers, valve boxes, and electrical panels. These components are not expected to have a significant impact on visual character or quality due to their negligible footprint and intermittent placement. Impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold AES-D: Create a New Source of Substantial Light or Glare that Would Adversely Affect Day or Nighttime Views in the Area

Construction

Nighttime lighting may be required in construction work areas and staging areas for safety and security purposes. During construction and at staging areas, lighting may spill over into adjacent light-sensitive areas, especially residential land uses. Though temporary, this spillover light may result in significant impacts.

Post-Construction

No permanent lighting would be included in the program. Therefore, there would be no impacts related to light and glare after construction is complete.

Mitigation Measures

MM AES-1 In order to prevent impacts related to spillover lighting into light-sensitive land uses, all safety and security lighting at construction work areas and staging areas will be directed downward and shielded to avoid light spilling over into residential areas.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM AES-1 would reduce these impacts so that residual impacts would be less than significant.

4.1.5.2 Cumulative Analysis

The proposed program would be implemented over a long period of time; in many cases implementation of the projects in the proposed program would occur past the planning horizons of local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

Impacts of the proposed program related to aesthetics would generally be minimal and/or temporary. Aesthetic impacts usually do not combine with impacts of other projects to result in cumulative impacts unless projects are very near to each other (i.e., in the same viewshed). The less-than-significant impacts related to scenic resources, scenic highways, and visual character and quality would not represent considerable contributions to cumulative impacts. Impacts related to light and glare (spillover lighting) would not result in a significant impact after mitigation. Even this mitigated impact would be temporary. Therefore, the proposed program would not result in a considerable contribution to a cumulative impact related to light and glare.

Section 4.2
Agriculture and Forestry Resources

4.2.1 Introduction

This section describes the existing conditions for agriculture and forestry resources, the regulatory framework associated with agriculture and forestry resources, the impacts on agriculture and forestry resources that would result from the proposed program, and the mitigation measures that would reduce these impacts. As noted in the Initial Study, the proposed program is not located within proximity to forestry resources; therefore, forestry resources are not discussed in this chapter.

4.2.2 Existing Conditions

The study area for agriculture includes land within 0.25 mile on each side of the pipeline alignments (a 0.5-mile-wide corridor). For this analysis, Important Farmland was identified, which is defined as areas identified in the California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) as Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Farmland of Local Importance. These Important Farmland categories are defined as follows.

- **Prime Farmland**. Farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.
- **Unique Farmland**. Farmland of lesser-quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the 4 years prior to the mapping date.
- **Farmland of Statewide Importance**. Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.
- **Farmland of Local Importance**. Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee. (Note: No Farmland of Local Importance was identified in the study areas for any of the pipelines in the PCCP Rehabilitation Program.)

4.2.2.1 Allen-McColloch Pipeline

The Allen-McColloch Pipeline study area includes Prime Farmland, Unique Farmland, and Farmland of Statewide Importance in the cities of Irvine and Lake Forest and the County of Orange. Figure 4.2-1 shows where the Allen-McColloch Pipeline study area crosses Important Farmland as defined above, including Prime Farmland, Unique Farmland, and Farmland of Statewide Importance.

Approximately 142.6 acres of Prime Farmland, 20.8 acres of Farmland of Statewide Importance, and 500.2 acres of Unique Farmland occur within the Allen-McColloch Pipeline study area.

The Allen-McColloch Pipeline crosses the Santiago Hills and Northern Flatlands landforms located in the northeastern portion of the city of Irvine. According to the Conservation and Open Space Element of the City of Irvine General Plan (City of Irvine 2012), the Santiago Hills form the City of Irvine's northern sphere of influence boundary. The Santiago Hills consist of moderately steep to steep, unbuildable slopes, canyons, plateaus, and narrow ridges, which obtain an elevation of 1,700 feet. This area contains limited agricultural activities and grazing lands. The Northern Flatlands extend from the Santiago Hills to Interstate (I) 5. This area, known as the Tustin Plain, is nearly flat and gradually slopes from the northeast to the southeast. Generally, surface soils within the Northern Flatlands consist of fine-grained mixtures of sands, silts, and clay and are classified as "prime" Class I and II agricultural soils by the U.S. Soils Conservation Service. Farmland in this area includes orchards and row crops. Approximately 4.5 acres of Farmland of Statewide Importance and 2.7 acres of Unique Farmland occur within the Allen-McColloch Pipeline study area in the City of Irvine.

The Allen-McColloch Pipeline enters the city of Lake Forest in the northeastern portion of the city. Although this area is designated Low-Medium Density Residential by the City of Lake Forest General Plan, the California Department of Conservation (DOC) has identified this area as Farmland of Statewide Importance and Unique Farmland (City of Lake Forest 2014; DOC 2015a). Approximately 3.8 acres of Unique Farmland occur within the Allen-McColloch Pipeline study area in the city of Lake Forest.

The Allen-McColloch Pipeline study area includes various areas of Important Farmland designated in unincorporated Orange County, including Prime Farmland, Unique Farmland, and Farmland of Statewide Importance. As shown on Figure 4.2-1, this farmland mainly occurs near State Routes (SR) 261, 241, and 133 near north Tustin and north Irvine. This area is also designated Suburban Residential, Open Space, and Open Space Reserve by the Orange County General Plan (County of Orange 2014).

4.2.2.2 Calabasas Feeder

The Calabasas Feeder study area (0.25 mile on either side of the pipeline) overlaps with Unique Farmland in the cities of Los Angeles and Hidden Hills. Figure 4.2-2 shows where the Calabasas Feeder crosses Important Farmland as designated by the FMMP. Approximately 26.18 acres of Unique Farmland occur within the Calabasas Feeder study area.

Only a few parcels of land in the city of Los Angeles remain designated as Important Farmland. The largest of these is the open space portion of Pierce College in Woodland Hills, which is related to the college's educational curriculum (City of Los Angeles 2001). The study area for the Calabasas Feeder includes approximately 25.5 acres of Unique Farmland in the city of Los Angeles near the southwest portion of Woodland Hills immediately adjacent to Hidden Hills.

The Calabasas Feeder enters the city of Hidden Hills in the east-southeast corner of the city. Although this area is designated Commercial Restricted, Single-Family Residential, and Public/Community Use by the Hidden Hills General Plan, DOC has identified this area as Unique Farmland (City of Hidden Hills 1995; DOC 2015a). Approximately 0.68 acre of Unique Farmland occurs within the Calabasas Feeder study area in the city of Hidden Hills.

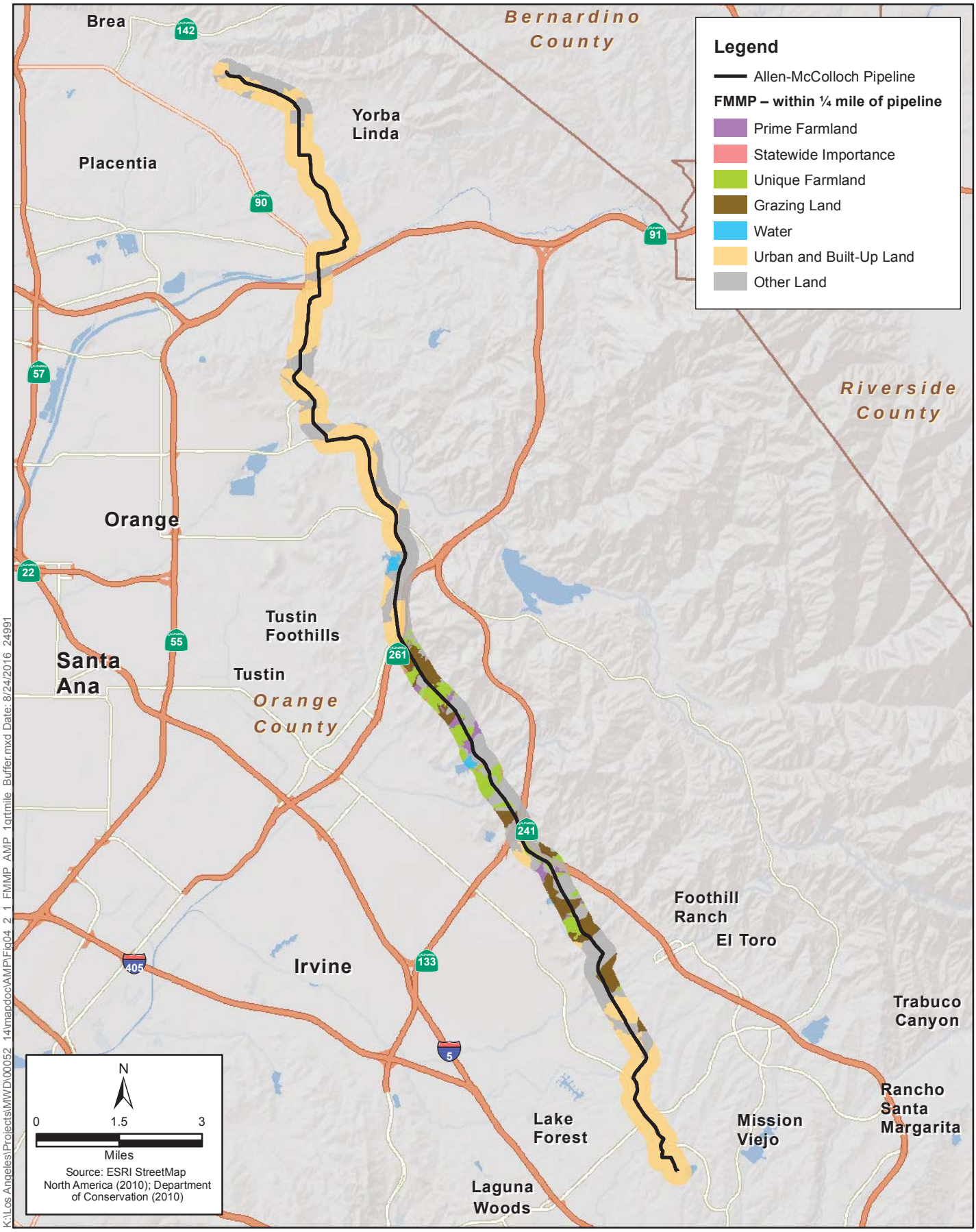
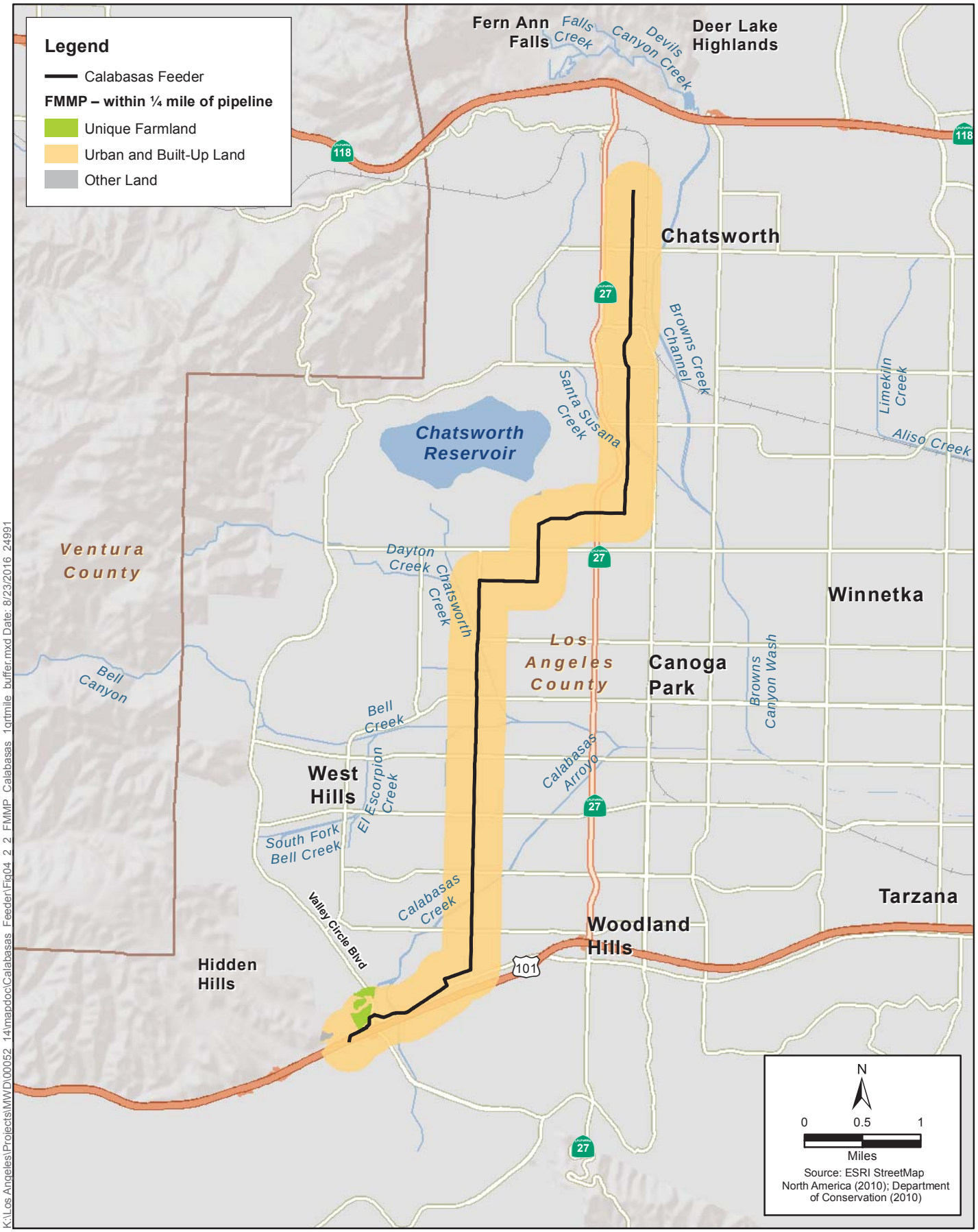


Figure 4.2-1
Important Farmland near the Allen-McColloch Pipeline
Metropolitan PCCP Program



K:\Los Angeles\Projects\MWD\00052 14\mapdoc\Calabasas Feeder\Fig04 2 2 FMMP Calabasas 1qrtmile buffer.mxd Date: 8/23/2016 24991

Figure 4.2-2
Important Farmland near the Calabasas Feeder
Metropolitan PCCP Program

4.2.2.3 Rialto Pipeline

The Rialto Pipeline study area (0.25 mile on either side of the pipeline) does not include any Important Farmland designated by the FMMP. See Figure 4.2-3.

4.2.2.4 Second Lower Feeder

The Second Lower Feeder study area (0.25 mile on either side of the pipeline) includes Unique Farmland in the cities of Yorba Linda, Anaheim, and Stanton. Figure 4.2-4 shows where the Second Lower Feeder crosses Important Farmland as designated by the FMMP. Approximately 17.42 acres of Unique Farmland occur within the Second Lower Feeder study area.

The Second Lower Feeder begins at the Diemer Water Treatment Plant in the northern portion of the city of Yorba Linda and terminates at the Palos Verdes Reservoir in the city of Rolling Hills Estates. The city of Yorba Linda is predominantly a residential community with a limited amount of undeveloped land. According to the Recreation and Resources Element of the City of Yorba Linda General Plan (City of Yorba Linda 1993), although some of this undeveloped land is currently used for small-scale agricultural uses, it is unlikely that it will continue as agricultural land in the future. DOC has designated Important Farmland in the northern portion of the city. This is also where the Second Lower Feeder study area overlaps with approximately 7.5 acres of Unique Farmland in the city of Yorba Linda.

The Second Lower Feeder enters the city of Anaheim in the northeast portion of the city and overlaps with Important Farmland designated by the FMMP in the southwest portion of the city near its border with the city of Stanton. This area is also designated Open Space by the city's General Plan (City of Anaheim 2004). According to the Land Use Element of the City of Anaheim General Plan (City of Anaheim 2004), there are nearly 3,400 acres of land in the city of Anaheim vacant or utilized for agricultural purposes; however, very little remains that is not already entitled for future development. The primary exceptions are the many utility easements that are envisioned to serve as trail connections, passive open space, or low-intensity commercial uses. Approximately 9.7 acres of Unique Farmland occur within the Second Lower Feeder study area in the city of Anaheim.

Although the Second Lower Feeder itself does not run through the city of Stanton, a portion of the study area crosses the northern portion of the city. This area is designated Open Space by the City of Stanton General Plan and is also identified as Unique Farmland by the FMMP (City of Stanton 2008; DOC 2015a). Approximately 0.22 acres of Unique Farmland occur within the Second Lower Feeder study area in the city of Stanton.

4.2.2.5 Sepulveda Feeder

The Sepulveda Feeder study area (0.25 mile on either side of the pipeline) does not include any Important Farmland designated by the FMMP. See Figure 4.2-5.

4.2.3 Regulatory Framework

This section describes the plans, policies, and regulations related to agriculture that are applicable to the proposed program.

4.2.3.1 Federal

There are no federal regulations related to agriculture applicable to the program.

4.2.3.2 State

Farmland Mapping and Monitoring Program

DOC administers various programs to conserve California farmland and open space resources, including the FMMP. The goal of the FMMP is to provide consistent, timely, and accurate data to decision makers for use in planning for the present and future of California's agricultural land resources. The FMMP produces maps and statistical data used for analyzing impacts on agricultural resources in the state. Agricultural land is rated according to soil quality and irrigation status. The maps are updated every 2 years with the use of a computer mapping system, aerial imagery, public review, and field reconnaissance.

The list below encompasses all categories mapped by DOC. Collectively, lands classified as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land are referred to as "agricultural land" (DOC 2015b).

- **Prime Farmland**. Defined in Section 4.2.2, *Existing Conditions*
- **Farmland of Statewide Importance**. Defined in Section 4.2.2, *Existing Conditions*
- **Unique Farmland**. Defined in Section 4.2.2, *Existing Conditions*
- **Farmland of Local Importance**. Defined in Section 4.2.2, *Existing Conditions*
- **Grazing Land**. Land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities.
- **Urban and Built-up Land**. Land occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.
- **Other Land**. Land not included in any other mapping category. Common examples include low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines and borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.
- **Water**. Perennial water bodies with an extent of at least 40 acres.

4.2.3.3 Local

California Government Code Section 53091 exempts Metropolitan, as a regional public water purveyor and utility, from local zoning and building ordinances. Therefore, the PCCP Rehabilitation Program is not subject to local zoning regulations related to agriculture. In addition, there are no

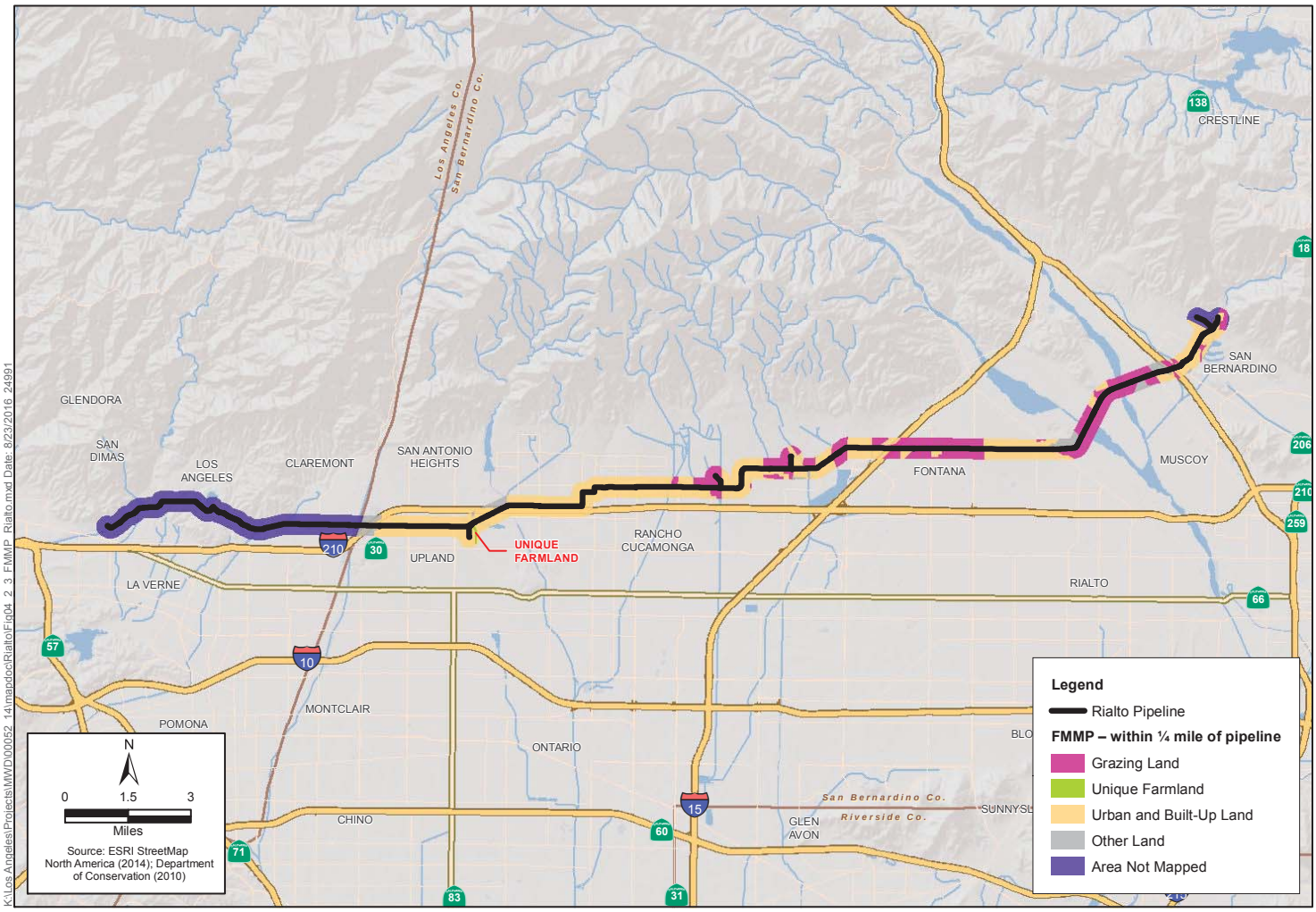


Figure 4.2-3
Important Farmland near the Rialto Pipeline
Metropolitan PCCP Program

Figure 4.2-4
Important Farmland near the Second Lower Feeder
Metropolitan PCCP Program

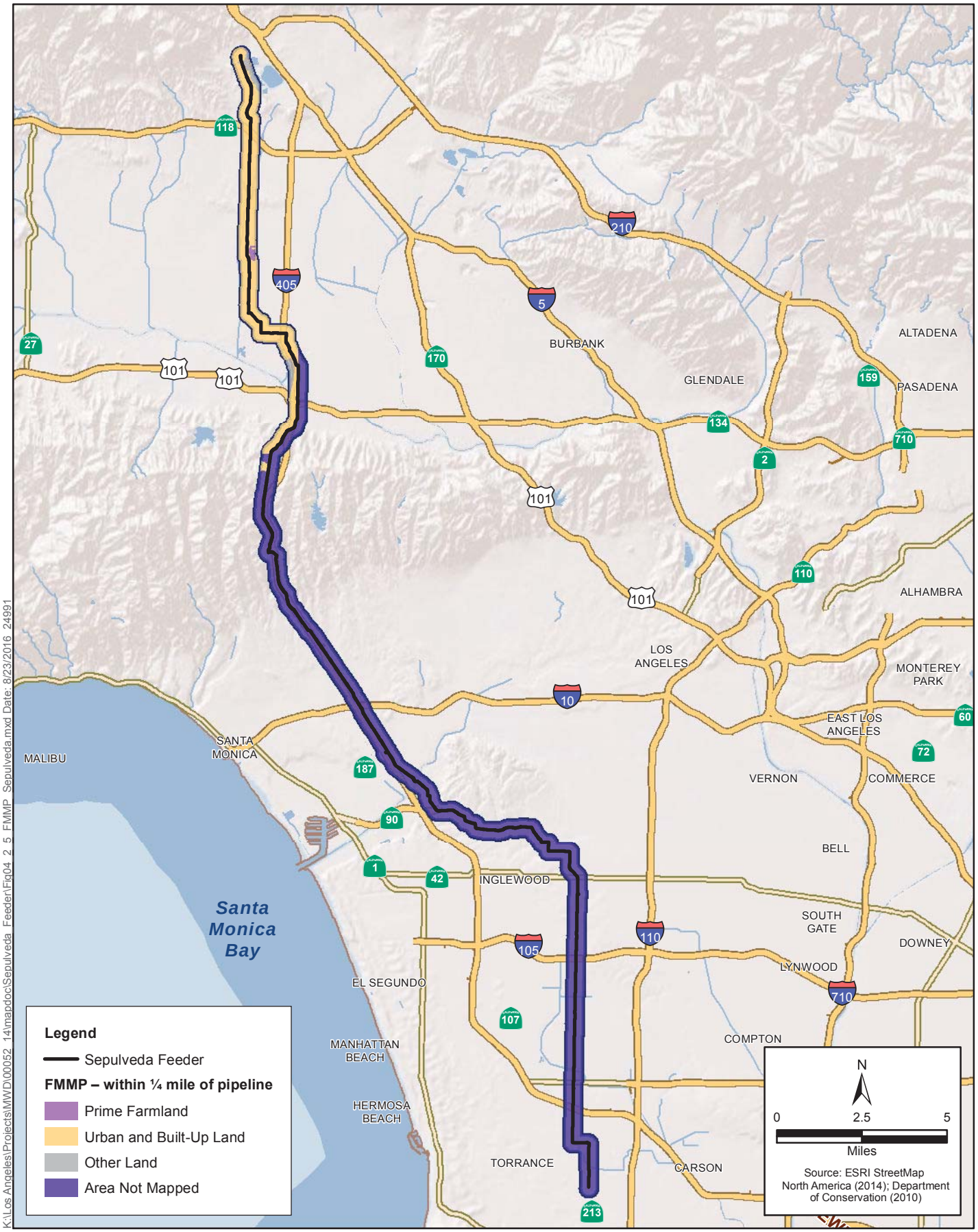


Figure 4.2-5
Important Farmland near the Sepulveda Feeder
Metropolitan PCCP Program

Farmlands of Local Importance determined by county boards of supervisors and local advisory committees within the study areas for the pipelines in the PCCP Rehabilitation Program.

4.2.4 Thresholds and Methodology

4.2.4.1 Thresholds of Significance

Table 4.2-1 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to agriculture and forestry resources. It also indicates which impacts were determined to be less than significant in the Initial Study and therefore do not require additional analysis, and which impacts must be analyzed in the PEIR for the proposed program.

Table 4.2-1. CEQA Thresholds for Agriculture and Forestry Resources**

Threshold *Would the proposed program:*	**Analysis Required for the Proposed Program**
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	X
b. Conflict with existing zoning for agricultural use or a Williamson Act contract?	N/A*
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined by Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 551104(g))?	N/A*
d. Result in the loss of forest land or conversion of forest land to non-forest use?	N/A*
e. Involve other changes in the existing environment that, because of their location or nature, could result in the conversion of Farmland to non-agricultural use or the conversion of forest land to non-forest use?**	X
* Determined to be less than significant in the Initial Study (Appendix A) ** Because the Initial Study did not identify any forest land in the study area for the proposed program, that portion of the threshold will not be addressed in this document.	

4.2.4.2 Program Methodology

Direct Farmland Conversion

As documented in Section 4.2.2, *Existing Conditions*, this PEIR identifies Important Farmland within the study area for the pipeline alignments (within 0.25 mile of the pipeline). For this program-level analysis, the potential for impacts on Important Farmlands would occur if the rehabilitation of the pipelines would remove any such land from agricultural production, either permanently or temporarily. Because most of the pipelines are within public rights-of-way, typically under roadways, the pipeline rehabilitation projects discussed in this program would not permanently convert Important Farmland to other uses. During construction, temporary work areas extending

beyond the public rights-of-way or construction staging activities could be located on land designated as Important Farmland. The impacts resulting from this temporary use are evaluated.

Indirect Farmland Conversion

Other changes in the environment can sometimes cause the conversion of Important Farmland to non-agricultural use. Examples of this are pollution impacts on the soil's productivity, impacts on water quality or availability of water used for irrigation, impacts on air quality negatively affecting agricultural productivity, limiting or removing access to Important Farmlands, and increased noise (for confined animal agriculture). The agriculture analysis considers whether the proposed program would result in any impacts that would indirectly lead to the conversion of Important Farmland to non-agricultural use.

As part of the program, Metropolitan has agreed to implement the following environmental commitments that would limit indirect impacts on Important Farmlands; these commitments are considered part of the program for analysis purposes.

- Rehabilitation activities would comply with the South Coast Air Quality Management District's Rule 403 to minimize fugitive dust, construction traffic, and particulate matter releases.
- Rehabilitation activities would incorporate water quality Best Management Practices, including a Stormwater Pollution Prevention Plan, as applicable, for sediment and erosion control, pollutant treatment, outlet protection, and general site management.
- A Spill Emergency Response Plan would be prepared prior to the start of construction to ensure that hazardous materials and waste are handled, stored, and disposed of in accordance with applicable federal and state laws and regulations. All materials and fuels within the staging areas, excavation sites, and work zones would be stored in a manner that reduces the potential for spills.

4.2.5 Impacts Analysis

4.2.5.1 Program Analysis

Threshold AGR-A: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland) to Non-Agricultural Use

Although there are designated agricultural lands within the study area for the PCCP program, the proposed program would not permanently convert any farmland to non-agricultural use. The proposed program would rehabilitate existing pipelines, usually located in existing roadway rights-of-way. Even where the pipelines cross agricultural lands, they are existing underground facilities.

During construction, agricultural lands may be temporarily used for access to the pipeline or for staging construction equipment. However, all land would be restored to its pre-construction condition once rehabilitation is completed (see Section 3.7.6, *Site Restoration*). Therefore, the proposed program would not permanently convert Important Farmland to non-agricultural use and impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold AGR-E: Involve Other Changes in the Existing Environment that, Because of Their Location or Nature, Could Result in the Conversion of Farmland to Non-Agricultural Use

The proposed program would rehabilitate existing pipelines, usually located in existing roadway rights-of-way. Even where the pipelines cross agricultural lands, they are existing underground facilities. The proposed program could have temporary impacts that could affect agriculture in the study area, such as impacts on access or use of land for construction staging. Contractors for the rehabilitation work are required to maintain access to adjacent land, so while access may be changed during construction, access would not be precluded. If contractors use agricultural land for construction staging, they would be required to return it to pre-construction conditions. Therefore, there would be no changes to the existing environment that could lead to permanent conversion of farmland to non-agricultural use and impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

4.2.5.2 Cumulative Analysis

The proposed program would not permanently convert farmland to non-agricultural use, either directly or indirectly. Therefore, the program would not make a considerable contribution to a cumulative impact on farmland.

Section 4.3
Air Quality

4.3.1 Introduction

This section describes the existing conditions for air quality, the regulatory framework associated with air quality, the impacts on air quality that would result from the proposed program, and the mitigation measures that would reduce these impacts. As noted in the Initial Study, the proposed program would have potentially significant air quality impacts. Impacts related to greenhouse gas emissions are provided in Section 4.7, *Greenhouse Gas Emissions.*

4.3.2 Existing Conditions

The study area for air quality is the South Coast Air Basin (Basin). See Figure 4.3-1.

4.3.2.1 Regional Setting

The proposed program lies within the Los Angeles County portion of the Basin, which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). SCAQMD has jurisdiction over an area of approximately 10,743 square miles, including all of Orange County; Los Angeles County, except for the Antelope Valley; the non-desert portion of western San Bernardino County; and the western and Coachella Valley portions of Riverside County. The Basin is a sub-region of SCAQMD's jurisdiction. Although air quality in this area has improved, the Basin requires continued diligence to meet air quality standards.

4.3.2.2 Climate and Meteorological Conditions

The proposed program would occur within the Basin, which covers approximately 6,745 square miles and is bounded by the Pacific Ocean to the west and south and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area in Riverside County. The terrain and geographical location determine the distinctive climate of the Basin, which is a coastal plain with connecting broad valleys and low hills.

The Southern California region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild and tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography) as well as human-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and dispersion of pollutants throughout the Basin, making it an area of high pollution potential.

4.3.2.3 Regional and Localized Air Quality

Criteria Pollutants

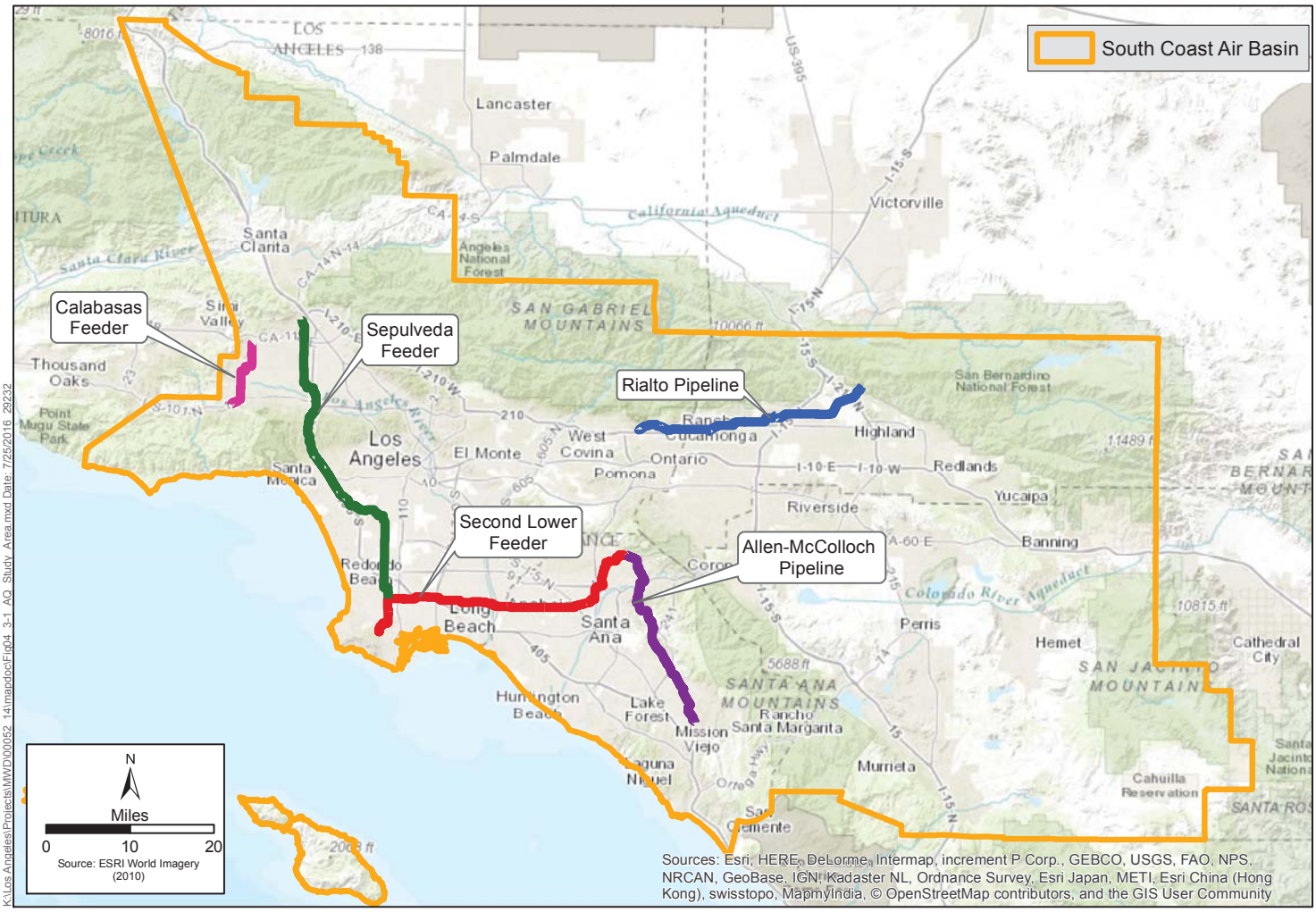
Air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. These regulated air pollutants, which are known as criteria air pollutants, are categorized as primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOCs), nitrogen oxides (NO_X), sulfur dioxide (SO_2), and most fine particulate matter (particulate matter 10 microns or less in diameter [PM10], particulate matter 2.5 microns or less in diameter [PM2.5]), including lead (Pb) and fugitive dust, are primary air pollutants. Of these, CO, SO_2, PM10, and PM2.5 are criteria pollutants. VOCs and NO_X are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants. Presented below is a description of each of the primary and secondary criteria air pollutants and their known health effects (SCAQMD 2005).

Ozone

Ozone, a colorless toxic gas, is found in two regions of the Earth's atmosphere, at ground level and in the upper regions of the atmosphere. Both types of ozone have the same chemical composition (O_3). Although upper atmospheric O_3 protects the Earth from the sun's harmful rays, ground-level O_3 is the main component of smog (EPA 2016a). It enters the bloodstream and interferes with the transfer of oxygen, depriving sensitive tissues in the heart and brain of oxygen. It also damages vegetation by inhibiting growth. Although O_3 is not directly emitted, it forms in the atmosphere through a photochemical reaction between VOCs and NO_X in the presence of sunlight. O_3 is present in relatively high concentrations within the Basin, and the damaging effects of photochemical smog are generally related to the concentration of O_3. Meteorology and terrain play major roles in O_3 formation. Ideal smog conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies but can also occur during the winter months in high-elevation areas in the western United States with high levels of local VOC and NO_X emissions when snow is on the ground and temperatures are near or below freezing (EPA 2012). The greatest source of smog-producing gases is the automobile (SCAQMD 2012a).

Organic Gases—Precursors to Ozone

There are several subsets of organic gases, including reactive organic gases (ROGs) and VOCs. Hydrocarbons are organic gases that are formed solely of hydrogen and carbon. ROGs include all hydrocarbons except those exempted by ARB. Therefore, ROGs are a set of organic gases based on state rules and regulations. VOCs are similar to ROGs in that they include all organic gases except those exempted by federal law. Both VOCs and ROGs are emitted from incomplete combustion of hydrocarbons or other carbon-based fuels. Combustion engine exhaust, oil refineries, and oil-fueled power plants are the primary sources of hydrocarbons. Another source of hydrocarbons is evaporation from petroleum fuels, solvents, dry-cleaning solutions, and paint. Generally speaking, and in this analysis, ROGs and VOCs are used interchangeably to refer to the hydrocarbons that are a precursor to O_3 formation. However, because SCAQMD uses VOCs in the formulation of its thresholds, VOCs are presented herein.



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THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Figure 4.3-1
South Coast Air Basin
Metropolitan Water District PCCP Rehabilitation Program

The primary health effects of hydrocarbons result from the formation of O_3 and its related health effects. High levels of hydrocarbons in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. There are no separate National Ambient Air Quality Standards (NAAQS) or California Ambient Air Quality Standards (CAAQS) for VOCs or ROGs (EPA 2012). Carcinogenic forms of VOCs and ROGs are considered to be toxic air contaminants (TACs), which are described below. An example is benzene, which is a carcinogen.

Carbon Monoxide

Carbon monoxide is a colorless, odorless gas that can interfere with the transfer of oxygen to the brain. It can cause dizziness and fatigue and impair central nervous system functions. CO is emitted almost exclusively from incomplete combustion of fossil fuels. In urban areas, CO is emitted by motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. Automobile exhaust releases most of the CO in urban areas. CO is a non-reactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February. The highest CO concentrations in Los Angeles County are typically recorded during the winter (SCAQMD 2005).

Nitrogen Dioxide

Nitrogen dioxide is a brownish gas that irritates the lungs. It can cause breathing difficulties at high concentrations. Similar to O_3, NO_2 is not directly emitted but is formed through a reaction between NO and atmospheric oxygen. Nitric oxide (NO) and NO_2 are collectively referred to as NO_X and are major contributors to O_3 formation. NO_2 also contributes to the formation of PM10 (see discussion of PM10 below). At atmospheric concentrations, NO_2 is only potentially irritating. In high concentrations, the result is a brownish-red cast to the atmosphere and reduced visibility. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (2 to 3 years old) has also been observed at concentrations below 0.3 part per million (ppm) (SCAQMD 2005).

Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles floating in the air. These can include smoke, soot, dust, salts, acids, and metals. Particulate matter also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. PM10 and PM2.5 represent fractions of particulate matter. PM10 refers to particulate matter less than 10 microns in diameter, about $^1/_{7^{th}}$ the thickness of a human hair. PM2.5 refers to particulate matter that is 2.5 microns or less in diameter, roughly $^1/_{28^{th}}$ the diameter of a human hair. Major sources of PM10 include motor vehicles; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. PM2.5 results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, PM10 and PM2.5 can be formed in the atmosphere from gases such as SO_2, NO_X, and VOCs.

Both PM10 and PM2.5 pose a greater health risk than larger size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM10 and PM2.5 can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances, such as lead, sulfates, and nitrates, can cause lung damage directly. These substances can be absorbed into the bloodstream and cause damage elsewhere in the body; they can also transport absorbed gases such as chlorides or ammonium into the lungs and cause injury. Whereas particles measuring 2.5 to 10 microns in diameter tend to collect in the upper portion of the respiratory system, particles measuring 2.5 microns or less are so tiny that they can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle and contribute to haze and reduce regional visibility (SCAQMD 2005).

Secondary PM2.5 Formation

PM2.5 particles are both directly emitted into the atmosphere (i.e., primary particles) and formed through atmospheric chemical reactions from precursor gases (i.e., secondary particles). Primary PM2.5 includes diesel soot, combustion products, road dust, and other fine particles. Secondary PM2.5, which includes products such as sulfates, nitrates, and complex carbon compounds, is formed from reactions with directly emitted NO_X, SO_X, VOCs, and ammonia. Secondary formation of smaller particles can lead to elevated PM2.5 concentrations in the inland valley areas of the Basin (SCAQMD 2012a). The analysis herein focuses on the effects of direct PM2.5 emissions, consistent with the recommendations of SCAQMD (SCAQMD 2006).

Sulfur Dioxide

Sulfur dioxide is a product of high-sulfur-fuel combustion. The main sources of SO_2 are coal and oil used in power stations, industries, and domestic heating. Industrial chemical manufacturing is another source of SO_2. SO_2 is an irritant gas that attacks the throat and lungs. It can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also cause plant leaves to turn yellow and erode iron and steel. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary-source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 concentrations have been reduced to levels well below the state and national standards, but further reductions are needed to attain compliance with standards for sulfates and PM10, to which SO_2 is a contributor (SCAQMD 2012a).

Lead

Lead is a natural constituent of air, water, and the biosphere and listed as both a criteria pollutant and a carcinogenic TAC. Pb is neither created nor destroyed in the environment, so it essentially persists forever. Pb was used several decades ago to increase the octane rating in automotive fuel. Because gasoline-powered automobile engines were a major source of airborne Pb through the use of leaded fuels and because the use of leaded fuel has been mostly phased out, the ambient concentrations of Pb have dropped dramatically. Short-term exposure to high levels of Pb can cause vomiting, diarrhea, convulsions, coma, or even death. However, even small amounts of Pb can be harmful, especially to infants, young children, and pregnant women. Symptoms of long-term exposure to lower Pb levels may be less noticeable but are still serious. Anemia is common, and damage to the nervous system may cause impaired mental function. Other symptoms are appetite

loss, abdominal pain, constipation, fatigue, sleeplessness, irritability, and headache. Continued excessive exposure, as in an industrial setting, can affect the kidneys.

Emissions of Pb have dropped substantially over the past 40 years. However, sources of Pb emissions within the Basin remain, primarily the lead-acid battery recycling industry. Emissions from two large battery recycling facilities are responsible for the Basin's recent nonattainment designation under the NAAQS for Pb for Los Angeles County (SCAQMD 2012b).

Toxic Air Contaminants

With respect to criteria pollutants, federal and/or state ambient air quality standards represent the exposure level (with an adequate margin of safety) deemed safe for humans. No ambient air quality standards exist for TACs because no exposure level has been deemed safe for humans. Pollutants are identified as TACs because of their potential to increase the risk of developing cancer or their acute or chronic health risks. For TACs that are known or suspected carcinogens, ARB has consistently found that there are no levels or thresholds below which exposure is risk free. Individual TACs vary greatly in the risk they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. For certain TACs, a unit risk factor can be developed to evaluate cancer risk. For acute and chronic health risks, a similar factor, called a Hazard Index, is used to evaluate risk. In the early 1980s, ARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Toxic Air Contaminant Identification and Control Act (Assembly Bill [AB] 1807) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks (ARB 2010). AB 2588 requires local air districts like SCAQMD to designate high, intermediate, and low priority categories and report on facilities that may pose a risk to the public.

To date, ARB has identified 21 TACs and adopted the U.S. Environmental Protection Agency's (EPA) list of hazardous air pollutants as TACs. In August 1998, ARB identified diesel exhaust particulate matter (DPM) emissions as a TAC (ARB 1998). In September 2000, ARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan was to reduce DPM emissions and the associated health risk by 75 percent by 2010 and by 85 percent by 2020 (ARB 2000).

Ambient Air Monitoring Stations

SCAQMD maintains a network of air quality monitoring stations throughout the Basin, each of which provides ambient air monitoring data for specific areas of the Basin. The proposed program would occur within numerous monitoring areas of the Basin. Monitoring data from sites near the proposed program are provided below. Although these monitoring locations may not be representative of every location in which program rehabilitation activities would occur, they provide context on the existing air quality at the local level.

Allen-McColloch Pipeline

The Mission Viejo – 26081 Via Pera Monitoring Station (ARB Site Number 30002) is 0.1 mile to the west of the southern end of the Allen-McColloch Pipeline and collects data for O_3, PM10, and PM2.5. Exceedances of the state 1-hour O_3 standard as well as the state and federal 8-hour O_3 standard were recorded at this site over the 3-year monitoring period from 2013 to 2015.

Table 4.3-1. Ambient Background Concentrations for Mission Viejo – 26081 Via Pera Monitoring Station (ARB Site Number 30002)

Pollutant Standards	**2013**	**2014**	**2015**
1-Hour Ozone (O_3)			
State Maximum Concentration (ppm)	0.104	0.115	0.099
Number of Days Standard Exceeded			
CAAQS 1-hour Standard (> 0.09 ppm)	2	4	2
8-Hour Ozone (O_3)			
State Maximum Concentration (ppm)	0.082	0.088	0.088
National Maximum Concentration (ppm)	0.082	0.088	0.088
National Fourth-Highest Concentration (ppm)	0.074	0.078	0.075
National Design Value (ppm)	0.072	0.074	0.075
Number of Days Standard Exceeded			
CAAQS 8-hour Standard (> 0.070 ppm)	5	10	8
NAAQS 8-hour Standard (> 0.075 ppm)	2	5	3
Carbon Monoxide (CO)			
Maximum Concentration 8-hour Period (ppm)	N/A	N/A	N/A
Number of Days Standard Exceeded			
NAAQS 8-hour Standard (≥ 9 ppm)	N/A	N/A	N/A
CAAQS 8-hour Standard (≥ 9.0 ppm)	N/A	N/A	N/A
Nitrogen Dioxide (NO_2)			
Maximum National 1-hour Concentration (ppm)	N/A	N/A	N/A
Maximum State 1-hour Concentration (ppm)	N/A	N/A	N/A
Annual Average Concentration (ppm)	N/A	N/A	N/A
Number of Days Standard Exceeded			
CAAQS 1-Hour Standard (0.18 ppm)	N/A	N/A	N/A
NAAQS 1-Hour Standard (100 ppb)	N/A	N/A	N/A
Suspended Particulates (PM10)			
Maximum State 24-hour Concentration (μg/m^3)	50.0	40.0	48.0
Maximum National 24-hour Concentration (μg/m^3)	51.0	41.0	49.0
State Annual Average Concentration (μg/m^3)	19.0	19.8	N/A
Number of Days Standard Exceeded			
CAAQS 24-hour Standard (> 50 μg/m^3)	0	0	0
NAAQS 24-hour Standard (> 150 μg/m^3)	0	0	0

Pollutant Standards	2013	2014	2015
Suspended Particulates (PM2.5)			
Maximum National 24-hour Concentration (µg/m^3)	28.0	25.5	31.5
24-hour Standard 98th Percentile (µg/m^3)	17.5	N/A	15.1
National Annual Average Concentration (µg/m^3)	8.0	N/A	7.0
State Annual Average Concentration (µg/m^3)	8.1	N/A	7.0
Number of Days Standard Exceeded			
NAAQS 24-hour Standard (> 35 µg/m^3)	0	0	0
ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; N/A = data not available. Sources: ARB 2016b; EPA 2016b; ICF International 2016 (see Appendix C).			

Calabasas Feeder

The Reseda Monitoring Station (ARB Site Number 70074) is 5.2 miles east of the Calabasas Feeder and 2.3 miles west of Sepulveda Feeder. The station collects data for O_3, NO_X, and PM2.5. Exceedances of the state 1-hour O_3 standard, the state and federal 8-hour O_3 standard, and the PM2.5 federal standard were recorded at this site over the 3-year monitoring period from 2013 to 2015.

Table 4.3-2. Ambient Background Concentrations for Reseda Monitoring Station (ARB Site Number 70074)

Pollutant Standards	2013	2014	2015
1-Hour Ozone (O_3)			
State Maximum Concentration (ppm)	0.124	0.116	0.119
Number of Days Standard Exceeded			
CAAQS 1-hour Standard (> 0.09 ppm)	7	6	11
8-Hour Ozone (O_3)			
State Maximum Concentration (ppm)	0.092	0.093	0.095
National Maximum Concentration (ppm)	0.092	0.092	0.094
National Fourth-Highest Concentration (ppm)	0.084	0.084	0.087
National Design Value (ppm)	0.090	0.087	0.084
Number of Days Standard Exceeded			
CAAQS 8-hour Standard (> 0.070 ppm)	21	31	34
NAAQS 8-hour Standard (> 0.075 ppm)	11	11	15
Carbon Monoxide (CO)			
Maximum Concentration 8-hour Period (ppm)	N/A	N/A	N/A
Number of Days Standard Exceeded			
NAAQS 8-hour Standard (≥ 9 ppm)	N/A	N/A	N/A
CAAQS 8-hour Standard (≥ 9.0 ppm)	N/A	N/A	N/A
Nitrogen Dioxide (NO_2)			
Maximum National 1-hour Concentration (ppm)	0.0581	0.0589	0.0725
Maximum State 1-hour Concentration (ppm)	0.058	0.058	0.072
Annual Average Concentration (ppm)	N/A	N/A	0.013

Pollutant Standards	2013	2014	2015
Number of Days Standard Exceeded			
CAAQS 1-Hour Standard (0.18 ppm)	0	0	0
NAAQS 1-Hour Standard (100 ppb)	0	0	0
Suspended Particulates (PM10)			
Maximum State 24-hour Concentration (µg/m^3)	N/A	N/A	N/A
Maximum National 24-hour Concentration (µg/m^3)	N/A	N/A	N/A
State Annual Average Concentration (µg/m^3)	N/A	N/A	N/A
Number of Days Standard Exceeded			
CAAQS 24-hour Standard (> 50 µg/m^3)	0	0	0
NAAQS 24-hour Standard (> 150 µg/m^3)	0	0	0
Suspended Particulates (PM2.5)			
Maximum National 24-hour Concentration (µg/m^3)	41.8	27.2	36.8
24-hour Standard 98th Percentile (µg/m^3)	23.0	N/A	28.4
National Annual Average Concentration (µg/m^3)	9.8	N/A	8.8
State Annual Average Concentration (µg/m^3)	9.9	N/A	N/A
Number of Days Standard Exceeded			
NAAQS 24-hour Standard (> 35 µg/m^3)	1	0	1
ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; N/A = data not available. Sources: ARB 2016b; EPA 2016b; ICF International 2016 (see Appendix C).			

Rialto Pipeline

The Fontana-Arrow Highway Monitoring Station (ARB Site Number 36197) is 3.6 miles south of the Rialto Pipeline. The station collects data for O_3, NO_X, PM10, and PM2.5. Exceedances of the state 1-hour O_3 standard, the state and federal O_3 standard, the state PM10 standard, and the PM2.5 federal standard were recorded at this site over the 3-year monitoring period from 2013 to 2015.

Table 4.3-3. Ambient Background Concentrations for Fontana-Arrow Highway Monitoring Station (ARB Site Number 36197)

Pollutant Standards	2013	2014	2015
1-Hour Ozone (O_3)			
State Maximum Concentration (ppm)	0.151	0.127	0.133
Number of Days Standard Exceeded			
CAAQS 1-hour Standard (> 0.09 ppm)	34	31	36
8-Hour Ozone (O_3)			
State Maximum Concentration (ppm)	0.123	0.106	0.111
National Maximum Concentration (ppm)	0.122	0.105	0.111
National Fourth-Highest Concentration (ppm)	0.100	0.093	0.100
National Design Value (ppm)	0.103	0.099	0.097
Number of Days Standard Exceeded			
CAAQS 8-hour Standard (> 0.070 ppm)	68	52	59
NAAQS 8-hour Standard (> 0.075 ppm)	42	37	39

Pollutant Standards	2013	2014	2015
Carbon Monoxide (CO)			
Maximum Concentration 8-hour Period (ppm)	N/A	N/A	N/A
Number of Days Standard Exceeded			
NAAQS 8-hour Standard (≥ 9 ppm)	N/A	N/A	N/A
CAAQS 8-hour Standard (≥ 9.0 ppm)	N/A	N/A	N/A
Nitrogen Dioxide (NO_2)			
Maximum National 1-hour Concentration (ppm)	0.0817	0.0704	0.0891
Maximum State 1-hour Concentration (ppm)	0.081	0.070	0.089
Annual Average Concentration (ppm)	0.020	N/A	0.018
Number of Days Standard Exceeded			
CAAQS 1-Hour Standard (0.18 ppm)	0	0	0
NAAQS 1-Hour Standard (100 ppb)	0	0	0
Suspended Particulates (PM10)			
Maximum State 24-hour Concentration (µg/m³)	86.0	65.0	92.0
Maximum National 24-hour Concentration (µg/m³)	90.0	68.0	96.0
State Annual Average Concentration (µg/m³)	38.8	N/A	N/A
Number of Days Standard Exceeded			
CAAQS 24-hour Standard (> 50 µg/m³)	15	10	13
NAAQS 24-hour Standard (> 150 µg/m³)	0	0	0
Suspended Particulates (PM2.5)			
Maximum National 24-hour Concentration (µg/m³)	43.6	34.9	50.5
24-hour Standard 98th Percentile (µg/m³)	33.1	N/A	37.7
National Annual Average Concentration (µg/m³)	12.2	N/A	11.0
State Annual Average Concentration (µg/m³)	12.3	N/A	11.0
Number of Days Standard Exceeded			
NAAQS 24-hour Standard (> 35 µg/m³)	1	0	3

ppm = parts per million; ppb = parts per billion; µg/m³ = micrograms per cubic meter; N/A = data not available.
Sources: ARB 2016b; EPA 2016b; ICF International 2016 (see Appendix C).

Second Lower Feeder

The Anaheim-Pampas Lane Monitoring Station (ARB Site Number 30178) is 0.9 mile north of the Second Lower Feeder. The station collects data for O_3, NO_X, PM10, and PM2.5. Exceedances of the state 1-hour O_3 standard, the state and federal 8-hour O_3 standard, the state PM10 standard, and the PM2.5 federal standard were recorded at this site over the 3-year monitoring period from 2013 to 2015.

Table 4.3-4. Ambient Background Concentrations for Anaheim-Pampas Lane Monitoring Station (ARB Site Number 30178)

Pollutant Standards	2013	2014	2015
1-Hour Ozone (O_3)			
State Maximum Concentration (ppm)	0.084	0.111	0.100
Number of Days Standard Exceeded			
CAAQS 1-hour Standard (> 0.09 ppm)	0	2	1
8-Hour Ozone (O_3)			
State Maximum Concentration (ppm)	0.070	0.082	0.081
National Maximum Concentration (ppm)	0.070	0.081	0.080
National Fourth-Highest Concentration (ppm)	0.063	0.076	0.065
National Design Value (ppm)	0.064	0.068	0.068
Number of Days Standard Exceeded			
CAAQS 8-hour Standard (> 0.070 ppm)	0	6	1
NAAQS 8-hour Standard (> 0.075 ppm)	0	4	1
Carbon Monoxide (CO)			
Maximum Concentration 8-hour Period (ppm)	N/A	N/A	N/A
Number of Days Standard Exceeded			
NAAQS 8-hour Standard (≥ 9 ppm)	N/A	N/A	N/A
CAAQS 8-hour Standard (≥ 9.0 ppm)	N/A	N/A	N/A
Nitrogen Dioxide (NO_2)			
Maximum National 1-hour Concentration (ppm)	0.0815	0.0758	0.0591
Maximum State 1-hour Concentration (ppm)	0.081	0.075	0.059
Annual Average Concentration (ppm)	N/A	N/A	0.014
Number of Days Standard Exceeded			
CAAQS 1-Hour Standard (0.18 ppm)	0	0	0
NAAQS 1-Hour Standard (100 ppb)	0	0	0
Suspended Particulates (PM10)			
Maximum State 24-hour Concentration (µg/m^3)	77.0	84.0	59.0
Maximum National 24-hour Concentration (µg/m^3)	77.0	85.0	59.0
State Annual Average Concentration (µg/m^3)	25.2	26.7	25.3
Number of Days Standard Exceeded			
CAAQS 24-hour Standard (> 50 µg/m^3)	1	2	2
NAAQS 24-hour Standard (> 150 µg/m^3)	0	0	0
Suspended Particulates (PM2.5)			
Maximum National 24-hour Concentration (µg/m^3)	37.8	45.0	45.8
24-hour Standard 98th Percentile (µg/m^3)	22.7	N/A	N/A
National Annual Average Concentration (µg/m^3)	10.0	N/A	N/A
State Annual Average Concentration (µg/m^3)	10.1	16.1	14.6
Number of Days Standard Exceeded			
NAAQS 24-hour Standard (> 35 µg/m^3)	1	4	3

ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; N/A = data not available.
Sources: ARB 2016b; EPA 2016b; ICF International 2016 (see Appendix C).

Sepulveda Feeder

The Los Angeles – LAX (Westchester Parkway) Monitoring Station (ARB Site Number 70111) is 2.9 miles southwest of the Sepulveda Feeder. The station collects data for O_3, NO_X, and PM10. Exceedances of the state 1-hour O_3 standard and the state and federal 8-hour O_3 standard were recorded at this site over the 3-year monitoring period from 2013 to 2015.

Table 4.3-5. Ambient Background Concentrations for Los Angeles – LAX (Westchester Parkway) Monitoring Station (ARB Site Number 70111)

Pollutant Standards	2013	2014	2015
1-Hour Ozone (O_3)			
State Maximum Concentration (ppm)	0.105	0.114	0.096
Number of Days Standard Exceeded			
CAAQS 1-hour Standard (> 0.09 ppm)	1	1	1
8-Hour Ozone (O_3)			
State Maximum Concentration (ppm)	0.082	0.080	0.078
National Maximum Concentration (ppm)	0.081	0.080	0.077
National Fourth-Highest Concentration (ppm)	0.060	0.075	0.069
National Design Value (ppm)	N/A	0.064	0.68
Number of Days Standard Exceeded			
CAAQS 8-hour Standard (> 0.070 ppm)	1	6	3
NAAQS 8-hour Standard (> 0.075 ppm)	1	3	1
Carbon Monoxide (CO)			
Maximum Concentration 8-hour Period (ppm)	N/A	N/A	N/A
Number of Days Standard Exceeded			
NAAQS 8-hour Standard (≥ 9 ppm)	N/A	N/A	N/A
CAAQS 8-hour Standard (≥ 9.0 ppm)	N/A	N/A	N/A
Nitrogen Dioxide (NO_2)			
Maximum National 1-hour Concentration (ppm)	0.0778	0.0873	0.0870
Maximum State 1-hour Concentration (ppm)	0.077	0.087	0.087
Annual Average Concentration (ppm)	N/A	0.012	0.011
Number of Days Standard Exceeded			
CAAQS 1-Hour Standard (0.18 ppm)	0	0	0
NAAQS 1-Hour Standard (100 ppb)	0	0	0
Suspended Particulates (PM10)			
Maximum State 24-hour Concentration (μg/m^3)	37.0	45.0	42.0
Maximum National 24-hour Concentration (μg/m^3)	38.0	46.0	42.0
State Annual Average Concentration (μg/m^3)	N/A	21.9	N/A
Number of Days Standard Exceeded			
CAAQS 24-hour Standard (> 50 μg/m^3)	0	0	0
NAAQS 24-hour Standard (> 150 μg/m^3)	0	0	0

Pollutant Standards		2013	2014	2015
Suspended Particulates (PM2.5)				
	Maximum National 24-hour Concentration (μg/m^3)	N/A	N/A	N/A
	24-hour Standard 98th Percentile (μg/m^3)	N/A	N/A	N/A
	National Annual Average Concentration (μg/m^3)	N/A	N/A	N/A
	State Annual Average Concentration (μg/m^3)	N/A	N/A	N/A
Number of Days Standard Exceeded				
	NAAQS 24-hour Standard (> 35 μg/m^3)	N/A	N/A	N/A
ppm = parts per million; ppb = parts per billion; μg/m^3 = micrograms per cubic meter; N/A = data not available. Sources: ARB 2016b; EPA 2016b; ICF International 2016 (see Appendix C).				

Sensitive Receptors

SCAQMD defines sensitive receptor locations as residential, commercial, and industrial land use areas as well as other locations where sensitive populations may be present. Other sensitive receptor locations include schools, hospitals, convalescent homes, day care centers, and other locations where children, chronically ill individuals, or other sensitive persons could be exposed (SCAQMD 2005).

Each of the pipelines in the proposed program is within close proximity of residences, schools, and recreational facilities, with such receptor locations occurring adjacent to the roadway or at other locations in the immediate vicinity.

4.3.3 Regulatory Framework

This section describes the plans, policies, and regulations related to air quality that are applicable to the proposed program.

4.3.3.1 Federal

Federal Clean Air Act

The Federal Clean Air Act (CAA) was first enacted in 1963, but has been amended numerous times in subsequent years (1967, 1970, 1977, and 1990). The CAA establishes the NAAQS and specifies future dates for achieving compliance. The CAA also mandates that the states submit a State Implementation Plan for regions that fail to meet the standards. The plans must include pollution control measures that demonstrate how the standards will be met. The City of Los Angeles is within the Basin, which is designated as a nonattainment area for certain pollutants that are regulated under the CAA.

The 1990 amendments to the CAA identify specific emissions-reduction goals for areas that fail to meet the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. The sections of the CAA that would most substantially affect development of the proposed program include Title I (Nonattainment Provisions) and Title II (Mobile-Source Provisions). Title I provisions were established with the goal of attaining the NAAQS for criteria

pollutants. Table 4.3-6 shows the NAAQS that are currently in effect for each criteria pollutant. Table 4.3-7 shows the region's attainment status for the NAAQS. The NAAQS were amended in July 1997 to include an 8-hour standard for O_3 and adopt a standard for PM2.5. The 8-hour O_3 NAAQS was further amended in October 2015. EPA will designate O_3 attainment and nonattainment areas in late 2017.

Table 4.3-6. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b]
O_3	1 hour 8 hour	0.09 ppm[c] 0.070 ppm	— 0.070 ppm
CO	1 hour	20 ppm	35 ppm
	8 hour	9.0 ppm	9 ppm
NO_2	1 hour	0.18 ppm	100 ppb
	Annual Arithmetic Mean	0.030 ppm	53 ppb
SO_2	1 hour	0.25 ppm	75 ppb
	24 hour	0.04 ppm	0.14 ppm
PM10	24 hour	50 µg/m^3 [c]	150 µg/m^3
	Annual Arithmetic Mean	20 µg/m^3	—
PM2.5	24 hour	—	35 µg/m^3
	Annual Arithmetic Mean	12 µg/m^3	12.0 µg/m^3
Sulfates	24 hour	25 µg/m^3	—
Pb	30 day average	1.5 µg/m^3	—
	Calendar quarter	—	1.5 µg/m^3
	Rolling 3-Month Average	—	0.15 µg/m^3
Hydrogen Sulfide	1 hour	0.03 ppm	—
Vinyl Chloride	24 hour	0.01 ppm	—

Notes:

[a] The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM10, and PM2.5 are values not to be exceeded. All other California standards shown are values not to be equaled or exceeded.

[b] The NAAQS, other than O_3 and those pollutants using annual arithmetic mean, are not to be exceeded more than once a year. The O_3 standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than 1.

[c] ppm = parts per million by volume; ppb = parts per billion; µg/m^3 = micrograms per cubic meter.

Source: ARB 2016a.

Table 4.3-7. Federal and State Attainment Status for the South Coast Air Basin

Pollutants	Federal Classification	State Classification
O_3 (1-hour standard)	—	Nonattainment
O_3 (8-hour standard)	Nonattainment, Extreme	Nonattainment
PM10	Attainment/Maintenance	Nonattainmen
PM2.5	Nonattainment	Nonattainment
CO	Attainment/Maintenance	Attainment
NO_2	Attainment/Maintenance	Attainment
SO_2	Attainment	Attainment
Pb	Nonattainment	Attainment
Note that only the Los Angeles County portion of the Basin is nonattainment for NAAQS Pb. The remainder of the Basin is in attainment. Sources: ARB 2013b; EPA 2015; Appendix C.		

4.3.3.2 State

California Clean Air Act

The California Clean Air Act, signed into law in 1988, requires all areas of the state to achieve and maintain the CAAQS by the earliest practical date. The CAAQS incorporate additional standards for most of the criteria pollutants and set standards for other pollutants recognized by the state. In general, the California standards are more health protective than the corresponding NAAQS. California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. The Basin is in compliance with the California standards for sulfates, hydrogen sulfide, visibility-reducing particles, and vinyl chloride. Table 4.3-6 details the current CAAQS, and Table 4.3-7 provides the Los Angeles County portion of the Basin's attainment status with respect to CAAQS.

State Tailpipe Emission Standards

To reduce emissions from off-road diesel equipment, on-road diesel trucks, and harbor craft, ARB established a series of increasingly strict emission standards for new engines. New construction equipment used for the program, including heavy-duty trucks and off-road construction equipment, will be required to comply with the standards.

Toxic Air Contaminants

California regulates TACs primarily through the Toxic Air Contaminant Identification and Control Act (Tanner Act) and the Air Toxics "Hot Spots" Information and Assessment Act of 1987 ("Hot Spots" Act). In the early 1980s, ARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act created California's program to reduce exposure to air toxics. The "Hot Spots" Act supplements the Tanner Act by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

ARB identified DPM as a TAC in 1998 (ARB 1998). Shortly thereafter, ARB approved a comprehensive Diesel Risk Reduction Plan to reduce emissions from both new and existing diesel-

fueled engines and vehicles (ARB 2000). The goal of the plan is to reduce DPM (respirable particulate matter) emissions and the associated health risk by 75 percent in 2010 and by 85 percent by 2020. The plan identifies 14 measures that ARB will implement over the next several years. Because ARB measures would be enacted before any phase of construction, the proposed program would be required to comply with applicable diesel control measures.

4.3.3.3 Regional

South Coast Air Quality Management District Rules and Regulations

SCAQMD has adopted a series of air quality management plans (AQMPs) to meet the CAAQS and NAAQS. These plans require, among other emissions-reducing activities, control technology for existing sources, control programs for area sources and indirect sources, an SCAQMD permitting system that allows no net increase in emissions from any new or modified (i.e., previously permitted) emissions sources, and transportation control measures. The most recent AQMP is the 2012 AQMP. The Final 2012 AQMP was adopted by the SCAQMD Governing Board on December 7, 2012. Control measure IND-01 was approved for adoption and inclusion in the Final 2012 AQMP at the February 1, 2013 Governing Board meeting. ARB approved the 2012 AQMP on January 25, 2013, and the AQMP has been submitted to EPA as a revision to the California State Implementation Plan (ARB 2013a). The 2012 AQMP addresses CAA requirements and includes a 24-hour PM2.5 plan; additional 8-hour O_3 measures, with a vehicle-miles-traveled (VMT) offset demonstration; and a 1-hour O_3 attainment demonstration with VMT offset demonstration. SCAQMD is in the process of developing the 2016 AQMP, which will be primarily focused on addressing the O_3 and PM2.5 standards. SCAQMD is expected to release the draft 2016 AQMP and environmental review in the spring of 2016 and adopt and submit the final 2016 AQMP by the summer of 2016.

SCAQMD published the *CEQA Air Quality Handbook* in November 1993[1] to help local governments analyze and mitigate project-specific air quality impacts. This handbook provides standards, methodologies, and procedures for conducting air quality analyses as part of CEQA documents prepared within SCAQMD's jurisdiction. In addition, SCAQMD has published two guidance documents: *Localized Significance Threshold Methodology for CEQA Evaluations* (2003, revised 2008) and *Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology* (2006). These publications provide guidance for evaluating localized effects from mass emissions during construction. Both were used in the preparation of this analysis (SCAQMD 2006, 2008).

SCAQMD Rule 402—Nuisance

This rule prohibits the discharge of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; endanger the comfort, repose, health, or safety of any such persons or the public; or cause, or have a natural tendency to cause, injury or damage to business or property. Odors are regulated under this rule.

SCAQMD Rule 403—Fugitive Dust

This rule prohibits emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area that remains visible beyond the property line of the emission's source. During construction, best available control measures identified in the rule would be required to

[1] Section updates provided on the SCAQMD website: http://www.aqmd.gov/ceqa/hdbk.html

minimize fugitive dust emissions from proposed earthmoving and grading activities. These measures would include site pre-watering and re-watering as necessary to maintain sufficient soil moisture content. Additional requirements apply to construction projects on properties with 50 or more acres of disturbed surface area or any earthmoving operation with a daily earthmoving or throughput volume of 5,000 cubic yards or more three times during the most recent 365-day period. These requirements include submittal of a dust control plan, maintenance of dust control records, and designation of an SCAQMD-certified dust control supervisor.

SCAQMD Rule 1108—Cutback Asphalt

This rule specifies VOC content limits for cutback asphalt.

SCAQMD Rule 1470—Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines

This rule specifies requirements for stationary diesel engines, including emergency standby generators. It requires owners or operators of emergency standby generators to keep monthly logs of usage, limits maintenance and testing to 20 hours per year, and requires emission rates to not exceed 0.40 gram per brake-horsepower hour.

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial counties. SCAG addresses regional issues related to transportation, the economy, community development, and the environment, and is the federally designated metropolitan planning organization for a majority of the region and the largest metropolitan planning organization in the nation. As required by federal and state law, SCAG develops plans pertaining to transportation, growth management, hazardous waste management, housing, and air quality. SCAG data are used in the preparation of air quality forecasts and the consistency analysis included in the AQMP.

4.3.3.4 Local

Although local actions have important implications for air quality, regulation of air quality occurs primarily at the federal, state, and regional levels.

4.3.4 Thresholds and Methodology

4.3.4.1 Thresholds of Significance

Table 4.3-8 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to air quality. These thresholds are addressed in the PEIR.

Table 4.3-8. CEQA Thresholds for Air Quality

Threshold *Would the proposed ~~project or~~ program:*
a. Conflict with or obstruct implementation of the applicable air quality plan?
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?
c. Result in a cumulatively considerable net increase in any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?
d. Expose sensitive receptors to substantial pollutant concentrations?
e. Create objectionable odors that would affect a substantial number of people?

Appendix G of the State CEQA Guidelines further states that the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the determinations in Table 4.3-8. As such, SCAQMD has established significance thresholds intended to more specifically define CEQA Thresholds A through E.

Under Threshold A, SCAQMD thresholds consider whether the proposed program would:

- Result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of air quality standards.
- Exceed the assumptions in the AQMP.

SCAQMD's current significance thresholds relative to CEQA Thresholds B through E are presented in Table 4.3-9. This information is used to analyze:

- The daily regional emissions for construction activities.
- Daily local emissions occurring at or around a particular site.
- Maximum incremental carcinogenic risk and hazard indices for TACs.

Both regional and local impact analyses are performed for certain thresholds where appropriate. A regional impact analysis is based on attaining or maintaining regional emissions standards, and a local impact analysis compares the on-site emissions of a pollutant to a health-based standard.

As indicated in the first column of Table 4.3-9, SCAQMD's thresholds are used to determine impacts relative to applicable Appendix G CEQA checklist questions (Questions A through E from Table 4.3-8). Some Appendix G CEQA checklist questions require multiple SCAQMD thresholds to determine impacts. For example, with respect to CEQA Threshold B, both regional emission thresholds (B1) and local emission thresholds (B2) are considered to determine significance. Therefore, a significant impact would occur if the proposed program would exceed SCAQMD's established daily emission rate, risk value, or concentration thresholds identified in Table 4.3-9.

Table 4.3-9. SCAQMD Air Quality Thresholds

CEQA Threshold	Pollutant	Daily Regional Emissions Thresholds (pounds/day)
A1/B1/C1	VOC	75
	NO_X	100
	CO	550
	PM10	150
	PM2.5	55
	SO_X	150
		Daily Local Emissions Thresholds (pounds/day) [1]
B2/C2/D1	NO_X	46
	CO	231
	PM10	4
	PM2.5	3
		Other Thresholds
D2	TACs	Maximum Incremental Carcinogenic Risk ≥ 10 in 1 million
D3		Chronic and Acute Hazard Index ≥ 1.0 (project increment)
E1	Odor	Project creates an odor nuisance pursuant to Rule 402

Notes:
Letter:1 indicates regional emissions
Letter:2 indicates local emissions
[1] Program activities would occur in at least 18 of the source receptor areas (SRAs) within the Basin, which include SRAs 2, 3, 4, 6, 10, 11, 16, 17, 20, 21, 23, 24, 25, 30, 32, 33, 34, and 37. Because each SRA has its own localized significance threshold (LST) based on the location, size of the site, and distance to the nearest receptor, the LST for SRA No. 12 (South Central LA County) is being used because it represents the most stringent standard in the Basin. A 1-acre site and 25-meter receptor distance for this location was selected on the basis that it has the most stringent LST.
Source: SCAQMD 2008.

SCAQMD developed localized significance threshold (LST) methodology and mass rate look-up tables in 2003 and updated them in 2008. This information is used to determine whether or not a project may generate significant adverse localized air quality impacts (SCAQMD 2008). LSTs represent the maximum emissions from a project that would not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard. They are developed based on the ambient concentrations of that pollutant for each of the 37 source receptor areas (SRAs) within the SCAQMD. It should be noted that use of LSTs is voluntary. LSTs are applicable at the project-specific level and generally are not applicable to regional projects such as local general plans unless specific projects are identified in the general plans (SCAQMD 2008). Applicable SRA Zones for the proposed program include the following: 2, 3, 4, 6, 10, 11, 16, 17, 20, 21, 23, 24, 25, 30, 32, 33, 34, and 37.

4.3.4.2 Methodology

Because the proposed program intends to extend the service life of PCCP and appurtenant structures for these facilities to continue operating as they do at present, there would be no change in the operational characteristics relative to existing conditions once rehabilitation activities are

complete. Therefore, no operational air quality impacts are considered and the following analysis is limited to the construction period.

Construction phasing information, construction equipment that would be used, excavation and paving quantities, and truck trips were obtained from Metropolitan. Pollutant estimates were based on a combination of assumptions based on Metropolitan's experience with similar types of projects, information from Table 3-2 in Chapter 3, *Program Description*, and defaults derived from sources identified herein, as described below and in Table 4.3-10.

- Emission factors for off-road construction equipment (e.g., loaders, cranes) were obtained from the California Emissions Estimator Model (CalEEMod) *User's Guide* (CAPCOA 2013) Appendix D, which provides values per unit of activity (in grams per horsepower-hour) for each calendar year. Equipment load factors and engine horsepower ratings were also obtained from CalEEMod. Emissions from off-road equipment were estimated by multiplying the CalEEMod default data by the equipment inventory in Table 3-2 in Chapter 3, *Program Description*.
- Emission factors for on-road employee commute vehicles were obtained from ARB's EMFAC2011 web tool (ARB 2011). Factors are based on weighted average vehicle speeds for EMFAC's light-duty truck vehicle category. One-way trip lengths are based on CalEEMod defaults, which are 14.7 miles per employee trip (Los Angeles County portion of Basin, home-work trip) (CAPCOA 2013). All employees were conservatively assumed to make two trips to the project site per day. Emissions generated by employee vehicles were estimated by multiplying the number of employee vehicle trips by the EMFAC2011 emission factors and default mileage.
- Emission factors for on-road haul trucks were obtained from ARB's EMFAC2011 web tool (ARB 2011). Factors for on-site trucks are based on EMFAC's T7 Tractor category for vehicles traveling at 5 miles per hour. Emission factors for off-site haul trucks are based on weighted average vehicle speeds for EMFAC's T7 Tractor vehicle category. Criteria pollutants and GHGs generated by on-site and off-site trucks were estimated by multiplying the EMFAC2011 emission factors by vehicle mileage estimates. Because the fleet of on-road haul trucks would use diesel fuel, all emissions would be the result of incomplete diesel fuel combustion.
- Fugitive re-entrained road dust emissions are based on EPA's AP-42 methodology and VMT data (EPA 2011).
- Fugitive PM10 and PM2.5 dust emissions associated with earthwork are based on daily intensity rates (acres graded per day) and fugitive dust calculation methodologies contained in the CalEEMod *User's Guide* (CAPCOA 2013). Unmitigated emissions were reduced by 61 percent from uncontrolled levels to reflect required compliance with SCAQMD Rule 403 (SCAQMD 1993:Table A11-9-A: A11-77). The dust-control methods for the program will be specified in the dust-control plan that would be submitted to the SCAQMD per Rule 403.

Table 4.3-10. Construction Emissions Sources and Quantification Methodology

Emissions Source	Location	Emission Factors	Quantification Method
Off-road Equipment	On site	Engine emission factors from CalEEMod *User's Guide*	Engine emission factors, horsepower, and load factors multiplied by daily operating activity (hours)
Employee Vehicles	Off site	Engine emission factors from EMFAC2011 (LDA/LDT category)	Engine emission factors multiplied by the number of daily employee trips and default trip mileage (14.7 miles)
Haul Trucks	On and off site	Engine emission factors from EMFAC2011 (T7 Tractor category)	Engine emission factors multiplied by daily vehicle mileage
Re-entrained Dust	On and off site	PM10 and PM2.5 emission factors (0.73 and 0.18 gram per mile, respectively) from ARB 2011	Dust emission factors multiplied by daily VMT
Earthwork and Grading[a]	On site	PM10 and PM2.5 emission factors (0.41 and 0.04 pound per acre, respectively) from CalEEMod	Dust emission factors multiplied by daily graded acres
Paving	On site	ROG emission factor (2.62 pounds per acre) from CalEEMod	ROG emission factor multiplied by daily paved area

[a] Accounts for 61 percent from uncontrolled levels to reflect required compliance with SCAQMD Rule 403.
LDA = light-duty automobile; LDT = light-duty truck

Emissions from each of the sources above are presented at the daily scale and compared with the SCAQMD construction thresholds identified above. Peak daily construction emissions were estimated by calculating emissions for the individual construction scenarios and then summing emissions from overlapping activities. For the purposes of this analysis, it was assumed that the phase of each of the following construction/rehabilitation activities with the highest emissions would take place concurrently.

- 10 typical excavation sites for relining and valve replacement
- Two new valves/meter vaults would be constructed and the existing vault would be demolished (the maximum size of the vault was assumed, as identified in Chapter 3)
- Three below-grade air-release/vacuum valves relocated to above ground
- A 1,000-foot segment of new pipeline would be installed parallel to the existing PCCP

The combination of sequences across all locations that produce the highest daily emissions in each construction year was selected as the peak day for analysis purposes. This approach is meant to convey a worst-case scenario, and is therefore not necessarily representative of emissions that would occur on a daily basis throughout the construction period.

Due to the consistent improvements in the emissions of construction equipment and vehicles and the fact that older, less efficient equipment and vehicles are phased out over time, the greatest emissions would occur in the near future as opposed to the more distant future. As such, the first 5 years of the program are quantified to show the greatest impacts. Although there would continue to be impacts in the more distant future, emissions would be lower.

All emissions calculation worksheets and modeling output files are provided in Appendix C, *Air Quality Calculations*.

Applicable Air Quality Plan

As discussed in Section 4.3.3.3 above, the Final 2012 AQMP is the most recently adopted AQMP. SCAQMD rules and guidance documents, such as the CEQA Air Quality Handbook and the *Localized Significance Threshold Methodology for CEQA Evaluations*, provide the means by which projects demonstrate their consistency with the AQMP.

Criteria for determining consistency for the AQMP is defined in the CEQA Air Quality Handbook. There are two key indicators of consistency:

- **Consistency Criterion No. 1**: Whether the project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.
- **Consistency Criterion No. 2**: Whether the project will exceed the assumptions in the AQMP or increments based on the year of project build-out and phase.

Air Quality Standards and Criteria Pollutants

The significance thresholds identified above are the project-level air quality standards that are used to evaluate program impacts.

Sensitive Receptors

The LST methodology identified above is used as the project-level air quality standard to evaluate localized impacts on sensitive receptors. The LST analysis, which addresses pollutant proximity to sensitive receptors, was performed using the closest receptor distance (25 meters) and most conservative site size (1 acre) in the lowest LST-thresholds area within the Basin (SRA No. 12).[2]

Objectionable Odors

The Initial Study for the proposed program determined that impacts related to objectionable odors would not occur as a result of program rehabilitation activities. Therefore, there is no discussion of odor impacts in this section.

[2] LST standards increase as the distance from emissions source increases, and as site acreage increases. As such, it is most conservative to assume the closest receptor distance and smallest construction site acreage.

4.3.5 Impacts Analysis

4.3.5.1 Program Analysis

Threshold AQ-A: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan

Criteria for determining consistency for the AQMP is defined in the CEQA Air Quality Handbook. There are two key indicators of consistency:

- **Consistency Criterion No. 1**: Whether the project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.
- **Consistency Criterion No. 2**: Whether the project will exceed the assumptions in the AQMP or increments based on the year of project build-out and phase.

Consistency Criterion No. 1 refers to violations of NAAQS and CAAQS. SCAQMD recommends an air quality modeling analysis be performed to identify project impacts. In order to be found consistent with Consistency Criterion No. 1, the analysis needs to demonstrate that project emissions would not increase the frequency or severity of existing violations or cause or contribute to new violations. Although there would be no changes in land use or pollutant emissions associated with operation of the proposed program, construction-period emissions would exceed regional mass emissions thresholds developed to aid the Basin in achieving attainment for those pollutants for which it is nonattainment (see the discussion for Threshold AQ-B). Mitigation Measure MM AIR-1 would reduce the exceedances of regional mass emissions, but impacts would remain significant. Therefore, the proposed program would conflict with Consistency Criterion No. 1. This would be a significant and unavoidable impact.

For Criterion No. 2, SCAQMD is required, pursuant to the CAA, to reduce emissions of criteria pollutants for which the Basin is in nonattainment status. SCAQMD's most recent plan to achieve air quality standards is the 2012 AQMP, adopted by the SCAQMD Governing Board on December 7, 2012. The 2012 AQMP outlines a comprehensive control strategy to meet the requirement for expeditious progress toward attainment of the 24-hour PM2.5 NAAQS in 2014 through all feasible control measures. The 2012 AQMP also includes specific measures for implementing the O_3 strategy from the 2007 AQMP and attaining the 8-hour O_3 standard by 2023 (SCAQMD 2012a).

These strategies are based, in part, on regional population, housing, and employment projections prepared by the region's cities and counties and incorporated by SCAG. As such, projects that propose development that is consistent with the growth anticipated in the relevant land use plans used in the formulation of the AQMP are considered to be consistent with the AQMP.

Given that the proposed program would not involve changes to land use and would allow Metropolitan to extend the life of its facilities, the proposed program is considered consistent with the assumptions used in the development of the AQMP. Therefore, the proposed program would not conflict with Consistency Criterion No. 2.

Mitigation Measures

MM AIR-1 All off-road diesel-powered construction equipment greater than 50 horsepower will meet Tier 4 emission standards. All construction equipment will be outfitted with ARB best available control technology devices. Any emissions-control device used by the contractor will achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by ARB regulations. A copy of each unit's certified tier specification, best available control technology documentation, and ARB or SCAQMD operating permit will be provided to Metropolitan's Construction Inspector at the time of mobilization of each applicable unit of equipment.

Residual Impacts

Impacts that would result from the proposed program would be significant. Implementation of MM AIR-1 would reduce these impacts; however, residual impacts would still be significant and unavoidable.

Threshold AQ-B: Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation

Regional Mass Emissions

Pollutants would be emitted as a result of rehabilitation activities stemming from the use of construction equipment (primarily diesel-powered), haul and materials vehicle trips, and fugitive dust. Table 4.3-11 shows expected 2018 emissions for a single site associated with each of the modeled construction types. No exceedances of regional mass thresholds would occur when an individual site is considered.

Table 4.3-11. 2018 Daily Regional Mass Emissions for Single Sites (pounds per day)

	VOC	CO	NO_X	SO_X	PM10	PM2.5
Typical Excavation Site	7	37	60	<1	3	3
Typical New Valve/Meter Vault Structure	8	42	63	<1	3	3
Typical Below Grade Air-release/Vacuum Valve Relocation	7	32	58	<1	3	2
Pipeline Replacement/Parallel Piping	8	40	77	<1	3	3
Single-Site Maximum	8	42	77	<1	3	3
Regional Mass Emissions Threshold	75	550	100	150	150	55
Single Site Exceeds Threshold?	*No*	*No*	*No*	*No*	*No*	*No*
Source: Calculations by ICF International 2016 (see Appendix C).						

However, as shown in Table 4.3-12, the 2018 emissions for the full construction scenario of 10 relining sites, two new valve/meter vaults, three relocations of air-release/vacuum valves, and a 1,000-foot section of parallel piping occurring at the same time with the phases with the greatest emissions overlapping would result in exceedances of regional mass emissions thresholds for VOC, CO, and NO_X. This would be a significant air quality impact.

Table 4.3-12. 2018 Daily Regional Mass Emissions for Full Construction Scenario (pounds per day)

	VOC	CO	NO_X	SO_X	PM10	PM2.5
Typical Excavation Site	74	372	604	1	31	30
Typical New Valve/Meter Vault Structure	16	85	127	<1	7	6
Typical Below Grade Air-release/Vacuum Valve Relocation	21	96	175	<1	8	7
Pipeline Replacement/Parallel Piping	8	40	77	<1	3	3
Single-Site Maximum	118	593	983	1	48	47
Regional Mass Emissions Threshold	75	550	100	150	150	55
Single Site Exceeds Threshold?	*Yes*	*Yes*	*Yes*	*No*	*No*	*No*
Source: Calculations by ICF International 2016 (see Appendix C).						

With the implementation of MM AIR-1, impacts would be reduced to the levels shown in Table 4.3-13, but exceedances of the thresholds would occur for CO and NO_X.

Table 4.3-13. Mitigated Daily 2018 Regional Mass Emissions for Full Construction Scenario (pounds per day)

	VOC	CO	NO_X	SO_X	PM10	PM2.5
Typical Excavation Site (10)	43	372	129	1	5	5
Typical New Valve/Meter Vault Structure (2)	9	85	27	<1	1	1
Typical Below Grade Air-release/Vacuum Valve Relocation (3)	10	96	22	<1	1	1
Pipeline Replacement/ Parallel Piping (1,000 feet)	5	40	30	<1	1	1
Total for All Sites	68	593	208	1	9	8
Regional Mass Emissions Threshold	75	550	100	150	150	55
Total Exceeds Threshold?	*No*	*Yes*	*Yes*	*No*	*No*	*No*
Source: Calculations by ICF International 2016 (see Appendix C).						

As shown in Table 4.3-14, regional mass emissions would be reduced in each modeled year after 2018, but would remain significant through 2022 for CO and NO_X.

Table 4.3-14. Mitigated Daily Regional Mass Emissions for Full Construction Scenario (pounds per day)

	VOC	CO	NO_X	SO_X	PM10	PM2.5
2018 Total for All Sites	68	593	208	1	9	8
2019 Total for All Sites	62	584	193	1	8	7
2020 Total for All Sites	57	578	179	1	7	6
2021 Total for All Sites	53	572	164	1	7	6
2022 Total for All Sites	50	568	153	1	6	5
Regional Mass Emissions Threshold	75	550	100	150	150	55
Single Site Exceeds Threshold?	*No*	*Yes*	*Yes*	*No*	*No*	*No*
Source: Calculations by ICF International 2016 (see Appendix C).						

Localized Emissions

Localized emissions would result from those activities that would occur at a given site and in the immediate vicinity. Only on-site construction equipment and idling of truck trips required for hauling are considered, as all but a few of the emissions of on-road vehicles would occur away from the site. Due to the linear nature of the proposed program and the fact that sites would be spread out along the alignment, the emissions of single sites are considered in isolation of one another. Table 4.3-15 shows the on-site emissions for each of the modeled elements of the proposed program, which indicates that the LSTs would be exceeded for NO_X and PM2.5. This would be a significant impact.

Table 4.3-15. 2018 Daily Localized Emissions for Single Sites (pounds per day)

	VOC	CO	NO_X	SO_X	PM10	PM2.5
Typical Excavation Site	7	37	58	<1	3	3
Typical New Valve/Meter Vault Structure	8	42	61	<1	3	3
Typical Below Grade Air-release/Vacuum Valve Relocation	7	32	57	<1	2	2
Pipeline Replacement/Parallel Piping	7	36	57	<1	3	3
Single-Site Maximum	8	42	61	<1	3	3
Regional Mass Emissions Threshold	N/A	231	46	N/A	4	3
Single Site Exceeds Threshold?	*N/A*	*No*	*Yes*	*N/A*	*No*	*Yes*
Notes: 1-acre site and 25-meter receptor distances in SRA No. 12 South Central LA County are used, which have the most stringent LSTs; no LSTs have been established for VOC and SO_X. Source: Calculations by ICF International 2016 (see Appendix XXC).						

As shown in Table 4.3-16, with implementation of MM AIR-1, no exceedances of the LSTs would occur. Because no exceedances of the LSTs would occur in the mitigated 2018 condition, construction in the years following 2018 would also not exceed the LSTs, as newer, cleaner equipment would replace older, higher-emitting equipment.

Table 4.3-16. 2018 Mitigated Daily Localized Emissions for Single Sites (pounds per day)

	VOC	CO	NO_X	SO_X	PM10	PM2.5
Typical Excavation Site	4	37	10	<1	<1	<1
Typical New Valve/Meter Vault Structure	4	42	11	<1	1	1
Typical Below Grade Air-release/Vacuum Valve Relocation	3	32	6	<1	<1	<1
Pipeline Replacement/Parallel Piping	4	36	10	<1	<1	<1
Single-Site Maximum	4	42	11	<1	1	1
Regional Mass Emissions Threshold	N/A	231	46	N/A	4	3
Single Site Exceeds Threshold?	*N/A*	*No*	*No*	*N/A*	*No*	*No*

Notes: 1-acre site and 25-meter receptor distances in SRA No. 12 South Central LA County are used, which have the most stringent LSTs; no LSTs have been established for VOC and SO_X.
Source: Calculations by ICF International 2016 (see Appendix C).

Mitigation Measures

Implementation of MM AIR-1.

Residual Impacts

Impacts that would result from the proposed program would be significant. Implementation of MM AIR-1 would reduce these impacts; however, residual impacts would still be significant and unavoidable.

Threshold AQ-C: Result in a Cumulatively Considerable Net Increase in Any Criteria Pollutant for Which the Region Is in Non-Attainment under an Applicable Federal or State Ambient Air Quality Standard

As discussed under Threshold AQ-B above, implementation of the proposed program would result in exceedances of the regional mass emission thresholds for CO and NO_X. With implementation of mitigation, these impacts would be reduced, but would remain significant and unavoidable.

Mitigation Measures

Implementation of MM AIR-1.

Residual Impacts

Impacts that would result from the proposed program would be significant. Implementation of MM AIR-1 would reduce these impacts; however, residual impacts would still be significant and unavoidable.

Threshold AQ-D: Expose Sensitive Receptors to Substantial Pollutant Concentrations

With regard to criteria pollutant emissions, the localized significance threshold analysis shown in Table 4.3-16 demonstrates that impacts would be significant with the implementation of MM AIR-1.

Mitigation Measures

Implementation of MM AIR-1.

Residual Impacts

Impacts that would result from the proposed program would be significant. Implementation of MM AIR-1 would reduce these impacts; however, residual impacts would still be significant and unavoidable.

Threshold AQ-F: Create Objectionable Odors that Would Affect a Substantial Number of People

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment facilities, food processing plants, chemical plants, composting areas, refineries, landfills, dairies, and fiberglass molding facilities. Rehabilitation includes none of these land uses. During the rehabilitation process, some limited odor may result from asphalt paving activities, which may be detectable by people immediately adjacent to work sites. However, asphalt paving would occur for a limited time period at each excavation site (less than 1 week), and the locations of paving activities would be distributed over several excavation sites along the entire alignment. Furthermore, SCAQMD Rule 402 prohibits the discharge of air contaminants that cause nuisance or annoyance to the public, including odors. Also SCAQMD maintains both a toll-free phone line (1-800-CUT-SMOG) and a web-based platform (http://www.aqmd.gov/contact/complaints) for reporting complaints related to air quality, including odors. Given the limited duration and location of asphalt paving, mandatory compliance with SCAQMD Rule 402, and ability for the public to report complaints to SCAQMD, rehabilitation would not create a significant level of objectionable odors. Impacts would be less than significant

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

4.3.5.2 Cumulative Analysis

The proposed program would be implemented over a long period of time; in many cases, implementation of the projects in the proposed program would occur past the planning horizons of local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

Because the proposed program would exceed regional mass thresholds that have been developed to bring the Basin into attainment for all criteria pollutants and emissions would remain in excess of those thresholds with implementation MM AIR-1, impacts would be cumulatively considerable. The proposed program would comply with all applicable SCAQMD rules and regulations, including Rule 403 (Fugitive Dust Control) and Rule 1108 (Cutback Asphalt), during construction as well as all

other adopted AQMP emissions control measures to minimize emissions and impacts on nearby sensitive receptors.

Section 4.4
Biological Resources

4.4.1 Introduction

This section describes the existing conditions for biological resources, the regulatory framework associated with biological resources, the impacts on biological resources that would result from the proposed program, and the mitigation measures that would reduce these impacts. As noted in the Initial Study, the proposed program would have potentially significant biological resources impacts.

4.4.2 Existing Conditions

The study area for biological resources is the pipeline easements or rights-of-way and 0.25 mile on either side of the alignments (a half-mile corridor). Figures 4.4-1 through 4.4-5 show the biological resources study area and areas with potential for significant biological resources within these study areas.

4.4.2.1 Allen-McColloch Pipeline

The Allen-McColloch Pipeline alignment begins near the east side of the Robert B. Diemer Water Treatment Plant (Diemer Plant) and travels eastward and southward through an area of open space, a golf course, and undeveloped utility easements until it reaches Yorba Linda Boulevard. From this point until it crosses under the Santa Ana River, the pipeline is below street rights-of-way. Where the Allen-McColloch Pipeline crosses under the Santa Ana River, the river is a managed soft-bottomed channel used for flood control and groundwater recharge. After crossing the river, the alignment is again within street rights-of-way and developed areas until it crosses State Route 91 (SR-91). South of SR-91, the alignment is under increasingly larger areas of open space, first just small, isolated undeveloped areas and then mostly undeveloped open space between approximately State Route 261 (SR-261) and Alton Parkway. Past Alton Parkway, the alignment is within some open space areas, but also street rights-of-way. Once it reaches Trabuco Road, it is mostly in street rights-of-way until its southern terminus.

Special-status Species

Special-status species are plants or animals that are legally protected under the federal Endangered Species Act (FESA), California Endangered Species Act (CESA), California Native Plant Protection Act, or other regulations; for example, species that meet the definitions of rare, threatened, or endangered under State CEQA Guidelines Sections 15380 and 15125. Special-status species may also include species considered sufficiently rare by the scientific community.

Appendix D contains a list of the potential special-status species for Orange County from the California Natural Diversity Database. It is likely that a few of these species are found in the Allen-McColloch Pipeline study area. For example, California black walnut (*Juglans californica*), coastal cactus wren (*Campylorhynchus brunneicapillus couesi*), and coastal California gnatcatcher (*Polioptila californica californica*) are known to occur at the Diemer Plant (Metropolitan 2015). Special-status

species may also exist in open space areas in Orange, Tustin, Irvine, Lake Forest, and Mission Viejo. However, most of the species on this list would have low potential to occur and are not expected due to the lack of suitable habitat or other factors.

Riparian Habitat and Other Sensitive Natural Communities

A riparian area consists of the transitional habitat between terrestrial and aquatic ecosystems. Specifically, riparian areas are the vegetated areas between a seasonal riverine feature and the outer drip line of the adjacent vegetation. Riparian vegetation supports a unique set of physical and biological processes, including temperature regulation and wildlife habitat, and provides valuable aquatic food web services (inputs for nutrient cycling and food availability) to adjacent aquatic ecosystems. Riparian areas can be wetlands or nonwetland areas.

Special-status plant communities (also referred to as sensitive natural communities) are plant communities that are of limited distribution statewide or within a county or region, and that are often vulnerable to the environmental impacts of projects.

The Allen-McColloch Pipeline crosses under the Santa Ana River, Santiago Creek, Borrego Canyon Wash, Serrano Creek, Aliso Creek, and smaller unnamed washes (see Figure 4.4-1). It also passes near Peters Canyon Reservoir. Most of these drainages have soft bottoms at the point where the pipeline crosses under them, though riparian vegetation is very limited because the channels are managed for flood control and groundwater recharge. Other sensitive natural communities are known to exist within the Allen-McColloch Pipeline study area. For example, there are areas of coastal sage scrub, southern cactus scrub, California walnut woodland, mulefat scrub, and southern willow scrub known to occur at the Diemer Plant property (Metropolitan 2015). These and other sensitive natural communities may also occur elsewhere in the Allen-McColloch Pipeline study area, especially where the pipeline crosses under large areas of open space, south and east of SR-261.

Wetlands

Wetlands and other waters are regulated by the federal government (U.S. Army Corps of Engineers) and the State of California (State Water Resources Control Board and California Department of Fish and Wildlife [CDFW]).

The federal Clean Water Act (CWA) (33 U.S.C. § 1251 et seq.) defines *waters of the U.S.* as follows: (1) all waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide; (2) all interstate waters including interstate wetlands; (3) all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce; (4) all impoundments of waters otherwise defined as waters of the U.S.; (5) tributaries to the foregoing types of waters; and (6) wetlands adjacent to the foregoing waters (33 C.F.R. § 328.3(a)). Wetlands are a sub-classification of waters of the U.S. The term *other waters of the U.S.* is used to describe waters of the U.S. exclusive of wetlands.

According to the *Corps of Engineers Wetland Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE 2008), three criteria must be satisfied to classify an area as a jurisdictional wetland. These criteria are: (1) a predominance of plant life that is adapted to life in wet conditions (hydrophytic vegetation); (2) soils that saturate, flood, or pond long enough during the growing season to

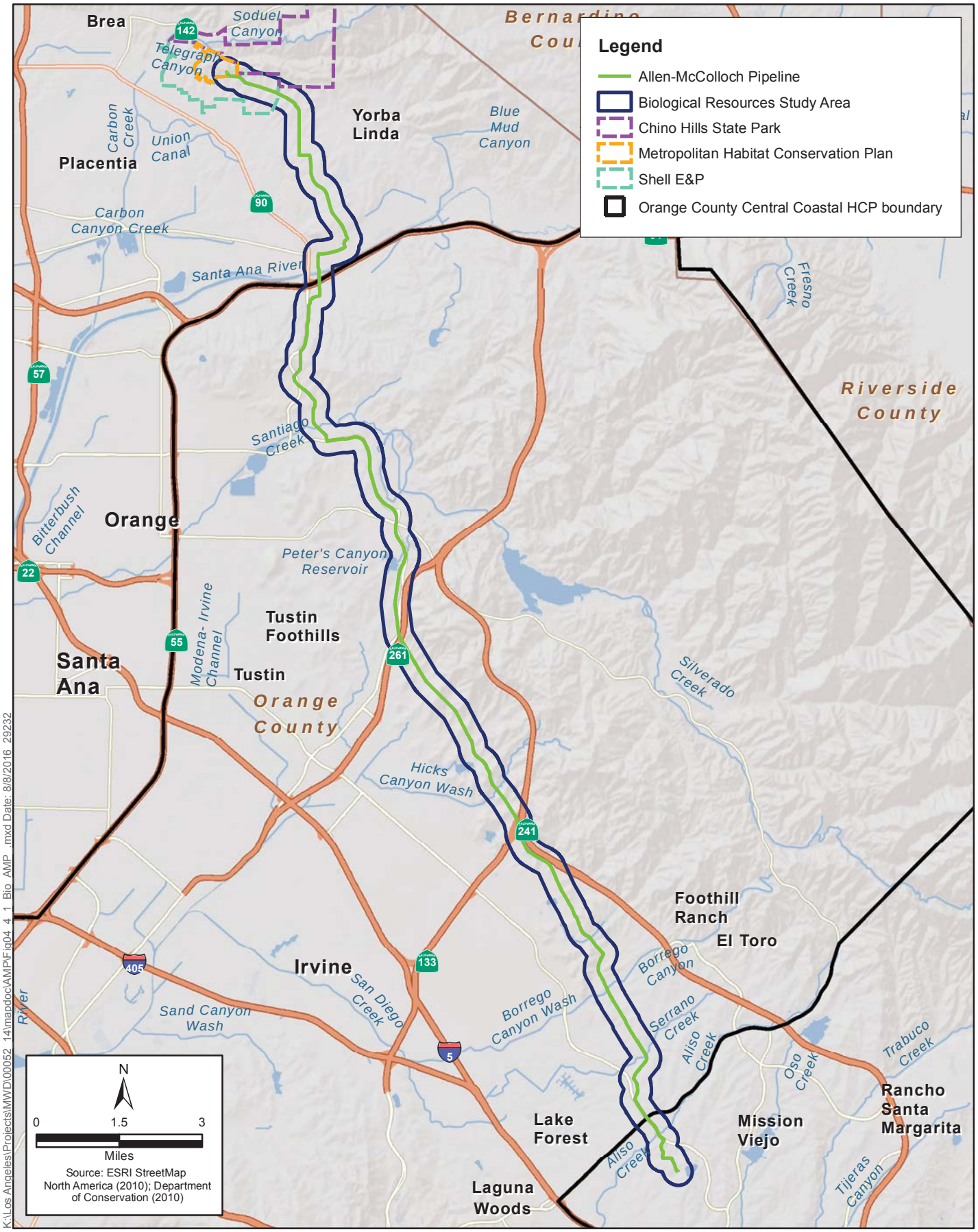

Figure 4.4-1
Allen-McColloch Pipeline Biological Resources
Metropolitan PCCP Program

develop anaerobic conditions in the upper part (hydric soils); and (3) permanent or periodic inundation or soils saturation, at least seasonally (wetland hydrology).

Waters of the state are broadly defined by the Porter-Cologne Water Quality Control Act (Cal. Water Code, § 13050(e)) to mean any surface water or groundwater, including saline waters within the boundaries of the state. Under this definition, isolated wetlands that may not be subject to regulation under federal law are considered waters of the state and regulated accordingly.

Wetlands and other waters occur along the alignment of the Allen-McColloch Pipeline, particularly where it crosses under the Santa Ana River, Santiago Creek, Borrego Canyon Wash, Serrano Creek, Aliso Creek, and smaller unnamed washes and at the adjacent Peters Canyon Reservoir (see Figure 4.4-1). Each of these channels and the reservoir are blue-line streams. Other wetlands may also occur in the Allen-McColloch Pipeline study area, especially in the undeveloped areas.

Wildlife Movement

Wildlife movement corridors are areas that are used by wildlife for movement on varying scales (e.g., daily foraging, seasonal migration, dispersal) and include areas that have been modeled for specific species based on different physical and biological parameters. Habitat linkages are areas of land used for a variety of purposes that potentially serve as a corridor for movement or migration of wildlife. Habitat linkages aid in the dispersal and distribution of wildlife and are crucial for maintaining healthy populations of multiple species. For the purposes of this section, the term *habitat linkage* is used synonymously with *wildlife movement corridor*.

Wildlife movement corridors are likely to occur at many locations along the Allen-McColloch Pipeline due to its route along the urban edges in Orange County. Wildlife movement often occurs along streams and channels. Wildlife movement and dispersal corridors may exist anywhere the Allen-McColloch Pipeline is located in open space areas, such as golf courses and in undeveloped areas.

Habitat Conservation Plans/Natural Community Conservation Plans

Portions of the Allen-McColloch Pipeline study area are within the Shell E&P and Metropolitan Habitat Conservation Plan (HCP), covering areas on and near the Diemer Plant, and the Central and Coastal Natural Community Conservation Plan (NCCP)/HCP covering areas near the southeastern portion of the Allen-McColloch Pipeline study area (see Figure 4.4-1). Metropolitan is a participant in both these HCPs/NCCPs.

4.4.2.2 Calabasas Feeder

The Calabasas Feeder is in street rights-of-way through developed areas for its entire length, with the exception of a small, isolated area in Hidden Hills where the alignment crosses under and adjacent to a commercial nursery/growing yard.

Special-status Species

Appendix D contains a list of the potential special-status species for Los Angeles County from the California Natural Diversity Database. It is unlikely that any of these species would be found in the Calabasas Feeder study area due to the high level of development throughout the study area.

Riparian Habitat and Other Sensitive Natural Communities

The Calabasas Feeder crosses under Santa Susana Creek, Chatsworth Creek, Bell Creek, and Calabasas Creek. All of these creeks are within concrete channels and there is no riparian habitat associated with these creeks in the study area. No other riparian habitat or other sensitive natural communities are known to exist within the Calabasas Feeder study area (see Figure 4.4-2).

Wetlands

Waters of the U.S./state occur along the alignment of the Calabasas Feeder where the alignment crosses under Santa Susana Creek, Chatsworth Creek, Bell Creek, and Calabasas Creek. However, because these are concrete-lined channels in the study area, there is no possibility that they include wetlands. It is unlikely that other wetlands occur in the Calabasas Feeder study area due to the high level of development.

Wildlife Movement

Wildlife movement corridors are not likely to occur within the Calabasas Feeder study area due to the high level of development.

Habitat Conservation Plans/Natural Community Conservation Plans

There are no HCPs or NCCPs applicable to the Calabasas Feeder study area.

4.4.2.3 Rialto Pipeline

The Rialto Pipeline alignment travels near the base of the San Bernardino Mountains, crossing under many creeks and washes that drain from these mountains. Much of the alignment is near the edge of the expanding urban environment.

The Rialto Pipeline begins in the Devils Canyon area, where it crosses under the edge of the Devils Canyon Percolation Basins. It passes under developed areas before crossing Cable Creek, Cajon Wash, and Lytle Creek, which are natural soft bottom in the Rialto Pipeline study area (see Figure 4.4-3). The alignment then runs under developed areas before crossing under East Etiwanda Creek, Day Creek, and Deer Creek. East Etiwanda Creek is concrete lined in the study area, but Day Creek and Deer Creek are partially natural soft bottom (and partially concrete lined). The alignment then continues under developed areas until it crosses under Cucamonga Creek and San Antonio Creek, which are both concrete lined in the study area. The Rialto Pipeline is again under developed areas until it crosses under Marshall Creek and San Dimas Wash, both of which are natural soft bottom. Near the western end of the Rialto Pipeline, the alignment is under or adjacent to undeveloped foothill areas and golf courses, such as along Webb Canyon Road and San Dimas Canyon Road.

Special-status Species

Appendix D contains a list of the potential special-status species for San Bernardino County and Los Angeles County from the California Natural Diversity Database. It is possible that a few of these species are found in the Rialto Pipeline study area, mainly in the undeveloped areas at the edges of the development and where the alignment crosses creeks and washes. For example, the following species are known to occur within the proposed North Fontana Multi-species Habitat Conservation Plan (MSHCP) (City of Fontana 2004) (see Figure 4.4-3):

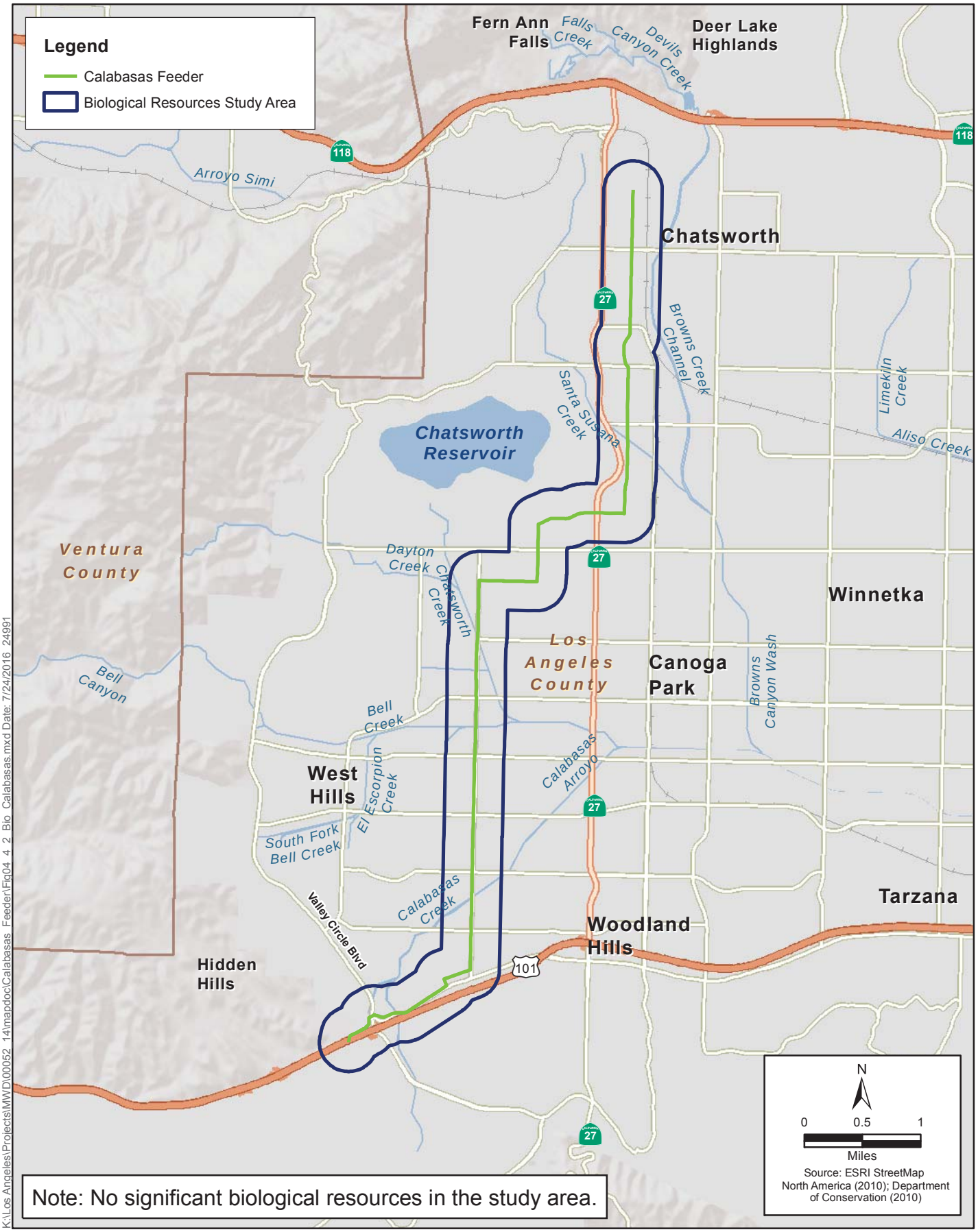

Figure 4.4-2
Calabasas Feeder Biological Resources
Metropolitan PCCP Program

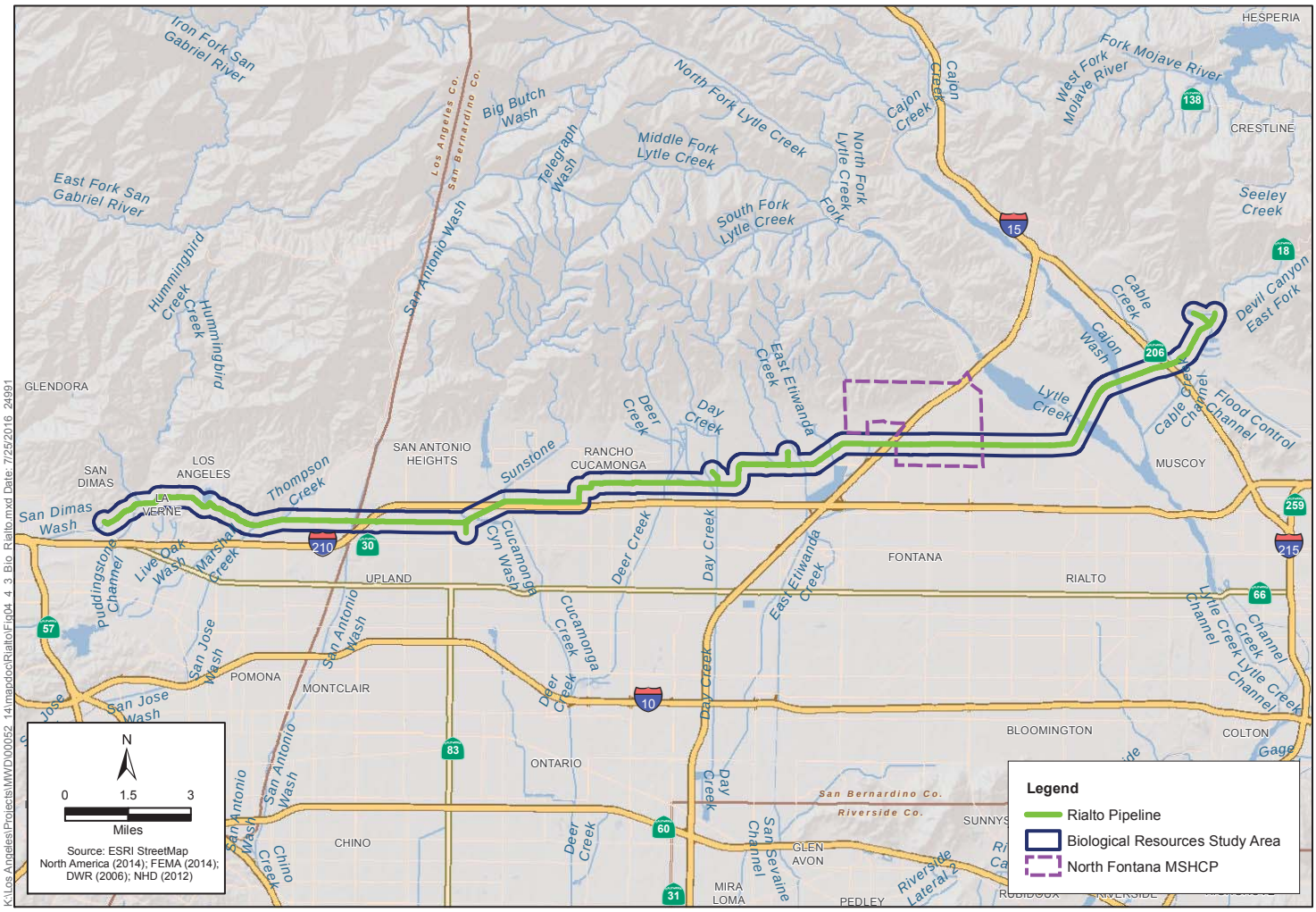

Figure 4.4-3
Rialto Pipeline Biological Resources
Metropolitan PCCP Program

- Slender-horned spineflower (*Dodecahema leptoceras*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Lemon lily (*Lilium parryi*)
- San Bernardino kangaroo rat (*Dipodomys merriami parvus*)
- Coastal California gnatcatcher (*Polioptila californica californica*)
- Golden eagle (*Aquila chrysaetos*)
- Cooper's hawk (*Accipiter cooperii*)
- Northern harrier (*Circus cyanus*)
- Burrowing owl (*Athena cunicularia hypogea*)
- Loggerhead shrike (*Lanius ludovicianus*)
- San Diego horned lizard (*Phrynosoma coronatum blainvillii*)
- Los Angeles pocket mouse (*Perognathus longimembris brevinasus*)

Riparian Habitat and Other Sensitive Natural Communities

The Rialto Pipeline crosses under several soft-bottomed (or partially soft-bottomed) creeks and washes, including Cable Creek, Cajon Wash, Lytle Creek, Day Creek, Deer Creek, Marshall Creek, and San Dimas Wash. Each of these has the potential to have riparian habitat along their channels. The Rialto Pipeline also crosses channels that are concrete lined, including East Etiwanda Creek, Cucamonga Creek, and San Antonio Creek. These channels do not host riparian habitat in the study area. Other sensitive natural communities may also exist in the Rialto Pipeline study area, especially in the areas that have not been subject to development. For example, Riversidian alluvial fan scrub and Riversidian sage scrub are known to occur in several areas in the study area, such as the northern portion of Fontana (City of Fontana 2004). These and other sensitive natural communities may also occur elsewhere in the Rialto Pipeline study area, especially where the pipeline crosses under large areas of open space, south and east of SR-261.

Wetlands

Wetlands and other waters occur along the alignment of the Rialto Pipeline, particularly where it crosses under Cable Creek, Cajon Wash, Lytle Creek, Day Creek, Deer Creek, Marshall Creek, and San Dimas Wash, all of which are partially or fully natural, soft-bottom channels through the study area. Other wetlands may also occur in the Rialto Pipeline study area, especially in the undeveloped areas.

Wildlife Movement

Wildlife movement corridors are likely to occur at many locations along the Rialto Pipeline due to its route along the urban edges in San Bernardino and Los Angeles counties. Wildlife movement often occurs along streams and channels. Wildlife movement and dispersal corridors may exist anywhere the Rialto Pipeline is located in open space areas, such as golf courses and in undeveloped areas.

Habitat Conservation Plans/Natural Community Conservation Plans

Portions of the Rialto Pipeline study area are within the proposed North Fontana MSHCP. The City of Fontana has prepared and submitted an MSHCP. While the MSHCP is being processed, the City of Fontana has issued the North Fontana Interim MSHCP Policy that is consistent with the intent and direction of the proposed MSHCP (City of Fontana 2004). The Rialto Pipeline travels through portions of the lands covered by the interim policy and the proposed MSHCP between approximately Sierra Avenue and Cherry Avenue in the city of Fontana. Metropolitan is not a participant in the MSHCP.

4.4.2.4 Second Lower Feeder

The Second Lower Feeder is in mostly urban areas, in street rights-of-way and other developed areas. It does, however, cross short distances of undeveloped or natural areas especially near the northeastern and southwestern termini, as described below.

The Second Lower Feeder begins on the southern side of the Diemer Plant and travels westward and southward through a golf course before entering a developed area in Yorba Linda and other cities in Orange and Los Angeles counties. In Anaheim, it crosses under the Anaheim Union Channel. This channel is concrete lined in the Second Lower Feeder study area. Also in Anaheim, it crosses under Carbon Creek twice, which is riprap lined or riprap and concrete lined in the study area. Near the Los Angeles County line, the pipeline crosses under the concrete-lined Coyote Creek. In Los Angeles County, the alignment crosses under Artesia-Norwalk Drain, San Gabriel River, an unnamed drainage, Los Angeles River, and Dominguez Channel Estuary, all of which are concrete-lined channels in the study area.

Just east of its San Gabriel River crossing, the Second Lower Feeder alignment passes adjacent to and through a large urban park, El Dorado Regional Park, a landscape with mostly nonnative plants. In Long Beach, the alignment is adjacent to a small urban park and the Skylinks Golf Course. Just east of the Los Angeles River, the Second Lower Feeder passes near and under a small urban park. Near its southwestern terminus, the pipeline is adjacent to golf courses and open space, including a small nature park in Rolling Hills Estates.

Special-status Species

Appendix D contains a list of the potential special-status species for Orange and Los Angeles counties from the California Natural Diversity Database. It is likely that a few of these species are found in the Second Lower Feeder study area. For example, California black walnut, coastal cactus wren, and coastal California gnatcatcher are known to occur at the Diemer Plant (Metropolitan 2015) (see Figure 4.4-4). However, most of the species on this list would have low potential to occur and are not expected due to the lack of suitable habitat or other factors.

Riparian Habitat and Other Sensitive Natural Communities

The Second Lower Feeder crosses under creeks, rivers, and channels. All of these water features are within concrete and/or riprap channels and there is no riparian habitat associated with the water features in the study area. Other sensitive natural communities are known to exist within the Second Lower Feeder study area. For example, there are areas of coastal sage scrub, southern

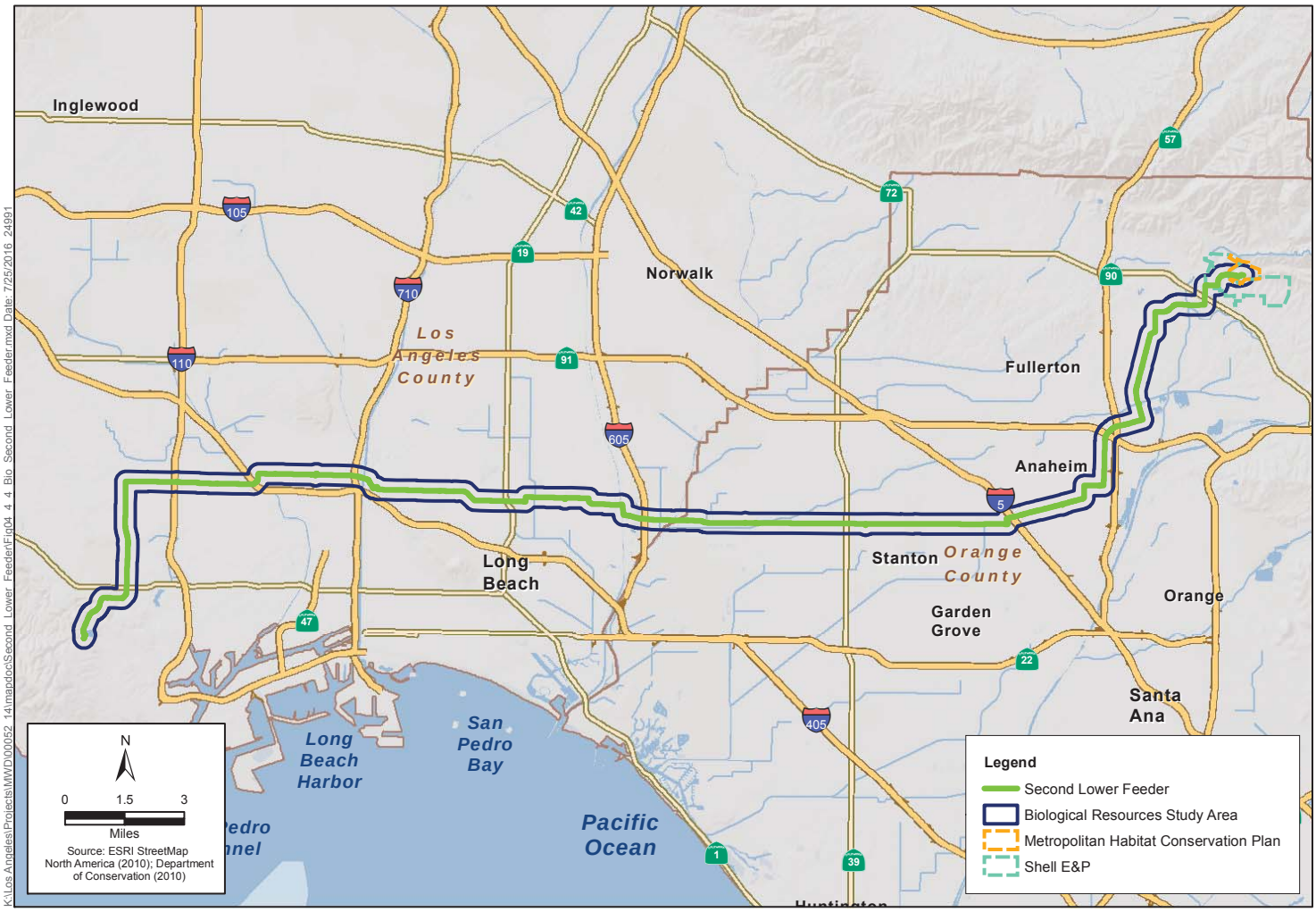

Figure 4.4-4
Second Lower Feeder Biological Resources
Metropolitan PCCP Program

cactus scrub, California walnut woodland, mulefat scrub, and southern willow scrub known to occur at the Diemer Plant property (Metropolitan 2015).

Wetlands

Waters of the U.S./state occur along the alignment of the Second Lower Feeder where it crosses under several creeks, rivers, and other channels. However, because these are concrete-lined and/or riprap-lined channels in the study area, there is no possibility that they include wetlands. It is possible that isolated wetlands may occur in the limited open spaces in the study area.

Wildlife Movement

The potential for wildlife movement corridors to occur in the Second Lower Feeder study area is limited. Only at the northeastern end, on the Diemer Plant property and the adjacent golf course, and near the southwestern end where the alignment is adjacent to somewhat connected open spaces, is there much opportunity for wildlife movement or dispersion. Elsewhere, the small amounts of open space are too isolated for wildlife movement. Creeks and rivers within this corridor are all concrete and/or riprap lined, making them ineffective for wildlife movement.

Habitat Conservation Plans/Natural Community Conservation Plans

Portions of the Second Lower Feeder study area are within the Shell E&P and Metropolitan HCP, covering areas on and near the Diemer Plant. Metropolitan is a participant in this HCP.

4.4.2.5 Sepulveda Feeder

The majority of the study area for the Sepulveda Feeder is in urbanized areas with few biological resources. However, there are exceptions, as discussed below.

Near its northern end, the Sepulveda Feeder passes under portions of the Knollwood Golf Course. It also passes by a sod farm, just north of State Route 118 (SR-118). Farther south, after crossing under Interstate 405 (I-405), the Sepulveda Feeder crosses under a portion of the Westridge-Canyonback Wilderness Park (see Figure 4.4-5). After crossing I-405 again, the alignment is adjacent to Los Angeles National Cemetery. In the city of Hawthorne, the Sepulveda Feeder runs under Van Ness Avenue, adjacent to the Chester Washington Golf Course.

The Sepulveda Feeder crosses the Los Angeles River and the Dominguez Channel. Both waterways are concrete lined in the Sepulveda Feeder study area. Another waterway in the study area, Bull Creek, is channelized underground in the study area.

Special-status Species

Appendix D contains a list of the potential special-status species for Los Angeles County from the California Natural Diversity Database. It is unlikely that any of these species would be found through most of the alignment in the Sepulveda Feeder study area due to the high level of development throughout the study area. However, the large Westridge-Canyonback Wilderness Park in the middle of the alignment has over 1,500 acres in which special-status species could occur.

Riparian Habitat and Other Sensitive Natural Communities

Except in the large Westridge-Canyonback Wilderness Park in the middle of the alignment, there is little opportunity for sensitive natural communities to occur in the Sepulveda Feeder study area. The remainder of the alignment is urbanized, with the alignment being usually in street rights-of-way. The only other location where the alignment is not in street rights-of-way is in the Knollwood Golf Course, which is a heavily managed nonnative landscape, with little opportunity for riparian or sensitive natural communities.

Wetlands

Except in the Knollwood Golf Course near the northern end of the Sepulveda Feeder and the large Westridge-Canyonback Wilderness Park in the middle of the alignment, wetlands are not likely to occur in the Sepulveda Feeder study area. The alignment does cross waters of the U.S/state (Bull Creek, Los Angeles River, and Dominguez Channel), but there are no wetlands associated with these concrete channels.

Wildlife Movement

Except in the large Westridge-Canyonback Wilderness Park and possibly the Knollwood Golf Course, there is little opportunity for wildlife movement to occur in the Sepulveda Feeder study area. However, these two locations may provide valuable wildlife movement and dispersal corridors in the otherwise urbanized environment.

4.4.3 Regulatory Framework

This section describes the plans, policies, and regulations related to biological resources that are applicable to the proposed program.

4.4.3.1 Federal

Federal Endangered Species Act of 1973 (16 U.S.C. § 1531 et seq.)

The FESA of 1973 provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range, and the conservation of the ecosystems on which they depend. The FESA regulates federally listed endangered or threatened wildlife and plant species, proposed listed species, and critical habitat. A species is considered endangered if it is in danger of extinction throughout all or a significant portion of its range. A species is considered threatened if it is likely to become an endangered species within the foreseeable future.

Clean Water Act (33 U.S.C. § 1251 et seq.)

The federal CWA of 1977, which amended the federal Water Pollution Control Act of 1972, establishes the basic structure for regulating discharges of pollutants into waters of the U.S. (not including groundwater). The CWA delegates authority to the U.S. Environmental Protection Agency to implement pollution control programs. Under the CWA, it is unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a National Pollutant Discharge Elimination System permit is obtained and implemented within compliance. In addition, the CWA

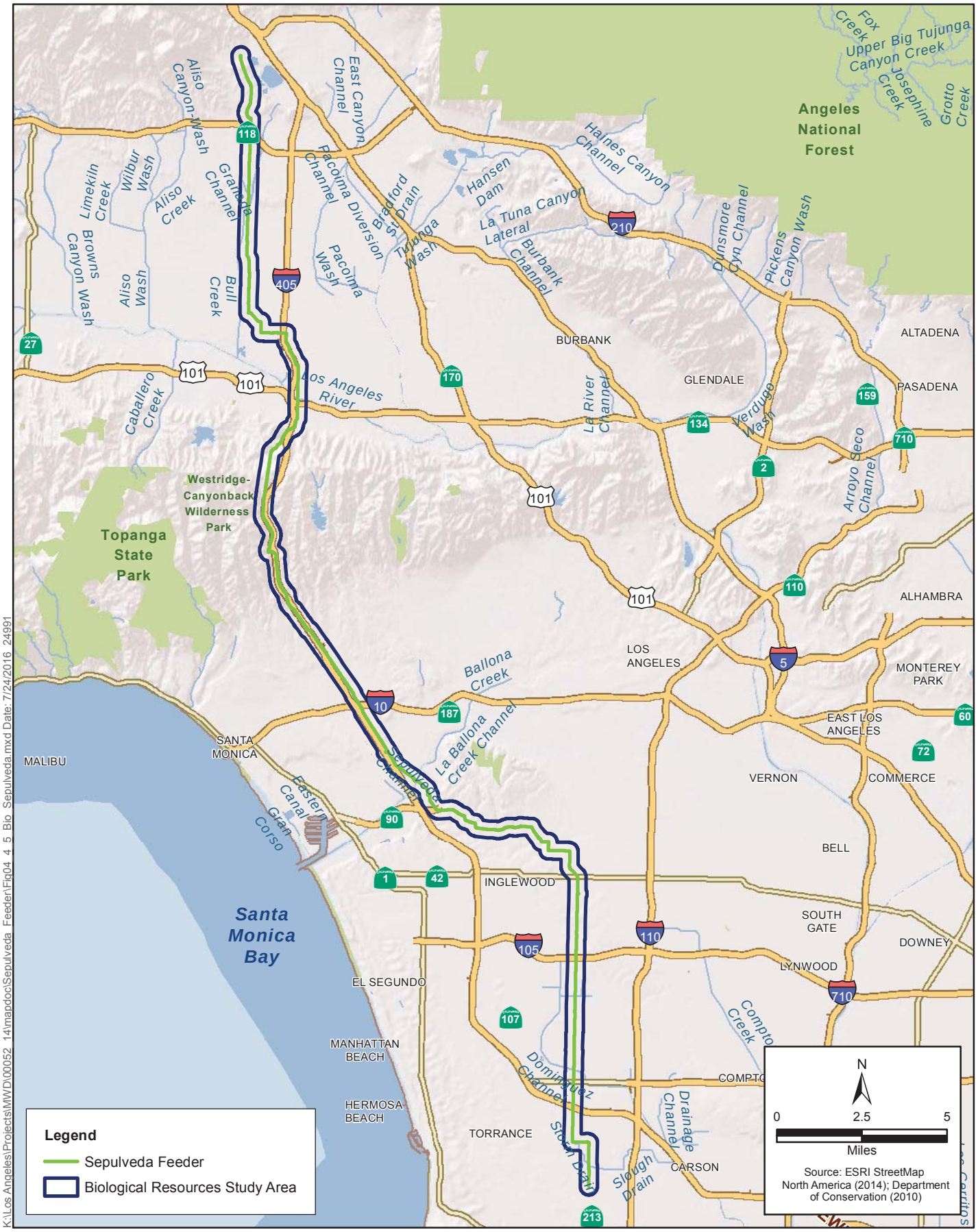

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Figure 4.4-5
Sepulveda Feeder Biological Resources
Metropolitan PCCP Program

requires the states to adopt water quality standards for receiving water bodies and to have those standards approved by the U.S. Environmental Protection Agency. Water quality standards consist of designated beneficial uses for a particular receiving water body (e.g., wildlife habitat, agricultural supply, fishing), along with water quality criteria necessary to support those uses.

Migratory Bird Treaty Act (16 U.S.C. §§ 703–712)

The Migratory Bird Treaty Act (MBTA) is a federal statute that implements treaties with several countries on the conservation and protection of migratory birds. The regulatory definition of "migratory bird" is broad and includes any mutation or hybrid of a listed species, as well as any part, egg, or nest of such bird. Migratory birds are not necessarily federally listed as endangered or threatened birds under the FESA. The MBTA makes it unlawful "by any means or in any manner, to pursue, hunt, take, capture, [or] kill" any migratory bird or attempt such actions, except as permitted by regulation.

4.4.3.2 State

California Fish and Game Code

Several sections of the California Fish and Game Code are applicable to the proposed program, as described below.

California Endangered Species Act (Cal. Fish and Game Code, §§ 2050–2085)

The CESA is similar to the main provisions of the FESA and is administered by CDFW. Under the CESA, the term *endangered species* is defined as a species of plant, fish, or wildlife that is "in serious danger of becoming extinct throughout all, or a significant portion of, its range," and is limited to species or subspecies native to California. The CESA prohibits the take (hunt, pursuit, catch, capture, kill, or attempt to hunt, pursue, catch, capture, or kill) of listed species except as otherwise provided in state law. Unlike its federal counterpart, the CESA also applies the take prohibitions to species petitioned for listing (state candidates).

Fully Protected Species Act (Cal. Fish and Game Code, §§ 3511, 4700, 5050, and 5515)

The classification of "fully protected" was the state's initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians and reptiles, and birds. Fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

Bird Protections (Cal. Fish and Game Code, § 3503, 3503.5, and 3513)

California Fish and Game Code Section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders of *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy their nests or eggs. Section 3513 makes it unlawful to take or possess any migratory nongame bird as designated in the federal MBTA or any part of such migratory nongame bird.

Lake and Streambed Alteration (Cal. Fish and Game Code, § 1600 et seq.)

Under California Fish and Game Code Section 1602, CDFW has authority to regulate work that will substantially divert or obstruct the natural flow of or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake. CDFW also has authority to regulate work that will deposit or dispose of debris, water, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. This regulation takes the form of a requirement for a Lake or Streambed Alteration Agreement and is applicable to any person, state or local governmental agency, or public utility. CDFW jurisdiction includes ephemeral, intermittent, and perennial watercourses (including dry washes) and lakes characterized by the presence of definable bed and banks and existing fish or wildlife resources.

California Native Plant Protection Act (Cal. Fish and Game Code, §§ 1900–1913)

The Native Plant Protection Act of 1977 gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and to protect endangered and rare plants from take. The CESA expanded on the original Native Plant Protection Act and enhanced legal protection for plants, but the Native Plant Protection Act remains part of the California Fish and Game Code. To align with federal regulations, the CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals to threatened species, but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered.

4.4.3.3 Local

Many cities and counties in the biological resources study area have land codes requiring protection of trees and other vegetation in their jurisdictions (Appendix X). Most call for tree removal permits and replacement.

4.4.4 Thresholds and Methodology

4.4.4.1 Thresholds of Significance

Table 4.4-2 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to biological resources. It indicates which impacts must be analyzed in the PEIR for the proposed program.

Table 4.4-1. CEQA Thresholds for Biological Resources

Threshold *Would the proposed program:*
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Threshold *Would the proposed program:*
c. Have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal areas, etc.), through direct removal, filling, hydrological interruption, or other means?
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites?
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?

4.4.4.2 Methodology

Special-status Species

Potential for special-status species and habitat for special-status species to occur is identified in Section 4.4.2. Potential impacts on special-status species from rehabilitations projects in the proposed program are identified in this analysis. Mitigation measures are included as necessary to reduce impacts and/or require further analysis when specific project locations and activities are known.

Riparian Habitat and Other Sensitive Natural Communities

Potential for riparian habitat and other sensitive natural communities to occur is identified in Section 4.4.2. Potential impacts on these habitats and communities from rehabilitation projects in the proposed program are identified in this analysis. Mitigation measures are included as necessary to reduce impacts and/or require further analysis when specific project locations and activities are known.

Wetlands

Potential for wetlands to occur is identified in Section 4.4.2. Potential impacts on wetlands from rehabilitation projects in the proposed program are identified in this analysis. Mitigation measures are included as necessary to reduce impacts and/or require further analysis when specific project locations and activities are known.

Wildlife Movement

Potential for wildlife movement corridors to occur within or be crossed by the study area is identified in Section 4.4.2. This biological analysis addresses whether rehabilitation projects in the proposed program could result in impacts on wildlife movement in these corridors or elsewhere. Mitigation measures are included as necessary to reduce impacts and/or require further analysis when specific project locations and activities are known.

Local Policies Protecting Biological Resources

The biological analysis addresses the proposed program's consistency with local policies, in particular local tree ordinances, and includes any mitigation required to reduce impacts and/or require further analysis when specific project locations and activities are known.

It should be noted that California Government Code Section 53091 exempts Metropolitan, as a regional public water purveyor and utility, from local zoning and building ordinances. This exemption applies to the pipeline infrastructure included in the proposed program because they are water transmission pipelines and a direct component of Metropolitan's treatment, storage, and transmission system. Despite this exemption from local land use planning jurisdiction, for purposes of full disclosure of potential impacts on the environment, this PEIR evaluates proposed program compatibility with relevant general plan policies of the cities along the pipeline alignments.

HCPs and NCCPs

HCPs or NCCPs potentially applicable to the study area are identified in Section 4.4.2. Impacts that may occur during rehabilitation projects under the proposed program are identified in this analysis. Mitigation measures are included as necessary to reduce impacts and/or require further analysis when specific project locations and activities are known.

4.4.5 Impacts Analysis

4.4.5.1 Program Analysis

Threshold BIO-A: Have a Substantial Adverse Effect, either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

Special-status species have the potential to occur in certain locations in the study areas for most of the pipelines. The areas most likely to include special-status species are listed below, but there is also potential for special-status species to occur in other areas along the pipelines.

- **Allen-McColloch Pipeline:** Diemer Plant and Black Hills Golf Course, especially within covered areas of the Shell E&P and Metropolitan HCP; open space areas in Orange, Tustin, Irvine, Lake Forest, and Mission Viejo, especially within covered areas of the Central Coastal NCCP/HCP.
- **Calabasas Feeder:** low potential throughout.
- **Rialto Pipeline:** Within undeveloped areas throughout, especially in the North Fontana MSHCP area.
- **Second Lower Feeder:** Diemer Plant and Black Hills Golf Course, especially within covered areas of the Shell E&P and Metropolitan HCP; open space areas near the southwestern terminus of the Second Lower Feeder.
- **Sepulveda Feeder:** Knollwood Golf Course; Westridge-Canyonback Wilderness Park.

Various rehabilitation activities could affect special-status species or their habitats. Vegetation clearing and excavation could remove habitat or individuals. Excavation, ground clearing, equipment and materials storage, access routes, and other activities could result in impacts on runoff and/or water quality, potentially affecting habitat. Excavation, ground clearing, and access routes could result in air quality impacts (dust, exhaust) that could affect adjacent individuals. Equipment or construction-related traffic could introduce hazardous materials into habitats. Equipment and construction-related traffic could result in noise impacts affecting noise-sensitive species. Equipment and construction personnel could also introduce harmful, noxious, and/or invasive species that could damage habitats (such as by tracking in weed seeds). Any of these effects could result in significant impacts on special-status species, but the level of impact would need to be determined at the project level when rehabilitation locations are known. Implementation of Mitigation Measure MM BIO-1 may reduce these impacts, but potentially not to less-than-significant levels.

Even in fully developed areas, rehabilitation activities have the potential to result in impacts on protected species. Migratory birds, including most birds that nest in the study area, are protected by the federal MBTA, which forbids most forms of harm to birds, including to their active nests. In addition, California Fish and Game Code Section 3503 makes it unlawful to destroy nests or eggs of any bird. Where vegetation, and especially trees, is removed as part of construction, there is the potential for violations under the MBTA and Section 3503 of the California Fish and Game Code, which would be a significant impact, but the level of impact would need to be determined at the project level when rehabilitation locations are known. Implementation of MM BIO-2 may reduce this impact, but potentially not to a less-than-significant level.

Mitigation Measures

MM BIO-1 Take of Special-Status Species.

For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas) and that contain special-status species, a qualified biologist will visit the site ~~to determine if any special-status species have the potential to occur on the site~~. If the biologist determines that special-status species may occur, preconstruction surveys for special-status plants and/or wildlife will be completed prior to any construction and consultation with the appropriate resource agency will occur (U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife), if necessary, to determine measures to address impacts such as avoidance, minimization, restoration, or compensation.

MM BIO-2 Impacts on Nesting Birds.

For any projects within the program that require vegetation removal during the nesting season for sensitive species protected by the Migratory Bird Treaty Act and California Fish and Game Code Section 3513, including street trees and other landscaping, a qualified biologist will inspect the vegetation to be removed no more than 10 days prior to tree/vegetation removal to determine whether nesting birds are present. If a nest is found, the biologist will determine the site-specific measures necessary to avoid disturbing the nest until nesting activity has ceased. ~~including avoidance of the nest and establishment of an adequate buffer. Construction within the buffer area will not occur until the biologist has verified that nesting activity has ceased.~~

Nothing in this mitigation measure precludes the use of deterrent measures to prevent bird nesting.

Residual Impacts

Impacts that would result from the proposed program may be significant, but the severity or location of the impacts cannot be determined at this time. Implementation of MM BIO-1 and MM BIO-2 may reduce any potential significant impacts; however, residual impacts may still be significant and unavoidable. Further environmental analysis and documentation is necessary prior to construction to determine if a significant impact would occur and if mitigation would reduce the impact to a less-than-significant level.

Threshold BIO-B: Have a Substantial Adverse Effect on Any Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans, Policies, or Regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

Riparian habitats and other sensitive natural communities are limited in the study area for the proposed program. The areas most likely to include riparian habitats or other sensitive natural communities are listed below, but there is also the potential for isolated areas of riparian habitat to occur in other areas along the pipelines.

- **Allen-McColloch Pipeline:** Diemer Plant and Black Hills Golf Course, especially within covered areas of the Shell E&P and Metropolitan HCP; open space areas in Orange, Tustin, Irvine, Lake Forest, and Mission Viejo, especially within covered areas of the Central Coastal NCCP/HCP.
- **Calabasas Feeder:** low potential throughout.
- **Rialto Pipeline:** Within undeveloped areas throughout.
- **Second Lower Feeder:** Diemer Plant and Black Hills Golf Course, especially within covered areas of the Shell E&P and Metropolitan HCP; open space areas near the southwestern terminus of the Second Lower Feeder.
- **Sepulveda Feeder:** Westridge-Canyonback Wilderness Park.

Various rehabilitation activities could affect riparian habitats and other sensitive natural communities. Vegetation clearing and excavation could remove habitat. Excavation, ground clearing, equipment and materials storage, access routes, and other activities could result in impacts on runoff and/or water quality, potentially affecting habitat. Excavation, ground clearing, and access routes could result in air quality impacts (dust, exhaust) that could affect adjacent habitat. Equipment or construction-related traffic could introduce hazardous materials into habitats. Equipment and construction personnel could also introduce harmful, noxious, and/or invasive species that could damage habitats (such as by tracking in weed seeds). Any of these effects could result in significant impacts on riparian habitats or sensitive natural communities, but the level of impact would need to be determined at the project level when rehabilitation locations are known. Implementation of Mitigation Measures MM BIO-3 and MM BIO-4 may reduce these impacts, but potentially not to less-than-significant levels.

Mitigation Measures

MM BIO-3 Adverse Impacts on Riparian Habitat.

For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (except for landscaped developed areas) which contain riparian vegetation, a qualified biologist will visit the site to conduct pre-construction surveys ~~determine if any riparian habitat is present at the site~~. If the biologist determines that riparian vegetation is present, then habitat areas will be mapped and flagged for avoidance, or other measures will be taken, including applying for appropriate regulatory permits, as required ~~to protect the habitat, as appropriate~~.

MM BIO-4 Adverse Impacts on Sensitive Natural Communities.

Removal of or adverse impacts on sensitive natural communities will be minimized for rehabilitation projects in the program, except in accordance with adopted HCPs/NCCPs to which Metropolitan is a party for covered areas and covered activities. For such covered activities, Metropolitan will coordinate with the appropriate resource agencies, and Metropolitan's contractors will adhere to all requirements in the applicable plan. For any activities not covered by an adopted HCP/NCCP, the following shall apply:

For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (except for landscaped developed areas) and that contain sensitive natural communities, a qualified biologist will conduct pre-construction surveys ~~visit the site to determine if any sensitive natural communities may be present at the site If the biologist determines that such communities may be present, preconstruction surveys~~ for sensitive natural communities ~~will be required~~ prior to any construction. These surveys will be conducted by a qualified biologist within 100 feet of ground-disturbing activities. If sensitive natural communities are located during the surveys, then habitat areas will be mapped and flagged for avoidance, or other measures will be taken including applying for appropriate regulatory permits, as required ~~to protect the habitat~~.

Residual Impacts

Impacts that would result from the proposed program may be significant, but the severity or location of the impacts cannot be determined at this time. Implementation of MM BIO-3 and MM BIO-4 may reduce any potential significant impacts; however, residual impacts may still be significant and unavoidable. Further environmental analysis and documentation is necessary prior to construction to determine if a significant impact would occur and if mitigation would reduce the impact to a less-than-significant level.

Threshold BIO-C: Have a Substantial Adverse Effect on Federally Protected Wetlands, as Defined by Section 404 of the Clean Water Act, through Direct Removal, Filling, Hydrological Interruption, or Other Means

Wetlands are limited in the study area for the proposed program. The areas most likely to include wetlands are listed below, but there is also the potential for wetlands to occur in other areas along the pipelines.

- **Allen-McColloch Pipeline:** Diemer Plant and Black Hills Golf Course; open space areas in Orange, Tustin, Irvine, Lake Forest, and Mission Viejo.
- **Calabasas Feeder:** low potential throughout.
- **Rialto Pipeline:** Within undeveloped areas throughout.
- **Second Lower Feeder:** Diemer Plant and Black Hills Golf Course; open space areas near the southwestern terminus of the pipeline.
- **Sepulveda Feeder:** Knollwood Golf Course; Westridge-Canyonback Wilderness Park.

Various rehabilitation activities could affect wetlands if present near work areas. Excavation or ground clearing could remove wetlands or place fill in the wetlands, either temporarily or permanently. Excavation, ground clearing, equipment and materials storage, access routes, and other activities could result in impacts on runoff and/or water quality, potentially affecting wetlands. Equipment or construction-related traffic could introduce hazardous materials into wetlands. Equipment and construction personnel could also introduce harmful, noxious, and/or invasive species that could damage wetlands (such as by tracking in weed seeds). Any of these effects could result in significant impacts on wetlands, but the level of impact would need to be determined at the project level when rehabilitation locations are known. Implementation of Mitigation Measure MM BIO-5 may reduce these impacts, but potentially not to less-than-significant levels.

Mitigation Measures

MM BIO-5 Adverse Impacts on Wetlands.

For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (including large landscaped areas, parks, and golf courses), which contain wetlands, a qualified biologist will visit the site to conduct pre-construction surveys ~~determine if wetlands may be present at the site~~. If the biologist determines that wetlands may be present, preconstruction wetlands jurisdictional delineations will be ~~required~~ performed prior to any construction. These delineations will be conducted by a qualified biologist within 100 feet of ground-disturbing activities. Any jurisdictional wetlands located during the delineations will be mapped and flagged for avoidance or other measures may be taken, including applying for appropriate regulatory permits, as required ~~or other measures will be taken to protect the habitat, as necessary~~.

Residual Impacts

Impacts that would result from the proposed program may be significant, but the severity or location of the impacts cannot be determined at this time. Implementation of MM BIO-5 may reduce any potential significant impacts; however, residual impacts may still be significant and unavoidable. Further environmental analysis and documentation is necessary prior to construction to determine if a significant impact would occur and if mitigation would reduce the impact to a less-than-significant level.

Threshold BIO-D: Interfere Substantially with the Movement of Any Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors or Impede the Use of Native Wildlife Nursery Sites

Wildlife movement corridors and wildlife dispersal routes have the potential to occur in certain locations in the study areas for most of the pipelines. The areas most likely to include wildlife movement corridors are listed below, but there is also potential for wildlife movement to occur in other areas along the pipelines.

- **Allen-McColloch Pipeline:** Diemer Plant and Black Hills Golf Course; along soft-bottom waterways (but not those lined with concrete); open space areas in Orange, Tustin, Irvine, Lake Forest, and Mission Viejo.
- **Calabasas Feeder:** low potential throughout.
- **Rialto Pipeline:** Within undeveloped areas throughout; along soft-bottom waterways (but not those lined with concrete).
- **Second Lower Feeder:** Diemer Plant and Black Hills Golf Course; El Dorado Regional Park and the adjacent San Gabriel River area; Skylinks Golf Course; open space areas near the southwestern terminus of the Second Lower Feeder.
- **Sepulveda Feeder:** Knollwood Golf Course; sod farm north of SR-118; Los Angeles National Cemetery; Westridge-Canyonback Wilderness Park; Chester Washington Golf Course.

Various rehabilitation activities could affect wildlife movement and dispersal in the vicinity of construction. Vegetation clearing and excavation could remove habitat used by wildlife for safe passage. Excavation, ground clearing, equipment and materials storage, access routes, and other activities could result in impacts on runoff and/or water quality, potentially affecting habitat used for wildlife movement. Excavation, ground clearing, and access routes could result in air quality impacts (dust, exhaust) that could affect habitat used for wildlife movement. Equipment or construction-related traffic could introduce hazardous materials into habitats used for wildlife movement. Equipment and construction-related traffic could result in noise impacts affecting noise-sensitive species, causing them to avoid or divert movement through the affected area. Equipment and construction personnel could also introduce harmful, noxious, and/or invasive species that could damage habitats used for wildlife movement. Nighttime lighting for security or safety could result in impacts on nighttime wildlife movement. Any of these effects could result in significant impacts on wildlife movement, but the level of impact would need to be determined at the project level when rehabilitation locations are known. Implementation of Mitigation Measure MM BIO-6 may reduce these impacts, but potentially not to less-than-significant levels.

Mitigation Measures

MM BIO-6 Impacts on Wildlife Movement.

For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas), a qualified biologist will visit the site to determine if any identifiable wildlife movement corridors are present at the site. If the biologist determines that such corridors are present, then wildlife movement corridors will be mapped, flagged, and avoided, or other measures will be taken to protect wildlife movement, as appropriate.

Residual Impacts

Impacts that would result from the proposed program may be significant, but the severity or location of the impacts cannot be determined at this time. Implementation of MM BIO-6 may reduce any potential significant impacts; however, residual impacts may still be significant and unavoidable. Further environmental analysis and documentation is necessary prior to construction to determine if a significant impact would occur and if mitigation would reduce the impact to a less-than-significant level.

Threshold BIO-E: Conflict with Any Local Policies or Ordinances Protecting Biological Resources, Such as a Tree Preservation Policy or Ordinance

Many of the cities and counties along the pipelines in the proposed program have tree preservation policies or ordinances requiring permits for removal of trees, replacement of trees, or other protection for vegetation within their jurisdictions. Rehabilitation activities would require removal of some trees and other vegetation throughout the pipelines, including street trees and other landscaping. Although the program would require contractors to restore construction areas to pre-construction conditions after rehabilitation activities are completed, in some cases this restoration may not be consistent with local tree preservation policies or ordinances, which would be a significant impact. Implementation of Mitigation Measure MM BIO-7 would reduce these impacts to less-than-significant levels.

Mitigation Measures

MM BIO-7 Conflicts with Local Policies Related to Biological Resources.

For any projects within the program that require vegetation removal, Metropolitan will determine if there are any applicable local policies related to biological resources and, if so, coordinate ~~consult~~ with the affected jurisdiction, as necessary, to determine appropriate requirements for vegetation removal and replacement. The contractor will be required to comply with any applicable requirements. Nothing in this mitigation will require the contractor to make improvements beyond the existing condition prior to construction.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM BIO-7 would reduce these impacts so that residual impacts would be less than significant.

Threshold BIO-F: Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan

Portions of the existing Allen-McColloch Pipeline and Second Lower Feeder are within the covered area for the Shell E&P and Metropolitan HCP. Metropolitan is a participant in this HCP. Portions of the existing Allen-McColloch Pipeline are in the Central and Coastal NCCP/HCP. Metropolitan is a participant in this NCCP/HCP. Portions of the Rialto Pipeline are within the proposed North Fontana MSHCP, and within the lands addressed by the North Fontana Interim MSHCP Policy. Metropolitan is not a participant in this proposed MSHCP.

Certain construction and maintenance activities are allowed under the Shell E&P and Metropolitan HCP and Central and Coastal NCCP/HCP, and would be allowed under the proposed North Fontana MSHCP (covered activities). However, the types of construction for the proposed program that would occur within the covered lands are not known at this time. Therefore, construction could potentially be inconsistent with the requirements of these plans, which would be a significant impact. Without knowing the location or type of rehabilitation activities in the covered lands, the level of impact and mitigation measures to address these impacts cannot be determined at this time. Also, it cannot be determined if impacts could be reduced to less-than-significant levels with mitigation. Therefore, impacts related to conflicts with the adopted Shell E&P and Metropolitan HCP and Central and Coastal NCCP/HCP and the proposed North Fontana MSHCP may be potentially significant and unavoidable. Additional project-specific analysis will be required for rehabilitation activities within the covered lands for these plans.

Mitigation Measures

No feasible mitigation can be identified at the program level.

Residual Impacts

Impacts that would result from the proposed program may be significant, but the severity or location of the impacts cannot be determined at this time. Therefore, these impacts are assumed to be significant and unavoidable. Further environmental analysis and documentation is necessary prior to construction to determine if a significant impact would occur and if mitigation would reduce the impact to a less-than-significant level.

4.4.5.2 Cumulative Analysis

The proposed program would be implemented over a long period of time; in many cases, implementation of the projects in the proposed program would occur past the planning horizons of local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

Impacts of projects in the proposed program related to special-status species, riparian habitats and other sensitive natural communities, wetlands, wildlife movement, and conflicts with local policies protecting biological resources would be avoided through implementation of Mitigation Measures MM BIO-1 through MM BIO-7. Therefore, the impacts of the proposed program on these resources would not represent a considerable contribution to cumulative impacts. Impacts related to conflicts with adopted HCPs and NCCPs cannot be determined at this time because the location and types of

construction are not known. Therefore, projects in the program would potentially result in impacts that would contribute significantly to cumulative impacts related to conflicts with HCPs and NCCPs. Further environmental analysis and documentation is necessary prior to construction to determine if a considerable contribution to a cumulative impact would occur.

Section 4.5
Cultural Resources

4.5.1 Introduction

This section describes the existing conditions for cultural resources, the regulatory framework associated with cultural resources, the impacts on cultural resources that would result from the proposed program, and the mitigation measures that would reduce these impacts. Under CEQA, cultural resources include archaeological sites, built environment resources, and paleontological resources. Paleontological resources are provided protection as historical resources, as discussed in State CEQA Guidelines Section 15064.5(a)(3). As noted in the Initial Study, the proposed program would have potentially significant cultural resources impacts.

4.5.2 Existing Conditions

The study area for archaeological and paleontological resources is the pipeline alignment corridors, plus 0.25 mile on either side (i.e., a half-mile-wide corridor). Figures 4.5-1 through 4.5-5 show this study area. For built environment resources (historic architecture), the study area is the pipeline alignment corridors and immediately adjacent properties.

The National Register of Historic Places (NRHP) is the official list of the historic places worthy of preservation under the National Historic Preservation Act of 1966. To be placed on the NRHP, the district, site, building, structure, or object must possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

- Be associated with events that have made a significant contribution to the broad patterns of our history (criterion A); or
- Be associated with the lives of significant persons in our past (criterion B); or
- Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction (criterion C); or
- Yield or be likely to yield information important in history or prehistory (criterion D).

The California Register of Historical Resources (CRHR) is the State's program to identify, evaluate, register, and protect California's historical resources. The criteria for designation are similar to the NRHP criteria, as follows:

- Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States (criterion 1); or
- Associated with the lives of significant persons to local, California, or national history (criterion 2); or
- Embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master or possesses high artistic values (criterion 3); or

- Has yielded, or has the potential to yield, information important to the history or prehistory of the local area, California, or the nation (criterion 4).

The National Park Service is responsible for maintaining the NRHP. The California Office of Historic Preservation, an office of the California Department of Parks and Recreation, maintains the CRHR. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the State's jurisdiction.

Between October 2014 and February 2015, reviews of cultural resource records housed at the California Historical Resources Information System for the PCCP Program were conducted by Metropolitan staff. The record searches took place at the South Central Coastal Information Center at California State University, Fullerton, for program pipelines in Los Angeles and Orange counties, and the San Bernardino Archaeological Information Center at the San Bernardino County Museum for program pipelines in San Bernardino County. The record searches were conducted to identify all previously conducted cultural resource survey work and any previously recorded cultural resources within 0.25 mile of each PCCP Program line and included a review of the following.

- NRHP
- CRHR
- California Points of Historical Interest
- The California Landmarks list
- Archaeological Determinations of Eligibility list
- California State Historic Resources Inventory list
- All available historic United States Geological Survey 7.5-minute and 15-minute topographic quadrangle maps

Tables in the pipeline-specific discussions below document all recorded historic-period and prehistoric archaeological sites and built environment resources that occur on or immediately adjacent to the existing pipeline.

- Paleontological resources consist of fossils of plants and animals, and paleontology is the study of life in past geologic time based on fossil evidence.
- Archaeological resources consist of the physical remains of past human activity that have been preserved below or above ground, but no longer take the form of a standing structure (e.g., a house or building). Archaeological remains may occur in the same place as standing structures but are considered a distinct element (called a component) of the larger resource.
- Built environment resources consist of buildings, structures, objects, or districts. Typically, built environment resources must be 50 years of age or older to qualify as cultural resources. Where these resources form a landscape unified by a coherent historical or design theme, they may qualify as a rural historic landscape (U.S. Department of the Interior 1999:1).

Between March 26, 2015 and April 22, 2015, a fossil locality search was requested from the Los Angeles County Museum of Natural History, Vertebrate Paleontology section, for the PCCP Program. Results of a locality search and an assessment of paleontological sensitivity was provided for each PCCP Program line. These results were provided in five letter reports prepared by Dr. Sam A. McLeod of the Vertebrate Paleontology section.

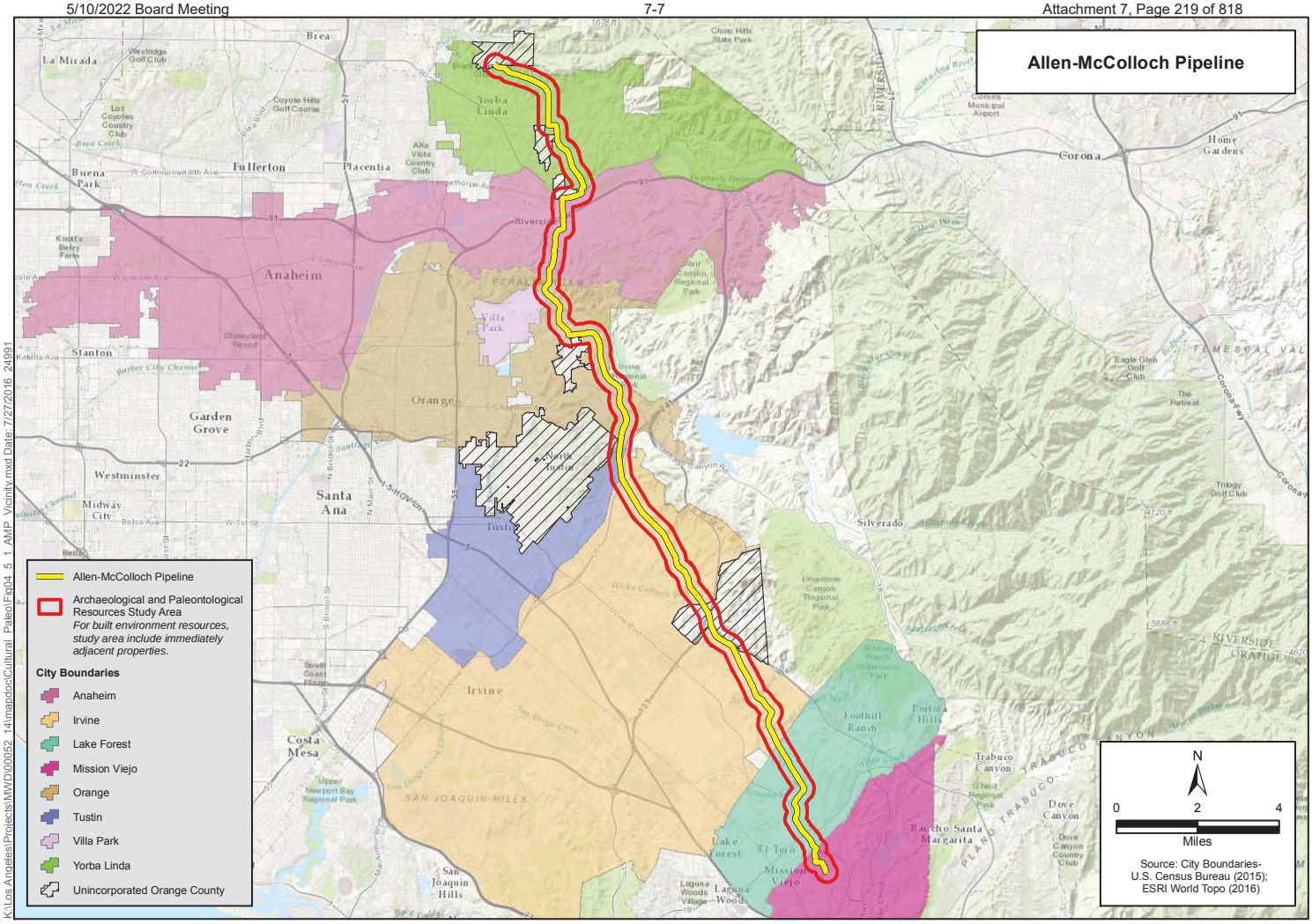


Figure 4.5-1
Allen-McColloch Pipeline Cultural Resources Study Area
Metropolitan Water District PCCP Rehabilitation Program

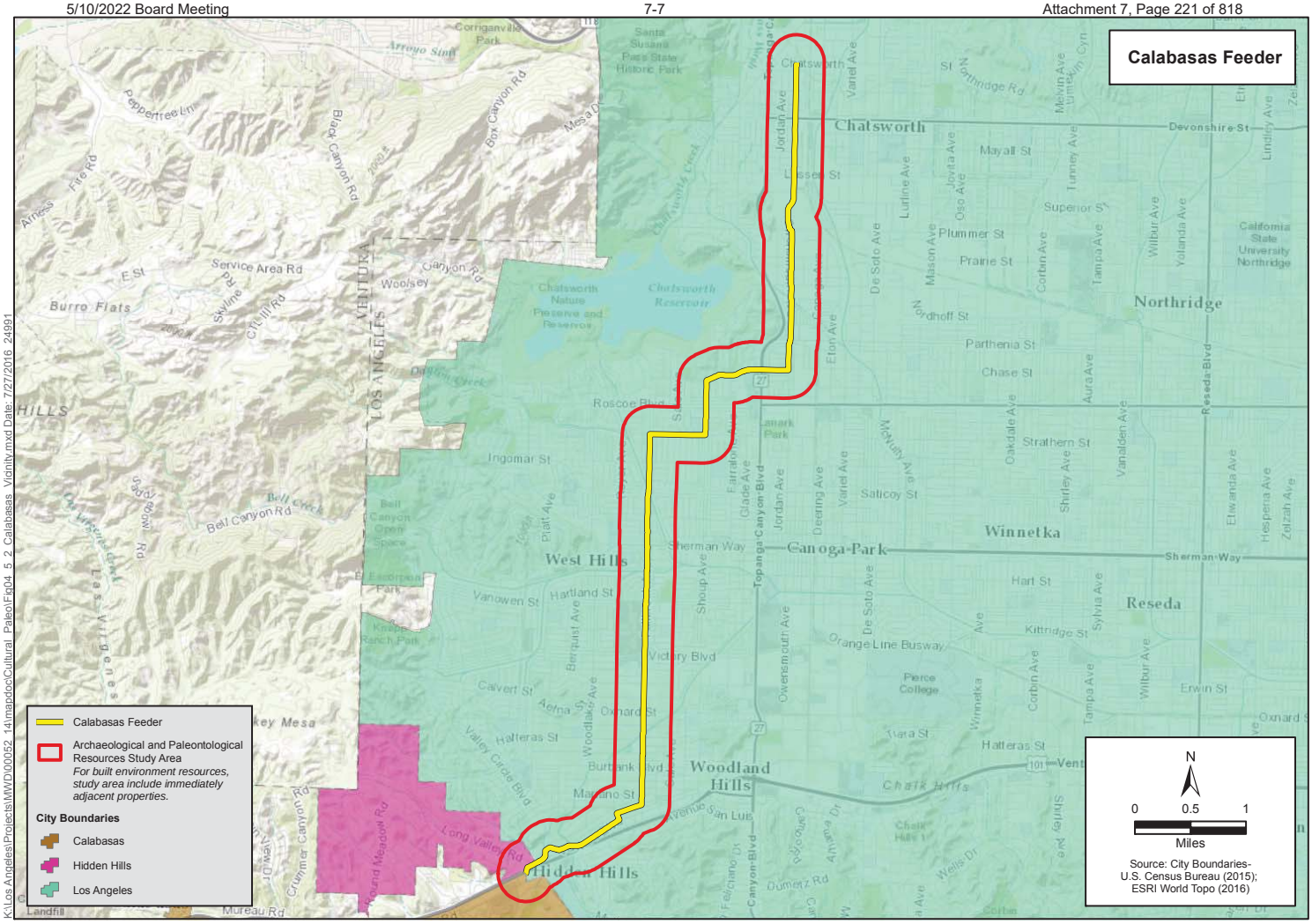


Figure 4.5-2
Calabasas Feeder Cultural Resources Study Area
Metropolitan Water District PCCP Rehabilitation Program

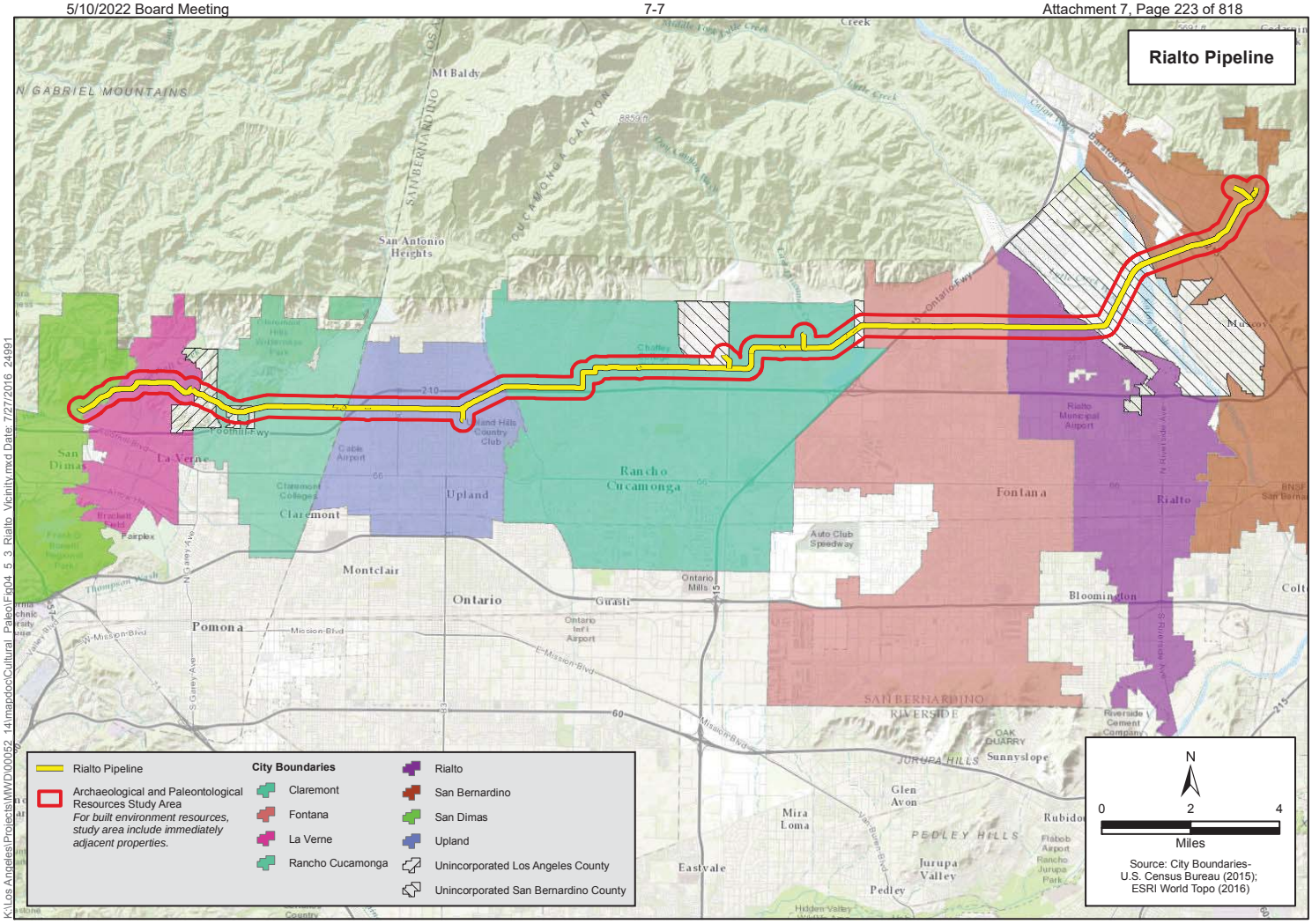


Figure 4.5-3
Rialto Pipeline Cultural Resources Study Area
Metropolitan Water District PCCP Rehabilitation Program

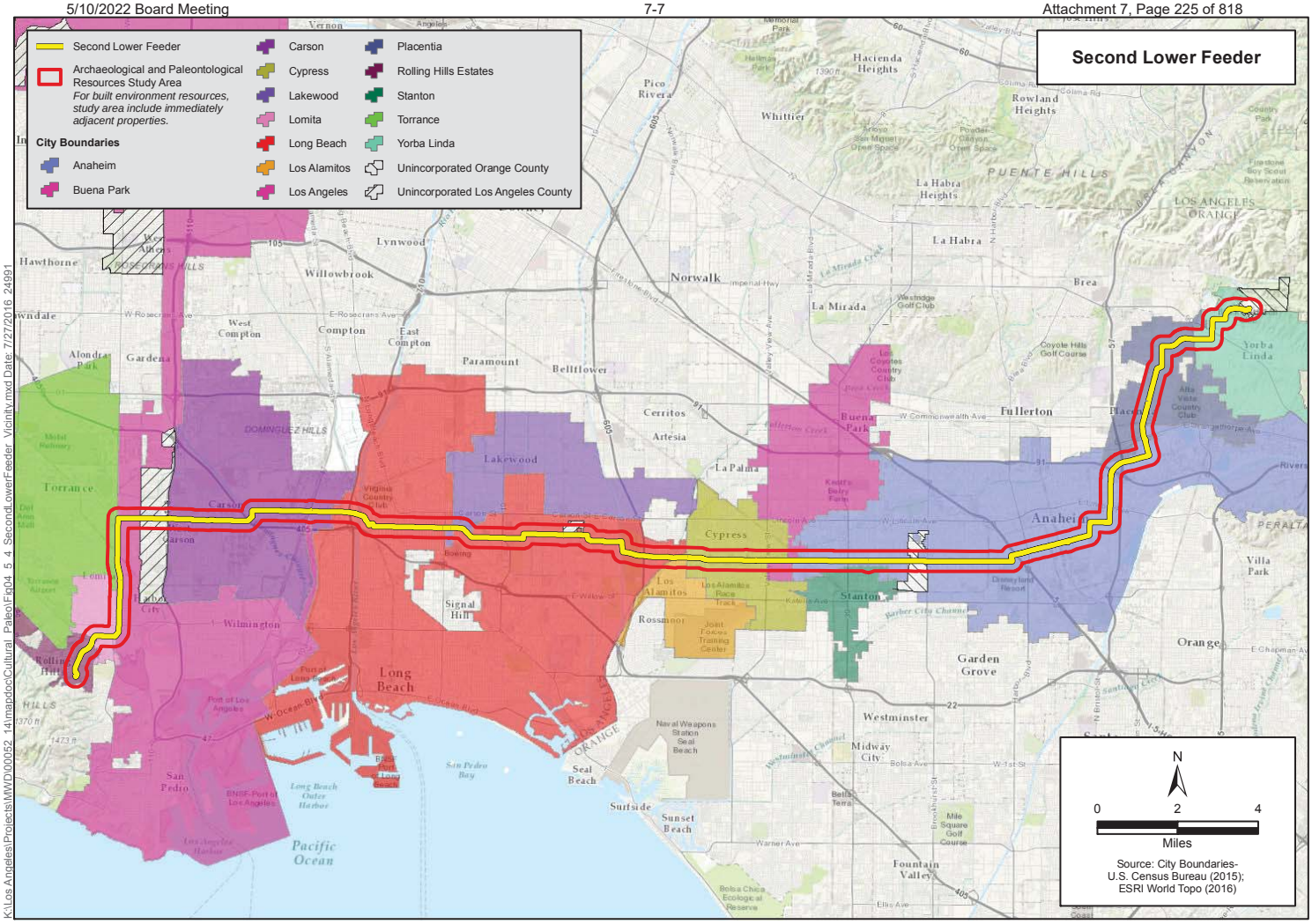


Figure 4.5-4
Second Lower Feeder Cultural Resources Study Area
Metropolitan Water District PCCP Rehabilitation Program

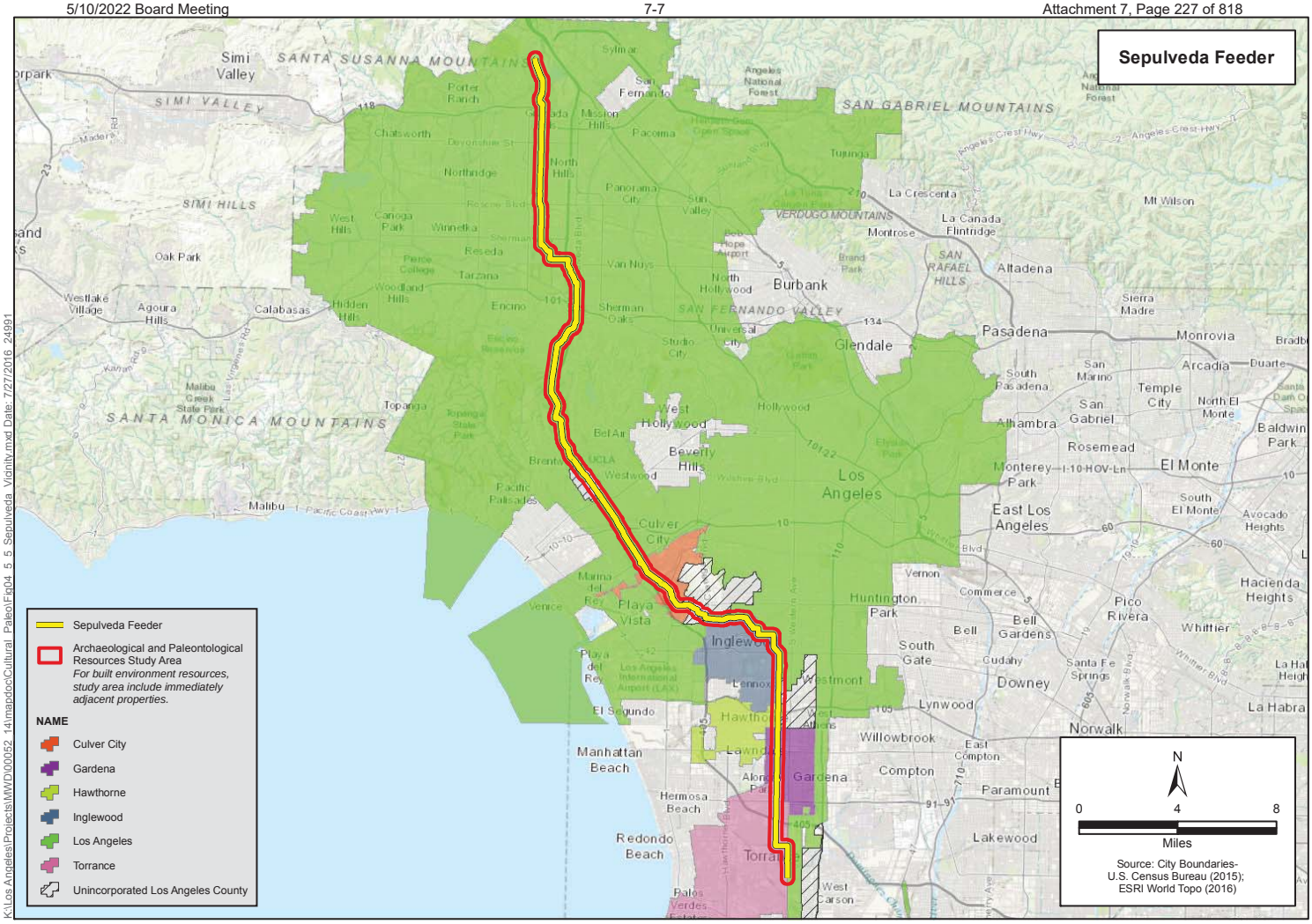


Figure 4.5-5
Sepulveda Feeder Cultural Resources Study Area
Metropolitan Water District PCCP Rehabilitation Program

Tables in the pipeline-specific discussions below document the geologic formations crossed by the pipelines. General types of fossils that have been recovered from these sediments are also listed.

4.5.2.1 Paleontological, Cultural, and Historical Background

Paleontological Setting

The project site is in Southern California in a physical setting known as the Los Angeles Basin. The Los Angeles Basin is a roughly north-south trending depositional trough in the northwestern portion of the Peninsular Ranges geomorphic province (CGS 2002). The Los Angeles Basin has been the site of discontinuous marine deposition since the Late Cretaceous (99.6 million years ago); it began to fill with alluvium about 5 million years ago and eventually was exposed above sea level, and terrestrial deposition began. Geologic structures in this region reflect the resolution of tectonic forces as the northwest-trending structures of the northern Peninsular Range Province, exemplified by the Whittier-Elsinore fault, meeting the Santa Monica-Hollywood-Raymond fault of the Transverse Range Province (CGS 2002; Jahns 1954).

Geographic features in the Los Angeles Basin include the San Fernando Valley, the Los Angeles Plain, the Pomona Valley, the Santa Ana Valley, the San Gabriel Valley, and the San Bernardino Valley. All of these interconnected lowlands are drained by three large river systems: the Los Angeles, San Gabriel and Santa Ana rivers. These rivers, their tributaries, and many small intermittent water flows from the mountains surrounding these valleys have resulted in a deep accumulation of Pleistocene-age (2.6 million years ago to 10,000 years ago) to Holocene-age (10,000 years ago to present) alluvium consisting of water-borne deposits of silt, sand, and gravel. The relatively level to gently sloping alluvium forms a series of intercut layers that gets older at greater depths below the ground surface. However, in some settings, Pleistocene-age sediments are exposed at the ground surface. Underlying these alluvial deposits is bedrock of various types (Dibblee 1989). For example, in downtown Los Angeles, geotechnical work on one city block (City of Los Angeles 2004) found alluvial sediments extended to depths ranging between 27 feet to 52.5 feet below the ground surface. Underlying the alluvium was Fernando Formation bedrock of early Pliocene age (3.4 to 5.5 million years ago).

Mountains and hills divide the Los Angeles Basin, such as the Santa Monica Mountains, Hollywood Hills, Santa Ana Mountains, San Gabriel Mountains, and San Bernardino Mountains, as well as ranges of small hills such as the Chino Hills or Puente Hills. These ranges are made up of various structures of sedimentary formations and volcanic and granitic rocks (Hinds 1952).

The paleontological sensitivity of these rock units ranges from not sensitive to very sensitive. Quaternary younger alluvial deposits of Holocene-age deposits contain the remains of modern organisms and are too young to contain fossils. Younger alluvial deposits have been determined to have a low potential for paleontological resources. Typically, Quaternary older alluvial deposits throughout Southern California are considered to be highly sensitive for vertebrate fossils (McLeod 2015a, 2015b, 2015c, 2015d, 2015e). Sixty Pleistocene localities from this type of sediment, exclusive of Rancho La Brea, were reviewed by Miller (1971), and many localities have since been discovered.

The layers of consolidated bedrock forming mountains and hills, as well as underlying the alluvial deposits, have been repeatedly demonstrated to be abundantly fossiliferous in the program area. These sedimentary formations include the La Habra, Fernando, Puente, Monterey, Saugus, Upper Modelo, Chico, Silverado, Williams, Vaqueros, Topanga, Capistrano, and Niguel formations. All of

these sedimentary bedrock formations have been assigned a "high" designation for paleontological resource sensitivity. In some areas, volcanic and granitic rocks are exposed. These rock units have no potential to contain paleontological resources (McLeod 2015a, 2015b, 2015c, 2015d, 2015e).

Cultural Background

Prehistoric Setting

The prehistoric occupation of Southern California is divided chronologically into several temporal phases, or horizons, as presented on Table 4.5-1, based on the work of William J. Wallace (Moratto 1984). Horizon I, or the Early Man Horizon, began at the first appearance of people in the region (approximately 11,000 years ago) and continued until about 7,000 years ago. Although little is known about these people, it is assumed that they were semi-nomadic and subsisted primarily on game.

Horizon II, also known as the Millingstone Horizon or Encinitas Tradition, began around 7,000 years ago and continued until about 3,500 years ago. The Millingstone Horizon is characterized by widespread use of milling stones (manos and metates), core tools, and few projectile points or bone and shell artifacts. This horizon appears to represent a diversification of subsistence activities and a more sedentary settlement pattern. Archaeological evidence suggests that hunting became less important and that reliance on collecting shellfish and vegetal resources increased (Moratto 1984).

Horizon III, the Intermediate Horizon or Campbell Tradition, began around 3,500 years ago and continued until about 1,300 years ago. Horizon III is defined by a shift from the use of milling stones to increased use of mortar and pestle, possibly indicating a greater reliance on acorns as a food source. Projectile points become more abundant and, together with faunal remains, indicate increased use of both land and sea mammals (Moratto 1984).

Horizon IV, the Late Horizon, which began around 1,300 years ago and terminated with the arrival of Europeans, is characterized by dense populations; diversified hunting and gathering subsistence strategies, including intensive fishing and sea mammal hunting; extensive trade networks; use of the bow and arrow; and a general cultural elaboration (Moratto 1984).

Table 4.5-1. William J. Wallace's Chronological Horizons for Prehistoric Cultures

Horizon	Time Period	Description
Horizon I/Early Man	11,000–7,000 years ago	First appearance of humans in the region
Horizon II/Millingstone Horizon	7,000–3,500 years ago	Widespread use of millingstone (manos, metates), representing a more sedentary settlement pattern
Horizon III/Intermediate Horizon	3,500–1,300 years ago	Shift from use of millingstone to increased use of mortar and pestle and more projectile points
Horizon IV/Late Horizon	1,300 years ago to arrival of Europeans	Dense populations, diversified hunting, intensive fishing, and extensive trade networks
Source: Moratto 1984		

Ethnographic Setting

When Spanish explorers and missionaries first visited the southern coastal areas of California, the indigenous inhabitants of the Los Angeles area (the Tongva) were given the Spanish name "Gabrieliño." Gabrieliño/Tongva territory included the watersheds of the San Gabriel, Santa Ana, and Los Angeles rivers; portions of the Santa Monica and Santa Ana mountains; the Los Angeles Basin; the coast from Aliso Creek to Topanga Creek; and San Clemente, San Nicolas, and Santa Catalina islands. The Gabrieliño language is classified as belonging to the Takic family (or "Cupan"), Uto-Aztecan stock, and is subdivided into four or more separate dialects (Shipley 1978). The proposed program area is in the region where the Fernandeño dialect of the Gabrieliño language was spoken. The names Gabrieliño and Fernandeño refer to the two major missions established in Gabrieliño territory: San Gabriel and San Fernando (Bean and Smith 1978).

The Gabrieliño/Tongva inhabited some 50 to 100 permanent villages in fertile lowlands along streams and rivers and in sheltered areas along the coast at the time of European contact. The larger permanent villages most likely had populations averaging 50 to 200 persons. Sedentary villages also had smaller satellite villages located at varying distances; these remained connected to the larger villages through economic, religious, and social ties (Bean and Smith 1978). Gabrieliño villages contained four basic types of structures. Houses were circular and domed, made of tule mats, fern, or carrizo (Kroeber 1925; Bean and Smith 1978). The Gabrieliño sweathouses were small, circular earth-covered buildings. Villages may have included menstrual huts and open-air ceremonial structures made with willows inserted wicker fashion among willow stakes (Bean and Smith 1978).

Ethnographic information indicates that the Gabrieliño occupied the area between the Palos Verdes Peninsula and the Los Angeles River as evidenced by the number of recorded village sites in each of these areas. Gabrieliño place names on the peninsula include *Chaawvenga*, *Xuuxonga*, *Toveemonga*, *Aataveanga*, *Kiinkenga*, *Toveemonga*, and *Haraasnga* (McCawley 1996). McCawley also provides information for the village sites of *Swaanga* and *Ahwa Anga* as located along the Los Angeles River closest to its junction with the Pacific Ocean. These villages were occupied as late as the 1700s and early 1800s as evidenced by notations in the baptismal registers of Mission San Gabriel (McCawley 1996). *Swaanga* was documented as one of the larger, more substantial village sites (Reid 1852; McCawley 1996 citing Reid). However, there is some discrepancy as to the actual location of the village. McCawley (1996) cites Reid's (1852) notation that *Swaanga* was located at "Suang-na," suggesting that this was still a recognizable place by 1852.

The Gabrieliño/Tongva had a rich and varied material culture. Technological and artistic items included shell set in asphaltum, carvings, paintings, an extensive steatite industry, baskets, and a wide range of stone, shell, and bone objects that were both utilitarian and decorative. Gabrieliño/Tongva subsistence was based on a composite hunting and gathering strategy that included large and small land animals, sea mammals, river and ocean fish, and a variety of vegetal resources. Generally, Gabrieliño settlements were created at the intersection of several ecozones. The majority of the population drifted as families to temporary hillside or coastal camps throughout the year, returning to the central location on ritual occasions or when resources were low and it was necessary to live on stored foods.

Offshore fishing was accomplished from boats made of pine planks sewn together and sealed with asphaltum or bitumen. Much of the fishing, shellfish harvesting, and fowling took place along the ocean shoreline or along freshwater courses. Sea mammals were taken with harpoons, spears, and

clubs. River and ocean fishing was undertaken with the use of line and hook, nets, basket traps, spears, and poisons (Hudson and Blackburn 1982).

Land animals were hunted with bow and arrow and throwing sticks, and were trapped or clubbed. Smaller animals such as rabbits and ground squirrels were driven with grass fires and taken with deadfall traps. Seasonal grass fires may have had the additive effect of yielding new shoots attractive to deer. Burrowing animals could be smoked from their lairs.

Transportation of plants and other resources was accomplished through the use of burden devices such as coiled and woven baskets and hammock carrying nets commonly made from grass and other plant fibers.

The Gabrieliño/Tongva were apparently first contacted by Europeans in 1542 when Juan Rodríguez Cabrillo entered the area. Following subsequent Spanish visits to the region, colonization began in 1769, precipitating the establishment of Missions San Gabriel (1771) and San Fernando (1797). Due in part to the introduction of Euro-American diseases and the harsh effects of mission life, the Gabrieliño population and culture suffered a gradual deterioration. Following the secularization of the missions, most surviving Gabrieliño became wage laborers on the ranchos of Mexican California. In the early 1860s, a smallpox epidemic nearly wiped out the remaining Gabrieliño. The combination of disease, forceful reduction, and poor diet contributed to the disappearance of the Gabrieliño as a culturally identifiable group in the 1900 federal census (Bean and Smith 1978). However, persons of Gabrieliño descent have continued to live in the Los Angeles area to the present time.

Historical Setting of Water Supply

Los Angeles Area Water Development and Metropolitan Water District

The city of Los Angeles had a population of around 50,000 in 1892. Developed by the Los Angeles Water Company, supplies from groundwater wells and the Los Angeles River provided adequate water for the city for a time, but a population that exceeded the 100,000 mark around the turn of the century required new sources. Los Angeles Water Company's superintendent at the time, William Mulholland, who would become the region's most famous water developer, predicted that the city's population would reach 400,000 by 1925, but as a result of Mulholland's and others' efforts, regional water infrastructure development would in fact supply water for over a million Angelinos by that year (Schwartz 1991:17).

The majority of that supply came from the Los Angeles Aqueduct, engineered by Mulholland and developed by the City of Los Angeles, which acquired Los Angeles Water Company in 1902 and created the Los Angeles Department of Water and Power (LADWP). Mulholland designed a system to transmit water to Los Angeles from the Owens Valley, approximately 50 miles north. Mulholland worked with former Mayor Fred Eaton, who had originally suggested the Owens Valley as a potential water source for the city. In 1905 Los Angeles voters approved a $1.5 million bond issue and Eaton began to acquire the necessary land and water rights for the project, which won congressional approval in 1906. Los Angeles voters approved a second bond issue for $23 million to finance the system in 1907, and the City initiated construction the following year, building over 1,000 miles of roads, pipeline, and electricity and telephone lines in preparation for the water conveyance system (Erie 2006:37; Schwartz 1991:18–19).

Completed in 1913, the Los Angeles Aqueduct was the largest aqueduct in the world for a time. It consisted of nearly 250 miles of canals, tunnels, siphons, and other water conveyance features. Because steel pipe still had to be shipped from the east, its use was limited mainly to 12 miles of canyon-spanning siphons. The City purchased 4,000 acres of clay- and limestone-rich land near the Mojave Desert town of Monolith and established a facility that produced 1,000 barrels of Portland cement per day for the project. The system also included the Haiwee, Fairmont, Bouquet Canyon, and Dry Canyon reservoirs, as well as two reservoirs in the San Fernando Valley, where water from Owens Valley entered the City's local distribution system. Despite opposition to the project by private power companies, hydroelectricity generated from plants along the aqueduct, combined with the City's acquisition of local private electricity distribution systems, would eventually make LADWP the nation's largest municipally owned electricity provider (Karhl 1979:32; Schwartz 1991:20, 22–23; Starr 1990:55–59, 156–57).

During the following decade, other California cities would also begin developing geographically extensive systems for transporting water from eastern California to the growing urban centers along the coast. Between 1926 and 1929, the East Bay Municipal Utility District completed twin 80-mile aqueducts to convey Mokelumne River water from the Sierra Nevada foothills to nine municipalities on the eastern side of the San Francisco Bay. Between 1915 and 1934, the City of San Francisco constructed a system to convey water from a dam and reservoir developed at the Hetch Hetchy Valley in the Sierra Nevada approximately 170 miles west to City storage reservoirs in San Mateo County (Elkind 1994:65–66; SFPUC 1935:51–53).

After 1913, the aqueduct fueled Los Angeles's growth and geographical expansion, but within a decade of its completion, the water supply it afforded the emerging metropolis threatened to become inadequate. Owens Valley water initially supplied Los Angeles with over four times the amount of water that could be used within the city limits. "This surplus," writes historian Kevin Starr, "provided an irresistible force for expansion" (Starr 1990:59). In 1915, the City of Los Angeles annexed the San Fernando Valley. Surplus Owens Valley water provided water for agricultural irrigation in the San Fernando Valley while also replenishing groundwater within the expanding city limits. By 1923, Los Angeles had expanded its geographical boundaries to include an area nearly four times the area encompassed in 1913 (Starr 1990:59–60; Karhl 1979:32).

Urban growth and drought during the early 1920s led Los Angeles to seek additional water supply, including increasing the supply from the Owens Valley. There, opposition to Los Angeles's efforts among business and farming interests evolved into a populist resistance movement that included bombings and occupations of Los Angeles aqueduct facilities. (Los Angeles would eventually prevail and become the largest land owner in the Owens Valley.) At the same time, Mulholland and LADWP began to investigate other options. Mulholland, LADWP, and other Southern California interests seized upon a Bureau of Reclamation study recommending construction of a dam across the Colorado River border between Arizona and Nevada, and the Colorado River Compact of 1922, to win voter approval for a bond issue for Mulholland to conduct the first of 16 surveys to establish a route for an aqueduct to convey Colorado River water to the Los Angeles area. In 1926, LADWP constructed a Mulholland-designed dam and reservoir at San Francisquito Canyon north of the city on geological foundations that proved catastrophically faulty. In 1928, the dam failed and released a torrent of water that ripped through the Santa Clara Valley and killed over 400 on its path to the Ventura shoreline. The disaster ended Mulholland's career and increased the importance of Colorado River water development for the long-term growth potential of Los Angeles as well other neighboring and nearby southland municipalities (Kahrl 1979: 33, 36; Schwartz 1991:39–40; Starr 1990:159–161).

The Metropolitan Water District (Metropolitan) took shape in this context. No municipality in the Los Angeles area had the resources to build an aqueduct between it and the Colorado River independently; a special district incorporating multiple municipalities was necessary. By the end of 1928, the U.S. Senate had approved the Boulder Canyon Project Act, and residents in 11 southland municipalities—Los Angeles, Pasadena, Burbank, Glendale, Beverly Hills, San Marino, Santa Monica, Anaheim, Colton, Santa Ana, and San Bernardino—had voted in favor of creating Metropolitan, which was incorporated in December of that year. By the end of 1931, Fullerton, Long Beach, Torrance, and Compton had also joined, though Colton and San Bernardino had withdrawn (Kahrl 1979: 41–42; Schwartz 1991:43; Starr 1990:161).

Construction of Metropolitan's 242-mile Colorado River Aqueduct began in the Great Depression year of 1933, under the agency's first superintendent, Frank Weymouth, and was completed in October 1939, 4 years after completion of Boulder Dam. The Colorado River Aqueduct project entailed construction of multiple dams and water storage facilities, including Parker Dam and Reservoir on the Colorado River, Gene Dam and Reservoir, Hayfield Reservoir (later abandoned), Cajalco Dam and Reservoir (later renamed Lake Mathews), and Palos Verdes Reservoir. The completed linear aqueduct included 29 concrete horseshoe-shaped tunnels measuring 16 feet high and 16 feet wide, with a combined length of 92 miles; 62 miles of concrete-lined canal; 92 miles of concrete horseshoe-shaped cut-and-cover conduit in areas subject to extensive flooding and wind-blown sand; 144 inverted siphons across drainages and depressions with a combined length of 29 miles, all constructed of cast-in-place concrete except for the experimental Little Morongo precast pipe siphon; and five pumping plants (Metropolitan 1939: 146–147, 178, 189, 197, 208–229, Tables 14–16; Schwartz 1991:66, 75–76)

Metropolitan began constructing the aqueduct's distribution system in the greater Los Angeles area in 1936 and completed it in 1941. The distribution system consisted of a water treatment and softening plant, tunnels, and 156 miles of feeder pipelines. From the intake tower at the Lake Mathews receiving reservoir, the system's Upper Feeder extended north and west to Glendale and consisted mainly of precast concrete pipelines, as well as the Monrovia, Sierra Madre, Pasadena, and San Rafael tunnels between Glendora and Glendale, and some cast-in-place and steel pipeline segments. The Palos Verdes Feeder, a welded steel pipeline, stretched from Eagle Rock south to Palos Verdes underneath city streets to service Los Angeles, Long Beach, Torrance, and Compton. Comprising precast concrete pipe, welded steel pipe, and the Hollywood Tunnel, the Glendale to Santa Monica segment extended approximately 23 miles through Glendale, Burbank, North Hollywood, Hollywood, Beverly Hills, and West Los Angeles to a reservoir in Santa Monica. The approximately 28-mile Orange County Feeder was constructed from the system's water filtration plant near La Verne through Brea Canyon to service Fullerton, Anaheim, and Santa Ana. Lateral lines were also constructed to serve Burbank, Compton, Torrance, and Long Beach. As of June 30, 1943, the Metropolitan distribution system included 36 miles of 116- to 140-inch and 28 miles of 30- to 58-inch precast concrete pipeline, 0.3 mile of cast-in-place concrete pipeline, 2.5 miles of asbestos cement pipeline, 61 miles of welded steel pipeline, 10 miles of cast-iron pipeline, and 16.5 miles of tunnels (Metropolitan 1939:253–272; 1940:61–92; 1943:31–33; Schwartz 1991:76–77).

Although deliveries initially represented a fraction of both the aqueduct's capacity and Southern California's allotment of Colorado River water, the outbreak of World War II increased water demand and led additional municipalities to join Metropolitan. Metropolitan's system provided water, power, and telephone service to the U.S. Army's Desert Training Center. Small cities in Orange County formed the Coastal Municipal Water District, which joined Metropolitan in 1942. Rapid wartime population growth in San Diego, coupled with the Navy's need for increased water supply

for expanded military operations in the area, led San Diego County to join Metropolitan. San Diego exchanged its annual 112,000 acre-foot apportionment of Colorado River water and agreed to pay the standard Metropolitan annexation fee in a deal that provided for Metropolitan and San Diego to split the costs building a connecting pipeline, which was completed in 1947(Kahrl 1979:42; Schwartz 1991:78–79, 84–86).

Evolution of Concrete Water Pipe and Prestressed Concrete Cylinder Pipe

The first widespread use of concrete water pipelines in the American West occurred during the late nineteenth and early twentieth centuries. High-pressure conduits required steel pipe, and because concrete pipe—including early reinforced concrete pipe—was subject to leakage under heads exceeding 60 feet, it was not widely used for penstocks at early hydroelectric facilities. However, irrigators increasingly made use of concrete pipe during the late nineteenth and early twentieth centuries. In irrigation networks, concrete pipe dramatically reduced evaporation compared to open canals and ditches. Compared to steel pipe, concrete proved much cheaper to produce in California and other parts of the West, where cement factories proliferated and abundant other concrete ingredients—sand, gravel, and rock—remained readily available (JRP 2000:8; Stanley and Fortier 1921:2–5).

Water providers in Southern California increasingly made use of concrete pipe during the early twentieth century for lower-pressure water conduit. In 1921 a U.S. Department of Agriculture bulletin reported that Orange County's Whittier Water Company had "laid considerable quantities of continuous reinforced concrete pipe" (Stanley and Fortier 1921:6–7). LADWP also installed segments of concrete pipe for multiple siphons along the aqueduct between the Owens Valley and Los Angeles. The Los Angeles Aqueduct's 11 miles of siphon incorporated nearly 3 miles of 10-foot-diameter reinforced concrete pipe that operated under heads ranging from 40 to 75 feet, while the remaining siphon segments consisted of steel pipe (City of Los Angeles 1916:192, 209). For pipeline conduit, pre-World War II extensive water conveyance systems and urban distribution systems continued to rely mainly on riveted and Lock-Bar steel pipe, or—beginning in the 1920s—welded steel pipe (Cates 1971:3–5). As of June 1940, for example, Metropolitan's greater Los Angeles-area water distribution system consisted of approximately 37 miles of precast and cast-in-place concrete pipe, and 48 miles of welded steel pipe (Metropolitan 1940: Tables 18–19).

Between 1920 and 1940, most water-conveying concrete-pressure distribution pipe installed in the U.S. consisted of steel cylinder concrete pipe that was not prestressed. The first such pipeline installed in the U.S. was a 36-inch-diameter line constructed in Cumberland, Maryland, in 1919. As described by the American Water Works Association, nonprestressed concrete pipe fabricated during this period consisted of "a welded steel sheet or steel plate cylinder with steel joint rings welded to its ends; a reinforcing cage or cages of steel rods or bars surrounding the cylinder; a wall of dense concrete covering the steel cylinder inside and out, and...a preformed lead gasket," the latter of which provided joint seal and was replaced after 1935 by rubber joint gasket (AWWA 1961:877, 878 quoted).

During World War II, military construction needs resulted in widespread steel shortages, which increased the use of concrete pipe and simulated innovations in concrete pipe technology, including the introduction of PCCP (AWWA 2008:53; Cates 1971:4). In the United States, water providers first installed PCCP within the U.S. in the cities of Penman, Virginia, and Hyattsville, Maryland, in 1942. Such pipe included conduits comprising steel cylinders lined with a concrete core, and conduits consisting of a steel cylinder embedded within a concrete core (AWWA 1961:878). Describing the

manufacture of PCCP compared to nonprestressed concrete cylinder pipe in 1961, the American Water Works Association (AWWA) explained (AWWA 1961:879):

> The welded steel cylinder with joint rings attached is made and tested in the same manner as the nonprestressed cylinder pipe. It is then lined centrifugally with dense concrete by a method that rapidly revolves the pipe in a horizontal position. The lined cylinder is cured, and high-tensile wire is wrapped around the core directly on the steel cylinder. The tension of the wire is measured accurately and constantly to produce a predetermined residual compression in the core. Spacing and size of the wire are determined by design requirements. The wrapped core is then covered by a dense, premixed mortar about 7/8-inch thick, applied by an impact method.

According to AWWA, annual installation of PCCP in the U.S. for water conveyance increased from 12,000 linear feet in 1942 to 1,305,314 linear feet in 1946 (AWWA 2008: 56).

While PCCP production declined in the late 1940s, it increased again during the early 1950s and surpassed the previous 1946 high mark in 1954, when 1,752,670 linear feet of PCCP were produced in the United States. The PCCP installed in the U.S. during the 1940s later became known as lined-cylinder prestressed concrete pipe (LC-PCCP). Embedded-cylinder prestressed concrete pipe (EC-PCCP) was introduced the early 1950s. As explained by AWWA in 1961, although cylinders and joint rings for both types of PCCP were constructed in the same way, early EC-PCCP differed from LC-PCCP in that the cylinder and joint rings were "embedded in vertical casting...after the concrete is cured, the wire reinforcement is wound around the outside of the concrete core that contains the cylinder, instead of being wound directly on the cylinder. An exterior coating of premixed mortar is applied by an impact or by the vertical-casting method" (AWWA 1961:880).

EC-PCCP was used less widely than LC-PCCP throughout the 1950s. For example, in 1955, 1,437,237 linear feet of LC-PCCP was produced in the U.S. compared to 554,589 linear feet of EC-PCCP. Production of LC-PCCP and EC-PCCP in the U.S. during the year 1961 totaled 1,710,406 and 1,151,640 linear feet, respectively. That year, AWWA estimated that 16,000,000 linear feet (3,030 miles) of PCCP had been installed for water conveyance in the U.S. (AWWA 1961:879; 2008: xxi, 53, 56). As such, between 1942 and 1961, PCCP became a widely used, commonplace water conveyance technology.

The State Water Project and Post-War Expansion of the Metropolitan Distribution System

With LADWP's Los Angeles Aqueduct and Metropolitan's Colorado River Aqueduct, Southern California enjoyed water abundance during the immediate post-World War II years of the latter 1940s and the first half of the 1950s. After initiating deliveries to San Diego beginning in 1947, Metropolitan began annexing additional municipal water districts in the 1950s. Still, as late as 1954, Metropolitan's aqueduct pumps transmitted supplies that met the region's water needs while operating at half capacity (Kahrl 1979:42).

Accurately anticipating long-term growth in Los Angeles, Orange, Riverside, and San Bernardino counties, where new suburban tract-housing developments proliferated amid the post-war baby boom and rapid economic growth, Metropolitan began a $200 million program of facilities expansion in 1952. The program provided for 165 miles of new Southern California distribution pipelines and tunnels, including construction of the Lower Feeder between 1954 and 1957. Between 1950 and 1954, Metropolitan's water district annexations included Pomona Valley (1950, later renamed Three Valleys), Eastern, Chino Basin, and Orange County (1951), Foothill (1953), and Central Basin and Western Riverside County (1954). Three more municipal water districts joined

during the early 1960s: Las Virgenes (1960), Calleguas (1961), and Upper San Gabriel Valley (1963). During the 1940s and 1950s, California's population grew from 6.9 million to 15.7 million, but not until the 1960s did demand increases from Southern California's spectacular post-war growth begin to raise concern about Metropolitan's capacity to provide adequate supply (Kahrl 1979:42; Metropolitan 1971:16; Schwartz 1991:87–88, 103).

Well before the 1960s, long-term plans to deliver additional water supply to Southern California from sources beyond the region were already in the works. Beginning in the early 1950s, State Engineer A. D. Edmunston began advocating for the Feather River project, which proposed to build a dam on the river at Oroville for storage, hydroelectric power, and flood control, and to transport Feather River water to the Sacramento-San Joaquin Delta, where water would be drawn for transport to the San Joaquin Valley and Southern California. Opposition in Northern California thwarted the project for a time. However, it received new powerful backing when Pat Brown won the governor's office in 1958 and orchestrated legislative passage of the 1959 Burns-Potter Act authorizing the project. Meanwhile, Metropolitan leadership had explored other potential supply sources and remained skeptical of the project up through the 1960 public vote on Proposition 1 to decide its fate. Aggressively negotiating Metropolitan commitments to the project, Metropolitan leadership reached an agreement with the State just before the voting public approved Proposition 1 by a slim margin. After a failed attempt to amend the contract between the State and Metropolitan in 1961, implementation of the project—which came to be known as the State Water Project (SWP)—moved forward. The pending new supply would prove essential. By 1962, Southern California's population had increased to 17.3 million, and in 1964 a U.S. Supreme Court ruling reduced Metropolitan's allotment of Colorado River water by more than half (Schwartz 1991:103–105, 109–120).

As implemented, the SWP would pump water from the Sacramento-San Joaquin Delta into the California Aqueduct, which would extend 444 miles south to Southern California. Other elements of the SWP system would include the 2 million acre-feet capacity San Luis Reservoir and a coastal branch delivery system to serve San Luis Obispo and Santa Barbara counties. Pumping facilities would transmit aqueduct flows over the Tehachapi Mountains, and the aqueduct would split into east and west branches, with the west branch flowing into Castaic Lake north of Los Angeles and the east branch running east of the Los Angeles basin at a 140-mile distance to Lake Perris in Riverside County (Schwartz 1991:120–122).

During the early 1960s, Metropolitan made plans to expand its Southern California distribution in anticipation of the new SWP supplies from Northern California. In 1966, voters serviced by Metropolitan approved an $850 million general obligation bond for the design and initial phase of construction. At the time, the total cost of the new distribution system was estimated at $1.2 billion, and included three new major feeder lines. The most important line of the system, the Foothill Feeder, would transmit SWP supply from the new Lake Castaic Reservoir through a 60-mile system of tunnels, siphons, and pipelines across the eastern Santa Susana Mountains, the Verdugo Mountains, and the south slope of the San Gabriel Mountains to the eastern San Gabriel Valley area. The Sepulveda Feeder would transmit water from a treatment plant connected to the Foothill Feeder in Granada Hills approximately 60 miles south through underground San Fernando Valley pipeline, a tunnel underneath the Santa Monica Mountains, and underground pipeline extending across the western Los Angeles Basin to Torrance. The Second Lower Feeder would extend east from the Palos Verdes Reservoir through Torrance and Long Beach and into Orange County, where it would turn north to connect with the Robert B. Diemer Filtration Plant in Yorba Linda. Two of these feeder lines would incorporate extensive PCCP segments now proposed for rehabilitation as part of

the current PCCP Rehabilitation Program: the Second Lower Feeder and the Sepulveda Feeder (Herbert 1965:3; Metropolitan 1966:79–85; Schwartz 1991:129).

PCCP standards issued by AWWA (PCCPC301) underwent several modifications during the mid-twentieth century, including a 1964 modification, issued 2 years prior to construction of the Second Lower Feeder. While the upper diameter size limit for LC-PCCP remained 48 inches, 1964 revision to the standard increased the upper limit for EC-PCCP from 72 to 96 inches and provided for larger-diameter pipe with engineer approval. The 1964 revision reduced the minimum pound per square inch (psi) allowance for surge pressures from 50 psi to 40 psi. While the 1964 revision retained a 16-gauge (0.060-inch thick) design basis for steel cylinder thickness, the minimum diameter of reinforcing wire was reduced from 6 gauge (0.192 inch) to 8 gauge (0.162 or 3/8 inch). Minimum cast concrete coating thickness over the core remained 1 inch in 1964, down from 1.5 inches in 1955. With wire size reduced to 3/8 inch, the standard allowed a 5/8-inch minimum concrete coating thickness over the wire. At the same time, the 1964 revision reduced the minimum thickness of shotcrete outer coating from 3/4 inch to 5/8 inch (AWWA 2008:60, 64–65, 68).

The first of the new feeder lines built to handle new supply from the SWP was the Second Lower Feeder, most of which consisted of PCCP. Construction of the approximately 40-mile distribution line began in April 1966 with work on an 8.2-mile segment from Anaheim to Long Beach. By mid-1969, Metropolitan contractors had completed the feeder from the Diemer Filtration Plant in Yorba Linda through Placentia, Anaheim, Buena Park, Cypress, and Los Alamitos and into Long Beach as far east as its connection with a cross feeder at Victoria and 223rd Streets. By mid-1969, only the westernmost segment between Alameda Street in east Carson and the Palos Verdes Reservoir had yet to be completed. Metropolitan contractors finished that westernmost segment in September 1970. The Second Lower Feeder's final price tag was $35,341,744. It included approximately 30 miles of 78-inch diameter PCCP. In addition to the cities already mentioned, segments of the Second Lower Feeder are located in Rolling Hills Estates, Lomita, Torrance, Los Angles, Lakewood, and unincorporated areas of Los Angeles and Orange counties (*Los Angeles Times* 1966:OC1; Metropolitan 1967:119; 1969:133; 1970:33; 1975:20).

Connecting to the Foothill Feeder, the Sepulveda Feeder system would consist of a 60-mile-long main distribution line extending south to a connection with the Second Lower Feeder in Torrance, as well as the Joseph Jensen Treatment Plant (initially the Balboa Water Treatment Plant), the East Valley Feeder and the West Valley Feeder No. 1 (the existing Calleguas Conduit), the West Valley Feeder No. 2, and the Calabasas Feeder. Construction of the Sepulveda Feeder began in May 1968 with work on the outlet tunnel from the Jensen Treatment Plant south to Chatsworth Street in Granada Hills. Construction on the Sepulveda Tunnel through the Santa Monica Mountains began in September 1968. Metropolitan contractors finished laying the main Sepulveda Feeder line in October 1972. The completed main Sepulveda Feeder line from the Jensen Filtration Plant to its connection with the Second Lower Feeder consisted of approximately 37 miles of 150-inch-diameter PCCP, 120-inch-diameter PCCP, and 96-inch-diameter PCCP. The overwhelming majority of the feeder's pipeline was 96-inch-diameter PCCP. The portions of the Sepulveda Feeder included in the proposed PCCP Rehabilitation Program are in Torrance, Carson, Gardena, Hawthorne, Inglewood, and Los Angeles (Metropolitan 1966:81–83; 1969:148; 1970:85, 128; 1975: 18–19).

AWWA standards for PCCP (PCCPC301) underwent limited additional revisions in 1972 and 1979. The 1972 revision increased the diameter size limit for EC-PCCP from 96 inches to 144 inches, and lowered the minimum PCCP steel cylinder thickness from 16 gauge (0.060 inch) to 18 gauge (0.048 inch) for pipe 48 inches or less in diameter, and retained the 16 gauge minimum cylinder thickness

for pipe 54 inches or more in diameter. The 1979 revision increased the 48-inch-diameter size limit for LC-PCCP, which was part of the 1955 revision, to 60 inches. The 1979 revision included a notation that the largest EC-PCCP manufactured by that year was 252-inch-diameter pipe for siphons on the Central Arizona Project (AWWA 2008:60, 64–65)

Two Metropolitan feeder lines to be rehabilitated as part of the current PCCP Rehabilitation Program were constructed during the first half of the 1970s: the Rialto Pipeline and the Calabasas Feeder. The Rialto Pipeline was planned as the fifth easterly reach of the Foothill Feeder, to be constructed between the San Dimas terminus of the fourth reach and the Devil Canyon power plant approximately 29 miles to the east. Metropolitan contractors began work on the first 7.6-mile segment of the pipeline through unincorporated areas of San Bernardino County in 1969. By June 1974, the pipeline had been completed through or north of the cities of San Bernardino, Rialto, Fontana, Rancho Cucamonga, Upland, and a portion of Claremont. In June 1975, a Metropolitan contractor finished the final segment from San Dimas east through La Verne to Thompson Creek in Claremont. The completed Rialto Pipeline included approximately 16 miles of 96-inch-, 121.5-inch-, and 136.5-inch-diameter PCCP (Metropolitan 1968:92, 97; 1969:121; 1970:85; 1974:64; 1975:18, 97).

Metropolitan planned the Calabasas Feeder as a subsidiary line of the Sepulveda Feeder system to extend from a connection with the West Valley Feeder No. 2 south to the boundary of the Las Virgenes Municipal Water District service area at Calabasas. Construction of the Calabasas Feeder from Chatsworth Street in Chatsworth south to U.S. Highway 101 began in 1973. Metropolitan contractors finished the feeder line in January 1975. As completed, the Calabasas Feeder consisted entirely of approximately 9.3 miles of 54-inch-diameter PCCP. The Calabasas Feeder is in the cities of Calabasas, Hidden Hills, and Los Angeles (Metropolitan 1967:84; 1970:87; 1973:108, 110; 1975:19, 96, 99).

Of the five PCCP lines included in the PCCP Rehabilitation Program, the last to be constructed was the Allen-McColloch Pipeline. Metropolitan of Orange County built the 26-mile pipeline on behalf of 11 participating agencies, including the Municipal Water District of Orange County (MWDOC), to supply eastern Orange County with Colorado River and SWP water. Construction was completed in early 1981. When dedicated in March 1981, the pipeline was named for Glenn Allen, former MWDOC board president, and Clem M. McColloch, who died soon after the pipeline was completed and also served as MWDOC board president. The southern 9-mile reach of the pipeline was constructed of PCCP. Metropolitan annual reports from this era did not specify the PCCP diameter and did not include the Allen-McColloch Pipeline in maps of its Southern California distribution system. The pipeline is in the cities of Yorba Linda, Anaheim, Orange, Tustin, Irvine, Lake Forest, and Mission Viejo (*Los Angeles Times* 1981: Part II-6; Metropolitan 1981:82–83; Metropolitan 1981:120–21; MWDOC 2014:4, 20).

California Register Eligibility of PCCP Segments of Program Pipelines

None of the PCCP portions of the Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, Second Lower Feeder, or Sepulveda Feeder appear to be eligible for listing on the CRHR. Consequently, none of these water conveyance resources appear to qualify as historical resources for the purposes of CEQA.

Water conveyance systems and features that clearly demonstrable historic significance are apt to be found eligible for CRHR listing under Criterion 1, for association with important events that have made a significant contribution to the broad patterns of our history, and/or Criterion 3, as resources

that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master. When water conveyance systems or features represent the work of a master, it typically means that a historically significant engineer or builder designed them and managed their construction. It is extremely rare for a historic-period water conveyance system or feature to be found eligible for listing under Criterion 2, for association with the lives of persons important to our past other than individuals who designed and/or built those systems or features. Individual features of a water conveyance system determined not to possess sufficient historical significance to qualify for individual CRHR listing can be found eligible for CRHR listing if they contribute to a larger historically significant system that qualifies for CRHR listing as a historic district. For more information on this topic, see Appendix E.

4.5.2.2 Allen-McColloch Pipeline

The Allen-McColloch Pipeline, which is approximately 26 miles in length, is in Orange County and within the city limits of Yorba Linda, Anaheim, Orange, Tustin, Lake Forest, and Mission Viejo. The pipeline originates from the Diemer Water Treatment Plant in unincorporated Orange County. The Allen-McColloch Pipeline exits the Diemer Water Treatment Plant to the southeast below the Black Gold Golf Club prior to continuing south between residential and commercial land uses in Yorba Linda. After crossing the Santa Ana River and State Route 91, the pipeline generally runs parallel to Imperial Highway before crossing undeveloped and residential land. It continues southeast along the outskirts of Orange, Tustin, and Irvine, traversing primarily undeveloped and agricultural land until entering residential and commercial land of Lake Forest. The Allen-McColloch Pipeline terminates at the El Toro Reservoir in Mission Viejo.

Table 4.5-2 documents the record search for the Allen-McColloch Pipeline.

Table 4.5-2. Allen-McColloch Pipeline – Known Cultural Resources

Trinomial	Primary Number	Eligibility Status	Type/Description	Location in relation to Allen-McColloch Pipeline
n/a	P-30-177541	Does not qualify	Calvary Chapel Church, a Modern-style religious building.	Approximately 54 feet west.
CA-Ora-369	P-30-000369	Unevaluated	Minute shell material and polyhedral core. No interpretive value for the prehistory of area.	Allen-McColloch Pipeline crosses center of site.
CA-Ora-1172	P-30-001172	Unevaluated	Lithic scatter on surface of small knoll—some indication of buried materials.	Allen-McColloch Pipeline crosses western portion of site.
CA-Ora-556	P-30-000556	Unevaluated	Widespread, moderately dense concentration of groundstone and chipped stone artifacts along a ridge top.	Approximately 185 feet northeast.

Trinomial	Primary Number	Eligibility Status	Type/Description	Location in relation to Allen-McColloch Pipeline
n/a	P-30-001548	Unevaluated	Apparent water control impoundment and associated scatter of refuse materials. Remnants of an earthen dam, concrete headwall, and pre-cast delivery pipe are visible on the southern end.	Site of earthen dam is approximately 340 feet east; pipeline crosses associated ditch, part of site, at three points along Jamboree Road.
n/a	P-30-176748	Unevaluated	A portion of the Highline Canal constructed in 1933. Associated features of the canal are several diversion gates, debris traps, flume remains, and conduits.	One portion of canal is approximately 130 feet southwest.
n/a	P-30-176777	Unevaluated	Lambert Ranch, 55-acre property built in 1915.	Northern portion of site is approximately 73 feet southwest.
CA-Ora-649	P-30-000649	Unevaluated	Lithic scatter of flaked materials (cherts and quartzites).	Pipeline crosses the southwestern portion of the site.
CA-Ora-650	P-30-000650	Unevaluated	Milling and flaking station along ridgeline. Ground and chipped stone scattered throughout sagebrush. Extensively disturbed by terracing.	Pipeline crosses the western portion of the site.
CA-Ora-244 CA-Ora-651 CA-Ora-652	P-30-000244	Unevaluated	A large complex village site. Lithic scatter on a small finger of ridge overlooking the mouth of Bee Canyon.	Pipeline crosses the western portion of the site.
CA-Ora-1356	P-30-001356	Unevaluated	Surface artifacts include groundstone, cores, scraper plane, and debitage.	Pipeline crosses the northeastern portion of the site.
CA-Ora-647	P-30-000647	Unevaluated	Rather dense scatter of chipped lithic material on the surface of a ridge.	Pipeline crosses the northeastern portion of the site.
CA-Ora-536	P-30-100188	Unevaluated	Several isolated artifacts identified on the site.	Approximately 130 feet northeast (completely paved).
CA-Ora-536	P-30-100187	Unevaluated	Several isolated artifacts identified on the site.	Approximately 65 feet northeast (completely developed).

Table 4.5-3 lists the geologic formations (McLeod 2015a) crossed by the Allen-McColloch Pipeline, divided geographically, as the route crosses different formations in different hill and mountain exposures. All of these geologic units have high paleontological sensitivity. General types of fossils that have been recovered from these sediments are also listed. (Younger Holocene-age alluvium is

not listed in this table.) Notably, a locality in Santiago Canyon south of Modjeska produced a specimen of a duck billed dinosaur, Hadrosauridae, extremely rare in California.

Table 4.5-3. Allen-McColloch Pipeline – Geologic Formations

Formation/Age	Known Fossils Recovered
Puente Hills Area	
Older Quaternary Alluvium	Land mammals and birds
La Habra—late Pleistocene	Land mammals and birds
Fernando—Pliocene	Marine fish, invertebrates, and mammals
Puente—late Miocene (sometimes called Monterey-Sycamore Canyon)	Marine fish and mammals
Peralta Hills/N. Santa Ana Mountains	
Topanga—middle Miocene	Land mammals, marine mammal, marine birds, fish
Vasqueros/Sespe—Late Eocene-early Miocene	Land mammals, marine mammals, marine birds, and fish
Ladd/Williams—late Cretaceous	Hadrosauridae
Southern Santa Ana Mountains	
Niguel—Pliocene	marine mammals, land mammals
Capistrano—late Miocene	marine mammals, land mammals
Monterey—middle to late Miocene	marine mammals and fish
Topanga—middle Miocene	Land mammals and marine mammal, marine birds, fish

4.5.2.3 Calabasas Feeder

The Calabasas Feeder, which is approximately 9.3 miles long, is in Los Angeles County and travels primarily within the city limits of Los Angeles, with a short portion of the pipeline within the city limits of Hidden Hills and Calabasas. The Calabasas Feeder originates from West Valley Feeder No. 2 in the city of Los Angeles and follows Owensmouth Avenue south through densely populated residential and commercial areas. At Chase Street, the Calabasas Feeder heads west and south, continuing through residential neighborhoods. The Calabasas Feeder then turns southwest and parallels U.S. Highway 101 (US-101) through primarily commercial areas prior to terminating at the Las Virgenes Municipal Water District Service Connection in Calabasas.

Table 4.5-4 documents the record search for the Calabasas Feeder. Listed in the table are all recorded historic-period and prehistoric archaeological sites and built environment resources that occur on or immediately adjacent to the existing pipeline.

Table 4.5-4. Calabasas Feeder – Known Cultural Resources

Trinomial	Primary Number	Eligibility Status	Type/Description	Location in relation to Calabasas Feeder
CA-LAn-964H	P-19-000964	Unevaluated	Standing two-story adobe occupied by Miguel Leonis in the 1870s.	Approximately 260 feet southeast.
CA-LAn-964H	P-19-187332	Listed on NRHP	Also the Leonis Adobe.	Approximately 260 feet southeast.
n/a	P-19-187331	Appears Ineligible	Sagebrush Cantina, formerly retail stores, built in 1924.	Approximately 430 feet southeast.

Table 4.5-5 lists the geologic formations crossed by the Calabasas Feeder and general types of fossils recovered in these sediments (McLeod 2015b). All of these geologic units have high paleontological sensitivity, except for the younger Quaternary/Holocene-age alluvium.

Table 4.5-5. Calabasas Feeder – Geologic Formations

Formation/Age	Known Fossils Recovered
Younger Quaternary/Holocene Alluvium	Very Low sensitivity
Older Quaternary Alluvium	Land mammals and birds, marine mammals
Upper Modelo—late Miocene	marine mammals and birds
Monterey—middle to late Miocene	marine mammals and fish

4.5.2.4 Rialto Pipeline

The Rialto Pipeline, which is approximately 30 miles long, is in San Bernardino and Los Angeles counties and travels within the city limits of San Bernardino, Rialto, Fontana, Rancho Cucamonga, Upland, Claremont, La Verne, and San Dimas, as well as small portions of unincorporated areas in the two counties. The Rialto Pipeline originates at the California Department of Water Resources' Devil Canyon Facility in the city of San Bernardino and exits the facility to the southwest along Pine Avenue through residential areas. After crossing Interstate 215 (I-215), the Rialto Pipeline continues southwest through vacant and industrial land until entering the northern portions of Rialto and Fontana, where the pipeline traverses a mixture of residential, commercial, and open space. In Rancho Cucamonga, Upland, and Claremont, the Rialto Pipeline travels generally along Interstate 210 (I-210) through primarily residential areas and open space. After traveling to the south of Live Oak Reservoir, the Rialto Pipeline continues through La Verne, traveling between residential neighborhoods, open space, and golf courses. The Rialto Pipeline continues into San Dimas, where it parallels North San Dimas Canyon Road through open space and residential neighborhoods prior to terminating at the San Dimas Power Plant Control Structure.

Table 4.5-6 documents the record search for the Rialto Pipeline. Listed in the table are all recorded historic-period and prehistoric archaeological sites and built environment resources that occur on or immediately adjacent to the existing pipeline.

Table 4.5-6. Rialto Pipeline – Known Cultural Resources

Trinomial	Primary Number	Eligibility Status	Type/Description	Location in relation to Rialto Pipeline
n/a	P-36-060258	Unevaluated	The isolate consists of a mortar ground into a sandstone/limestone boulder 40 centimeters in diameter. Probably redeposited through flooding episodes of Cucamonga Creek.	Approximately 100 feet northwest.
n/a	P-36-016474	Listed on the NRHP	Sam and Alfreda Maloof Residence and Studio.	Approximately 175 feet southeast.
CA-SBR-16156H	P-36-004946	Unevaluated	12 Historic Era rock piles.	Approximately 200 feet east (completely destroyed by subdivision).
CA-SBR-16156H	P-36-013748	Unevaluated	Etiwanda Colony water distribution system. Remnants of ceramic pipes and concrete structures.	Approximately 90 feet north.
CA-SBR-16155H	P-36-025410	Unevaluated	Manmade flood control berm.	Approximately 43 feet north.
n/a	P-36-013747	Unevaluated	Sparse scattering of glass and ceramics and metal.	Approximately 43 feet north.
n/a	P-36-013749	Unevaluated	Two structural foundations in the mouth of the canyon.	Rialto Pipeline crosses the southern end of the site.
CA-SBR-6589H	P-36-006589	Unevaluated	Grapeland Irrigation Canal.	Rialto Pipeline crosses the site at Cypress Avenue.
CA-SBR-11508H	P-36-011508	Unevaluated	Dirt road and two asphalt-lined ditches.	Rialto Pipeline crosses the site at Cypress Avenue.
CA-SBR-12608	P-36-013614	Unevaluated	A dirt road, concrete pad, asphalt, rusted metal, a palm stump, and tree trunk.	Rialto Pipeline crosses the southeastern portion of the site.
CA-SBR-13700H	P-36-021326	Unevaluated	A segment of the Union Pacific Railroad Company's Colton-Palmdale Cutoff and bridge over Institution Road.	Rialto Pipeline crosses the site at Cajon Blvd.

Table 4.5-7 lists the geologic formations crossed by the Rialto Pipeline and general types of fossils recovered in these sediments (McLeod 2015c). The older Quaternary Alluvium and the Puente Formation have high paleontological sensitivity.

Table 4.5-7. Rialto Pipeline – Geologic Formations

Formation/Age	Known Fossils Recovered
Younger Quaternary/Holocene Alluvium	Very Low sensitivity
Older Quaternary Alluvium	Land mammals and birds
Puente—late Miocene (sometimes called Monterey-Sycamore Canyon)	Marine fish and mammals
Pelona Schist	No sensitivity
Plutonic igneous rock	No sensitivity

4.5.2.5 Second Lower Feeder

The Second Lower Feeder, which is approximately 39 miles long, is in Orange County and Los Angeles County and travels within the city limits of Yorba Linda, Placentia, Anaheim, Buena Park, Cypress, Los Alamitos, Long Beach, Carson, Los Angeles, Torrance, Lomita, and Rolling Hills Estates, plus unincorporated areas of the two counties. The pipeline originates at the Diemer Water Treatment Plant in Yorba Linda and exits the facility to the west across vacant land, before turning south and crossing the Black Gold Golf Course. The Second Lower Feeder continues southwest through Yorba Linda, traversing residential and commercial areas along several roadways. Upon entering Placentia, the pipeline parallels Angelina Drive through residential, open space, and commercial areas. It continues southwest through Anaheim, traversing more residential, open space, and commercial areas, prior to heading west along Ball Road through Buena Park and Cypress. In Los Alamitos, the Second Lower Feeder crosses west through El Dorado East Regional Park and continues west into Long Beach and slightly into Lakewood through residential neighborhoods prior to paralleling the northern edge of the Skylinks at Long Beach Golf Course and the Long Beach Airport. The pipeline continues west along roadways in developed neighborhoods prior to crossing the Los Angeles River and Interstate 710 (I-710) just north of Interstate 405 (I-405). The Second Lower Feeder enters Carson along Carson Street and continues west, traveling through business, residential, and commercial areas, then turns south along Western Avenue, and continues through a small portion of unincorporated Los Angeles County and the city of Los Angeles. Prior to terminating at the Palos Verdes Reservoir, the Second Lower Feeder travels southwest, barely touching into Torrance and Lomita, and passing through Rolling Hills Country Club along Palos Verdes Drive.

Table 4.5-8 documents the record search for the Second Lower Feeder. Listed in the table are all recorded historic-period and prehistoric archaeological sites and built environment resources that occur on or immediately adjacent to the existing pipeline.

Table 4.5-8. Second Lower Feeder – Known Cultural Resources

Trinomial	Primary Number	Eligibility Status	Type/Description	Location in relation to Second Lower Feeder
n/a	P-19-287085	California Historical Landmark #963	The Mojave Road. Former Indian trade route and U.S. Army road.	Pipeline crosses the site at Alameda Street (State Route 47).
CA-LAn-281	P-19-000281	Unevaluated	Deep dark midden deposit. Probable village. Site removed in construction of reservoir.	Western portion of site adjacent.

Table 4.5-9 lists the geologic formations crossed by the Second Lower Feeder and general types of fossils recovered in these sediments (McLeod 2015d), divided geographically, as the route begins in the Puente Hills, crosses the broad alluvial expanses of the Los Angeles Basin, and terminates in the Palos Verdes Peninsula. (Younger Holocene-age alluvium is not listed in this table.) All of these geologic units have high paleontological sensitivity, except for the Malaga Mudstone, which is a deep sea deposit. However, this unit may encompass evidence of deep water fossils and is considered possibly sensitive for fossil resources.

Table 4.5-9. Second Lower Feeder – Geologic Formations

Formation/Age	Known Fossils Recovered
Puente Hills	
Older Quaternary Alluvium	Land mammals and birds
La Habra—late Pleistocene	Land mammals and birds
Fernando—Pliocene	Marine fish, invertebrates, and mammals
Palos Verdes Peninsula	
Older Quaternary Alluvium (Palos Verdes Sand)	Land mammals, marine mammals, and birds
San Pedro Sand—early Pleistocene	Land mammals, marine mammals, and birds
Timms Point Sand—early Pleistocene	marine mammals and fish
Lomita Marl—early Pleistocene	marine mammals, birds, and fish
Fernando-Pliocene	Marine fish
Malaga Mudstone—late Miocene	No known recovery to date
Monterey—middle to late Miocene	
Valmonte Diatomite member	marine mammals and fish
Altamira Shale member	marine mammals and fish

4.5.2.6 Sepulveda Feeder

The Sepulveda Feeder, which is approximately 42 miles long, is in Los Angeles County and travels within the city limits of Los Angeles, Culver City, Inglewood, Hawthorne, Gardena, and Torrance, plus a small unincorporated area of Los Angeles County. The Sepulveda Feeder originates at the Jensen Water Treatment Plant in the city of Los Angeles and exits the facility to the south through residential neighborhoods and the eastern portion of the Knollwood Golf Course. The Sepulveda

Feeder continues south along Hayvenhurst Avenue, traversing mixed residential, commercial, vacant lots, agricultural fields, and the Van Nuys Airport. Just north of the Van Nuys Golf Course, the Sepulveda Feeder turns east through residential areas and crosses I-405, prior to paralleling the freeway south into developed portions of the Sherman Oaks and Encino neighborhoods of Los Angeles. The Sepulveda Feeder continues to generally parallel I-405 toward the southeast into Culver City and Inglewood, where it traverses commercial and residential areas. Near the Ladera Heights neighborhood, the Sepulveda Feeder travels east through primarily residential neighborhoods before turning south and paralleling Van Ness Avenue through developed portions of Hawthorne, Gardena, and Torrance. The Sepulveda Feeder terminates at the Second Lower Feeder Interconnection in Torrance.

Table 4.5-10 documents the record search for the Sepulveda Feeder. Listed in the table are all recorded historic-period and prehistoric archaeological sites and built environment resources that occur on or immediately adjacent to the existing pipeline.

Table 4.5-10. Sepulveda Feeder – Known Cultural Resources

Trinomial	Primary Number	Eligibility Status	Type/Description	Location in relation to Sepulveda Feeder
n/a	P-19-190584	Not eligible	RMG Hathaway Office Building.	Approximately 30 feet east.
n/a	P-19-188103	Not eligible	One-story, single-family residence constructed in 1946.	Approximately 183 feet east.
n/a	P-19-187739	Eligible	Concrete tunnel and roadway built in 1929.	Sepulveda Feeder crosses site.
n/a	P-19-173043	Listed on NRHP	Veterans Administration Medical Center: 14 Spanish colonial/mission revival buildings.	Adjacent on east.
n/a	P-19-188905	Not evaluated	Bridge 53-1099S, constructed in 1957, is a concrete box-girder bridge.	Adjacent on northeast.
n/a	P-19-190026	Not eligible for CRHR	Spanish Eclectic-style house built in 1937 that was modified into an office in 1974.	Approximately 85 feet northeast.
n/a	P-19-189764	Recommended eligible	Westdale Savings and Loan building, built in 1961.	Approximately 63 feet east.
n/a	P-19-189769	Not eligible	Two-story apartment building built in 1952.	Approximately 66 feet southwest.
n/a	P-19-190592	Not eligible	One-story, rectangular-shaped, symmetrical, Modern-style commercial building.	Approximately 53 feet southwest.
n/a	P-19-186740	Not eligible	St. Eugene Church. Built in 1954.	Approximately 46 feet east.

Table 4.5-11 lists the geologic formations crossed by the Sepulveda Feeder and general types of fossils recovered in these sediments (McLeod 2015e). All of these geologic units have high paleontological sensitivity, except for the Santa Monica Slate. (Younger Quaternary/Holocene-age alluvium is not listed in the table.)

Table 4.5-11. Sepulveda Feeder – Geologic Formations

Formation/Age	Known Fossils Recovered
Granada Hills	
Older Quaternary Alluvium	Land mammals and birds
Saugus—Plio-Pleistocene	Land mammals
Santa Monica Mountains	
Upper Modelo—late Miocene	marine mammals and birds
Monterey—middle to late Miocene	marine mammals and fish
Chico—late Cretaceous	Shark's teeth
Santa Monica Slate—Jurassic	None—very Low Sensitivity

4.5.3 Regulatory Framework

This section describes the plans, policies, and regulations related to cultural resources that are applicable to the proposed program.

4.5.3.1 Federal

There are no applicable federal regulations to cultural resources given that there is no federal nexus to the proposed program.

4.5.3.2 State

California Environmental Quality Act

CEQA, as codified in Public Resources Code (PRC) Sections 21000 et seq. and implemented through the State CEQA Guidelines (14 California Code of Regulations [CCR] Section 15000 et seq.), is the principal statute governing the environmental review of projects in the state. To be considered an historical resource, a resource must be at least 50 years old. In addition, the State CEQA Guidelines define an *historical resource* as follows.

(1) A resource listed in, or determined to be eligible by the State Historical Resources Commission for listing in, the California Register of Historical Resources (Pub. Res. Code § 5024.1, Title 14 CCR, Section 4850 et seq.).

(2) A resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

(3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code § 5024.1, Title 14 CCR, Section 4852) including the following:

(A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(B) Is associated with the lives of persons important in our past;

(C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(D) Has yielded, or may be likely to yield, information important in prehistory or history.

For a resource to be eligible for the CRHR, it must also retain enough integrity to be recognizable as an historical resource and to convey its significance. A resource that does not retain sufficient integrity to meet the NRHP criteria may still be eligible for listing in the CRHR. .

CEQA requires lead agencies to determine if a proposed project would have a significant effect on important historical resources or unique archaeological resources. If a lead agency determines that an archaeological site is an historical resource, CEQA would apply (PRC Section 21084.1 and State CEQA Guidelines Section 15064.5). If an archaeological site does not meet the State CEQA Guidelines criteria for an historical resource, then the site may meet the threshold of PRC Section 21083.2 regarding unique archaeological resources. A *unique archaeological resource* is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria (PRC Section 21083.2 (g)).

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

The State CEQA Guidelines note that if a resource is neither a unique archaeological resource nor an historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (14 CCR Section 15064(c)(4)).

Paleontological resources are afforded protection by CEQA per Appendix G of the State CEQA Guidelines, which provides guidance relative to significant impacts on paleontological resources. This guidance indicates that a project would have a significant impact on paleontological resources if it would disturb or destroy a unique paleontological resource or site or unique geological feature.

California Health and Safety Code Section 7050.5

California State Law, Section 7050.5 of the California Health and Safety Code states:

(a) Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the Public Resources Code. The provisions of this subdivision shall not apply to any person carrying out an agreement developed pursuant to subdivision (l) of Section 5097.94 of the Public Resources Code or to any person authorized to implement Section 5097.98 of the Public Resources Code.

(b) In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the [California] Government Code, that the remains are not subject to the provisions of Section 27491 of the [California] Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.

(c) If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission.

Of particular note to cultural resources is subsection (c), requiring the coroner to contact the Native American Heritage Commission (NAHC) within 24 hours if discovered human remains are determined to be Native American in origin. After notification, NAHC will follow the procedures outlined in PRC Section 5097.98, which include notification of most likely descendants, if possible, and recommendations for treatment of the remains. The most likely descendants will have 24 hours after notification by NAHC to make their recommendation (PRC Section 5097.98). In addition, knowing or willful possession of Native American human remains or artifacts taken from a grave or cairn is a felony under state law (PRC Section 5097.99).

Public Resources Code Sections 5097.5 and 30244

PRC Section 5097.5 prohibits excavation or removal of any "vertebrate paleontological site or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands." Section 30244 requires reasonable mitigation of adverse impacts on paleontological resources from development on public land.

4.5.3.3 Local

Table 4.5-12 lists the applicable cultural resources regulations for each jurisdiction for the proposed program.

Table 4.5-12. Applicable Cultural Resources Regulations for Proposed Program

Title of Governing Document (date)	Applicable Plan, Policy, and/or Regulation

Allen-McColloch Pipeline	
Orange County General Plan (2014)	**Resource Element, Cultural-Historic Resource Preservation, Goal 2.0**: To encourage through a resource management effort the preservation of the county's cultural and historic heritage. **Cultural-Historic Resource Preservation, Objective 2.2**: Take all reasonable and proper steps to achieve the preservation of archaeological and paleontological remains, or their recovery and analysis to preserve cultural, scientific, and educational values. **Cultural-Historic Resource Preservation, Objective 2.3**: Take all reasonable and proper steps to achieve the preservation and use of significant historic resources including properties of historic, historic architectural, historic archaeological, and/or historic preservation value. **Cultural-Historic Resource Preservation, Goal 3**: To preserve and enhance buildings structures, objects, sites, and district of cultural and historic significance. **Cultural-Historic Resource Preservation, Objective 3.1**: Undertake actions to identify, preserve, and develop unique and significant cultural and historic resources.
Yorba Linda General Plan (1993)	**Recreation and Resources Element, Goal 12, Policy 12.1:** Protect significant areas of historical, archaeological, educational or paleontological resources. **Recreation and Resources Element, Goal 12, Policy 12.2:** Require effective mitigation measures where development may affect historical, archaeological or paleontological resources. **Recreation and Resources Element, Goal 12, Policy 12.3:** Require the preparation of archaeological or paleontological reports in areas where there is potential to impact cultural resources. **Recreation and Resources Element, Goal 12, Policy 12.4:** Require that an archaeologist be retained to observe grading activities in areas where the probable presence of archaeological or paleontological resources is indicated. **Recreation and Resources Element, Goal 12, Policy 12.5:** Preserve uncovered resources in their natural state, as much as feasible to assure their preservation and availability for later study. **Historic Resources Element, Goal 1, Policy 1.1:** Encourage the preservation, maintenance, enhancement and reuse of existing historic buildings in redevelopment and commercial areas. **Historic Resources Element, Goal 2:** Preserve, protect and restore significant architectural and historical sites, structures and districts in the City. **Historic Resources Element, Goal 2, Policy 2.3:** Implement Preservation Mechanisms designating any site, structure, district area deemed to be of local, historical, architectural, or cultural significance. In conjunction, seek Certified Local Ordinance and Certified Local Government status from the California Office of Historic Preservation.

City of Orange General Plan (2010)	**Cultural Resources and Historic Preservation, Goal 1.0**: Identify and preserve potential and listed historic resources, including buildings, structures, objects, sites, districts, and archaeological resources citywide **Cultural Resources and Historic Preservation, Goal 2.0:** Identify and preserve neighborhoods that are culturally and historically significant but do not retain sufficient integrity for eligibility as a local, state, or national district. **Cultural Resources and Historic Preservation, Goal 4.0, Policy 4.1:** Identify, designate, and protect historically and culturally significant archaeological resources or sites. **Cultural Resources and Historic Preservation, Goal 4.0, Policy 4.2**: Recognize the importance of Santiago Creek as an archaeological resource.
Tustin General Plan (2013)	**Land Use Element, Goal 5.0, Policy 5.5**: Encourage the restoration and rehabilitation of properties in Tustin eligible for inclusion on the National Register of Historic Places according to the rehabilitation guidelines and tax incentives of the National Trust for Historic Preservation. **Land Use Element, Goal 6.0, Policy 6.5**: Preserve historically significant structures and sites, and encourage the conservation and rehabilitation of older buildings, sites and neighborhoods that contribute to the City's historic character. **Conservation/Open Space/Recreation Element, Goal 12.0, Policy 12.1**: Identify, designate, and protect facilities of historical significance, where feasible. **Conservation/Open Space/Recreation Element, Goal 12.0, Policy 12.2**: Retain and protect significant areas of archaeological, paleontological, or historical value for education and scientific purposes.
City of Irvine General Plan (2012)	**Cultural Resources Element, Objective E-2:** Evaluate surveyed sites for their present and potential cultural, educational, recreational, and scientific value to the community and the region, and determine their proper disposition prior to the approval of any project which could adversely affect them. **Conservation and Open Space Element, Objective L-7**: Use and maintain societal resources, including, but not limited to, archeological historical and paleontological resources, as part of the City's land use pattern.
Lake Forest General Plan (1994)	**Recreation Element, Goal 4.0, Policy 4.1:** Protect areas of important historic, archaeological, and paleontologic resources. **Recreation Element, Goal 4.0, Policy 4.2:** Identify, designate, and protect buildings or sites of historical significance.
Mission Viejo General Plan (2013)	**Conservation and Open Space Element, Policy 1.2**: Utilize a development review process to mitigate the impacts of development on sensitive lands such as steep slopes, wetlands, cultural resources, oak woodlands and sensitive habitats.
Calabasas Feeder	
City of Los Angeles General Plan (2001)	**Conservation Element, Archaeological and Paleontological, Objective:** Protect the city's archaeological and paleontological resources for historical, cultural, research and/or educational purposes. **Conservation Element, Archaeological and Paleontological, Policy:** Continue to identify and protect significant archaeological and paleontological sites and/or resources known to exist or that are identified during land development, demolition or property modification activities. **Conservation Element, Cultural and Historical, Objective:** Protect

	important cultural and historical sites and resources for historical, cultural, research, and community educational purposes. **Conservation Element, Cultural and Historical, Policy:** Continue to protect historic and cultural sites and/or resources potentially affected by proposed land development, demolition or property modification activities.
Calabasas General Plan (2015)	**Community Design Element, Policy IX-2:** Preserve, protect, and enhance landmarks, sites, historic landscapes and districts, and areas of historical, cultural, and urban design significance. **Historic Resources Element, Policy XI-2:** Preserve significant archeological and paleontological resources in-situ, when feasible. When avoidance of impacts is not possible, require data recovery mitigation for all significant resources. All forms of excavation in deposits of Native American origin shall be coordinated and monitored by representatives of the Chumash nation.
Rialto Pipeline	
City of San Bernardino General Plan (2005)	**Historical and Archaeological Resources, Goal 11.1:** Develop a program to protect, preserve, and restore the sites, buildings and district that have architectural, historical, archaeological, and/or cultural significance. **Historical and Archaeological Resources, Goal 11.4:** Protect and enhance our historic and cultural resources. **Historical and Archaeological Resources, Goal 11.5:** Protect and enhance our archaeological resources.
San Bernardino County General Plan (2014)	**Conservation Element, Goal CO 3:** The County will preserve and promote its historic and prehistoric cultural heritage. **Conservation Element, Policy CO 3.1:** Identify and protect important archaeological and historic cultural resources in areas of the County that have been determined to have known cultural resource sensitivity. **Conservation Element, Policy CO 3.5:** Ensure that important cultural resources are avoided or minimized to protect Native American beliefs and traditions. **Open Space Element, Goal OS 4:** The County will preserve and protect cultural resources throughout the County, including parks, areas of regional significance, and scenic, cultural and historic sites that contribute to a distinctive visual experience for visitors and quality of life for County residents.
Rialto General Plan (2010)	**Cultural and Historic Resources, Goal 7-1:** Preserve Rialto's significant historical resources as a source of community identity, stability, aesthetic character, and social value. **Cultural and Historic Resources, Goal 7-3:** Identify, document, and protect significant archaeological resources in Rialto. **Cultural and Historic Resources, Policy 7-3.1:** Require archaeological surveys during the development review process for all projects in archaeologically sensitive areas where no previous surveys are recorded.
City of Fontana General Plan (2003)	**Open Space and Conservation, Goal #4.2**: The City will encourage and support the preservation, rehabilitation, and/or restoration of historical and archaeological resources within the City boundaries and its sphere of influence.
Rancho Cucamonga General Plan (2010)	**Land Use, Community Design, and Historic Resources, Policy LU-16:** Protect historic resources. **Land Use, Community Design, and Historic Resources, Policy LU-19:** Identify and protect historic districts and neighborhood character areas.

Upland General Plan (2015)	**Community Character Element, Policy CC-9.3**: Ensure that City, State, and federal historic preservation laws, regulations, and codes related to historical resources are implemented, including the California Historical Building Code and State laws related to archaeological and paleontological resources, to ensure the adequate protection of these resources.
City of Claremont General Plan (2009)	**Land Use Element, Goal 2-14, Policy 2-14.1:** Continue to protect architectural, historical, open space, environmental, and archeological resources throughout the City. **Land Use Element, Goal 2-14, Policy 2-14.6:** Strive to prevent the demolition of structures listed on Register of Historical and Architectural Merit of the City.
Los Angeles County General Plan (2015)	**Conservation and Natural Resources Element, Policies for Historic, Cultural, and Paleontological Resources, Policy C/NR 14.2:** Support an inter-jurisdictional collaborative system that protects and enhances historic, cultural, and paleontological resources. **Conservation and Natural Resources Element, Policies for Historic, Cultural, and Paleontological Resources, Policy C/NR 14.6**: Ensure proper notification and recovery processes are carried out for development on or near historic, cultural, and paleontological resources.
La Verne General Plan (1999)	**Cultural Resources Element, Policy 2.5:** Pursue preservation of archeological resources.
San Dimas General Plan (1991)	**Conservation Element, Goal Statement CN-2:** Conserve the historical and cultural resources of San Dimas. **Conservation Element, Policy 2.1.1:** Preserve significant paleontological and archaeological sites. Evaluate the significance of each site on a case by case basis. **Conservation Element, Policy 2.1.2:** Preserve significant historical resources within the City of San Dimas. Evaluate each historical structure, place and site on a case by case basis.
Second Lower Feeder	
Orange County General Plan (2014)	**Resource Element, Cultural-Historic Resource Preservation, Goal 2.0**: To encourage through a resource management effort the preservation of the county's cultural and historic heritage. **Cultural-Historic Resource Preservation, Objective 2.2**: Take all reasonable and proper steps to achieve the preservation of archaeological and paleontological remains, or their recovery and analysis to preserve cultural, scientific, and educational values. **Cultural-Historic Resource Preservation, Objective 2.3**: Take all reasonable and proper steps to achieve the preservation and use of significant historic resources including properties of historic, historic architectural, historic archaeological, and/or historic preservation value. **Cultural-Historic Resource Preservation, Goal 3**: To preserve and enhance buildings structures, objects, sites, and district of cultural and historic significance. **Cultural-Historic Resource Preservation, Objective 3.1**: Undertake actions to identify, preserve, and develop unique and significant cultural and historic resources.

Yorba Linda General Plan (1993)	**Recreation and Resources Element, Goal 12, Policy 12.1:** Protect significant areas of historical, archaeological, educational or paleontological resources. **Recreation and Resources Element, Goal 12, Policy 12.2:** Require effective mitigation measures where development may affect historical, archaeological or paleontological resources. **Recreation and Resources Element, Goal 12, Policy 12.3:** Require the preparation of archaeological or paleontological reports in areas where there is potential to impact cultural resources. **Recreation and Resources Element, Goal 12, Policy 12.4:** Require that an archaeologist be retained to observe grading activities in areas where the probable presence of archaeological or paleontological resources is indicated. **Recreation and Resources Element, Goal 12, Policy 12.5:** Preserve uncovered resources in their natural state, as much as feasible to assure their preservation and availability for later study. **Historic Resources Element, Goal 1, Policy 1.1:** Encourage the preservation, maintenance, enhancement and reuse of existing historic buildings in redevelopment and commercial areas. **Historic Resources Element, Goal 2:** Preserve, protect and restore significant architectural and historical sites, structures and districts in the City. **Historic Resources Element, Goal 2, Policy 2.3:** Implement Preservation Mechanisms designating any site, structure, district area deemed to be of local, historical, architectural, or cultural significance. In conjunction, seek Certified Local Ordinance and Certified Local Government status from the California Office of Historic Preservation.
Buena Park General Plan (2010)	**Conservation and Sustainability Element, Goal CS-3**: Protection of important archaeological and paleontological resources.
Cypress General Plan (2001)	**Conservation/Open Space/Recreation Element, Goal COSR-5**: Preserve Cypress's archaeologic and paleontological resources.
Los Alamitos General Plan (2015)	**Open Space, Recreation, and Conservation Element, Policy 3.4**: Preserve historical sites and buildings of state or national significance in accordance with the Secretary of Interior Standards for Historic Rehabilitation.
Long Beach General Plan (2010)	**Historic Preservation Element, Goal 2**: Protect historic resources from demolition and inappropriate alternations through the use of the City's regulatory framework, technical assistance, and incentives.
Los Angeles County General Plan (2015)	**Conservation and Natural Resources Element, Policies for Historic, Cultural, and Paleontological Resources, Policy C/NR 14.2**: Support an inter-jurisdictional collaborative system that protects and enhances historic, cultural, and paleontological resources. **Section 3 of the City of Los Angeles General Plan Conservation Element**: City guidelines for the protection of paleontological resources requires that the paleontological resources of the city be protected for research and/or educational purposes. It mandates the identification and protection of significant paleontological sites and/or resources known to exist or that are identified during land development, demolition, or property modification activities.
Carson General Plan (2006)	**Parks and Recreation Element, Policy P-9.2**: Encourage all development or redevelopment occurring in areas identified as a potential historic archaeological site to be surveyed for historic archaeological resources prior to initiation of site preparation for development.

Torrance General Plan (2010)	**Community Resources Element, Policy CR 12.1**: Encourage the preservation of public and private buildings which are of local, historical, or cultural importance.
Sepulveda Feeder	
City of Los Angeles General Plan (2001)	**Conservation Element, Archaeological and Paleontological, Objective:** Protect the city's archaeological and paleontological resources for historical, cultural, research and/or educational purposes. **Conservation Element, Archaeological and Paleontological, Policy:** Continue to identify and protect significant archaeological and paleontological sites and/or resources known to exist or that are identified during land development, demolition or property modification activities. **Conservation Element, Cultural and Historical, Objective:** Protect important cultural and historical sites and resources for historical, cultural, research, and community educational purposes. **Conservation Element, Cultural and Historical, Policy:** Continue to protect historic and cultural sites and/or resources potentially affected by proposed land development, demolition or property modification activities.
Culver City General Plan (1996)	**Land Use Element, Objective 14:** Promote the City's architectural and cultural heritage by preserving buildings and sites that reflect Culver City's varied history and development. **Land Use Element, Policy 14.A:** Encourage restoration of historic resources in a manner that complies with the U.S. Secretary of Interior's Standards for Rehabilitation of Historic Structures.
Gardena General Plan (2006)	**Conservation Element, CN Policy 5.3**: Protect and preserve cultural resources of the Gabrielino Native American Tribe found uncovered during construction.
Torrance General Plan (2010)	**Community Resources Element, Policy CR 12.1**: Encourage the preservation of public and private buildings which are of local, historical, or cultural importance.

4.5.4 Thresholds and Methodology

4.5.4.1 Thresholds of Significance

Table 4.5-14 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to cultural resources. These thresholds are addressed in the PEIR.

Table 4.5-13. CEQA Thresholds for Cultural Resources

Threshold *Would the proposed program:*
a. Cause a substantial adverse change in the significance of a historical resource, as defined in Section 15064.5?
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?
d. Disturb any human remains, including those interred outside of formal cemeteries?

4.5.4.2 Methodology

Historical Resources

CEQA requires an assessment of a project's potential effects on significant historical resources (i.e., those that are listed or eligible for listing in the CRHR or in a local register or survey that meets the requirements of PRC 5020.1(k) and 5024.1(g)). As documented in Section 4.5.2, this PEIR identifies known historical resources that have been reported in the study area for the pipelines in the proposed program. For this program-level analysis, the potential for construction associated with the proposed program to affect these resources is considered. The potential for construction to affect previously unknown resources that may occur within the study area is also considered.

Archaeological Resources

As documented in Section 4.5.2, this PEIR identifies known archaeological resources that have been reported in the study area for the pipelines in the proposed program. For this program-level analysis, the potential for construction associated with the proposed program to affect these resources is considered. The potential for construction to affect previously unknown resources that may occur within the study area is also considered.

Paleontological Resources

As documented in Section 4.5.2, this PEIR identifies known paleontological resources that have been reported in the study area for the pipelines in the proposed program. For this program-level analysis, the potential for construction associated with the proposed program to affect these resources is considered. The potential for construction to affect previously unknown resources that may occur within the study area is also considered.

In California, unique paleontologic resources, sites, and geologic features, particularly with regard to fossil localities, are afforded protection under a number of state environmental statutes, including CEQA. Under CEQA, a lead agency must determine if the project would result in the direct or indirect destruction of a unique paleontological resource or site or unique geologic feature, and if such impacts would be significant. The CEQA lead agency is responsible for ensuring that feasible mitigation measures are implemented in order to reduce impacts to a less-than-significant level. CEQA does not include a specific definition of "unique paleontological resource or site," nor does it establish thresholds for significance.

Further guidance can be found in "CEQA and Fossil Preservation in California" in the fall 2003 edition of *The Environmental Monitor*. The article states that significant paleontological resources include "fossil remains of large to very small aquatic and terrestrial vertebrates, remains of plants and animals previously not represented in certain portions of the stratigraphy, and fossils that might aid stratigraphic correlations, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, paleoclimatology, and the relationships of aquatic and terrestrial species." Furthermore, it also advises that impacts might be considered less than significant if dense concentrations of plant and/or invertebrate fossil remains were "so locally abundant that the impacts to the resources do not appreciably diminish their overall abundance or diversity." (Scott and Springer 2003)

More recent guidance has been developed by the Society for Vertebrate Paleontology, which defines significant paleontological resources as "fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years)." (Society of Vertebrate Paleontology 2010)

Therefore, any identifiable vertebrate fossil remains would be considered unique under CEQA, and direct or indirect impacts on such remains would be considered significant. Identifiable invertebrate and plant fossils would be considered unique if they meet the criteria presented above. Determinations take into account the abundance and densities of fossil specimens or newly and previously recorded fossil localities in exposures of the rock units present at a project site.

Human Remains

This program-level analysis considers the potential for construction associated with the proposed program to affect previously undiscovered human remains that may occur within the study area.

Native American Coordination

Native American coordination has been undertaken by Metropolitan, regarding the program. NAHC was contacted regarding the program in early 2015. NAHC responded regarding the Second Lower Feeder on February 10, 2015, and regarding the other four program elements on April 9, 2015. NAHC stated in its response letters that a search of its Sacred Lands Database did indicate the potential for Native American resources for the Rialto Feeder and the Sepulveda Feeder but did not yield any sacred lands within the areas of the Allen-McColloch Pipeline, the Calabasas Feeder, or the Second Lower Feeder.

Specifically, NAHC indicated that there may be Native American resources on the San Bernardino U.S. Geological Survey quadrangle map associated with the Rialto Feeder, and Native American resources on the Beverly Hill and Venice U.S. Geological Survey quadrangle maps associated with the Sepulveda Feeder. It should be noted that NAHC keeps records of resources by Township and Range; therefore, the resources called out could be anywhere with a 36-square-mile area crossed by the mentioned program elements.

In addition, NAHC provided, for each program element, a list of Native American contacts who may have additional information on resources in the area. Table 4.5-14 lists the NAHC-provided contacts.

Table 4.5-14. Native American Contacts provided by NAHC

Contact	Representing
Allen-McColloch Pipeline Contacts	
Tessa Romero, Chairwoman	Juaneño Band of Mission Indians Acjacheman
Office of Chairperson	Juaneño Band of Mission Indians
Sonia Johnston, Tribal Chairperson	Juaneño Band of Mission Indians
Adolph "Bud" Sepulveda	Juaneño Band of Mission Indians
Joyce Perry, Representative	Juaneño Band of Mission Indians
Anita Espinoza	Juaneño Band of Mission Indians
Rebecca Robles	United Coalition to Protect Panhe
Calabasas Feeder Contacts	
Beverly Salazar Folkes	Chumash, Tataviam, Fernandeño
Julie Lynn Tumamait-Stennslie, Chair	Barbareño/Ventureño Band of Mission Indians
Patrick Tumamait	Chumash
Randy Guzman Folkes	Chumash, Fernandeño, Tataviam
Richard Angulo	Chumash
Carol A. Pulido	Chumash
Melissa M. Parra-Hernandez	Chumash
Frank Arredondo	Chumash
Kathleen Pappo	Barbareño/Ventureño Band of Mission Indians
Raudel Joe Banuelos, Jr.	Barbareño/Ventureño Band of Mission Indians
PeuYoKo Perez	Chumash
Rialto Feeder Contacts	
Denisa Torres, Cultural Resources Manager	Morongo Band of Mission Indians
Daniel McCarthy, Director, CRM Department	Morongo Band of Mission Indians
Robert Martin, Chairperson	Morongo Band of Mission Indians
Goldie Walker, Chairwoman	Serrano Nation of Mission Indians
Ernest Siva, Elder	Morongo Band of Mission Indians
Cultural Resources Department	Las Vegas Piute Tribe
Andrew Salas, Chairperson	Gabrieliño Band of Mission Indians—Kizh Nation
Anthony Madrigal, Jr. Tribal Historic Preservation Officer	Twenty-Nine Palms Band of Mission Indians
Lynn Valbuena, Chairwoman	San Manuel Band of Mission Indians
Darrell Mike, Chairperson	Twenty-Nine Palms Band of Mission Indians
Joseph R. Benitez (Mike)	Chemehuevi
Edward Smith, Chairperson	Chemehuevi Reservation
Dennis Patch, Chairman	Colorado River Indian Tribe
John Valenzuela, Chairperson	San Fernando Band of Mission Indians
Anthony Morales, Chairperson	Gabrieliño/Tongva San Gabriel Band of Mission Indians
Sandonne Goad, Chairperson	Gabrieliño/Tongva Nation

Contact	Representing
Sam Dunlap, Cultural Resources Director	Gabrieliño/Tongva Nation
Second Lower Feeder Contacts	
John Tommy Rosas, Tribal Administrator	Tongva Ancestral Territorial Tribal Nation
Anthony Morales, Chairperson	Gabrieliño/Tongva San Gabriel Band of Mission Indians
Sandonne Goad, Chairperson	Gabrieliño/Tongva Nation
Robert F. Dorame, Tribal Chair, Cultural	Gabrieliño Tongva
Bernie Acuna Co-Chairperson	Gabrieliño-Tongva Tribe
Linda Candelaria Co-Chairperson	Gabrieliño-Tongva Tribe
Andrew Salas, Chairperson	Gabrieliño Band of Mission Indians—Kizh Nation
Conrad Acuna	Gabrieliño-Tongva Tribe
Sam Dunlap, Cultural Resources Director	Gabrieliño/Tongva Nation
Sepulveda Feeder Contacts	
Beverly Salazar Folkes	Chumash, Tataviam, Fernandeño
Rudy Ortega Jr., President	Fernandeño Tataviam Band of Mission Indians
Julie Lynn Tumamait-Stennslie, Chair	Barbareño/Ventureño Band of Mission Indians
Patrick Tumamait	Chumash
Ron Andrade, Director	LA City/County Native American Indian Commission
John Tommy Rosas, Tribal Administrator	Tongva Ancestral Territorial Tribal Nation
John Valenzuela, Chairperson	San Fernando Band of Mission Indians
Anthony Morales, Chairperson	Gabrieliño/Tongva San Gabriel Band of Mission Indians
Randy Guzman Folkes	Chumash, Fernandeño, Tataviam,
Richard Angulo	Chumash
Sandonne Goad, Chairperson	Gabrieliño/Tongva Nation
Robert F. Dorame, Tribal Chair, Cultural	Gabrieliño Tongva
Carol A. Pulido	Chumash
Melissa M. Parra-Hernandez	Chumash
Bernie Acuna Co-Chairperson	Gabrieliño-Tongva Tribe
Linda Candelaria Co-Chairperson	Gabrieliño-Tongva Tribe
Andrew Salas, Chairperson	Gabrieliño Band of Mission Indians—Kizh Nation
Kathleen Pappo	Barbareño/Ventureño Band of Mission Indians
Raudel Joe Banuelos, Jr.	Barbareño/Ventureño Band of Mission Indians
Conrad Acuna	Gabrieliño-Tongva Tribe
Sam Dunlap, Cultural Resources Director	Gabrieliño/Tongva Nation
PeuYoKo Perez	Chumash

4.5.5 Impacts Analysis

4.5.5.1 Program Analysis

Threshold CUL-A: Cause a Substantial Adverse Change in the Significance of a Historical Resource

The proposed program has the potential to adversely affect built environment resources (i.e., historic resources), including those identified in Section 4.5.2, and others that have not yet been identified or designated as historic resources. Rehabilitation activities would be temporary, with the only permanent aboveground components being manhole covers, valve boxes, and electrical panels. The impacts of these permanent components would not result in substantial adverse changes to built environment resources; therefore, impacts would be less than significant.

During rehabilitation, there is the potential for construction to result in adverse impacts on built environment resources. Specifically, ground-borne vibration from excavation and concrete cutting could potentially adversely affect nearby resources, which would be a significant impact. Implementation of Mitigation Measure MM CUL-1 would reduce this impact to a less-than-significant level.

The five pipelines themselves are not considered to be eligible for listing on the CRHR. Therefore, rehabilitation of the pipelines would not be a substantial adverse change in the significance of a built environment resource.

Mitigation Measures

MM CUL-1 Historic Resources Protection Program.

To avoid impacts on built environment (historic) resources, prior to any rehabilitation involving excavation or concrete cutting, a qualified cultural resource specialist ~~an architectural historian~~ will ~~be retained to~~ determine whether there are any identified or eligible historical resources present and whether ~~to determine if~~ proposed construction activities could adversely affect these resources. If any resources could be adversely affected by construction, ~~the excavation site will be moved or other~~ measures will be taken ~~used~~ to prevent adverse impacts on the resource, as determined by the qualified cultural resource specialist ~~architectural historian~~.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM CUL-1 would reduce these impacts so that residual impacts would be less than significant.

Threshold CUL-B: Cause a Substantial Adverse Change in the Significance of an Archaeological Resource

The proposed program has the potential to affect unknown buried archaeological resources within the pipeline alignments or in staging areas associated with construction. Buried archaeological resources, either prehistoric or historic, could be inadvertently unearthed during ground-disturbing activities. This would potentially result in the demolition of or substantial damage to significant cultural resources, which would be a significant impact under CEQA.

It is unlikely that archaeological resources will be discovered during trenching and rehabilitation, as this work would take place within sediments previously disturbed by the original pipeline construction. Staging areas, which could be located anywhere along the alignments, have an unknown potential to affect previously undiscovered archaeological resources.

Archaeological resources are known to occur on three of the five pipeline alignments, as listed in Tables 4.5-3, 4.5-7, and 4.5-9. Specifically, there are 11 recorded prehistoric and historical archaeological sites on the Allen-McColloch Pipeline alignment, four sites on the Rialto alignment, and one site on the Second Lower Feeder. This final site has probably been destroyed by subsequent reservoir construction.

If construction were to occur in proximity to any of the previously recorded archaeological resources, there is a potential to damage the sites and undiscovered buried components of the sites. The sediments in proximity to the pipelines have been previously disturbed by installation of the pipelines, and therefore the potential for intact archaeological resources is low, but not precluded; consequently potential significant impacts on archaeological resources could occur. Mitigation Measure MM CUL-2 would mitigate impacts on these known resources to less-than-significant levels.

Pipelines routes that do not cross known archaeological sites and have been disturbed by previous construction have a low potential to encounter unknown buried archaeological resources, although resources could still be found intact in trench walls and other excavation areas; therefore, potential significant impacts on archaeological resources could occur. Due to this low potential, archaeological monitoring is not required. Mitigation Measures MM CUL-3 and MM CUL-4 would mitigate impacts on unknown resources to less-than-significant levels.

Areas selected for staging areas or for other activities beyond the alignments of the existing pipeline routes have not been identified and may contain archaeological resources. Staging or other rehabilitation activities could result in significant impacts on these resources. Implementation of MM CUL-5 would mitigate impacts on archaeological resources to less-than-significant levels.

Mitigation Measures

MM CUL-2 Avoidance or Monitoring of Archaeological Sites.

To avoid impacts on archaeological sites, prior to construction of any program element, such as pipeline alignments, construction staging areas, laydown areas, or relocation of pipelines in new alignments, a new record search will be conducted to determine if additional sites or resources have been recorded on or adjacent to the proposed construction section. Reports will be examined to determine the condition of each site when recorded, if the site has been evaluated, and if destruction of the site is documented. Following this review, recorded archaeological sites that are within the pipeline route will be surveyed and their present conditions assessed (see MM CUL-4). Archaeological monitoring will be required during construction-related ground-disturbing activities if within the recorded area of a significant or potentially significant site and for a 50-foot buffer beyond the site boundary. A Native American monitor may be present if the site is prehistoric. If archaeological materials are discovered during monitoring, procedures outlined in MM CUL-4~~3~~ will be implemented.

If it can be demonstrated that the site has been destroyed by previous construction or other actions and there is no potential for other buried parts of the site within the construction area,

or if the site has been evaluated and determined not eligible for the CRHR, then monitoring will not be required.

MM CUL-3 Preconstruction Meeting for Identifying Cultural Resources.

To avoid impacts on previously unidentified cultural resources, all construction personnel will attend a preconstruction meeting that includes a discussion of cultural resources. The meeting will inform construction personnel on how to identify potential cultural resources during ground-disturbing activities and what to do if such potential resources are encountered.

MM CUL-4 Previously Unidentified Resources Encountered during Ground-disturbing Activities.

In the event that any potentially significant cultural resources are unexpectedly encountered during construction, work will be immediately halted and the discovery shall be protected in place. The contractor will halt construction within 50 feet of the exposed resource until a qualified cultural resources specialist evaluates the discovery.

If the qualified cultural resources specialist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. This additional work may include avoidance, testing, and evaluation or data recovery excavation. Work shall be prohibited in the restricted area until Metropolitan provides written authorization.

MM CUL-5 Archaeological Survey of Non-Pipeline Areas.

Prior to rehabilitation activities of any program element, each area will be subject to pedestrian survey for archaeological resources by a professional archaeologist retained by Metropolitan if ground-disturbing activities are slated to occur. If archaeological sites are recorded or found in these affected areas, the sites will be avoided to the greatest extent feasible. If a site cannot be avoided, site testing and evaluation by a professional archaeologist will be required. This may require test excavations, artifact analysis, evaluation for the CRHR and review by SHPO, and possibly data recovery excavation and reporting.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM CUL-2, MM CUL-3, MM CUL-4, and MM CUL-5 would reduce these impacts so that residual impacts would be less than significant.

Threshold CUL-C: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geologic Feature

The proposed program has the potential to affect paleontological resources within the pipeline alignments or in staging areas during rehabilitation activities. Paleontological resources could be inadvertently unearthed during ground-disturbing activities.

Projects in the proposed program would have varying potential for impacts due to differences in rock units to be crossed and depth and type of excavation. In areas of alluvial deposits, such as the Los Angeles Plain or the San Fernando Valley, paleontological resources typically do not occur within 5 feet of the ground surface. In areas of exposed bedrock, such as the Santa Ana Mountains,

paleontological resources may be exposed at the ground surface. There is only one previously recorded paleontological locality known along the existing pipelines routes, in sedimentary terrain, at a depth of 16 feet. In this alluvial setting, areas of shallow grading or vehicular traffic, such as to staging areas, are unlikely to affect paleontological resources. It is also unlikely that paleontological resources will be discovered during trenching and rehabilitation in areas with sediments previously disturbed by the original pipeline construction, but this is not precluded. Therefore, projects in the proposed program have the potential result in destruction of or significant damage to unique paleontological resources or unique geological resources, which would be a significant impact under CEQA.

Implementation of MM CUL-6 would reduce impacts on paleontological resources to less-than-significant levels.

Mitigation Measures

MM CUL-6 Develop a Program to Mitigate Impacts on Paleontological Resources for Each Contract Package

In order to avoid impacts on paleontological resources, the following mitigation program will be implemented for each contract package. This mitigation program will be conducted by a qualified professional paleontologist and will be consistent with the provisions of CEQA. This program will include the following.

1. Assessment of site-specific excavation areas to determine those areas that may be designated as highly sensitive for unique paleontological resources to be monitored during ground disturbance.
2. ~~Development of a monitoring plan for these designated areas. Paleontological~~ In these designated areas, if any, paleontological resources monitors qualified to Society of Vertebrate Paleontology standards will be equipped to salvage fossils as they are unearthed and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitoring may be reduced or eliminated if some of the potentially fossiliferous units are determined upon exposure and examination by qualified paleontological resources personnel to have low potential to contain fossil resources. Also in these designated areas, all unique paleontological resources, if any, will be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates.
3. ~~Preparation of all unique paleontological resources to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Identification and curation of unique~~ Unique paleontological resources, if any, will be identified and curated into an established, accredited museum repository ~~will be required~~.
4. Preparation of a report of findings including a summary of field work and laboratory methods, an overview of the program work area geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. If the monitoring efforts produced fossils, a copy of the report will also be submitted to the designated museum repository.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM CUL-6 would reduce these impacts so that residual impacts would be less than significant.

Threshold CUL-D: Disturb Any Human Remains, Including Those Interred Outside of Formal Cemeteries

Projects in the proposed program have the potential to disturb human remains within the pipeline alignments or in staging areas during excavations or grading. Human remains could be inadvertently unearthed during ground-disturbing activities. This could result in damage to or destruction of these human remains, including those interred outside of formal cemeteries, which would be a significant impact under CEQA. However, California State Law in Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the PRC requires specific procedures for identification and treatment of human remains, both Native American and non-Native American. Therefore, impacts on human remains from the proposed program would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

4.5.5.2 Cumulative Analysis

The proposed program would be implemented over a long period of time; in many cases, implementation of the projects in the proposed program would occur past the planning horizons of local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

The potential for individual future projects to affect significant cultural resources is unknown, but given the number of projects that will take place in the region, it is probable that cumulative growth and development in the Metropolitan service area could have impacts on significant cultural resources. Given the large scale of the region, the proposed program's impacts are reasonably localized. The program's impact would not contribute to cumulative impacts because implementation of Mitigation Measures MM CUL-1 through MM CUL-6 would reduce potential program-related impacts. The incremental effects of the proposed program, after mitigation, would not contribute to a significant adverse cumulative impact on cultural resources.

Section 4.6
Geology and Soils

4.6.1 Introduction

This section describes the existing conditions for geology and soils, the regulatory framework associated with geology and soils, the impacts on geology and soils that would result from the proposed program, and the mitigation measures that would reduce these impacts. As noted in the Initial Study, the proposed program would have potentially significant geology and soils impacts.

4.6.2 Existing Conditions

The study area for geology and soils is the pipeline alignment corridors, plus 0.5 mile on either side (i.e., a 1-mile-wide corridor). The exception is when discussing earthquake faults; any known faults that could affect the pipelines are discussed.

4.6.2.1 Allen-McColloch Pipeline

As shown on Figures 4.6-1 and 4.6-2, the Allen-McColloch Pipeline is in a seismically active area and susceptible to strong groundshaking, seismically induced landslides, and liquefaction as a result of earthquakes. Table 4.6-1 summarizes the Alquist-Priolo Earthquake Fault Zones nearest the jurisdictions traversed by the Allen-McColloch Pipeline study area. Table 4.6-2 summarizes approximately how many acres of the Allen-McColloch Pipeline study area overlap with seismic hazards identified in each jurisdiction within the study area.

Table 4.6-1. Estimated Distance to Nearest Alquist-Priolo Earthquake Fault Zone for Jurisdictions in the Allen-McColloch Pipeline Study Area

Jurisdiction	Distance to Nearest Alquist-Priolo Earthquake Fault Zone (miles)	Nearest Alquist-Priolo Earthquake Fault Zone
City of Yorba Linda	0.0	Elsinore
City of Anaheim	1.7	Elsinore
City of Orange	4.4	Elsinore
City of Villa Park	5.0	Elsinore
City of Tustin	7.7	Elsinore
City of Irvine	7.6	Elsinore
City of Lake Forest	11.9	Elsinore
City of Mission Viejo	12.8	Elsinore
Orange County	0.0	Elsinore
Notes: 0.0 = the Allen-McColloch Pipeline study area crosses the Alquist-Priolo Earthquake Fault Zone within that jurisdiction.		

Table 4.6-2. Estimated Area of Overlap between the Allen-McColloch Pipeline Study Area and Identified Seismic Hazard Areas

Jurisdiction	Earthquake-Induced Landslide Overlap (acres)	Liquefaction Overlap (acres)
City of Yorba Linda	174.2	64.5
City of Anaheim	211.6	683.2
City of Orange	193.6	223.3
City of Villa Park	7.4	-
City of Tustin	9.3	126.6
City of Irvine	-	54.5
City of Lake Forest	33.5	301.5
City of Mission Viejo	63.1	20.9
Orange County	942.3	1,121.5

Seismic Environment

City of Yorba Linda

The city of Yorba Linda is in an area of potential fault rupture and strong groundshaking. The Whittier, Elsinore, San Andreas, and Newport-Inglewood faults have been identified as potentially hazardous in the Public Safety Element of the City of Yorba Linda General Plan. Other active and potentially active faults in the vicinity include the Peralta Hills, San Jacinto, Chino, Malibu-Coast-Raymond, Palos Verdes, San Gabriel, and the Sierra Madre-Santa Susana-Cucamonga faults (City of Yorba Linda 1993).

According to the City of Yorba Linda General Plan (City of Yorba Linda 1993), the Whittier fault is believed to be the main spur from the larger Elsinore fault, which follows a general line easterly of the Santa Ana Mountains into Mexico. The maximum creditable earthquake from the Whittier-Elsinore Fault Zone is a 7.0 magnitude. The Whittier fault zone is also an Alquist-Priolo Earthquake Fault Zone and, accordingly, surface fault rupture hazard in Yorba Linda is high within the boundaries of this zone.

Yorba Linda is also approximately 4 miles from the Peralta Hills fault, 21 miles from the Newport-Inglewood fault, 26 miles from the San Jacinto fault, and 32 miles from the nearest segment of the San Andreas fault. Due to the proximity of regional active and potentially active faults in and around Orange County, and local active faults in Yorba Linda, the risk of structural damage and loss of life due to groundshaking is considerable. The Whittier-Elsinore fault system is probably the most hazardous with respect to groundshaking in Yorba Linda (City of Yorba Linda 1993).

In addition, according to the City of Yorba Linda General Plan (City of Yorba Linda 1993), slope stability is a serious geologic problem in the northern and northeastern parts of the city of Yorba Linda. This area is underlain by siltstone and interbedded sandstone of the Puente Formation, which are often the most prone to landsliding and other forms of slope failure. The Allen-McColloch Pipeline crosses zones identified as earthquake-induced landslide zones, which are areas where previous occurrence of landslide movement or local topographic, geological, geotechnical, and subsurface water conditions indicate a potential for permanent ground displacements (California Geological Survey 2005).

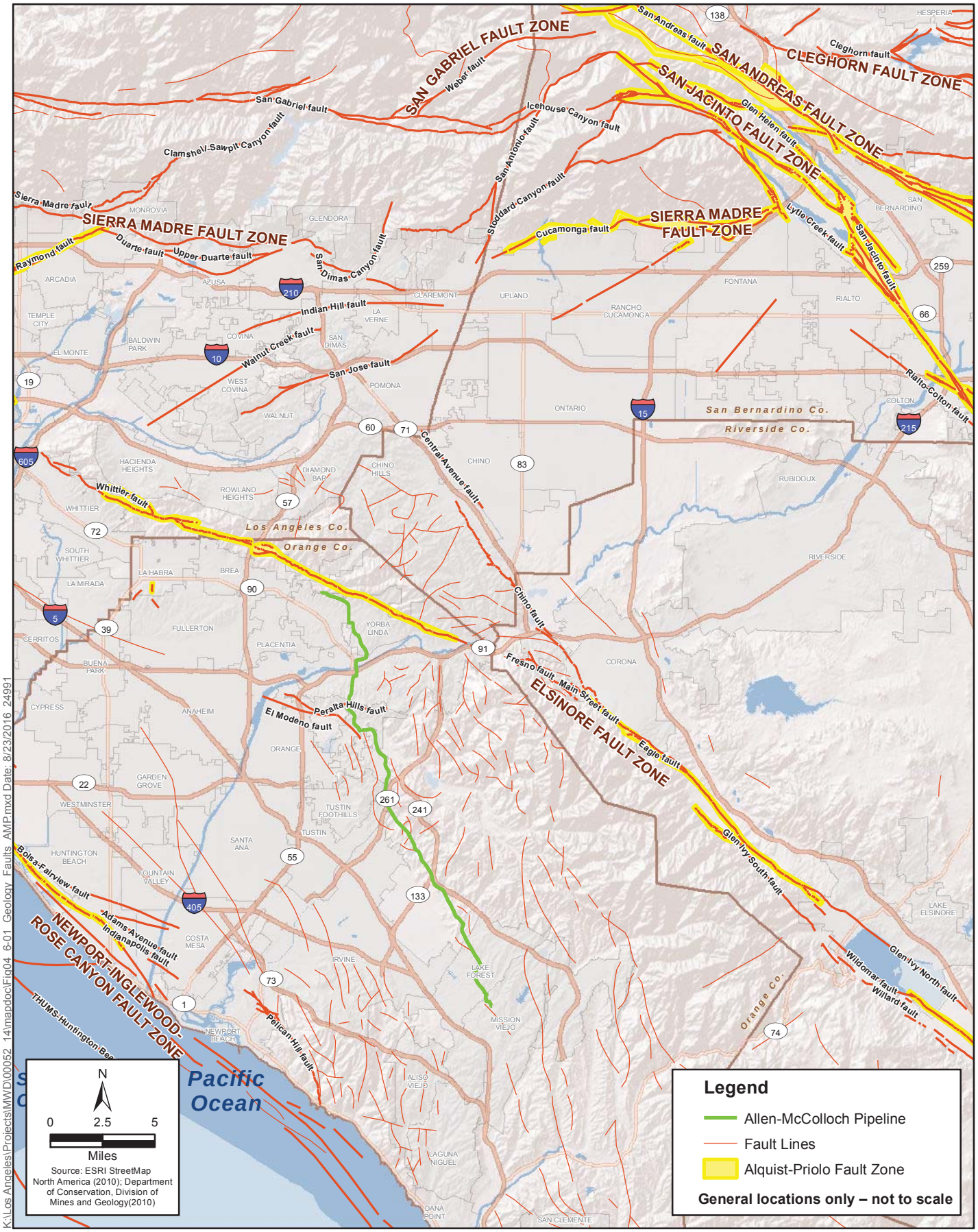


Figure 4.6-1
Regional Fault Map – Allen-McColloch Pipeline
Metropolitan PCCP Program

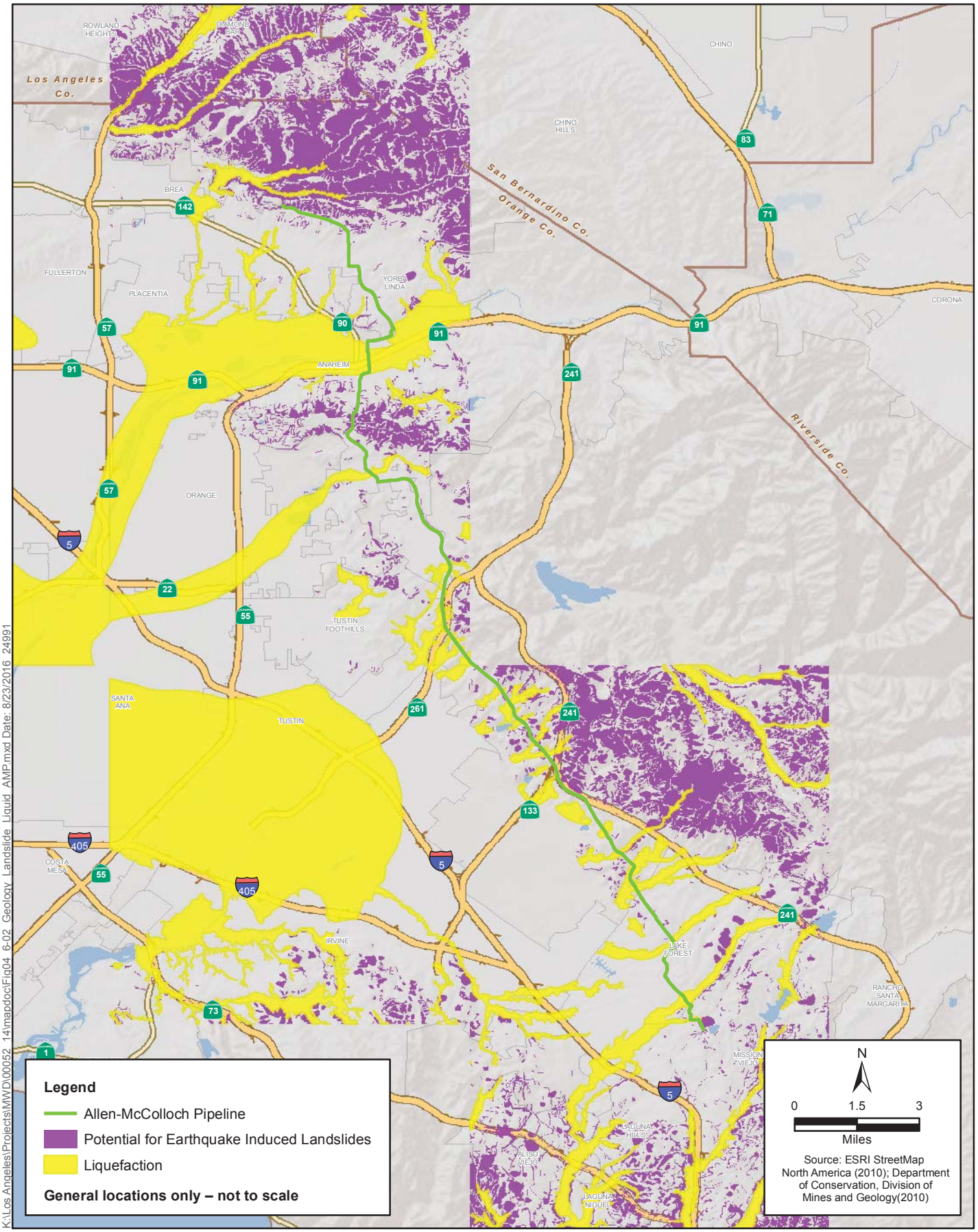


Figure 4.6-2
Regional Landslide/Liquefaction - Alllen-McColloch Pipeline
Metropolitan PCCP Program

Liquefaction refers to a phenomenon in which water-saturated granular soils are temporarily transformed from a solid to a liquid state because of a sudden shock or strain, typically occurring during earthquakes. Depending on the other factors such as soil density, ground slope, and stratification, the temporary loss of strength may result only in surface sand and soils or cracks and may also lead to foundation failures, landslides, and excessive subsidence. To have potential for liquefaction, three simultaneous conditions are necessary: generally cohesionless soils, high groundwater, and groundshaking. Most areas in Yorba Linda are assumed to be at low risk for liquefaction hazards because the water table in most places is deeper than 50 feet, except for some parts of the major drainage channels like near the Santa Ana River (City of Yorba Linda 1993).

City of Anaheim

The city of Anaheim is in a seismically active area and active and potentially active faults are adjacent to the city; however, there are no Alquist-Priolo Earthquake Fault Zones within the city limits. The two major Alquist-Priolo Earthquake Fault Zones nearest the city of Anaheim include the Newport-Inglewood fault zone approximately 7 miles to the southwest and the Whittier-Elsinore fault zone within less than 1 mile to the northeast.

Other potentially active faults close to Anaheim are the El Modeno, Peralta Hills, and Norwalk faults, which have a low possibility of ground rupture. The majority of the El Modeno and Peralta Hills faults are south of the Peralta Hills area and outside the boundaries of the city; however, the Allen-McColloch Pipeline crosses the Peralta Hills fault and comes close to the El Modeno fault. The El Modeno fault zone is a concealed fault; therefore, the exact location of the fault is uncertain. The California Department of Mines and Geology has determined that the El Modeno, Peralta Hills, and Norwalk faults are not sufficiently active or well defined enough to be subject to the provisions of the Alquist-Priolo Earthquake Fault Zoning Act. Compared with the more active and recognized fault zones, the potential for ground rupture due to seismic activity in the city is considered low (City of Anaheim 2004).

Earthquake-induced landslides have the potential to occur in the hill and canyon areas of the city of Anaheim and generally consist of rock falls, landslides, and debris flows. Areas with the potential for earthquake-induced landsliding generally are those areas of previous landslide movement, or where topographic, geological, geotechnical, and subsurface water conditions indicate a potential for permanent ground displacements (City of Anaheim 2004). Areas considered susceptible to seismic hazards are shown on Figure 4.6-2. Additionally, liquefaction has the potential to affect properties within the city of Anaheim that are located along the Santa Ana River, as well as western portions of the city. Mapped liquefaction zones are shown on Figure 4.6-2.

City of Orange

The city of Orange is susceptible to geologic and seismic hazards including earthquakes; however, no known Alquist-Priolo Earthquake Fault Zones are located in the city. Portions of two possibly active faults traverse the city: the Peralta Hills fault and the El Modeno fault. The Peralta Hills fault runs from the crossing of Lincoln Avenue over the Santa Ana River on the northwest, easterly along the base of the Peralta Hills and into the City of Villa Park, then southerly into the hills west of Peters Canyon Reservoir. The El Modeno fault runs from its intersection with the Peralta Hills fault at the base of the Peralta Hills, southeasterly to Chapman Avenue (City of Orange 2010).

Other faults in the vicinity include the Newport-Inglewood fault approximately 15 miles to the southwest, the Elsinore fault approximately 5 miles to the northeast, and the San Andreas fault approximately 40 miles to the northeast and parallel to the Elsinore fault.

The city of Orange is also susceptible to earthquake-induced landslides and liquefaction. According to the City of Orange General Plan (City of Orange 2010), earthquake-induced landslides are most probable in poorly consolidated or semi-consolidated sedimentary rock, characteristic of the low hills of the northern and eastern parts of the city. Portions of the city that are susceptible to seismically induced liquefaction include areas near the Santa Ana River and Santiago Creek. Areas considered susceptible to seismic-related landslides and liquefaction are shown on Figure 4.6-2.

City of Villa Park

Although the Allen-McColloch Pipeline itself does not run through the city of Villa Park, a portion of the study area overlaps with the northern portion of the city. According to the City of Villa Park General Plan Seismic and Safety Element (City of Villa Park 2010), the city is in the low foothills on the western flank of the Santa Ana Mountains and is southeast of the Santa Ana River. The El Modeno and Peralta Hills faults are nearest to the city; however, little impact from groundshaking is anticipated from these faults. Slope stability in the city is affected by three interrelated factors: surface and subsurface water, geologic structure and rock types, and the degree of slope. Stability is also dependent on the specific properties and combination of materials forming the slope. Moderate slopes occur in the northeastern portion of the city, and exposure to such hazards can be increased with the urbanization of hilly areas. The Allen-McColloch Pipeline does not cross any liquefaction hazard areas in the city.

City of Tustin

The city of Tustin lies within a seismically active region; however, no known active or potentially active faults exist within the city. The El Modeno fault passes through the city's northern section; however, according to the General Plan, studies have not been conclusive about the active/inactive status of this fault (City of Tustin 2012). Groundshaking represents one of the main seismic dangers within the city of Tustin. In addition, areas within the city have been identified as susceptible to bedrock landslides and liquefaction. As shown on Figure 4.6-2, the Allen-McColloch Pipeline study area occurs in areas identified as having the potential to experience earthquake-induced landslides and liquefaction in the city of Tustin.

City of Irvine

The city of Irvine is affected by both local and regional active faults. According to the City of Irvine General Plan Seismic Element (City of Irvine 2012), the Newport-Inglewood fault is the nearest regional active fault and less than 10 miles west of the city. Other faults in the vicinity include the Whittier-Elsinore fault, the San Andreas fault, and the San Jacinto fault.

The City of Irvine has also identified five Seismic Response Areas (SRAs) within the city based on types and magnitudes of potential seismic hazards. The Allen-McColloch Pipeline crosses SRA-2, SRA-4, and SRA-5. According to the General Plan (City of Irvine 2012), the predominant characteristics of these SRAs include denser soils and deeper groundwater (SRA-2), highlands generally over 20 percent slope (SRA-4), and less stable geologic formations (SRA-5). The predominant potential seismic hazard in these areas is ground motion; however, ground breakage and/or ground failure is not expected to occur in this area.

In addition, according to the City of Irvine General Plan Seismic Element (City of Irvine 2012), as slope increases in each of the SRAs, so does slope instability. However, the Allen-McColloch Pipeline study area does not overlap with any areas identified as a seismically induced landslide hazard area, and liquefaction potential is considered to be localized and remote. As shown on Figure 4.6-2, the Allen-McColloch Pipeline study area occurs in areas identified as having the potential to experience liquefaction.

City of Lake Forest

Similar to the other cities in the region, the city of Lake Forest is in a region with active seismic faults and therefore subject to risks and hazards associated with earthquakes. No Alquist-Priolo Earthquake Fault Zone has been established and no known active faults exist within the city; as a result, the potential for ground rupture is low.

In addition, according to the City of Lake Forest General Plan Safety and Noise Element (City of Lake Forest 1994), slope failure from groundshaking could occur in the hillside areas of the city; however, the potential for seismically induced liquefaction is low. In addition, ground settlement could occur on sites within a short distance of alluvial valleys or where a site is partially on bedrock formation, or partially on fill with inadequate internal compaction or consolidation of unsuitable soils. As shown on Figure 4.6-2, approximately the Allen-McColloch Pipeline study area occurs in areas identified as having the potential to experience landslides and liquefaction.

City of Mission Viejo

The city of Mission Viejo is in a seismically active region and could experience groundshaking in the event of a major seismic event along the Newport-Inglewood fault or the San Andreas fault. In addition, the city could experience seismically induced landslides and liquefaction in steeply sloped areas and areas near Aliso and Oso creeks. As shown on Figure 4.6-2, the Allen-McColloch Pipeline study area occurs in areas identified as having the potential to experience landslides and liquefaction in the city of Mission Viejo.

Orange County

Orange County is a region of high seismic activity with susceptibility to potentially destructive earthquakes. Two potentially hazardous active fault zones run along the coastal and inland edges of Orange County. The Newport-Inglewood fault and Whittier fault are capable of producing earthquakes with magnitudes of 7.5 and 7.0, respectively. According to the Orange County General Plan, earthquakes from faults outside the county are also capable of producing groundshaking in the region. Blind thrust faults including the Elysian Park Blind Thrust fault and the Compton Blind Thrust fault extend into and underneath northwestern and southwestern Orange County, respectively. In addition, perimeter faults around Orange County include the San Andreas, San Jacinto, Malibu-Coast-Raymond, Palos Verdes, San Gabriel, and Sierra Madre-Santa Susana-Cucamonga faults. Smaller thrust faults also lay beneath the county, but are not included as Earthquake Fault Zones by the State of California. Areas within Orange County that are affected by Alquist-Priolo Earthquake Fault Zones are within the Bolsa Chica area, Tonner Canyon area, and island areas adjacent to the cities of Yorba Linda and Brea.

In addition, according to the Orange County General Plan, the county is highly susceptible to slope failure and liquefaction. Due to an active seismic environment and the conditions of soils and surface waters in Orange County, there is a high potential for landslides in the region. Therefore, Orange

County's history includes many landslide events, and its future is likely to include many more. According to the Resources Element of the Orange County General Plan, the county's Grading Ordinance strictly regulates hillside grading with regard to soil stability. The Allen-McColloch Pipeline study area occurs in areas identified as having the potential to experience landslides and liquefaction in Orange County.

Soil Erosion

No substantial soil erosion issues were identified by the jurisdictions in the Allen-McColloch Pipeline study area.

Unstable Geology or Soils

Other than the earthquake-related landslides and liquefaction risks described above, no other unstable geology or soils conditions were identified in the Allen-McColloch Pipeline study area by the cities of Orange, Villa Park, Tustin, Irvine, Lake Forest, and Mission Viejo, and unincorporated Orange County. The Allen-McColloch Pipeline study area overlaps with unstable geology or soil conditions in the cities of Yorba Linda and Anaheim, which are discussed in more detail below.

City of Yorba Linda

As described above, slope stability is a serious geologic problem in the northern and northeastern parts of the city of Yorba Linda. This area is underlain by siltstone and interbedded sandstone of the Puente Formation, which are often the most prone to landsliding and other forms of slope failure. Other than the areas identified above as susceptible to earthquake-induced landslides, the Allen-McColloch Pipeline study area does not cross any other areas identified by the Yorba Linda General Plan as prone to landslides.

A slight subsidence and uplift occurs in the region, primarily in the Coyote Hills west of the city of Yorba Linda. There is also slow uplift of the Chino Hills, but this has been identified as too insignificant to cause noticeable damage to engineering structures (City of Yorba Linda 1993). The Allen-McColloch Pipeline study area does not cross either of these areas and therefore would not be subject to subsidence.

City of Anaheim

The city of Anaheim is susceptible to landslides in the steep slopes of the Hill and Canyon Area as identified in the City of Anaheim General Plan. The Hill and Canyon Area is in the eastern portion of the city and includes a portion of the Santa Ana River, Deer Canyon Park Preserve, and the Anaheim Hills Golf Course. The Allen-McColloch Pipeline crosses this area where it is near and parallel to Imperial Highway.

In addition, mining and petroleum exploration activities in the city have resulted in the creation of open pits and wells. According to the City of Anaheim General Plan Safety Element (City of Anaheim 2004), some of these pits and wells may have been abandoned and backfilled with undocumented fill materials. Existing pits and wells backfilled with undocumented materials may be subject to differential settlement, which causes structures to shift, and often become damaged, due to the uneven lowering of the earth. Differential settlement is closely related to subsidence, which is the sudden sinking or gradual downward settling of the Earth's surface with little or no horizontal movement. Subsidence can be caused by natural geologic processes or by human activity such as

subsurface mining or pumping of oil or groundwater. Active and abandoned oil and gas wells occur within and adjacent to the Allen-McColloch Pipeline study area near Imperial Highway and Esperanza Road, making this area susceptible to subsidence.

Expansive Soils

No expansive soils were identified by the jurisdictions in the Allen-McColloch Pipeline study area with the exception of where the study area crosses unincorporated Orange County land. According to the Orange County General Plan, much of the county is covered by soil that may be expansive. Therefore, expansive soils could occur within the Allen-McColloch Pipeline study area in unincorporated Orange County.

4.6.2.2 Calabasas Feeder

As shown on Figures 4.6-3 and 4.6-4, the Calabasas Feeder is in a seismically active area and susceptible to strong groundshaking, seismically induced landslides, and liquefaction as a result of earthquakes. Table 4.6-3 summarizes the Alquist-Priolo Earthquake Fault Zones nearest the jurisdictions traversed by the Calabasas Feeder study area. Table 4.6-4 summarizes approximately how many acres of the Calabasas Feeder study area overlap with seismic hazards identified in each jurisdiction within the study area.

Table 4.6-3. Estimated Distance to Nearest Alquist-Priolo Earthquake Fault Zone for Jurisdictions in the Calabasas Feeder Study Area

Jurisdiction	Distance to Nearest Alquist-Priolo Earthquake Fault Zone (miles)	Nearest Alquist-Priolo Earthquake Fault Zone
City of Los Angeles	3.7	Sierra Madre
City of Hidden Hills	8.9	Malibu Coast
City of Calabasas	8.6	Malibu Coast
Los Angeles County	8.7	Malibu Coast

Table 4.6-4. Estimated Area of Overlap between the Calabasas Feeder Study Area and Identified Seismic Hazard Areas

Jurisdiction	Earthquake-Induced Landslide Overlap (acres)	Liquefaction Overlap (acres)
City of Los Angeles	136.8	3,225.5
City of Hidden Hills	14.8	0.65
City of Calabasas	9.6	32.2
Los Angeles County	6.8	-

Seismic Environment

City of Los Angeles

The city of Los Angeles is a seismically active region. There are Alquist-Priolo Earthquake Fault Zones and fault rupture study areas in the northern, eastern, and central parts of the city. According

to the Safety Element of the General Plan (City of Los Angeles 1996), the fault system in the city interacts with the alluvial soils in the hills and basins and poses seismic risks for the entire city. Alluvial and artificially uncompacted soils tend to amplify groundshaking. Shallow groundwater combined with uncompacted soils can result in liquefaction, and there are risks of seismically induced landslides in the hillside areas of the city.

City of Hidden Hills

The City of Hidden Hills is adjacent to the northwestern portion of the city of Los Angeles, and is also within a seismically active region with numerous active, potentially active, and inactive fault traces. However, there are no Alquist-Priolo Fault Rupture Hazard Zones mapped within the city. According to the Safety Element of the Hidden Hills General Plan (City of Hidden Hills 1995), the city could experience groundshaking from the major active and potentially active faults in the region.

In addition, as shown on Figure 4.6-4, the city of Hidden Hills is subject to liquefaction in areas where sandy, fine-grained soils exist. Also, a few areas of the city may have potentially unstable slopes and could experience earthquake-induced landslides. However, subsidence resulting from groundshaking is unlikely to affect the city of Hidden Hills (City of Hidden Hills 1995).

City of Calabasas

The city of Calabasas is also adjacent to the northwestern portion of the city of Los Angeles and is south of the city of Hidden Hills. Like the other cities discussed above, the city of Calabasas is subject to seismic hazards and could experience groundshaking from the major active and potentially active faults in the region; however, it is not within an Alquist-Priolo Fault-Rupture Hazard Zone.

Other seismic hazards identified in the city include seismically induced landslides and liquefaction. According to the Safety Element of the City of Calabasas 2030 General Plan (City of Calabasas 2015), the topography within the city varies and features vertical slopes and steep canyons. The major environmental factors controlling stability of the steeper hillsides include precipitation, topography, geology, soils, vegetation, and man-made alterations of the natural topography.

Los Angeles County

Los Angeles County has experienced significant earthquakes throughout its history. According to the county's General Plan (County of Los Angeles 2015), over 50 active and potentially active fault segments, an undetermined number of buried faults, and at least four blind thrust faults are capable of producing damaging earthquakes in Los Angeles County.

In addition, according to the Los Angeles County General Plan (County of Los Angeles 2015), more than 50 percent of the unincorporated areas of the county are composed of hilly or mountainous terrain. The vast majority of hillside hazards include mud and debris flows, active deep-seated landslides, hillside erosion, and man-induced slope instability.

Soil Erosion

No soil erosion issues were identified in the Calabasas Feeder study area in the cities of Los Angeles and Calabasas. The Calabasas Feeder study area does overlap with soils susceptible to soil erosion in the city of Hidden Hills and Los Angeles County, which are discussed in more detail below.

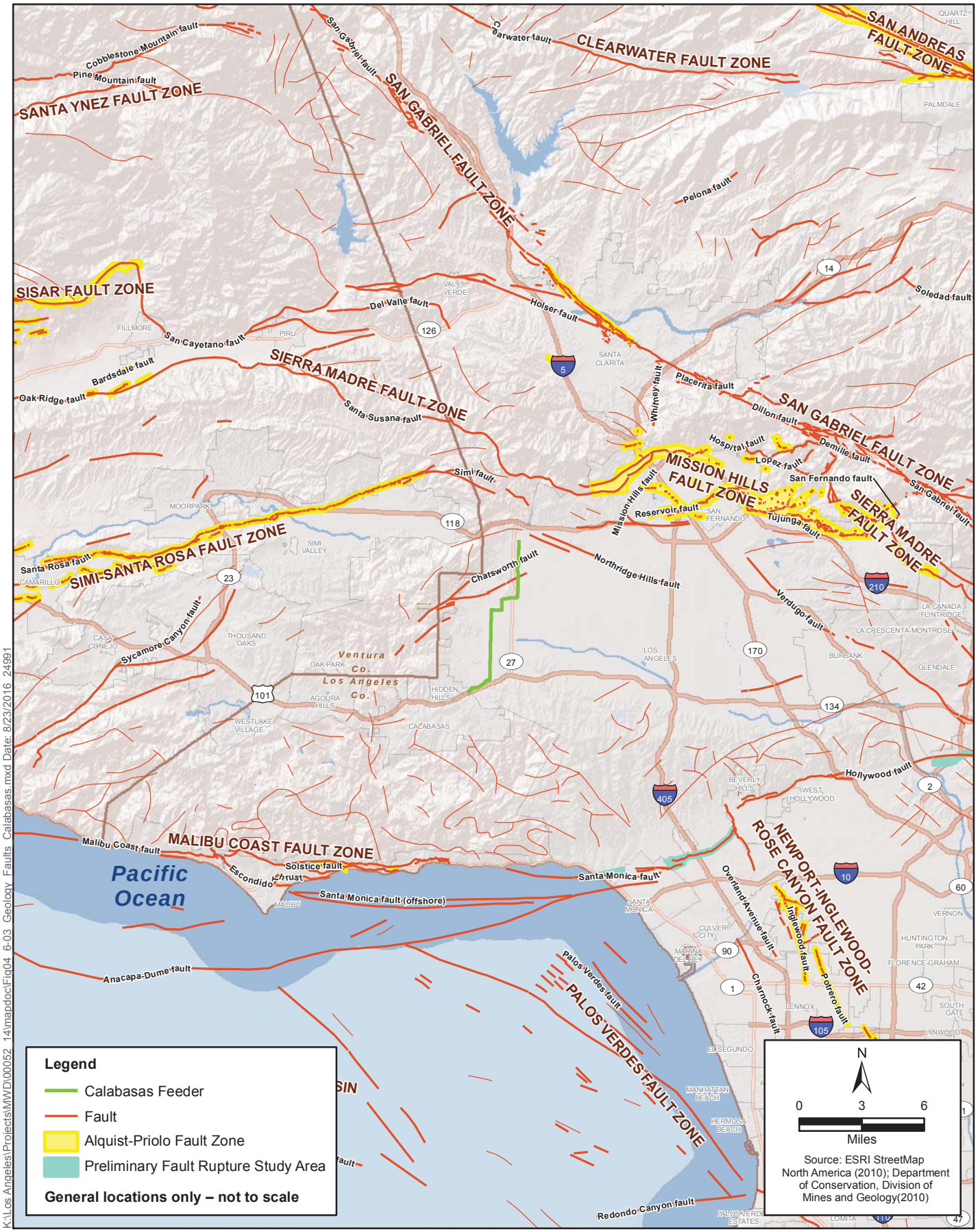


Figure 4.6-3
Regional Fault Map – Calabasas Feeder
Metropolitan PCCP Program

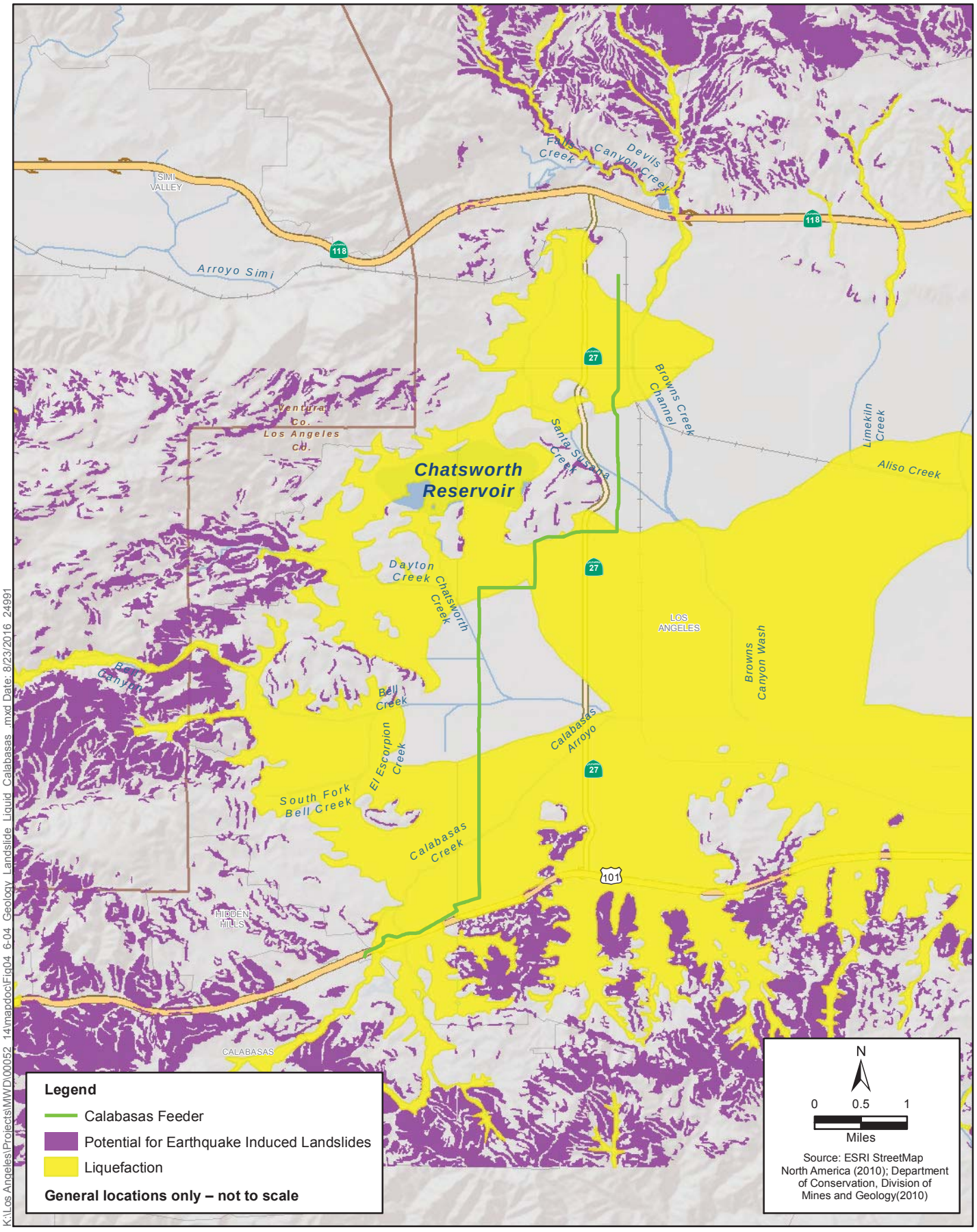


Figure 4.6-4
Regional Landslide/Liquefaction - Calabasas Feeder
Metropolitan PCCP Program

City of Hidden Hills

As described in the Natural Resources Element of the Hidden Hills General Plan (City of Hidden Hills 1995), deposits of sedimentary bedrock consisting of claystone, sandstone, siltstone, diatomaceous shale, and petroliferous shale underlie the entire city. The more gentle slopes within the city lie on a gradient parallel to the underlying bedding plane orientations. Surfaces of these slopes have weathered, producing various thicknesses of topsoil. Steeper slopes within the city indicate weathering over the harder, resistant bedrock. Most soils found in the city have moderate to very high erosion potential.

Los Angeles County

According to the Los Angeles County General Plan, more than 50 percent of unincorporated areas are composed of hilly or mountainous terrain. Such areas are susceptible to hillside hazards, including mud and debris flow, landslides, and hillside soil erosion. Also, the Santa Ana winds were noted to contribute to soil erosion.

Unstable Geology or Soils

Other than the earthquake-related landslides and liquefaction risks described above, no other unstable geology or soils conditions were identified in the Calabasas Feeder study area.

Expansive Soils

No expansive soils were identified in the Calabasas Feeder study area in the city of Los Angeles or Los Angeles County. However, expansive soils were found to potentially occur where the study area crosses the cities of Hidden Hills and Calabasas.

Soils in the city of Hidden Hills are primarily sandy clay derived from fine-grained sedimentary bedrock. According to the Natural Resources Element of the Hidden Hills General Plan (City of Hidden Hills 1995), this type of soil shrinks when it is dry and expands when it is wet; therefore, it is both expansive and creep-prone. When it is wet, the expanding soil affects the foundations of structures built upon it.

According to the 2014–2021 Housing Element Background Report (City of Calabasas 2013), soils with high clay content are found in portions of the city of Calabasas and may present limitations to urban development due to their shrink-swell potential. The exact location of these soils was not identified; however, per city regulations, geologic studies are required prior to commencement of development projects to evaluate the potential for geologic and soil hazards, and the city requires these conditions to be corrected during construction.

4.6.2.3 Rialto Pipeline

As shown on Figures 4.6-5 and 4.6-6, the Rialto Pipeline is in a seismically active area and is susceptible to strong groundshaking as a result of earthquakes. Table 4.6-5 summarizes the Alquist-Priolo Earthquake Fault Zones nearest the jurisdictions traversed by the Rialto Pipeline study area.

The Rialto Pipeline study area does not overlap with any areas identified as earthquake-induced landslide or liquefaction hazard areas.

Table 4.6-5. Estimated Distance to Nearest Alquist-Priolo Earthquake Fault Zone for Jurisdictions in the Rialto Pipeline Study Area

Jurisdiction	Distance to Nearest Alquist-Priolo Earthquake Fault Zone (miles)	Nearest Alquist-Priolo Earthquake Fault Zone
City of San Bernardino	0.0	San Jacinto
San Bernardino County	0.0	San Jacinto
City of Rialto	0.4	San Jacinto
City of Fontana	0.0	Sierra Madre
City of Rancho Cucamonga	0.0	Red Hill-Etiwanda Avenue
City of Upland	0.8	Sierra Madre
City of Claremont	1.4	Sierra Madre
Los Angeles County	3.6	Sierra Madre
City of La Verne	4.6	Sierra Madre
City of San Dimas	6.0	Sierra Madre
Notes: 0.0 = the Rialto Pipeline study area crosses the Alquist-Priolo Earthquake Fault Zone within that jurisdiction.		

The Rialto Pipeline crosses land within the jurisdiction of the County of Los Angeles, which is discussed above under Section 4.6.2.2, *Calabasas Feeder*, and thus not discussed in detail below.

Seismic Environment

City of San Bernardino

The city of San Bernardino is surrounded by earthquake faults, including the San Andreas, San Jacinto, Glen Helen, and Loma Linda faults, which run through the city and are all classified as Alquist-Priolo Special Studies Zones under the Alquist-Priolo Earthquake Fault Zoning Act (City of San Bernardino 2005). Therefore, the potential for fault rupture and seismic groundshaking is high.

San Bernardino County

San Bernardino County is subject to earthquake-related risks, including fault rupture and groundshaking. Numerous faults run through the county, including the San Andreas fault, which has a very high probability of a great earthquake occurring (County of San Bernardino 2014). Another seismic hazard identified in the General Plan includes tectonic subsidence, which is primarily of concern during large earthquake events, when instantaneous subsidence of many feet could occur. The Rialto Pipeline crosses the Alquist-Priolo Earthquake Fault Zone associated with the San Jacinto Fault Zone in San Bernardino County.

City of Rialto

According to the Rialto General Plan (City of Rialto 2010), the city is in a region with sharp contrasts in terrain. Tectonic movement of the San Andreas fault and its subsidiary faults have created an area in which the gently sloping lands in south Rialto abruptly meet the slopes of the San Gabriel Mountains in the north. Virtually all city lands are underlain by poorly consolidated alluvium, resulting in potentially devastating damage in the event of an earthquake. Groundshaking has historically occurred in Rialto due to earthquakes, with moderate to strong shaking associated with

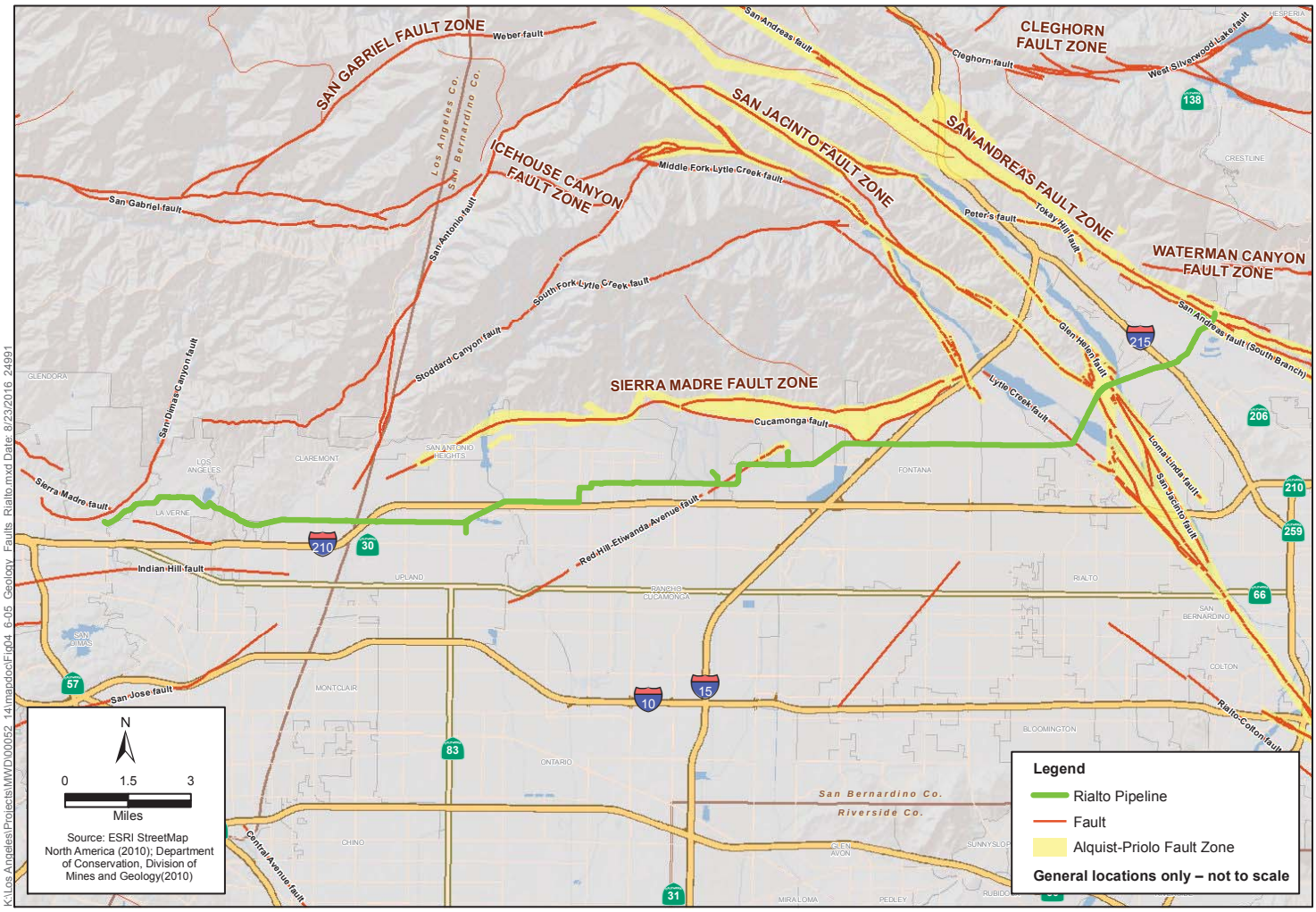


Figure 4.6-5
Regional Fault Map - Rialto Pipeline
Metropolitan PCCP Program

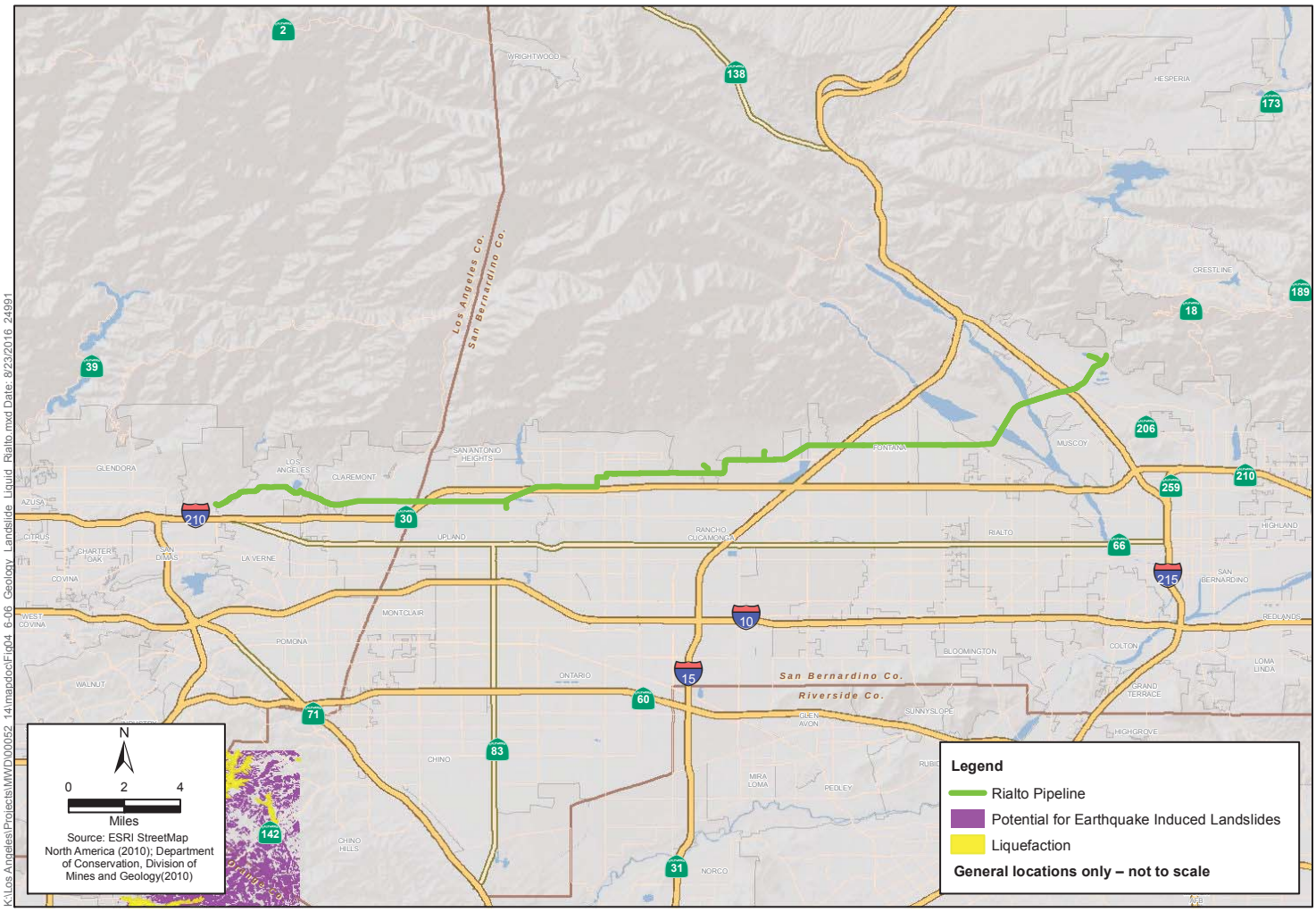


Figure 4.6-6
Regional Landslide/Liquefaction - Rialto Pipeline
Metropolitan PCCP Program

the San Jacinto, San Andreas, and Cucamonga faults. According to the Rialto General Plan, these faults have the potential to generate earthquakes of maximum magnitudes ranging from 6.7 to 8.0 (City of Rialto 2010). The Rialto Pipeline crosses the Alquist-Priolo Earthquake Fault Zone associated with the San Jacinto Fault Zone in the city of Rialto.

City of Fontana

The city of Fontana lies within the Upper Santa Ana River Valley, in an area defined by the steeply rising range front of the eastern San Gabriel Mountains on the north, Lytle Creek Wash on the east, and the Jurupa Mountains on the south. According to the City of Fontana General Plan, the majority of development in the city has occurred on the gently sloping valley floor (City of Fontana 2003). Faults within and near the city of Fontana include the San Jacinto, Cucamonga, San Andreas, Rialto-Colton, and Barrier J faults. An additional series of faults that create the Fontana Seismic Trend are located across the center of the city. The Cucamonga and San Jacinto faults both extend across the northern portion of the city, with the San Andreas fault lying slightly outside the city. This results in a high potential for very strong groundshaking, with some areas of the city susceptible to surface fault rupture. The Rialto Pipeline crosses the Alquist-Priolo Earthquake Fault Zone associated with the Cucamonga fault in the city of Fontana.

City of Rancho Cucamonga

Groundshaking and fault rupture due to earthquake activity pose a threat to the Rancho Cucamonga area. The city is near the San Andreas and San Jacinto faults, both of which are highly active and capable of generating a large earthquake in the near future. The most threatening scenario for the city of Rancho Cucamonga, however, is an earthquake on the Cucamonga fault. According to the Rancho Cucamonga General Plan (City of Rancho Cucamonga 2010), ground displacements from a major earthquake along the Cucamonga fault could be up to 9 feet, with intense groundshaking and extensive losses. The Red Hill fault, comprising three segments and traversing the city in a northeast direction, also presents a risk to the city. Alquist-Priolo Earthquake Fault Zones have been designated for the Cucamonga fault and a portion of the Red Hill fault (the Etiwanda Avenue Fault Scarp). The Rialto Pipeline crosses the Alquist-Priolo Earthquake Fault Zone associated with the Red Hill fault in the city of Rancho Cucamonga.

City of Upland

Similar to the other jurisdiction discussed above, the City of Upland is susceptible to seismic and geologic hazards. A very small region in the northern area of the city is within an Alquist-Priolo Earthquake Fault Zone and is associated with the Sierra Madre Fault Zone.

City of Claremont

Fault lines and hillside terrain are present in the city of Claremont and make the city prone to earthquakes and earthquake-induced landslides. Situated at the base of the San Gabriel Mountains, Claremont is susceptible to seismic groundshaking and surface fault rupture. The Sierra Madre and Cucamonga fault lines meet under northern Claremont, both of which are not expected to rupture for several thousand years. Thus, while the risk of fault rupture is minimal, the threat of groundshaking activity is of real concern to the Claremont region.

City of La Verne

According to the La Verne General Plan (City of La Verne 1999), most potentially active faults cross the community in the northern region of the city, north of Baseline Road. Earthquake activity in this area leaves north La Verne and the Rialto Pipeline susceptible to groundshaking.

City of San Dimas

According to the San Dimas General Plan (City of San Dimas 1991), ground rupture from earthquake activity could result along the surface traces of the Sierra Madre fault, which crosses the northern portion of the city. This fault is designated "potentially active," though the city is not within an Alquist-Priolo Earthquake Fault Zone. Groundshaking is likely to occur in the city as a result of earthquake activity along the Sierra Madre fault or other nearby faults of significance.

Soil Erosion

No soil erosion issues due to water were specifically identified in the Rialto Pipeline study area, with the exception of San Bernardino County, the city of Claremont, and Los Angeles County. Erosion control is of particular importance in San Bernardino County at the base of the mountain ranges. The Claremont General Plan identifies soil erosion as likely to occur in hillside areas due to the steep grade of the San Gabriel Mountains and the low permeability of the soils. Debris basins have been created in the area to trap sediment, rock, and debris carried by storm flows and protect property from damage. Soil erosion issues for Los Angeles County are described above under Section 4.6.2.2, *Calabasas Feeder*.

Unstable Geology or Soils

City of San Bernardino

According to the City of San Bernardino General Plan, historic and potential ground subsidence areas within the city are typically within thick, poorly consolidated alluvial and marsh deposits of the old artesian north of Loma Linda (City of San Bernardino 2005). Subsidence in this area has the potential to be as great as 5 to 8 feet if unreplenished groundwater is depleted from the Bunker Hill-San Timoteo Basin. However, problems with ground subsidence have not been identified since 1972, when the city began a groundwater recharge program. The Rialto Pipeline is over 9 miles north of Loma Linda and is outside the potential subsidence areas mapped in the city's General Plan.

The city's General Plan also identifies the generalized landslide susceptibility in the city to be low to moderate. Potentially hazardous zones in the city include those with low relief with low to moderate susceptibility that may contain small-scale surficial soil slips, debris flow, and mudflows on steep slopes; or areas of moderate and high relief with low to moderate susceptibility that may contain small to large rotational slides, debris slides, and combinations of surficial slides and flows. According to Figure S-6 of the City of San Bernardino General Plan (City of San Bernardino 2005), the Rialto Pipeline crosses areas in the city identified with low to moderate susceptibility to landslides.

San Bernardino County

According to the San Bernardino County General Plan, two types of subsidence are of major concern to the county: tectonic subsidence and subsidence caused by groundwater withdrawal (County of

San Bernardino 2014). As mentioned above, tectonic subsidence is primarily of concern during large earthquake events, when instantaneous subsidence of many feet could occur.

Within the county, the San Gabriel, San Bernardino, Little San Bernardino, and Pinto mountains compose a portion of the Transverse Ranges. The steep slopes, narrow ridges, steep-walled incised canyons, valleys, and major faults provide a setting that is capable of producing landslides and mudslides. According to the county General Plan, the Wrightwood landslide area is of critical concern, given that high precipitation induces mudflows and mudslides in the area. Steep fronts occurring in the eastern San Gabriel and southwestern San Bernardino mountains may also present a stability hazard. As mentioned above, Rialto Pipeline traverses these areas at the base of the San Gabriel and San Bernardino mountains.

Subsidence caused by groundwater withdrawal is of concern in the alluvial valleys of San Bernardino County, particularly the southwestern portion of the county, where subsidence from 0.8 to 5.8 feet is reportedly possible (County of San Bernardino 2014). Subsidence is anticipated to continue to occur in desert basins as groundwater drafts increase with development.

City of Rialto

According to the Rialto General Plan, an area in the northeast corner of the city, southeast of the Rialto Pipeline study area, is moderately susceptible to liquefaction. Young, unconsolidated soils combined with historic artesian well activity has made this area susceptible to liquefaction, along with its location adjacent to the San Jacinto fault, as mentioned above.

City of Fontana

The northern and southern edges of the city of Fontana contain hillsides that are vulnerable to slope instability due to the fractured, crushed, and weathered condition of the bedrock, as well as the steep terrain (City of Fontana 2003). According to the city's General Plan, the probability of large bedrock landslides occurring is relatively low, with very few historic landslides recorded in the area. Smaller-scale instability may arise as a result of slides, slumps, soil slips, debris flows, and rockfalls. Development at the base of the San Gabriel and Jurupa mountains may be susceptible to runoff, sedimentation, and small slope failures, and may be at risk for destructive debris flows under the right conditions. An area to the north of the Rialto Pipeline is mapped by the City of Fontana General Plan as steep to very steep slopes and susceptible to rockfalls, small slides, and slumps.

In addition, groundwater may occur within 40 feet of the surface in a portion of the Lytle Creek channel, creating the potential for liquefaction in the area. Other areas of the city may also be susceptible to liquefaction due to seasonal saturation of near-surface sediments (City of Fontana 2003). The Rialto Pipeline crosses an area identified as low liquefaction susceptibility in the city of Fontana.

City of Rancho Cucamonga

Due to its proximity to the San Gabriel Mountains, Rancho Cucamonga is susceptible to geologic hazards including debris flows and falling rocks due to erosion of the mountain slopes, concentration of precipitation from storms, and rapid stream flow from mountain streams, which increase the potential for land subsidence in certain soil conditions. The northern portion of the city is most susceptible to these hazards. Slope instability on the slopes of the San Gabriel Mountains is likely to cause debris flows through city drainages, including Cucamonga Creek, Demens Canyon,

Deer Canyon, Day Canyon, and East Etiwanda Creek. The Rialto Pipeline study area occurs just south of these areas in an area noted as "slopes less than 10%" where no special hillside recommendations are required for development (City of Rancho Cucamonga 2010).

City of Upland

No issues with instability of soils or geology were identified by the City of Upland within its jurisdiction.

City of Claremont

Non-seismically induced landslides have the potential to occur within the city of Claremont in hillside areas. According to the city's Safety and Noise Element, past landslides have involved only minor inconveniences without extensive damage (City of Claremont 2009). However, heavy rainfall or other changes in conditions can increase susceptibility for slope instability.

City of La Verne

No issues with instability of soils or geology applicable to the Rialto Pipeline study area were identified by the City of La Verne within its jurisdiction.

City of San Dimas

No issues with instability of soils or geology applicable to the Rialto Pipeline study area were identified by the City of San Dimas within its jurisdiction.

Expansive Soils

No expansive soils were identified in the Rialto Pipeline study area, with the exception of the city of Claremont. The Claremont General Plan notes that collapsible and expansive soils lie under most of the City. Expansive soils in the hillsides are prone to collapse during dry seasons, while expansive soils in the urban area are prone to expand during the wet season (City of Claremont 2009).

4.6.2.4 Second Lower Feeder

As shown on Figures 4.6-7 and 4.6-8, the Second Lower Feeder is in a seismically active area and susceptible to strong groundshaking, seismically induced landslides, and liquefaction as a result of earthquakes. Table 4.6-6 summarizes the Alquist-Priolo Earthquake Fault Zones nearest the jurisdictions in the Second Lower Feeder study area. Table 4.6-7 summarizes approximately how many acres of the Second Lower Feeder study area overlap with seismic hazards identified in each jurisdiction within the study area.

Table 4.6-6. Estimated Distance to Nearest Alquist-Priolo Earthquake Fault Zone for Jurisdictions in the Second Lower Feeder Study Area

Jurisdiction	Distance to Nearest Alquist-Priolo Earthquake Fault Zone (miles)	Nearest Alquist-Priolo Earthquake Fault Zone
City of Yorba Linda	0.2	Elsinore
City of Brea	0.5	Elsinore
City of Placentia	1.0	Elsinore

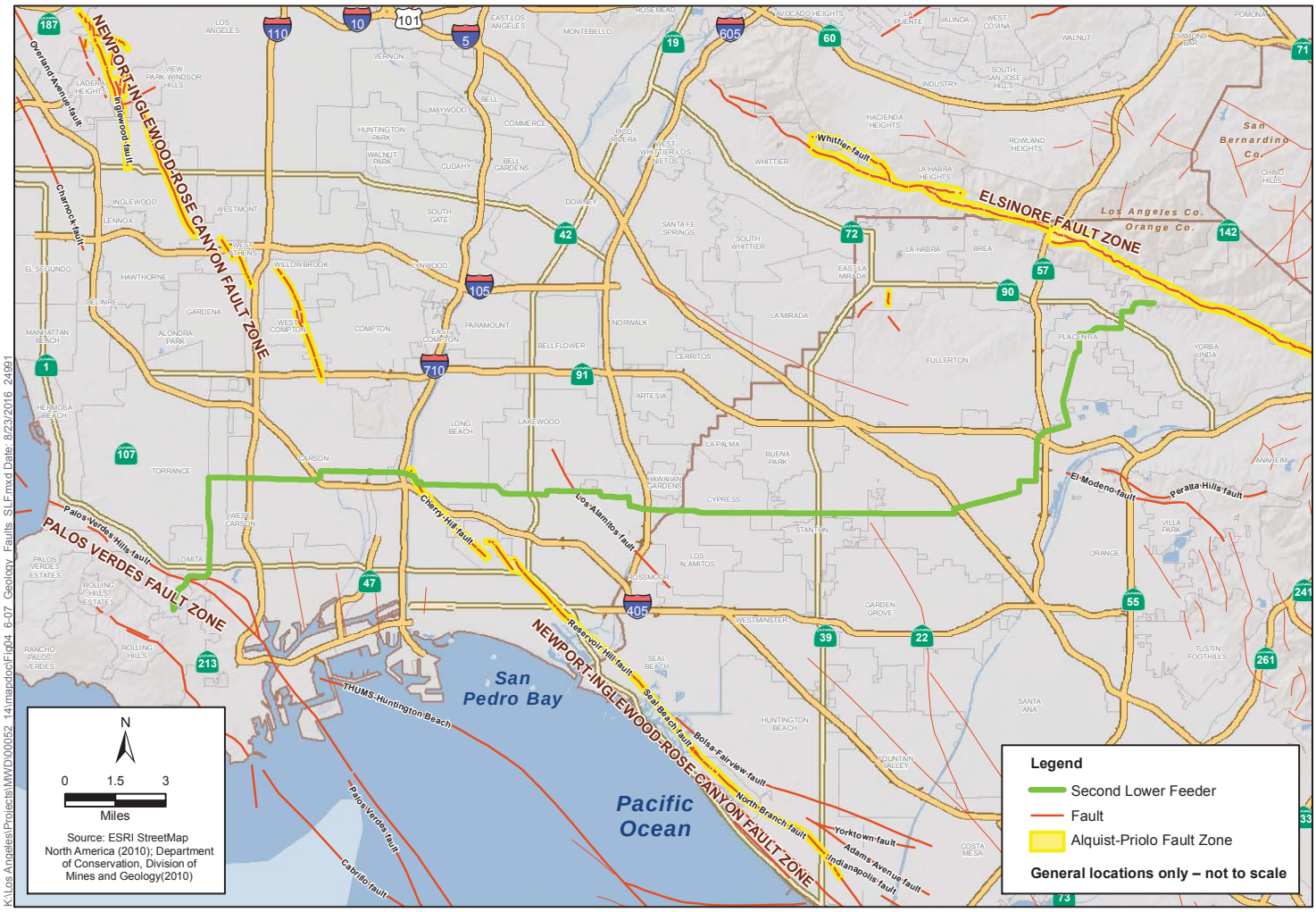


Figure 4.6-7
Regional Fault Map – Second Lower Feeder
Metropolitan PCCP Program

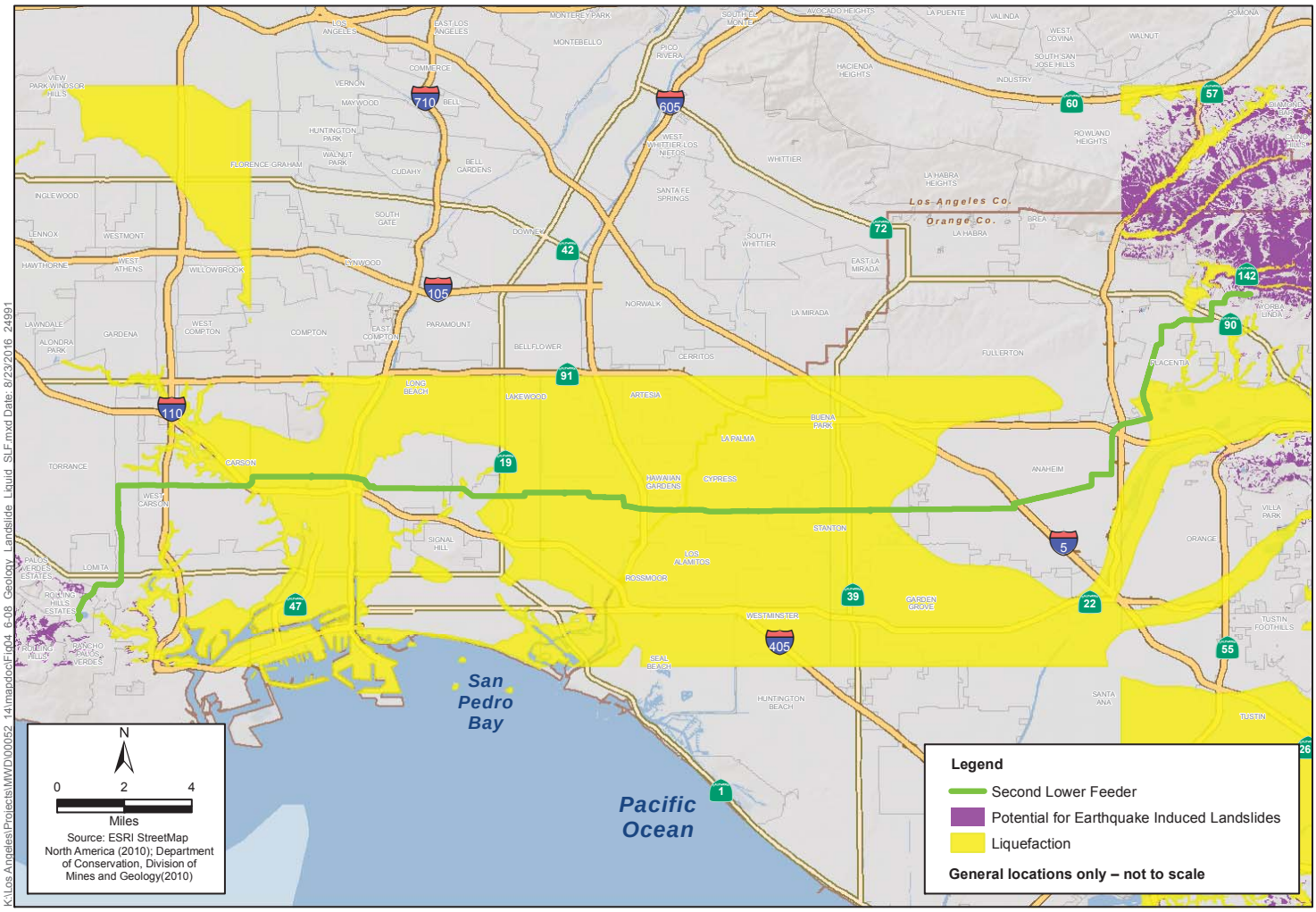


Figure 4.6-8
Regional Landslide/Liquefaction - Second Lower Feeder
Metropolitan PCCP Program

Jurisdiction	Distance to Nearest Alquist-Priolo Earthquake Fault Zone (miles)	Nearest Alquist-Priolo Earthquake Fault Zone
City of Anaheim	4.0	Elsinore
Orange County	0.0	Elsinore
City of Stanton	6.1	Newport-Inglewood
City of Buena Park	5.5	Newport-Inglewood
City of Cypress	4.2	Newport-Inglewood
City of Hawaiian Gardens	4.2	Newport-Inglewood
City of Los Alamitos	3.6	Newport-Inglewood
City of Lakewood	1.0	Newport-Inglewood
City of Long Beach	0.0	Newport-Inglewood
City of Carson	0.4	Newport-Inglewood
City of West Carson	3.1	Newport-Inglewood
Los Angeles County	2.8	Newport-Inglewood
City of Los Angeles	1.2	Newport-Inglewood
City of Torrance	4.1	Newport-Inglewood
City of Lomita	5.5	Newport-Inglewood
City of Rolling Hills Estates	7.0	Newport-Inglewood
City of Rolling Hills	8.2	Newport-Inglewood
City of Rancho Palos Verdes	7.4	Newport-Inglewood
Notes: 0.0 = the Second Lower Feeder crosses the Alquist-Priolo Earthquake Fault Zone within that jurisdiction.		

Table 4.6-7. Estimated Area of Overlap between the Second Lower Feeder Study Area and Identified Seismic Hazard Areas

Jurisdiction	Earthquake-Induced Landslide Overlap (acres)	Liquefaction Overlap (acres)
City of Yorba Linda	66.4	9.8
City of Brea	7.0	50.27
City of Placentia	-	201.3
City of Anaheim	-	1,589.1
Orange County	119.8	26.3
City of Stanton	-	379.41
City of Buena Park	-	294.6
City of Cypress	-	1,434.6
City of Hawaiian Gardens	-	57.3
City of Los Alamitos	-	221.8
City of Lakewood	-	20.0
City of Long Beach	-	3,488.9
City of Carson	-	1,597.6
City of West Carson	-	13.2
Los Angeles County	-	95.1

Jurisdiction	Earthquake-Induced Landslide Overlap (acres)	Liquefaction Overlap (acres)
City of Los Angeles	-	29.3
City of Torrance	3.9	-
City of Lomita	1.2	-
City of Rolling Hills Estates	59.2	0.8
City of Rolling Hills	0.6	-
City of Rancho Palos Verdes	6.7	1.8

The Second Lower Feeder crosses the following jurisdictions, which are discussed above and thus are not discussed in detail below: the city of Yorba Linda, the city of Anaheim, Orange County, Los Angeles County, and the city of Los Angeles.

Seismic Environment

City of Brea

The city of Brea lies within one of the most potentially seismically active areas of Southern California, adjacent to the Whittier fault and atop the Elysian Park Thrust fault. Both of these fault zones have the potential to generate moderate to large earthquakes that could cause substantial property damage and possibly loss of life. The Whittier fault is active and cuts across Brea diagonally (northwest/southeast orientation). The Whittier fault is an Alquist-Priolo Earthquake Fault Zone within the city limits and, accordingly, surface fault rupture hazard in Brea is high within the boundaries of this zone. Brea is also directly on the Elysian Park Thrust fault and 33 miles from the San Andreas fault. The most severe groundshaking would result from earthquake activity on the Whittier fault zone. The Elysian Park Thrust fault, a buried fault approximately 6 to 10 miles below the ground surface, is considered to be more threatening, with a greater potential to cause a large magnitude earthquake (City of Brea 2003).

In addition, according to the City of Brea General Plan (City of Brea 2003), slope stability is a significant concern in the natural slopes of the Carbon Canyon area. There is some potential for erosion and slope instability related to stream activity along major canyons and drainage courses. Steep topography, fractured and unconsolidated bedrock conditions, expansive soils, and high erosion potential make many hillside areas highly unstable. Landslides are typical on moderate to steep slopes in Brea and the potential for future landslides is high (City of Brea 2003).

Liquefaction hazards are significant along stream channels in the city of Brea due to the porous nature and high water content of the soil. These areas include Tonner Canyon Creek, Brea Canyon, and areas around the Carbon Canyon Dam (City of Brea 2003).

City of Placentia

According to the Seismic Safety Element of the Placentia General Plan (City of Placentia 1975), the majority of the city is relatively free of serious or significant seismic problems. Seismic groundshaking is expected to be moderate throughout the city, and primarily influenced by the San Andreas, San Jacinto, San Fernando-Sierra Madre, and Newport-Inglewood fault zones. The Whittier fault occurs approximately 1,000 feet north of the city and is not expected to have any direct impact

on Placentia. The potential for fault rupture in the city is low in most areas, and potentially moderate along the Norwalk fault and in anticlinal areas.

In addition, the potential for liquefaction is low. Any potential for slope instability is limited to the hillside areas northeast of Valencia Avenue and Bastanchury Road, and to the southeast of Linda Vista Avenue (Placentia General Plan 1975).

City of Stanton

There are no Alquist-Priolo Earthquake Fault Zones within the city of Stanton; however, there are several potentially active faults in proximity to the city. Potentially active faults close to the city are the Newport-Inglewood–Rose Canyon fault, the Whittier section of the Elsinore fault, and the Norwalk, Elysian Park, and San Andreas faults. Ground rupture as a result of earthquakes is unlikely to occur within Stanton because no faults have been identified within the city's boundaries (City of Stanton 2008). The impacts of earthquakes on the city depend upon the fault from which the earthquake occurred, fault location, distance from the city, and magnitude of the earthquake. The combination of these factors would determine the degree of shaking experienced by the city.

According to the California Department of Conservation, Division of Mines and Geology (Los Alamitos 7.5-Minute Quadrangle [March 25, 1999] and Anaheim and Newport Beach 7.5-Minute Quadrangle [April 15, 1998]), the entire city of Stanton is in a liquefaction hazard zone (City of Stanton 2008). The same maps show that the city does not have the potential for landslides.

City of Buena Park

According to the Safety Element of the Buena Park General Plan (City of Buena Park 2010), the city is in a seismically active region, with a number of active faults close by. The Norwalk fault traverses the northern and northeastern portions of the city, while the Los Coyotes fault lies near the city's northern boundary. Additionally, the Whittier-Elsinore, Newport-Inglewood, and Los Alamitos faults all lie within 5 miles of the city. The Norwalk fault—the only fault within the city—is not a state-designated Alquist-Priolo Earthquake Fault Zone.

Although the extent of groundshaking would depend on the magnitude of the earthquake and the city's distance from the epicenter, it is the Norwalk fault that has the greatest potential of causing significant groundshaking. The Whittier-Elsinore and Newport-Inglewood faults could also result in significant groundshaking. According to the city's General Plan, the northern portion of Buena Park is most susceptible to seismic groundshaking.

The Buena Park General Plan identifies liquefaction as a seismic activity of concern for the city. According to the Safety Element of the Buena Park General Plan, the California Geological Survey Quadrangles consider the city to be highly susceptible to liquefaction.

City of Cypress

According to the City of Cypress General Plan (City of Cypress 2001), the city is not within an Alquist-Priolo Earthquake Fault Zone. While no potentially active faults are within the city, the entire Southern California region is considered to be seismically active, and thus the city is at risk to seismic groundshaking. The Newport-Inglewood, Norwalk, El Modeno, Whittier-Elsinore, and Elysian Park faults are all close to the city. The San Andreas and San Jacinto faults are farther from the city, but have the potential to deliver larger magnitude earthquakes than the faults near the city.

Surface rupture from earthquake activity is unlikely to occur in the city of Cypress because no faults are known to lie within its boundaries.

According to the City of Cypress General Plan (City of Cypress 2001), the soils underlying Cypress include alluvium deposits that have the potential to become unstable during intense groundshaking. Instability in the form of liquefaction may occur in some portions of Cypress due to the city's granular sandy soil with high water content.

City of Hawaiian Gardens

Hawaiian Gardens is near the Norwalk fault, 4 miles to the northeast, and the Newport-Inglewood fault, 5 miles to the southwest. The Los Alamitos fault is also approximately 2 miles from the city. Although there are no known active earthquake faults within the city, the potential for strong earthquake groundshaking is high because of the many nearby active faults. (City of Hawaiian Gardens 2010).

Mass movements of loose rock, soil, and water-saturated and weathered materials are major effects of earthquakes. Steep slopes commonly favor gravitational movements, and landslides sometimes occur. However, no earthquake-induced landslide zone has been designated in the area. In addition, the city of Hawaiian Gardens has relatively flat topography (City of Hawaiian Gardens 2010).

The entire city of Hawaiian Gardens is in a liquefaction zone, according to the California Geological Survey (City of Hawaiian Gardens 2010). The liquefaction zone covers almost the entire region in the Los Alamitos Quadrangle because of the shallow groundwater table and nearly universal distribution of young sandy alluvial deposits.

City of Los Alamitos

According to the Public Facilities and Safety Element of the 2015 Los Alamitos General Plan (City of Los Alamitos 2015), there are no active or potentially active earthquake faults in the city of Los Alamitos. However, as mentioned above, the entire Southern California region is considered to be seismically active, and thus the city is susceptible to seismic groundshaking. The faults most capable of generating destructive groundshaking in Los Alamitos include the El Modeno, Elysian Park, Newport-Inglewood, Norwalk, and Whittier-Elsinore faults. The Newport-Inglewood fault zone is closest to the city and has been the source of devastating earthquakes in the past. The potential for surface rupture in the Los Alamitos area is unlikely because faults have not been identified within the boundaries of the city.

According to the Los Alamitos General Plan (City of Los Alamitos 2015), the city is underlain by alluvium deposits, which can become unstable during intense groundshaking. Due to the potential for seismic activity to generate groundshaking in the city, there exists the potential for liquefaction. In addition, in areas of the city with generally cohesionless soils (sand) and high ground water, there is also a potential for liquefaction as a result of groundshaking in these areas.

City of Long Beach

The City of Long Beach General Plan Seismic Safety Element (City of Long Beach 1988) identifies the Newport-Inglewood Fault Zone as a possible seismic hazard for the city. Faults that pass within city boundaries as well as faults outside the city capable of generating large earthquakes are considered as potential sources of groundshaking. However, the Newport-Inglewood Fault Zone is of particular

concern for the city, given that its faults lie within city boundaries. The Palos Verdes fault is also of concern because it could produce severe groundshaking within the city.

According to the General Plan (City of Long Beach 1988), the most likely place for surface fault rupture to occur is along major active faults in the region, including those associated with the Newport-Inglewood Fault Zone. Although the damage from surface fault rupture is likely to be significant, it would be less damaging than groundshaking associated with the seismic event.

The potential for liquefaction in the city of Long Beach depends on the extent of seismic groundshaking, groundwater conditions, and subsurface soil conditions in the area. There are areas identified as having low, moderate, and significant potential for liquefaction throughout the city.

City of Lakewood

According to the Safety Element of the City of Lakewood Comprehensive General Plan (City of Lakewood 1996), multiple known active or potentially active faults lie within or in the vicinity of Lakewood. The two known active or potentially active faults closest to the city are the Los Alamitos fault and the Newport-Inglewood Fault Zone, both of which present a risk of damage in the city.

Liquefaction is a potential seismic hazard in the city of Lakewood. There are areas designated as liquefiable and potentially liquefiable throughout the city.

City of Carson

The city of Carson is in a seismically active area, with numerous faults lying in the vicinity of the city. The Newport-Inglewood, Avalon-Compton, San Andreas, Palos Verdes, Whittier (or Elysian Park), and Santa Monica Fault Zones are all capable of generating earthquakes that could affect the city. Any one of these faults could generate detectable groundshaking within the city of Carson in the event of an earthquake. Due to the composition of soils in the area, the city is considered one of the most severe shock areas in the Los Angeles County area (City of Carson 2006). Surface fault rupture has the potential to occur within city limits as a result of seismic activity along the Avalon-Compton structural zone. However, this is not considered to be a significant potential hazard (City of Carson 1981).

Seismically induced ground failure, including liquefaction, is a threat to the city of Carson (City of Carson 1981). Existing conditions in the city make the area susceptible to liquefaction, particularly as a result of earthquake activity along the Newport-Inglewood Fault Zone. A significant portion of the city has been designated as a potential liquefaction area.

City of Torrance

The city of Torrance is susceptible to groundshaking caused by earthquakes from nearby faults. According to the City of Torrance Safety Element (City of Torrance 2010), the highest risks are from the Palos Verdes Fault Zone, the Puente Hills fault, the Newport-Inglewood Fault Zone, the Elysian Park Fault Zone, the Malibu Coast-Santa Monica-Hollywood Fault Zone, and the Whittier Fault Zone. In addition to groundshaking, the city is susceptible to fault rupture. As of 2009, no Alquist-Priolo Earthquake Fault Zones were designated within the city of Torrance limits. However, if the Palos Verdes fault ever becomes zoned as active, the southern portion of Torrance would be in an Alquist-Priolo Earthquake Fault Zone.

According to the city's Safety Element (City of Torrance 2010), some areas of Torrance have the potential for earthquake-induced landslides. These areas mainly occur in the southern portion of the city near the borders with the cities of Palos Verdes Estates and Rolling Hills Estates and unincorporated Los Angeles County.

City of Lomita

The city of Lomita is within seismically active Southern California, and bounded by two of the most active faults in the region. According to the City of Lomita General Plan (City of Lomita 1998), the Palos Verdes fault on the south and the Newport-Inglewood fault to the northeast both generate a potential for seismic groundshaking and surface fault rupture within the city. The Torrance-Wilmington fault, in northeast Lomita, is also capable of generating groundshaking earthquakes in the city. Surface rupture may occur as a result of an earthquake along one of these faults. No Alquist-Priolo Special Studies Zones have been recorded within the city of Lomita. The nearest Alquist-Priolo Special Studies Zone is associated with the Newport-Inglewood fault, approximately 5 miles east of the city.

Strong groundshaking may occur as a result of earthquake activity in the city of Lomita. Faults including the Palos Verdes, Newport-Inglewood, Torrance-Wilmington, Cabrillo, Redondo Canyon, and San Pedro Basin faults are all within or in the vicinity of the city. The Newport-Inglewood and Palos Verdes faults are the most likely to cause groundshaking events in the city, and thus are the most likely to trigger liquefaction in the area (City of Lomita 1998).

Although numerous landslides have occurred in adjacent areas, the City of Lomita General Plan (City of Lomita 1998) identifies no definite or probable landslide hazards within the city; however, hill slopes may be susceptible to debris flows and mudflows in the event of a heavy rainfall.

City of Rolling Hills Estates

According to the Public Safety Element of the City of Rolling Hills Estates General Plan (City of Rolling Hills Estates 1992), the closest active faults to the city are the Newport-Inglewood, Palos Verdes, and Cabrillo faults. Other faults in the area that have the potential for groundshaking in the city include the Redondo Canyon, Santa Monica-Malibu Coast, Whittier, and Torrance-Wilmington fault systems. These faults pose a seismic risk to the city, which could result in groundshaking and other seismic-induced hazards.

No Alquist-Priolo Special Studies Zones have been identified in the city of Rolling Hills Estates (Alquist-Priolo Special Studies Zone Act 1972). The potential for surface fault rupture from the Palos Verdes or Cabrillo fault segments is credible. Fault rupture from other faults in the area is of less concern for the city.

Secondary earthquake hazards such as liquefaction and landsliding are of some concern for the city of Rolling Hills Estates. Most of the city is underlain by consolidated bedrock and thus is not susceptible to liquefaction. The exception includes the Chandler quarry and some canyons, which have been filled with uncompacted artificial or hydraulic fill that may settle during strong groundshaking. Small landslides in the canyon areas and one area northeast of the Peninsula Center may also occur. This area, the Silver Spur Landslide Complex, is postulated as a pull-apart scarp. Additionally, out-of-slope road cuts including Crenshaw Boulevard along Agua Negra Canyon, Palos Verdes Drive between George F. Canyon to the east and Silver Spur Road to the west, and some sections of Hawthorne Boulevard may cause rockfall or landslide threats in the event of seismic

shaking. The San Pedro Formation in the northern flank of the city is also highly at risk of landslide, particularly in the event of heavy rainfall.

City of Rolling Hills

The major seismic sources that could produce significant groundshaking in the city of Rolling Hills include the Palos Verdes, Newport-Inglewood, Whittier, Santa Monica/ Malibu Coast, and the Torrance-Wilmington faults. The Palos Verdes fault is potentially capable of producing the most intense groundshaking in Rolling Hills due to its proximity (approximately 1 mile) (City of Rolling Hills 1990).

According the City of Rolling Hills General Plan, the city is susceptible to shallow earthquake-induced landslides. The most susceptible slopes for rockfalls would be where the bedding is dipping out of slope. If saturated hillslope conditions are extraordinary, the potential for damage caused by debris flows and sudden reactivation of existing deep-seated landslides will increase accordingly. Although Rolling Hills is subject to moderate to high seismic shaking, the general lack of thick, loose, sandy soils and saturated alluvial deposits make the potential for liquefaction low to very low (City of Rolling Hills 1990).

City of Rancho Palos Verdes

Similar to the other cities in the region, Rancho Palos Verdes is in a seismically active area and relatively close to several of the many active and potentially active faults in Southern California. However, there are no Alquist-Priolo Earthquake Fault Zones within the city (City of Rancho Palos Verdes 1975). The Palos Verdes fault zone, which traverses the extreme northeastern corner of the city, is a known active or potentially active fault that could be the site of ground rupture resulting from movement on the fault (City of Rancho Palos Verdes 1975).

Landslides in the city of Rancho Palos Verdes can be grouped into three major landslide systems: the Portuguese Bend, the South Shores, and the Silver Spur system. Historically, the most prominent landslides have occurred within the approximately 900-acre Ancient Portuguese Bend Landslide complex and surrounding areas (City of Rancho Palos Verdes 1975). In general, these landslides are the result of inclined bedding to the south that becomes unsupported due to erosion from beach waves and intrusion from water runoff.

The potential for liquefaction in the area is very low, because the local soil deposits are relatively thin and cohesive. Liquefaction is not considered to be a significant hazard in the city.

Soil Erosion

No soil erosion issues were identified for the Second Lower Feeder study area, with the exception of Los Angeles County, which is discussed above in Section 4.6.2.2, *Calabasas Feeder*, and the cities of Brea and Lomita.

For the city of Brea, as discussed above, stability of natural slopes in the Carbon Canyon area is a significant concern. Most properties within Carbon Canyon are characterized by steep, rugged hillside terrain subject to landslides and soil erosion. Areas adjacent to stream beds and drainage channels tend to exhibit liquefaction conditions and ground instability (City of Brea 2003).

The City of Lomita recognizes that hill slopes are extremely susceptible to erosion in the event of heavy rainfall if not properly planted (City of Lomita General Plan). However, the city grading codes include design guidelines to reduce the hazard of erosion due to surficial sliding.

Unstable Geology or Soils

Other than the earthquake-related landslide and liquefaction hazards discussed above, no other unstable geology or soils hazards were identified within the Second Lower Feeder study area, with the exception of the cities of Yorba Linda, Anaheim, Los Alamitos, and Rolling Hills Estates.

The Second Lower Feeder study area overlaps with unstable geology or soil conditions in the cities of Yorba Linda and Anaheim, which are discussed in Section 4.6.2.1. The potential for landslides in Los Alamitos is low, given the flat topography of the community. However, according to the Los Alamitos General Plan (City of Los Alamitos 2015), some landslide activity may occur along drainage channels and areas with steep banks or slopes.

The majority of Rolling Hills Estates is underlain by shale and siltstone units, which have planes of weakness conducive to landslides and slope instability. Landslides are not numerous in the city, although small landslides in the canyon areas may exist. Furthermore, one postulated landslide complex northeast of the Peninsula Center may exist. There is also conjecture that the northwest-southeast trending valley along Silver Spur Road could be a pull-apart scarp within a postulated Silver Spur landslide complex (City of Rolling Hills Estates 1992). Storm-induced landsliding in the event of heavy rainfall may occur within the city, particularly in the area of the San Pedro Formation.

Expansive Soils

No expansive soils were identified in the Second Lower Feeder study area, with the exception of where the study area crosses unincorporated Orange County, and the cities of Buena Park, Lomita, and Rancho Palos Verdes.

The expansive soils in unincorporated Orange County are discussed in Section 4.6.2.1. According to the Safety Element of the Buena Park General Plan (City of Buena Park 2010), moderately expansive soil potential occurs in the west-central and southern portions of the city. Additionally, some soils in the city of Lomita may be susceptible to significant consolidation and hydrocompaction due to their composition. Soils in central and southern Lomita generally have a high shrink-swell potential according to geologic and engineering reports done for the city, and thus have the potential to expand when wet (City of Lomita 1998).

According to the City of Rancho Palos Verde's General Plan, the entire city is underlain by various combinations of Diablo and Altamont soils, which produce a dark grey, neutral clay. All of these combinations have a high shrink-swell potential. However, the City of Rancho Palos Verde's General Plan also states that while these soils are highly expansive, they should not be a factor in precluding development due to modern soil engineering procedures coupled with present-day foundation designs.

4.6.2.5 Sepulveda Feeder

As shown on Figures 4.6-9 and 4.6-10, the Sepulveda Feeder is in a seismically active area and susceptible to strong groundshaking, seismically induced landslides, and liquefaction as a result of earthquakes. Table 4.6-8 summarizes the Alquist-Priolo Earthquake Fault Zones nearest the

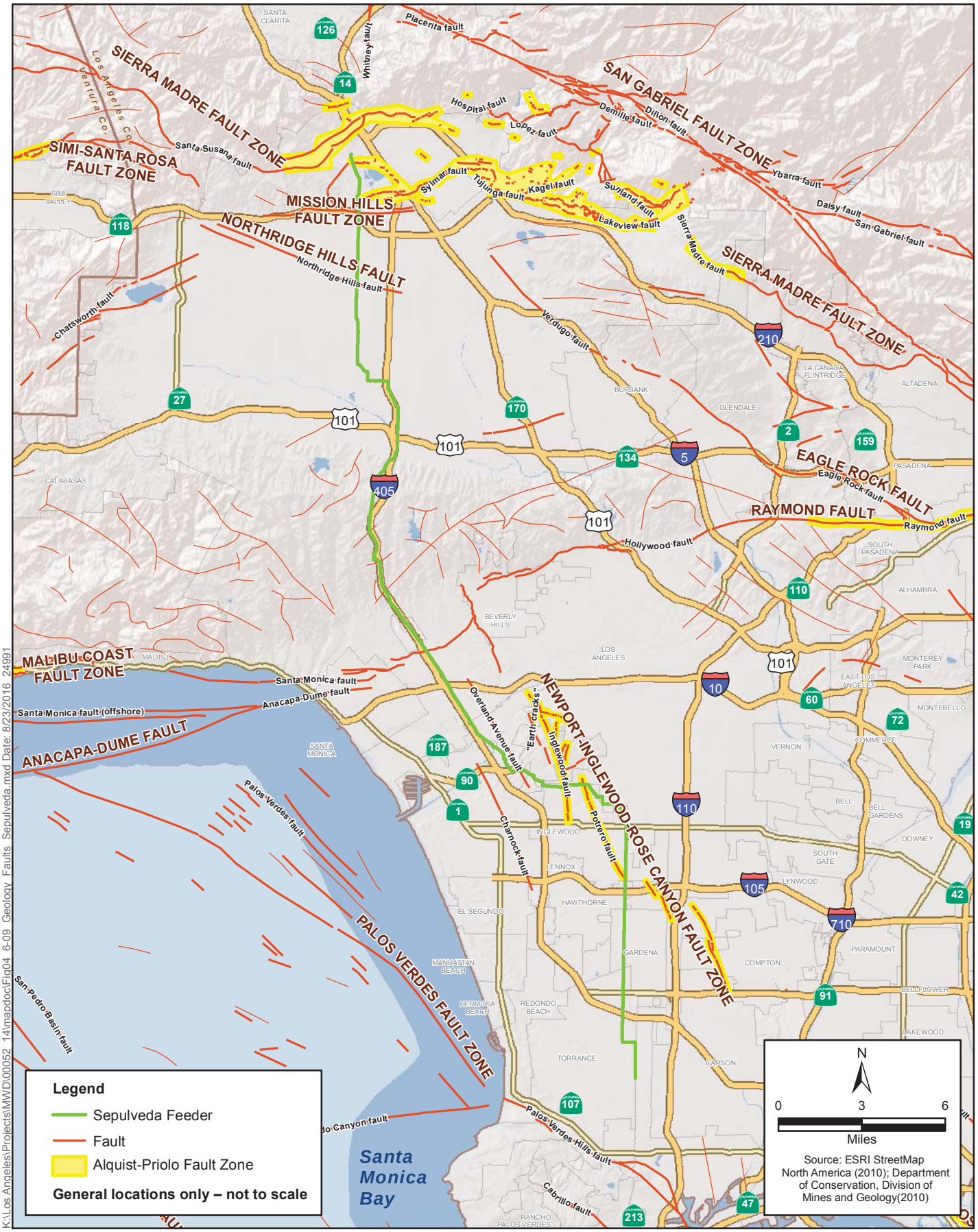


Figure 4.6-9
Regional Fault Map – Sepulveda Feeder
Metropolitan PCCP Program

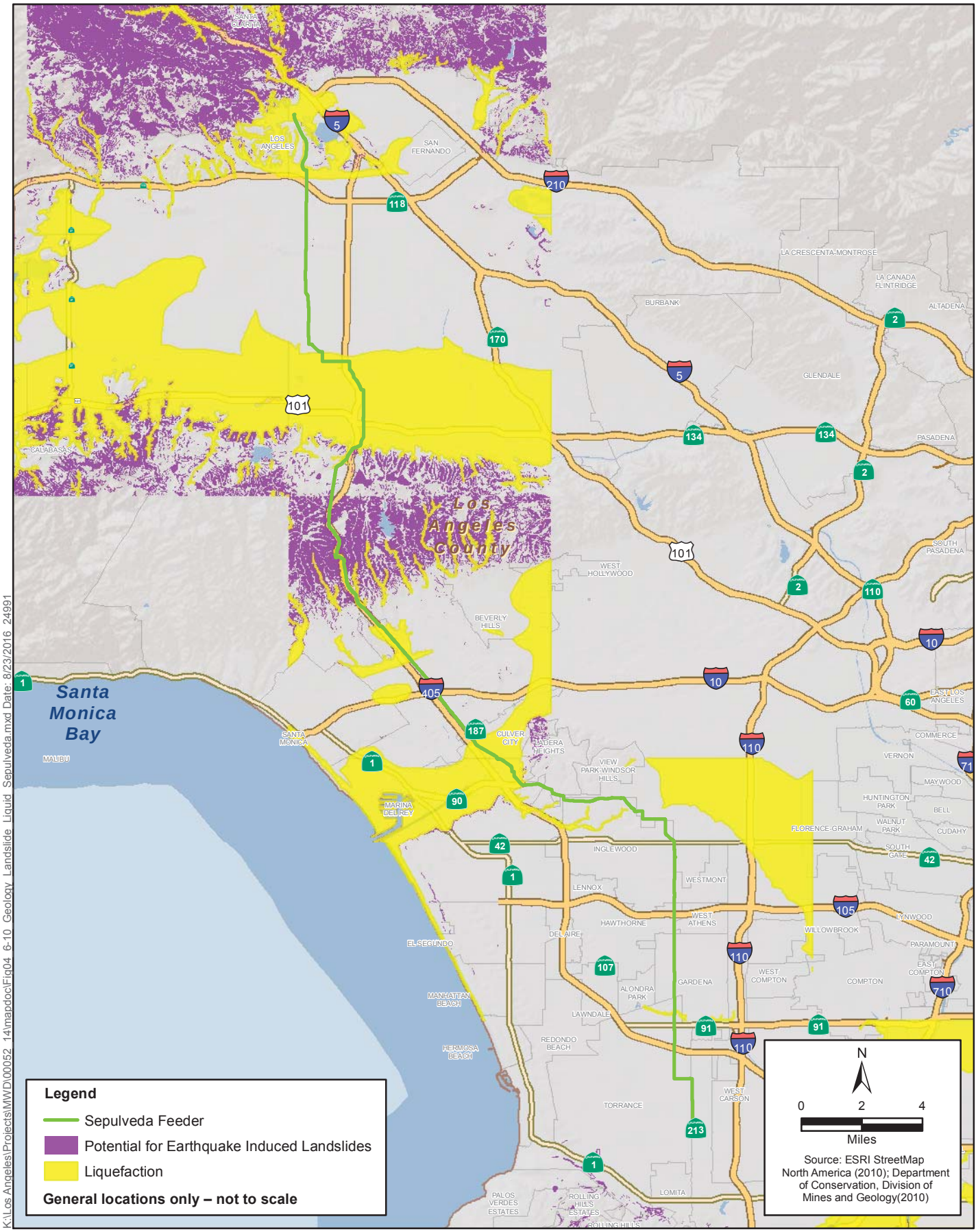


Figure 4.6-10
Regional Landslide/Liquefaction - Sepulveda Feeder
Metropolitan PCCP Program

jurisdictions traversed by the Sepulveda Feeder study area. Table 4.6-9 summarizes approximately how many acres of the Sepulveda Feeder study area overlap with seismic hazards identified in each jurisdiction within the study area.

Table 4.6-8. Estimated Distance to Nearest Alquist-Priolo Earthquake Fault Zone for Jurisdictions in the Sepulveda Feeder Study Area

Jurisdiction	Distance to Nearest Alquist-Priolo Earthquake Fault Zone (miles)	Nearest Alquist-Priolo Earthquake Fault Zone
City of Los Angeles	0.0	Newport-Inglewood
Los Angeles County	1.3	Newport-Inglewood
Culver City	0.9	Newport-Inglewood
City of Inglewood	0.0	Newport-Inglewood
City of Hawthorne	0.0	Newport-Inglewood
City of Gardena	0.7	Newport-Inglewood
City of Torrance	2.1	Newport-Inglewood
Notes: 0.0 = the Sepulveda Feeder study area crosses the Alquist-Priolo Earthquake Fault Zone within that jurisdiction.		

Table 4.6-9. Estimated Area of Overlap between the Sepulveda Feeder Study Area and Identified Seismic Hazard Areas

Jurisdiction	Earthquake-Induced Landslide Overlap (acres)	Liquefaction Overlap (acres)
City of Los Angeles	1,722.6	4,062.6
Los Angeles County	5.2	227.0
Culver City	7.6	952.3
City of Inglewood	-	16.4
City of Hawthorne	-	-
City of Gardena	-	10.0
City of Torrance	-	44.2

The Sepulveda Feeder crosses the following jurisdictions, which are discussed above and thus are not discussed in detail below: city of Los Angeles, Los Angeles County, and the city of Torrance.

Seismic Environment

Culver City

According to the Culver City Seismic Safety Element of the Revised General Plan (Culver City 1996), three major geologic-seismic risks exist within the city: potential future fault movement, the probability of continued subsidence in the Baldwin Hills, and instability resulting from development of hillside areas, particularly those coincident with the Inglewood Oil Field. Both the Inglewood Oil Field and Baldwin Hills are east of and outside the portion of the Sepulveda Feeder study area within Culver City.

The Inglewood Fault Zone is the most likely fault to experience surface displacement in the near term and is the major fault running through the city. The San Andreas Fault Zone may also cause seismic groundshaking in the Culver City area, should an earthquake occur.

Earthquake-induced landslides and liquefaction are also geologic hazards in Culver City. Two major zones have been identified in the city for landslide potential and include the Baldwin Hills and Inglewood Oil Field area and the western portion of the city where hill slopes are flatter and the underlying sedimentary units have shallow dips. In this area, natural slope stability is high, but problematic conditions would generally be restricted to the steeper portions of the natural drainages and to over-steepened, man-made slopes. Additionally, liquefaction hazard areas are generally confined to the floodplain and adjacent areas surrounding Ballona Creek.

City of Inglewood

According to the Safety Element of the Inglewood General Plan (City of Inglewood 1995), the city is dominated by the Newport-Inglewood Fault Zone. This fault zone has been responsible for extensive damage to nearby cities in the relatively recent past. The Potrero fault (a major local component of the Newport-Inglewood fault) is classified as an Alquist-Priolo Study Zone, according to the Inglewood Safety Element. The Seismic Safety Element also notes that major water lines and facilities could be significantly damaged should seismic ground rupture occur.

The potential for liquefaction in the city has been reduced due to water wells lowering the area's water table. According to the Safety Element of the Inglewood General Plan (City of Inglewood 1995), all of Inglewood is classified has having either very low susceptibility or, in the most southern portion of the city, low susceptibility to liquefaction. The one exception is the former water course of Centinela Creek, which has a very high susceptibility to liquefaction. The Sepulveda Feeder crosses mapped liquefaction hazard areas in the northern portion of the city.

City of Hawthorne

The city of Hawthorne is susceptible to seismic activity generated by the Newport-Inglewood and Charnock faults. The Newport-Inglewood fault is considered active, while the Charnock fault is considered potentially active. No Alquist-Priolo Special Studies Zones have been designated within the city of Hawthorne (City of Hawthorne General Plan 1989). The Safety Element of the general plan identifies the potential for groundshaking as generally low. Liquefaction is not an anticipated issue within the city.

City of Gardena

Similar to the other jurisdictions described above, Gardena is subject to risks associated with earthquake activity. The San Jacinto, San Andreas, Newport-Inglewood, Palos Verdes, Whittier-Elsinore, Sierra Madre-Cucamonga, San Fernando, and Raymond Hill fault systems all have the potential to affect the city. An Alquist-Priolo Earthquake Fault Zone is in the northeastern portion of Gardena and is part of the Newport-Inglewood fault system (City of Gardena 2006). Given that this fault is active, the area is at risk of fault rupture.

The city of Gardena also has some areas that are subject to liquefaction risks. Specifically, the area along Artesia Boulevard and the Dominguez Flood Control Channel are within a liquefaction zone identified by the California Department of Conservation Seismic Hazard Zones Map (City of Gardena 2006).

Soil Erosion

No soil erosion issues were identified for the Sepulveda Feeder study area with the exception of Los Angeles County, which is discussed in Section 4.6.2.2.

Unstable Geology or Soils

Culver City

The Seismic Safety Element of the Culver City General Plan identifies subsidence as a geologic hazard in the Baldwin Hills area since the failure of the Baldwin Hills reservoir in 1963. Subsidence is expected to continue in this area. According to the Seismic Safety Element, water injection into the oil reservoirs may slow the subsidence rate with time, as has been accomplished in the Wilmington Oil Field (Culver City General Plan).

City of Inglewood

According to the Safety Element of the Inglewood General Plan (City of Inglewood 1995), there is no historic evidence of subsidence problems in Inglewood. The exception is an area of the Baldwin Hills, approximately 1 mile northwest of Inglewood, which has experienced subsidence as a result of oil extraction.

The former course of Centinela Creek has the potential for settlement due to soil composition and the poorly compacted fill placed along the creekbed in the early 1900s. As previously mentioned, this area is also susceptible to seismically induced settlement.

City of Hawthorne

No issues related to unstable geology and soils were identified in the city of Hawthorne, with the exception of seismically induced instability, discussed above.

City of Gardena

No issues related to unstable geology and soils were identified in the city of Gardena, with the exception of seismically induced instability, discussed above.

Expansive Soils

No expansive soils were identified in the Sepulveda Feeder study area.

4.6.3 Regulatory Framework

This section describes the plans, policies, and regulations related to geology and soils that are applicable to the proposed program.

4.6.3.1 Federal

There are no federal regulations related to geology and soils applicable to the program.

4.6.3.2 State

Alquist-Priolo Earthquake Fault Zoning Act

This act provides policies and criteria to assist cities, counties, and state agencies in the exercise of their responsibility to prevent the location of developments and structures for human occupancy across the trace of active faults. The proposed program does not include development or structures for human occupancy, so this act is not applicable.

Seismic Hazards Mapping Act

This act requires that site-specific geotechnical investigations be conducted within the zones of required investigation to identify and evaluate seismic hazards and formulate mitigation measures prior to permitting most developments designed for human occupancy. The proposed program does not include development or structures for human occupancy, so this act is not applicable.

California Building Code Standards

The California Building Standards Code governs the design and construction of buildings, associated facilities, and equipment and applies to buildings in California.

4.6.3.3 Local

Table 4.6-10 lists the applicable geology and soils regulations for the proposed program.

Table 4.6-10. Applicable Geology and Soils Regulations for Proposed Program

Title of Plan, Policy, Regulation (date)	Applicable Regulation
Allen-McColloch Pipeline	
City of Yorba Linda General Plan, Public Safety Element	**Geologic Instability/Seismic Hazards Implementation Program 5**: All construction excavations and trenches relative to human occupancy and public works infrastructure of 5 feet or deeper in mapped fault zones shall be inspected by the city for any evidence of faulting. **Geologic Instability/Seismic Hazards Implementation Program 8**: A liquefaction report shall be required for proposed projects located in areas susceptible to liquefaction. Liquefaction reports will be submitted prior to issuance of construction permits.
City of Anaheim General Plan, Safety Element	**Goal 1.1**: Minimize the risk to public health and safety and disruptions to vital services, economic vitality, and social order resulting from seismic and geologic activities. **Policy 1**: Minimize the risk to life and property through the identification of potentially hazardous areas, adherence to proper construction design criteria, and provision of public information. **Policy 7**: Require that new construction and significant alterations to structures located within potential landslide areas be evaluated for site stability, including the potential impact to other properties, during project design and review.

Title of Plan, Policy, Regulation (date)	Applicable Regulation
City of Tustin General Plan, Conservation/ Open Space/ Recreation Element	**Policy 8.2**: Control erosion during and following construction through proper grading techniques, vegetation replanting, and the installation of proper drainage control improvements. **Policy 8.3**: Encourage the practice of proper soil management techniques to reduce erosion, sedimentation, and other soil-related problems.
City of Irvine, Seismic Element	**Policy D-2(d)**: Require detailed site studies to determine the potential for seismic hazards for facilities which are critical in an emergency. These facilities include but are not limited to: … major public utilities (electrical, gas, and water facilities…
Mission Viejo General Plan, Public Safety Element	**Policy 2.1**: Follow established standards for grading and construction to mitigate the potential for seismic hazards. **Policy 2.6**: Continue to implement operational guidelines and design standards, consistent with Public Utility Commission limitations, for subsurface transmission lines including natural gas, petroleum, water, and waste water which minimizes potential environmental damage resulting from operational failure due to natural or man-made catastrophes.
Orange County General Plan, Safety Element, Seismic Safety and Geologic Hazards	**Policy 5:** To encourage establishment of seismic design criteria and standards for county facilities (e.g., transmission lines, water and sewage systems, and highways), any structures housing necessary mobile units and support equipment, and other vital resources which would be needed following an earthquake (e.g., "back-up" power generation facilities and water storage).
Calabasas Feeder	
Conservation Element of the City of Calabasas 2030 General Plan	**Policy IV-32:** Regulate construction activities to eliminate potentially destructive practices that remove topsoil or place soils in areas intended to be preserved in open space, as well as practices such as dumping of construction wastes in unauthorized areas, washing out concrete trucks and spreading lime-laden water.
Rialto Pipeline	
City of Rialto General Plan, Safety and Noise	**Policy 5-1.2**: Require all construction to be in conformance with the Uniform Building Code (UBC) and the California Building Code (CBC), and to be consistent with the Municipal Code as it provides for earthquake resistant design, evacuation, and grading.
City of Upland General Plan	**Policy SAF-3.6**: Promote the upgrade, retrofitting, and/or relocation of all existing critical facilities (e.g., hospitals, schools, police stations, fire stations, water facilities, emergency operation centers, emergency access routes, public works yard, public refuge areas) and other important public facilities that do not meet current building code standards and are within areas susceptible to seismic or geologic hazards.
La Verne General Plan, Public Safety	**Policy 2.1, Implementation Measure (b)**: Adhere to Chapter 70 of the *Uniform Building Code* regulating earth work and grading during construction, and hillside grading guidelines to minimize erosion.
Second Lower Feeder	
Orange County General Plan, Safety Element, Seismic Safety and Geologic Hazards	**Policy 5:** To encourage establishment of seismic design criteria and standards for county facilities (e.g., transmission lines, water and sewage systems, and highways), any structures housing necessary mobile units and support equipment, and other vital resources which would be needed following an earthquake (e.g., "back-up" power generation facilities and

Title of Plan, Policy, Regulation (date)	Applicable Regulation
	water storage).
City of Yorba Linda General Plan, Public Safety Element	**Geologic Instability/Seismic Hazards Implementation Program 5**: All construction excavations and trenches relative to human occupancy and public works infrastructure of 5 feet or deeper in mapped fault zones shall be inspected by the city for any evidence of faulting. **Geologic Instability/Seismic Hazards Implementation Program 8**: A liquefaction report shall be required for proposed projects located in areas susceptible to liquefaction. Liquefaction reports will be submitted prior to issuance of construction permits.
City of Anaheim General Plan, Safety Element	**Goal 1.1**: Minimize the risk to public health and safety and disruptions to vital services, economic vitality, and social order resulting from seismic and geologic activities. **Policy 1**: Minimize the risk to life and property through the identification of potentially hazardous areas, adherence to proper construction design criteria, and provision of public information. **Policy 7**: Require that new construction and significant alterations to structures located within potential landslide areas be evaluated for site stability, including the potential impact to other properties, during project design and review.
City of Carson General Plan, Open Space and Conservation Element	**Policy OSC-2.2**: Minimize soil erosion and siltation from construction activities through monitoring and regulation.
Rolling Hills Estates General Plan, Public Safety Element	**Policy 1.5**: Support earthquake strengthening and provision of alternative or backup services, such as water, sewer, electricity, and natural gas pipelines and connections, especially in areas of high seismic or geologic high hazard or where weak segments are identified by existing or future studies.
Sepulveda Feeder	
Inglewood General Plan, Safety Element (1995)	**Policy 1**: Provide measures to reduce seismic impacts … Ensure that all utility lifelines, critical facilities, and places of assembly are seismically sound.

4.6.4 Thresholds and Methodology

4.6.4.1 Thresholds of Significance

Table 4.6-11 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to geology and soils. It also indicates which impacts were determined to be less than significant in the Initial Study and therefore do not require additional analysis, and which impacts must be analyzed in the PEIR for the proposed program.

Table 4.6-11. CEQA Thresholds for Geology and Soils

Threshold *Would the proposed program:*	**Analysis Required for the Proposed Program**

Threshold *Would the proposed program:*	**Analysis Required for the Proposed Program**
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42)?	X
ii. Strong seismic groundshaking?	X
iii. Seismically related ground failure, including liquefaction?	X
iv. Landslides?	X
b. Result in substantial soil erosion or the loss of topsoil?	X
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	X
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	X
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	N/A*
*Determined to be less than significant in the Initial Study (Appendix A).	

4.6.4.2 Methodology

Known Earthquake Fault Rupture

As documented in Section 4.6.2, this PEIR identifies known earthquake faults that could affect the pipelines in the PCCP Rehabilitation Program. For this program-level analysis, the Alquist-Priolo Earthquake Fault Zoning Act is not applicable, because the proposed program does not include structures intended for human occupancy. However, the Alquist-Priolo Earthquake Fault Zoning Map is helpful in identifying earthquake faults that could affect construction crews when rehabilitating the pipelines. The potential for impacts to occur related to fault rupture during rehabilitation anywhere along the pipelines is evaluated.

As part of any project within the PCCP Rehabilitation Program, Metropolitan would require its contractors to comply with the requirements of the California Building Code (CBC) and the California Division of Occupational Safety and Health (better known as Cal/OSHA). The analysis in this section assumes all contractors would comply with these requirements.

Strong Seismic Groundshaking

As documented in Section 4.6.2, this PEIR identifies that the study areas for all five pipelines would be subject to strong seismic groundshaking in the event of an earthquake on known or unknown faults in the region. For this program-level analysis, compliance with the requirements of the CBC and Cal/OSHA are assumed. Based on these assumptions, the potential for impacts to occur related to strong seismic groundshaking during rehabilitation anywhere along the pipelines is evaluated.

Seismically Related Ground Failure

As documented in Section 4.6.2, this PEIR identifies areas that could experience ground failure, including liquefaction, during earthquakes. For this program-level analysis, compliance with the requirements of the CBC and Cal/OSHA are assumed. Based on these assumptions, the potential for impacts to occur from seismically related ground failure during rehabilitation anywhere along the pipelines is evaluated.

Seismically Related Landslides

As documented in Section 4.6.2, this PEIR identifies areas that could be subject to seismically related landslides. For this program-level analysis, compliance with the requirements of the CBC and Cal/OSHA are assumed. Based on these assumptions, the potential for impacts related to seismically related landslides during rehabilitation anywhere along the pipelines is evaluated.

Soil Erosion

As documented in Section 4.6.2, this PEIR identifies areas where substantial soil erosion or loss of topsoil could occur. For this program-level analysis, compliance with the requirements of the CBC and Cal/OSHA are assumed. In addition, Metropolitan has included the following environmental commitments as part of all projects in the proposed program.

- Rehabilitation activities would comply with the South Coast Air Management District's Rule 403 to minimize fugitive dust, construction traffic, and particulate matter releases.
- Rehabilitation activities would incorporate water quality Best Management Practices, including a Stormwater Pollution Prevention Plan, as applicable, for sediment and erosion control, pollutant treatment, outlet protection, and general site management.

Based on these assumptions and environmental commitments, the potential for impacts related to soil erosion or loss of topsoil to occur during rehabilitation anywhere along the pipelines is evaluated.

Unstable Geology or Soils

As documented in Section 4.6.2, this PEIR identifies areas that could be affected by unstable geology or soils, potentially resulting in landslides, lateral spreading, subsidence, liquefaction, or collapse. For this program-level analysis, compliance with the requirements of the CBC and Cal/OSHA are assumed. Based on these assumptions, the potential for impacts related to unstable geology or soils during rehabilitation anywhere along the pipelines is evaluated.

Expansive Soils

As documented in Section 4.6.2, this PEIR identifies areas that could be affected by expansive soils. For this program-level analysis, compliance with the requirements of the CBC and Cal/OSHA are assumed. Based on these assumptions, the potential for impacts related to expansive soils during rehabilitation anywhere along the pipelines is evaluated.

4.6.5 Impacts Analysis

4.6.5.1 Program Analysis

Threshold GEO-A.I: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Rupture of a Known Earthquake Fault

All of the feeders with the exception of the Calabasas Feeder would cross at least one Alquist-Priolo Earthquake Fault Zone. Fault rupture, if it were to occur, could affect the integrity of a pipeline and damage could occur. Although there are designated Alquist-Priolo Earthquake Fault Zones within the study area for the PCCP program, the proposed program would not include construction of structures intended for human occupancy. The proposed program would rehabilitate existing feeders, usually located in existing roadway rights-of-way, and would not be an attraction drawing a significant amount of people to the area. Fault rupture, if it were to occur in these areas, could affect construction crews and the integrity of a feeder. However, due to the infrequent occurrence of fault rupture and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Furthermore, Metropolitan would require its contractors to comply with the requirements of the CBC and Cal/OSHA. Therefore, this hazard is considered to pose an acceptable level of risk of injury and material/property loss that could potentially occur from seismic activity during construction, and impacts would be less than significant. In the event that construction staging areas are situated outside the 0.5-mile study area, Metropolitan would evaluate potentially hazardous geologic conditions in jurisdictions not addressed in this PEIR.

In addition, the hazard of fault rupture at a feeder/fault crossing would exist during program operation. However, similar to construction activities, this hazard is considered to pose an acceptable level of risk for operation of a water conveyance system and would not draw a significant amount of people to the area. Therefore, operation of the PCCP program would not create a substantial risk to life or property involving rupture of a known earthquake fault, and impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold GEO-A.II: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Strong Seismic Groundshaking

All five feeders would be potentially subject to strong seismic shaking as a result of earthquakes on nearby or more distant faults. However, as mentioned above, the proposed program would rehabilitate existing feeders and would not include construction of structures intended for human

occupancy or draw a significant amount of people to the area. As discussed under Threshold GEO-A.I, earthquake-induced groundshaking could affect construction crews and the integrity of a feeder, resulting in injury or loss. However, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Furthermore, Metropolitan would require its contractors to comply with the requirements of the CBC and Cal/OSHA. Therefore, this hazard is considered to pose an acceptable level of risk of injury and material/property loss that could potentially occur from seismic activity during construction, and impacts would be less than significant.

In addition, the PCCP program is in Southern California, which is a seismically active area; therefore, strong seismic shaking could have adverse effects on buried feeders during operation and would result in significant impacts. However, as mentioned above, rehabilitation would be conducted in compliance with current and applicable pipeline design standards, which would minimize potential impacts. Therefore, similar to construction impacts, this hazard is considered to pose an acceptable level of risk for operation of a water conveyance system, and impacts would be less than significant.

Mitigation Measures

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold GEO-A.III: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Seismically Related Ground Failure, Including Liquefaction

The PCCP program is in Southern California, which is a seismically active area, and susceptible to liquefaction during seismic events in some areas of the PCCP program study area. Liquefaction, if it were to occur, could result in settlement and lateral spreading. These effects could damage the feeders and would result in impacts.

As mentioned above, the proposed program would rehabilitate existing feeders, usually located in existing roadway rights-of-way, and would not involve the construction of structures intended for human occupancy or draw a significant amount of people to the area. In addition, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Furthermore, Metropolitan would require its contractors to comply with the requirements of the CBC and Cal/OSHA. Therefore, this hazard is considered to pose an acceptable level of risk of injury and material/property loss that could potentially occur from seismically related ground failure including liquefaction, and impacts would be less than significant.

In addition, the hazard of liquefaction would exist over the design life of the water conveyance system. This is an existing risk for the current operation of the feeders in the study area, and operation of the proposed program would not increase this risk or potential to expose people or structures to seismically related ground failure. Additionally, as previously discussed, rehabilitation would be conducted in compliance with the most up-to-date building codes required by the state of

California and the CBC, which would minimize potential impacts. Therefore, similar to construction impacts, this hazard is considered to pose an acceptable level of risk for operation of a water conveyance system, and impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold GEO-A.IV: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Landslides

Some portions of the PCCP program study area are in hilly areas that are susceptible to earthquake-induced landslides. This effect could damage the feeders and would result in impacts.

As discussed above, the proposed program would rehabilitate existing feeders, usually located in existing roadway rights-of-way, and would not involve the construction of structures intended for human occupancy or draw a significant amount of people to the area. In addition, due to the infrequent occurrence of seismic events and the relatively short duration of construction, the probability that a seismic event would coincide with construction activities is low. Furthermore, Metropolitan would require its contractors to comply with the requirements of the CBC and Cal/OSHA. Therefore, this hazard is considered to pose an acceptable level of risk of injury and material/property loss that could potentially occur from seismically related landslides, and impacts would be less than significant.

Additionally, the hazard of seismically related landslides would exist over the design life of the water conveyance system. This is an existing risk for the current operation of the feeders in the study area, and operation of the proposed program would not increase this risk or potential to expose people or structures to seismically related ground failure. Additionally, as discussed above, rehabilitation would be conducted in compliance with the most up-to-date building codes required by the state of California and the CBC, which would minimize potential impacts. Therefore, similar to construction impacts, this hazard is considered to pose an acceptable level of risk for operation of a water conveyance system, and impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold GEO-B: Result in Substantial Soil Erosion or the Loss of Topsoil

Some portions of the PCCP program study area are in areas where soil erosion or loss of topsoil could occur. This effect could damage the feeders and would result in impacts.

As mentioned above, the proposed program would rehabilitate existing feeders, usually located in existing roadway rights-of-way, and the potential for soil erosion would be limited in the existing street areas. Trenching during pipeline rehabilitation would result in soil disturbance in a relatively narrow corridor along a feeder route. Also, the movement and temporary stockpiling of excavated soil could also result in short-term erosion and sedimentation if improperly handled and stored. Additionally, soil disturbance and erosion and sedimentation could occur at construction staging areas, which may or may not be within the study area. However, Metropolitan has included the following environmental commitments as part of all projects in the proposed program.

- Rehabilitation activities would comply with the South Coast Air Management District's Rule 403 to minimize fugitive dust, construction traffic, and particulate matter releases.
- Rehabilitation activities would incorporate water quality Best Management Practices, including a Stormwater Pollution Prevention Plan, as applicable, for sediment and erosion control, pollutant treatment, outlet protection, and general site management.

These environmental commitments would reduce potential impacts related to soil erosion and loss of topsoil during construction and, therefore, impacts would be less than significant.

As described in Chapter 3, Section 3.7.6, *Site Restoration*, once rehabilitation of a program component is complete, ground surface and work areas including staging areas would be restored to pre-construction conditions. Landscaping would also be replaced and restored to pre-construction conditions. Site restoration would also include restoration of existing roads or sidewalks damaged during rehabilitation activities. Thus, operational impacts resulting in soil erosion and loss of topsoil would be minimized and returned to pre-construction conditions. Therefore, impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold GEO-C: Be Located on a Geologic Unit or Soil that Is Unstable, or that Would Become Unstable as a Result of the Project, and Potentially Result in On- or Off-Site Landslide, Lateral Spreading, Subsidence, Liquefaction, or Collapse

Some areas of the PCCP program could be located on a geologic unit or soils that have been identified as potentially unstable. This could expose the feeders and workers to impacts related to landslide, lateral spreading, subsidence, liquefaction, or collapse.

However, as discussed above, the proposed program would rehabilitate existing feeders, usually located in existing roadway rights-of-way, and would not involve the construction of structures intended for human occupancy or draw a significant amount of people to the area. In addition, Metropolitan would require its contractors to comply with the requirements of the CBC and Cal/OSHA. Therefore, this hazard is considered to pose an acceptable level of risk of injury and material/property loss that could potentially occur from unstable geologic units or soils, and impacts would be less than significant.

Additionally, the hazard of unstable geologic conditions would exist over the design life of the water conveyance system. This is an existing risk for the current operation of the feeders in the study area, and operation of the proposed program would not increase this risk or potential to expose people or structures to on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Additionally, as discussed above, rehabilitation would be conducted in compliance with the most up-to-date building codes required by the state of California and the CBC, which would minimize potential impacts. Therefore, similar to construction impacts, this hazard is considered to pose an acceptable level of risk for operation of a water conveyance system, and impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold GEO-D: Be Located on Expansive Soil, Creating Substantial Risks to Life or Property

Some areas of the PCCP program may be underlain by expansive soils that could deform, resulting in damage to feeders and risk of injury to workers. However, as discussed above, the proposed program would rehabilitate existing feeders, usually located in existing roadway rights-of-way, and would not involve the construction of structures intended for human occupancy or draw a significant amount of people to the area. In addition, Metropolitan would require its contractors to comply with the requirements of the CBC and Cal/OSHA. Therefore, this hazard is considered to pose an acceptable level of risk of injury and material/property loss that could potentially occur from expansive soils, and impacts would be less than significant.

Additionally, the hazard of expansive soils would exist over the design life of the water conveyance system. This is an existing risk for the current operation of the feeders in the study area, and operation of the proposed program would not increase this risk or potential to expose people or structures to loss of life or damage to property. Additionally, as discussed above, rehabilitation would be conducted in compliance with the most up-to-date building codes required by the state of California and the CBC, which would minimize potential impacts. Therefore, similar to construction impacts, this hazard is considered to pose an acceptable level of risk for operation of a water conveyance system, and impacts would be less than significant

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

4.6.5.2 Cumulative Analysis

The proposed program would be implemented over a long period of time; in many cases, implementation of the projects in the proposed program would occur past the planning horizons of local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

All of the geology and soils thresholds were found to be less than significant after implementation of mitigation. As discussed above, all operational impacts are existing risks for the feeders and considered acceptable for the operation of a water conveyance system. Rehabilitation of the feeders would not change this level of risk. However, impacts could occur during construction that could damage feeders and expose workers to risk of injury. These impacts would be localized to the construction sites and limited to the duration of construction. Therefore, the contribution of these impacts would not be cumulatively considerable, and construction of the proposed program would not result in cumulative geologic impacts.

Section 4.7
Greenhouse Gas Emissions

4.7.1 Introduction

This section describes the existing conditions for greenhouse gas (GHG) emissions, the regulatory framework associated with GHG emissions, the impacts on GHG emissions that would result from the proposed program, and the mitigation measures that would reduce these impacts. As noted in the Initial Study, the proposed program would have potentially significant GHG emissions impacts.

4.7.2 Existing Conditions

According to the U.S. Environmental Protection Agency (EPA), a GHG is any gas that absorbs infrared radiation in the atmosphere. This absorption traps heat within the atmosphere, maintaining the Earth's surface temperature at a level higher than would be the case in the absence of GHGs. GHGs include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and halogenated chlorofluorocarbons. Naturally occurring GHGs include water vapor, CO_2, CH_4, N_2O, and O_3. Human activities add to the levels of most of these naturally occurring gases.

Increasing levels of GHGs in the atmosphere result in an increase in the temperature of the Earth's lower atmosphere, a phenomenon that is commonly referred to as "global warming." Warming of the Earth's lower atmosphere induces a suite of additional changes, including changes in global precipitation patterns; ocean circulation, temperature, and acidity; global mean sea level; species distribution and diversity; and the timing of biological processes. These large-scale changes are collectively referred to as "global climate change."

The Intergovernmental Panel on Climate Change (IPCC) has been established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change and its potential impacts and provide options for adaptation and mitigation. As the leading authority on climate change science, IPCC's best estimates are that average global temperature rise between 2000 and 2100 could range from 0.5°F to 8.6°F (IPCC 2013). Large increases in global temperatures, as high as 8.6°F, could have massive deleterious impacts on natural and human environments.

Since the industrial revolution began in approximately 1750, the concentration of CO_2 in the Earth's atmosphere has increased from 270 parts per million (ppm) to roughly 391 ppm. Atmospheric concentrations of CH_4 and N_2O have similarly increased since the beginning of the industrial age. Since 1880, the global average surface temperature has increased by 1.5°F, the global average sea level has risen by nearly 190 millimeters (since 1901), and northern hemisphere snow cover (data available since 1920) has decreased by nearly 3 million square kilometers. These recently recorded changes can be attributed with a high degree of certainty to increased concentrations of GHGs in the atmosphere (IPCC 2013). Sinks of CO_2 (which remove rather than emit CO_2) include uptake by vegetation and dissolution into the ocean. Global GHG emissions greatly exceed the removal capacity

of natural sinks. As a result, concentrations of GHGs in the atmosphere are increasing (California Energy Commission 2006).

GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants. Criteria air pollutants and toxic air contaminants occur locally or regionally, and local concentrations respond to locally implemented control measures. The long atmospheric lifetimes of GHGs allow them to be transported great distances from sources and become well mixed, unlike criteria air pollutants, which typically exhibit strong concentration gradients away from point sources. GHGs and global climate change represent cumulative impacts. GHG emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change.

4.7.2.1 Definition of Greenhouse Gases

The GHGs listed by IPCC (CO_2, CH_4, N_2O, HFCs, PFCs, and sulphur hexafluoride [SF_6]) (2013) are discussed in this section in order of abundance in the atmosphere. California law and the State CEQA Guidelines contain a similar definition of GHGs (Health and Safety Code Section 38505(g); 14 California Code of Regulations Section 15364.5). Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic (human-made) sources.[1] The sources and sinks[2] of each of these gases are discussed in detail below. Generally, GHG emissions are quantified and presented in terms of metric tons of carbon dioxide equivalent (CO_2e) emitted per year. The primary GHGs associated with the program are CO_2, CH_4, and N_2O. HFCs, PFCs, and SF_6 are associated primarily with industrial processes and, thus, are not discussed herein.

To simplify reporting and analysis, GHGs are commonly defined in terms of global warming potential (GWP). IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of CO_2e. The GWP of CO_2 is, by definition, 1. The GWP values used in this report are based on IPCC Fourth Assessment Report and United Nations Framework Convention on Climate Change reporting guidelines and defined in Table 4.7-1, below (IPCC 2007). The IPCC Fourth Assessment Report GWP values are used in the California Air Resources Board's (ARB) California inventory and the most recent AB 32 Scoping Plan estimate update (ARB 2014).

Table 4.7-1. Lifetime, Global Warming Potential, and Abundance of Several Significant GHGs

Gas	Global Warming Potential (100 years)	Lifetime (years)[a]	Atmospheric Abundance
CO_2 (ppm)	1	50–200	394
CH_4 (ppb)	25	9–15	1,893
N_2O (ppb)	298	121	326

[a] Defined as the half-life of the gas.
ppm = parts per million; ppb = parts per billion
Sources: Myhre et al. 2013; Blasing 2014; ARB 2014.

[1] Although water vapor plays a substantive role in the natural greenhouse effect, the change in GHGs in the atmosphere due to anthropogenic actions is enough to upset the radiative balance of the atmosphere and result in global warming.
[2] A sink removes and stores GHGs in another form. For example, vegetation is a sink because it removes atmospheric CO_2 during respiration and stores the gas as a chemical compound in its tissues.

CO_2 is the most important anthropogenic GHG. It accounts for more than 75 percent of all GHG emissions emitted by humans. Its atmospheric lifetime of 50 to 200 years ensures that atmospheric concentrations of CO_2 will remain elevated for decades, even after mitigation efforts to reduce GHG concentrations are promulgated (IPCC 2007). The primary sources of anthropogenic CO_2 in the atmosphere include fossil fuel usage (including motor vehicle fuels), gas flaring, cement production, and land use changes (including deforestation).

CH_4, the main component of natural gas, is the second-most abundant GHG and has a GWP of 25 (IPCC 2007). Sources of anthropogenic emissions of CH_4 include rice growing, cattle raising, natural gas combustion, landfill outgassing, and coal mining (National Oceanic and Atmospheric Administration 2005).

N_2O is a powerful GHG, with a GWP of 298 (IPCC 2007). Anthropogenic sources of N_2O include agricultural processes (e.g., fertilizer application), nylon production, fuel-fired power plants, nitric acid production, and vehicle emissions. N_2O is also used in rocket engines and racecars and as an aerosol spray propellant. In the United States, more than 70 percent of N_2O emissions are related to agricultural soil management practices, particularly fertilizer applications.

4.7.2.2 GHG Emissions Sources

More than 97 percent of U.S. GHG emissions result from burning fossil fuels. Although many nations, including the U.S., regularly monitor and report GHG emissions, federal legislation to reduce global emissions has not been adopted, although it is the subject of much debate. EPA is presently pursuing the regulation of GHGs through the federal Clean Air Act (CAA), following a U.S. Supreme Court ruling that clarified its authority under the CAA to do so. Many states, including California, as a prominent leader, have passed legislation to reduce GHG emissions. California's GHG regulatory framework is discussed in Section 4.7.3, *Regulatory Framework*.

4.7.2.3 Greenhouse Gas Inventories

A GHG inventory is a quantification of all GHG emissions and sinks within a selected physical and/or economic boundary. GHGs can be inventoried on a large scale (i.e., for global and national entities) or a small scale (i.e., for a particular building or person). Although many processes are difficult to evaluate, several agencies have developed tools to quantify emissions from certain sources.

U.S. Greenhouse Gas Emissions Inventory

EPA estimates that total U.S. GHG emissions for 2013 amounted to 6,673 million metric tons of CO_2e ($MMTCO_2e$), which represents a 2.0 percent increase compared with 2012 levels but a 9.0 percent decrease from 2005 levels and a 5.9 percent decrease from 1990 levels. The largest contributors to U.S. GHG emissions in 2013 were electricity generation (31 percent), transportation (27 percent), and the industrial sector (21 percent). Emissions in the electricity generation, transportation, residential, commercial, and industrial sectors consist primarily of CO_2 (82 percent of emissions). GHG emissions from agriculture consist predominantly of CH_4 and N_2O. In general, industrial and, to a lesser extent, commercial emissions in the U.S. have declined over the last decade, while emissions in other sectors, such as transportation, have grown steadily. U.S. GHG emissions are responsible for approximately 16 percent of the global total (EPA 2015).

California Greenhouse Gas Emissions Inventory

In 2013, total California GHG emissions were estimated to be 459.3 $MMTCO_2e$. The transportation sector accounted for approximately 37 percent of total emissions, followed by electricity generation (20 percent), the industrial sector (23 percent), commercial and residential sources (12 percent), agriculture (8 percent), and other sources (6 percent) (ARB 2015).

Annual statewide GHG emissions inventories provide an important tool for establishing historical emission trends and tracking California's progress toward the 2020 goal. From 2000 to 2013, GHG emissions decreased by 2.0 percent. In addition, California's per capita GHG emissions have generally decreased over the last 12 years, going from 14.0 metric tons of CO_2e per person in 2001 to 12.0 in 2013, a 14 percent decrease (ARB 2015).

4.7.2.4 California GHG Emissions

California is the second-largest emitter of GHGs in the United States (just behind Texas) and the sixteenth-largest GHG emitter in the world (California Energy Commission 2006). However, because of its more stringent air pollutant emissions regulations and mild climate, California was fourth lowest in carbon emissions per capita in 2001 and fifth lowest in CO_2 emissions from fossil fuel consumption per unit of Gross State Product (i.e., total economic output of goods and services). In 2010, California produced 452 $MMTCO_2e$,[3] of which 38 percent were from transportation sources, 21 percent from activities related to electric power generation, and 19 percent from industrial sources (ARB 2013). Other major sources of statewide GHG emissions include mineral production, waste combustion and related land use, and forestry changes. Agriculture, forestry, commercial, and residential activities make up the balance of California's GHG emissions (ARB 2013).

4.7.3 Regulatory Framework

This section describes the plans, policies, and regulations related to GHG that are applicable to the proposed program.

4.7.3.1 Federal

Massachusetts et al. v. U.S. Environmental Protection Agency (2007)

Twelve U.S. states and cities, including California, in conjunction with several environmental organizations, sued EPA to regulate GHGs as a pollutant, pursuant to the federal CAA. The court ruled that the plaintiffs had standing to sue, finding that GHGs fit within the CAA's definition of a pollutant, and EPA's reasons for not regulating GHGs were insufficiently grounded.

[3] GHG emissions, other than CO_2, are commonly converted into CO_2 equivalents, which take into account the differing GWP of different gases. For example, the IPCC finds that N_2O has a GWP of 310, and CH_4 has a GWP of 21. Thus, the emission of 1 ton of N_2O and 1 ton of CH_4 is represented as the emission of 310 tons of CO_2e and 21 tons of CO_2e, respectively. This allows for the summation of different GHG emissions into a single total.

4.7.3.2 State

Assembly Bill 32, the Global Warming Solutions Act of 2006/2011

Assembly Bill (AB) 32 codified the state's GHG emissions target by requiring California's global warming emissions to be reduced to 1990 levels by 2020. Since its adoption, ARB, the California Energy Commission, the California Public Utilities Commission, and the California Building Standards Commission have been developing regulations that will help the state meet the goals of AB 32 and Executive Order (EO) S-03-05. The scoping plan for AB 32 identifies specific measures to reduce GHG emissions to 1990 levels by 2020 and requires ARB and other state agencies to develop and enforce regulations and other initiatives to reduce GHG emissions. Specifically, the scoping plan articulates a key role for local governments by recommending that they establish GHG emissions-reduction goals for both their municipal operations and the community that are consistent with those of the state (i.e., approximately 15 percent below current levels (ARB 2008).

Climate Change Scoping Plan

On December 11, 2008, pursuant to AB 32, ARB adopted the Climate Change Scoping Plan. This plan outlines how emissions reductions from significant sources of GHGs will be achieved via regulations, market mechanisms, and other actions. The Climate Change Scoping Plan also describes recommended measures that were developed to reduce GHG emissions from key sources and activities while improving public health, promoting a cleaner environment, preserving natural resources, and ensuring that the impacts of the reductions are equitable and do not disproportionately affect low-income and minority communities. These measures put the state on a path to meet the long-term 2050 goal of reducing California's GHG emissions to 80 percent below 1990 levels.

The First Update to the Scoping Plan was approved by ARB on May 22, 2014, and builds upon the initial Scoping Plan with new strategies and recommendations. The First Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The First Update defines ARB's climate change priorities for the next 5 years, and also sets the groundwork to reach long-term goals set forth in Executive Orders S-3-05 and B-16-2012. The First Update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the initial Scoping Plan. It also evaluates how to align the State's "longer-term" GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use.

Executive Order S-03-05 (2005)

The goal of EO S-03-05 is to reduce California's GHG emissions to (1) 2000 levels by 2010, (2) 1990 levels by 2020, and (3) 80 percent below 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of AB 32.

Executive Order B-30-15

Signed on April 29, 2015, EO B-30-15 set a goal of reducing GHG emissions to 40 percent below 1990 levels by 2030. The intent is for the state to achieve this interim goal in advance of AB 32's emissions target of 80 percent below 1990 levels by 2050.

Senate Bill 97

Senate Bill (SB) 97 required the Governor's Office of Planning and Research to develop recommended amendments to the State CEQA Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Senate Bill 375, Sustainable Communities and Climate Protection Act of 2008

SB 375 requires metropolitan planning organizations to incorporate a "sustainable communities strategy" in their regional transportation plans that will achieve the GHG emissions reduction targets that were set by ARB in February 2011. SB 375 also includes provisions for streamlined CEQA review for some infill projects, such as transit-oriented development. However, those provisions will not become effective until a sustainable communities strategy is adopted. The final targets require the Southern California Association of Governments to identify strategies to reduce per capita GHG emissions from passenger vehicles by approximately 8 percent by 2020 and 13 percent by 2035 compared with base-year (i.e., 2005) emissions. Southern California Association of Governments adopted the final 2012 Regional Transportation Plan, which incorporates the Sustainable Communities Strategy, on April 4, 2012 (SCAG 2012).

4.7.3.3 Regional

South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) is responsible for comprehensive air pollution control in the greater Los Angeles area. To provide GHG emissions guidance to local jurisdictions within the South Coast Air Basin, SCAQMD organized a working group to develop GHG emissions analysis guidance and thresholds and released an interim GHG significance threshold for stationary sources (i.e., industrial projects) where SCAQMD is lead agency. At present, SCAQMD offers no regulations or thresholds for non-SCAQMD lead agency projects.

4.7.3.4 Local

Numerous municipalities and other agencies in the Southern California region have adopted climate action plans or have developed programs and policies to comply with state-mandated GHG reductions. However, with the exception of the City of San Diego, no agencies or municipalities within the Metropolitan service area have adopted binding emissions reduction targets, and none of the pipelines in the proposed program are located in San Diego.

4.7.4 Thresholds and Methodology

4.7.4.1 Thresholds of Significance

Table 4.7-2 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to GHG emissions. These thresholds are addressed in the PEIR.

Table 4.7-2. CEQA Thresholds for Greenhouse Gas Emissions

Threshold *Would the proposed program:*
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
b. Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

4.7.4.2 Methodology

With regard to Threshold A, there are no established federal, state, or local quantitative thresholds applicable to the proposed program to determine the quantity of GHG emissions that may have a significant effect on the environment. ARB, SCAQMD, and various cities and agencies have proposed, or adopted on an interim basis, thresholds of significance that require the implementation of GHG emission reduction measures.

For the proposed program, the most appropriate screening threshold for determining GHG emissions is the SCAQMD proposed Tier 3 screening threshold (SCAQMD 2008); therefore, a significant impact would occur if the proposed program would exceed the SCAQMD proposed Tier 3 screening threshold of 3,000 metric tons of CO_2e per year. As the Tier 3 screening threshold proposed by SCAQMD is tied to meeting the reduction goals outlined by AB 32, this numeric threshold is also used as the basis for evaluating the proposed program with regard to Threshold B. Based on SCAQMD guidance, construction emissions are amortized over the life of the project, which is defined by SCAQMD as 30 years, and compared to the applicable interim GHG significance threshold tier.

As discussed in Section 4.3, GHG emissions were estimated using emissions factors for off-road construction equipment and on-road vehicle trips and idling derived from CalEEMod and EMFAC2011. Emissions for each of the individual sites were estimated and a full program construction scenario was developed to quantify impacts related to GHGs, which includes the following.

- An average of three relining excavation sites per mile of PCCP
- An average of one new valve/meter vault structure for every 5 miles of PCCP
- An average of one air-release/vacuum valve relocation per mile of PCCP
- 1,000 feet of parallel piping for every 10 miles of PCCP

Emissions have been amortized over the expected 30-year service life of the relined PCCP and appurtenant facilities. Because there would be no change in operational characteristics of the pipelines once rehabilitation is complete, no change in operational GHG emissions would occur.

4.7.5 Impacts Analysis

4.7.5.1 Program Analysis

Threshold GHG-A: Generate Greenhouse Gas Emissions, either Directly or Indirectly, that May Have a Significant Impact on the Environment

Short-term construction activities would result in GHG emissions from fuel combustion associated with on- and off-road construction equipment and vehicles. Emissions associated with construction are summarized in Table 4.7-3. Construction emissions are summed and amortized over the expected 30-year service life of the program. As shown in Table 4.7-3, the full program construction would result in amortized annual emissions of just over 4,700 metric tons, which exceeds the SCAQMD threshold of 3,000 metric tons. As such, impacts would be significant.

Table 4.7-3. Estimate of Total Construction GHG Emissions (metric tons)

Phase	Individual Site CO_2e	Full Program CO_2e
Typical Excavation Site	422	127,891
New Valve/Meter Vault Structure	407	8,149
Typical Below Grade Air-release/Vacuum Valve Relocation	13	1,307
Pipeline Replacement/Parallel Piping	326	3,261
Total Construction Emissions		140,609
30-year Amortized Total		*4,687*
Source: Appendix F.		

Mitigation Measures

With the implementation of MM AIR-1 identified in Section 4.3, *Air Quality*, GHG emissions would be reduced by 0.8 percent through the use of Tier 4 off-road construction equipment. The GHG emissions shown in Table 4.7-3 are emissions with the implementation of MM AIR-1.

Residual Impacts

Impacts that would result from the proposed program would be significant. Implementation of MM AIR-1 would reduce these impacts; however, residual impacts would still be significant and unavoidable.

Threshold GHG-B: Conflict with Any Applicable Plan, Policy, or Regulation of an Agency Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases

Metropolitan has not adopted a qualified plan, policy, or regulation to reduce GHG emissions. Therefore, the most applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions is AB 32, which codified the state's GHG emissions-reduction targets for 2020. Beyond 2020, there are no adopted enforceable plans, policies, or regulations pursuant to EO S-03-05 and

EO B-30-15 that are legally applicable to the program. Regardless, a discussion of proposed plans and discussion documents designed to help meet EO S-03-05 and EO B-30-15 targets is provided.

Consistency with Assembly Bill 32 Scoping Plan

AB 32 identified 427 $MMTCO_2e$ as the acceptable level of GHG emissions for California in 2020, which is the same as the 1990 GHG emissions level and approximately 28.5% less than 2020 business-as-usual (BAU) conditions (596 $MMTCO_2e$).[4] To reach the target level, there will have to be widespread reductions in GHG emissions across California. Some reductions will need to come in the form of changes pertaining to vehicle emissions and mileage standards. Some will come from changes pertaining to sources of electricity and increased energy efficiency at existing facilities. The remainder will need to come from plans, policies, or regulations that will require new facilities to have lower carbon intensities than they have under BAU conditions.

The AB 32 Scoping Plan details specific GHG emissions-reduction measures that target specific GHG emissions sources. The scoping plan considers a range of actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms (e.g., a cap-and-trade system). Also included are mobile-source emissions reduction measures (Pavley, low carbon fuel standards, vehicle efficiency measures), energy production–related emissions-reduction measures (natural gas transmission and distribution efficiency measures, natural gas extraction efficiency measures), and the Renewables Portfolio Standard (electricity). The proposed program would not conflict with the measures within the AB 32 Scoping Plan and other measures adopted by ARB but not yet included in the scoping plan. Accordingly, the program would not conflict with AB 32.

Consistency with Executive Orders S-03-05 and B-30-15

EO B-30-15 established an interim GHG reduction target of 40 percent below 1990 levels by 2030, and EO S-3-05 established a long-term goal of reducing statewide GHG emissions to 80 percent below 1990 levels by 2050. Achieving these long-term GHG reduction policies will require systemic changes in how energy is produced and used.

There are a number of studies that discuss potential mechanisms for limiting statewide GHG emissions to meet the aggressive goals identified by EO B-30-15 and EO S-3-05. For example, ARB and other State agencies commissioned Energy + Environmental Economics in 2015 to develop feasible GHG reduction scenarios for 2030. Other studies include a report by the California Center for Science and Technology (2012), the California Department of Transportation's (2015) *California Transportation Plan 2040*, ARB's *First Update to the AB 32 Scoping Plan*, and a study published in *Science* that analyzes the changes that will be required to reduce GHG emissions to 80 percent below 1990 levels by 2050 (Williams et al. 2012). In general, these studies reach similar conclusions—deep reductions in GHG emissions can *only* be achieved with significant changes in electricity production, transportation fuels, and industrial processes (e.g., decarbonizing electricity production, electrifying transportation, utilizing alternative fuels for aviation).

The systemic changes that will be required to achieve EO B-30-15 and EO S-3-05, if they are legislatively adopted, will require significant policy, technical, and economic solutions. Some

[4] ARB recently updated the AB 32 Scoping Plan and revised the 2020 BAU downward slightly to 509 $MMTCO_2e$, which reflects the reduced GHG emissions estimates resulting from the recent economic downturn and increased efficiencies.

changes, such as the use of alternative fuels (e.g., biofuel) to replace petroleum for aviation, cannot be accomplished without action by the federal government. Similarly, achieving the reduction goals will require California to dramatically increase the amount of electricity that is generated by renewable generation sources and, correspondingly, advance the deployment of energy storage technology and smart-grid strategies, such as price-responsive demand and the smart charging of vehicles. This would entail a significant redesign of California's electricity system, which can only be accomplished through State action. Accordingly, in evaluating the program's emissions for consistency with EO S-3-05 and EO B-30-15, it is important to note that many of the broad-scale shifts needed to meet the reduction goals are outside of the control of Metropolitan and beyond the scope of the proposed program.

The long-term climate change policy and regulatory changes that will be enacted to meet 2030 and 2050 emissions reduction targets are unknown at this time. As a consequence, the extent to which the program's emissions and resulting impacts would be mitigated through implementation of statewide (and nationwide) changes is not known. However, some of the anticipated statewide actions (e.g., decarbonization, energy efficiency, alternative transportation) can be facilitated, at least to some extent, through implementation of specific GHG reduction measures in large-scale developments.

Program features do not conflict with anticipated long-term statewide strategies to reduce GHG emissions and would help to facilitate substantial progress toward long-term targets as adopted (SB 350) and proposed (Phase 2 trucks) state regulations are fully realized. Accordingly, the program would not conflict with the goals in EO S-3-05 and EO B-30-15.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

4.7.5.2 Cumulative Analysis

The proposed program would be implemented over a long period of time; in many cases, implementation of the projects in the proposed program would occur past the planning horizons of local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

GHG emissions are exclusively cumulative impacts; there are no non-cumulative GHG emissions impacts from a climate change perspective. No single project, when considered in isolation, can cause climate change because a single project's emissions are not enough to change the radiative balance of the atmosphere. Because climate change is the result of GHG emissions and GHGs are emitted by innumerable sources worldwide, global climate change will have a significant cumulative impact on the natural environment as well as human development and activity. As such, GHGs and climate change are cumulatively considerable, even though the contribution may be individually limited (SCAQMD 2008). SCAQMD methodology and thresholds are thus cumulative in nature. As discussed above, the program would exceed the thresholds of significance. Therefore, the proposed

program would contribute to a cumulatively significant impact related to GHG emissions and climate change.

Section 4.8
Hazards and Hazardous Materials

4.8.1 Introduction

This section describes the existing conditions related to hazards and hazardous materials, the regulatory framework associated with hazards and hazardous materials, the impacts related to hazards and hazardous materials that would result from the proposed program, and the mitigation measures that would reduce these impacts. As noted in the Initial Study, the proposed program would have potentially significant impacts related to hazards and hazardous materials.

4.8.2 Existing Conditions

The study area for hazards and hazardous materials varies with topic. Generally, for existing hazardous materials and waste sites, the study area is the pipeline easements or rights-of-way, plus 1 mile. For risks to schools, the study area is 0.25 mile on either side of the pipelines. For airports and airstrips, the study area is 2 miles on either side of the pipelines. For emergency response plans and emergency evacuation plans, the study area is 0.25 mile from the pipelines. Figures 4.8-1 through 4.8-5 show these study areas.

Generally, existing contamination is most likely at commercial and industrial sites. Industrial land uses can encompass a wide range of business operations that have the potential to create hazardous materials impacts. Industrial facilities store hazardous materials in underground storage tanks and/or aboveground storage tanks, and in designated storage locations. Age and improper maintenance of storage tanks have been common causes for soil and groundwater contamination. Improper handling and storage of hazardous material containers can lead to hazardous material incidents.

Commercial locations that may have existing contamination include vehicle repair sites, gasoline fueling stations, and dry cleaning facilities. Like industrial facilities, some commercial sites store hazardous materials in storage tanks and in designated areas within the facility. Hazardous materials spills and leaks in vehicle repair and fueling locations can lead to hydrocarbon-contaminated soil and groundwater. Improper storage and use of hazardous materials in dry cleaning facilities can lead to contaminated soil and groundwater.

Known hazardous materials sites within 1mile of the proposed program were identified in an Environmental Data Resources (EDR) report for the study area from federal, state and local, tribal, or EDR proprietary databases (Appendix F).

Table 4.8-1. Sources for Known Hazardous Materials Site Records

Type of Record	Sources [1]
Federal	• National Priorities List sites (Superfund) [2] • Resource Conservation and Recovery Act sites that generate, transport, store, treat and/or dispose of hazardous waste • U.S. brownfields • Hazardous Materials Incident Report System sites • Toxic Release Inventory System • Other sources
State and Local	• Cortese Hazardous Waste & Substances Sites List • Leaking Underground Storage Tank • Spills, Leaks, Investigations and Cleanup • California Hazardous Material Incident Report System • Department of Toxic Substances Control's EnviroStor • Other sources
Tribal	• Indian Leaking Underground Storage Tank • Underground Storage Tank Voluntary Cleanup Program databases • Other sources
EDR Proprietary Records	• EDR U.S. Historic Auto Stations • EDR U.S. Historic Cleaners • Other sources

Notes:
[1] Superfund sites generally involve complex contamination issues and cover large geographic areas.
[2] Some sites may be found in multiple databases and may overlap in one or more categories. Not all sites in the study area have the potential to affect activities in the study area.

4.8.2.1 Allen-McColloch Pipeline

Known Hazardous Materials Sites

According to information obtained from the EDR report, there are multiple hazardous materials sites within 1 mile of the Allen-McColloch Pipeline alignment. Table 4.8-2 shows the number of sites identified in federal, state and local, tribal, and EDR proprietary databases.

Table 4.8-2. Known Hazardous Materials Sites in the Allen-McColloch Pipeline Study Area

Type of Database	Number of Sites Identified in EDR Report
Federal Records	104
State and Local Records	587
Tribal Records	0
EDR Proprietary Records	82

El Toro Marine Corps Air Station

One of the sites identified in Table 4.8-2 is the El Toro Marine Corps Air Station in Irvine. This is a large National Priorities List (NPL) site (approximately 4,700 acres) with multiple impacted areas

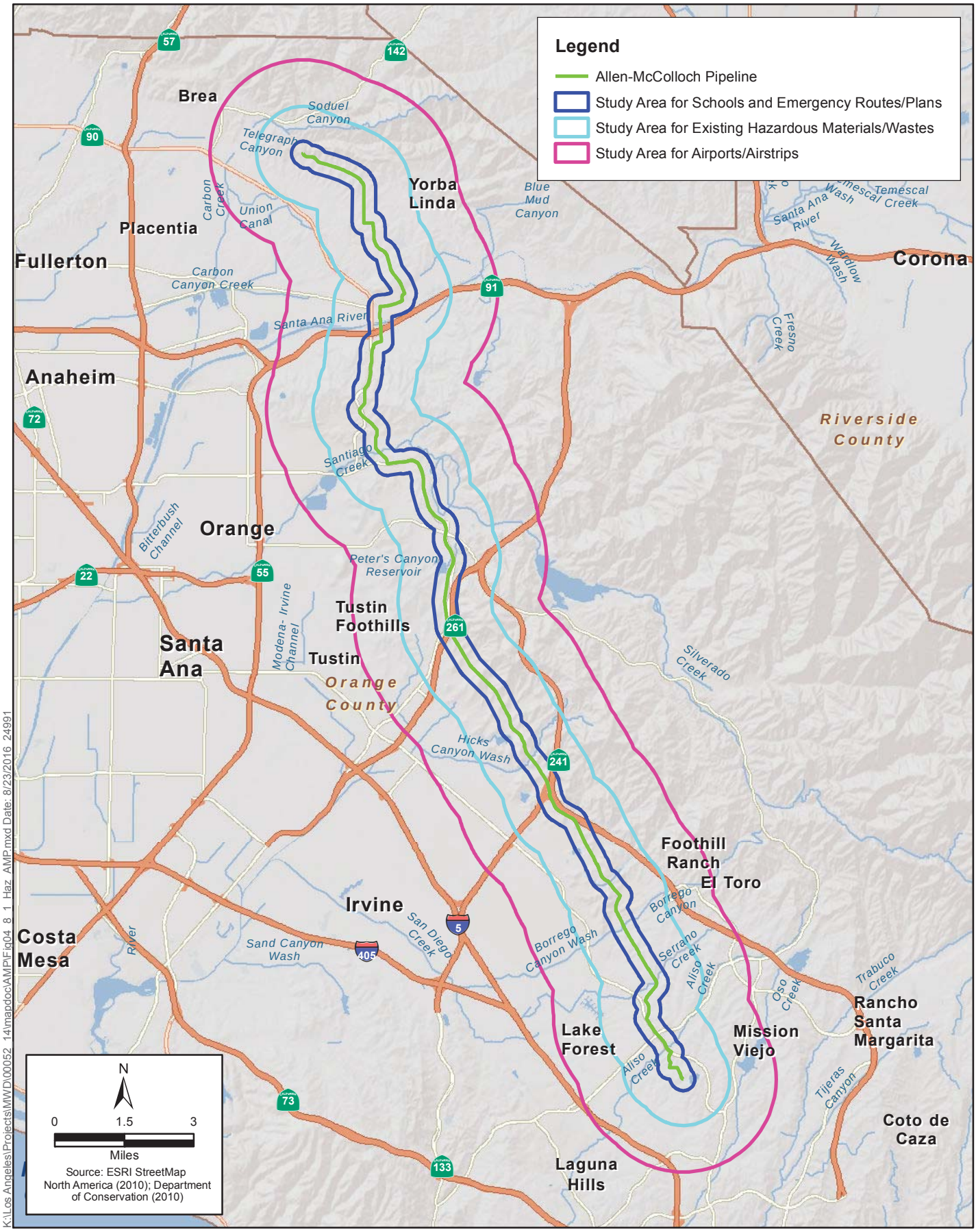
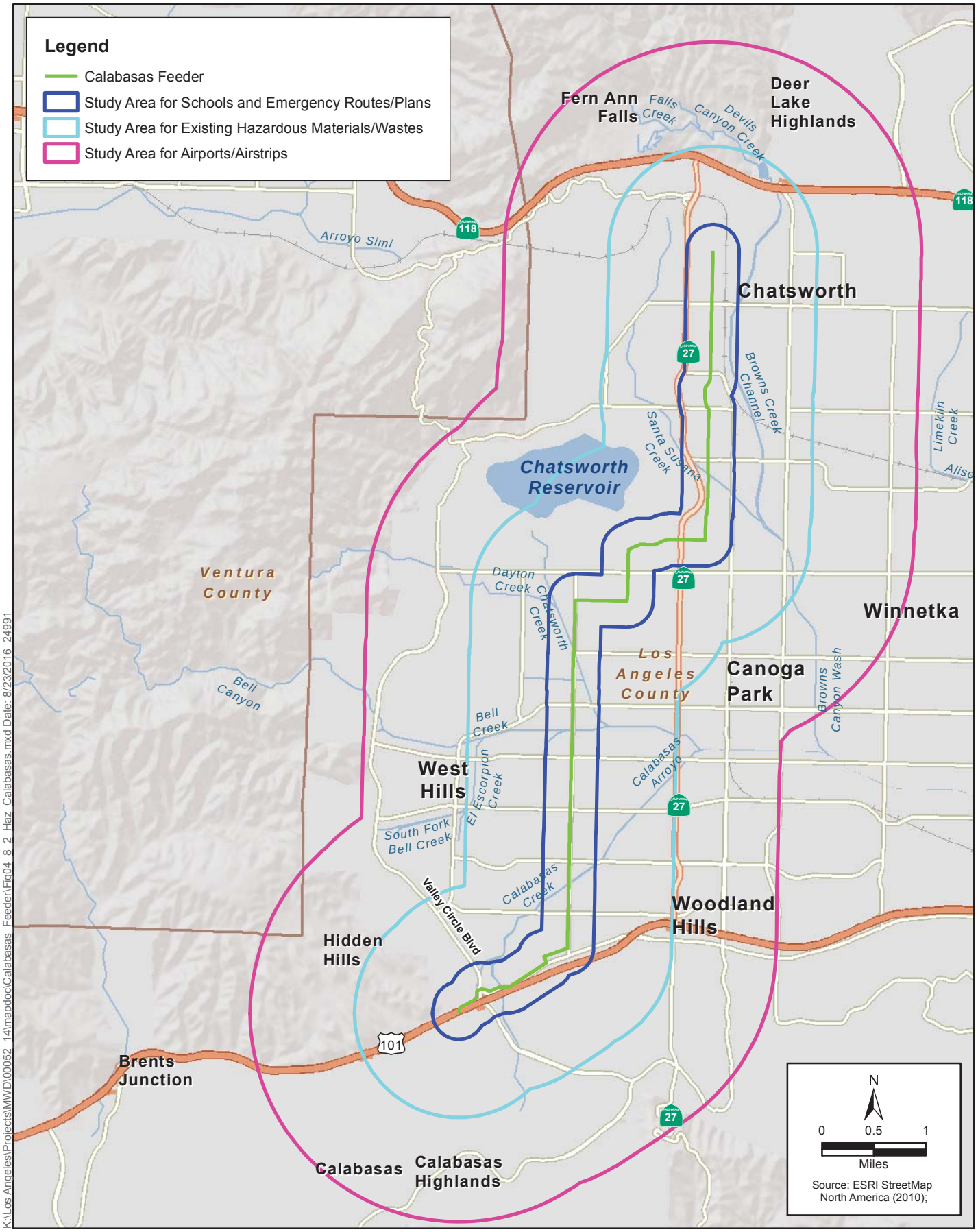


Figure 4.8-1
Allen-McColloch Pipeline Hazards Study Area
Metropolitan PCCP Program



K:\Los Angeles\Projects\MWD\00052 14\mapdoc\Calabasas Feeder\Fig04 8 2 Haz Calabasas.mxd Date: 8/23/2016 24991

Figure 4.8-2
Calabasas Feeder Hazards Study Area
Metropolitan PCCP Program

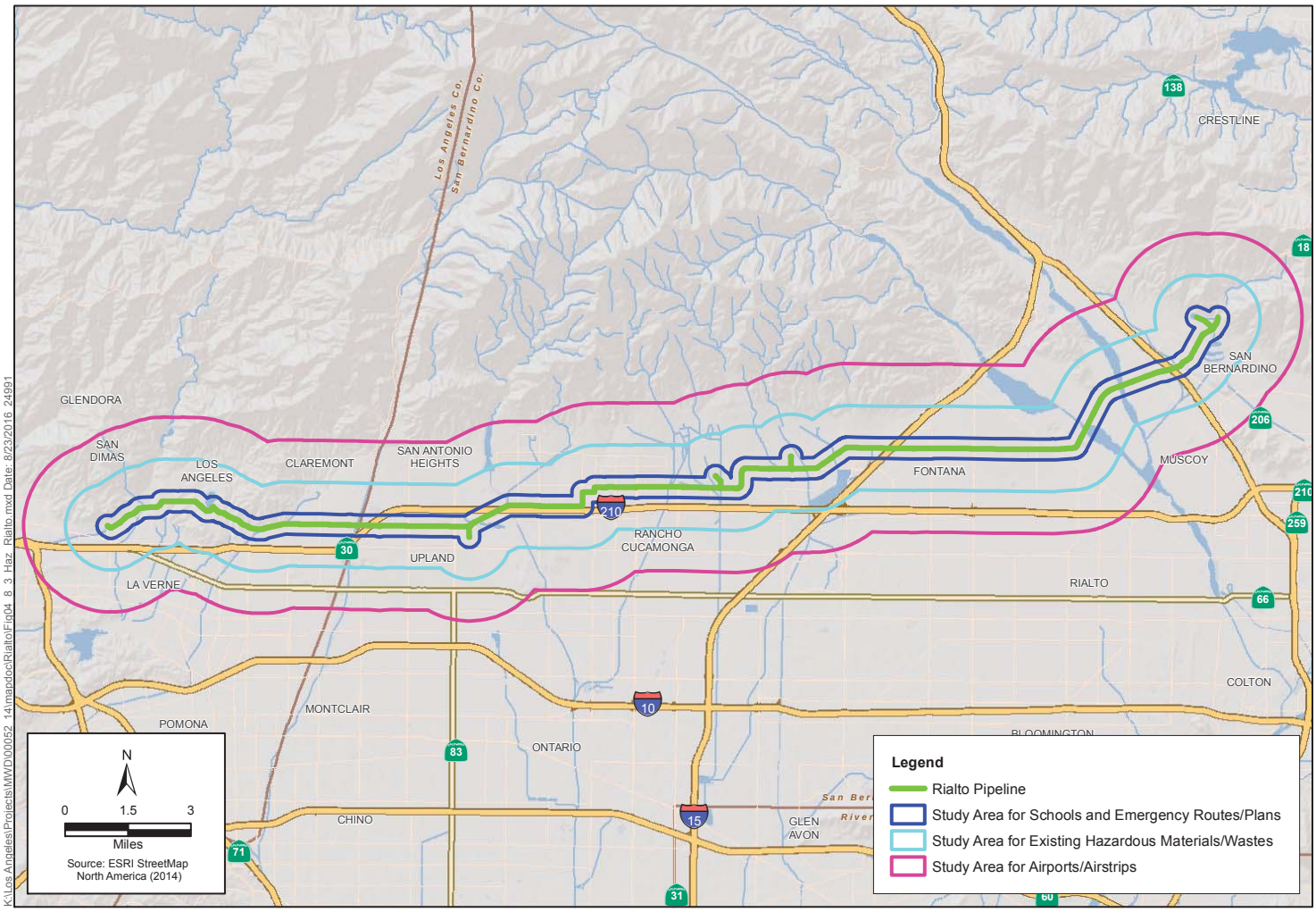


Figure 4.8-3
Rialto Pipeline Hazards Study Area
Metropolitan PCCP Program

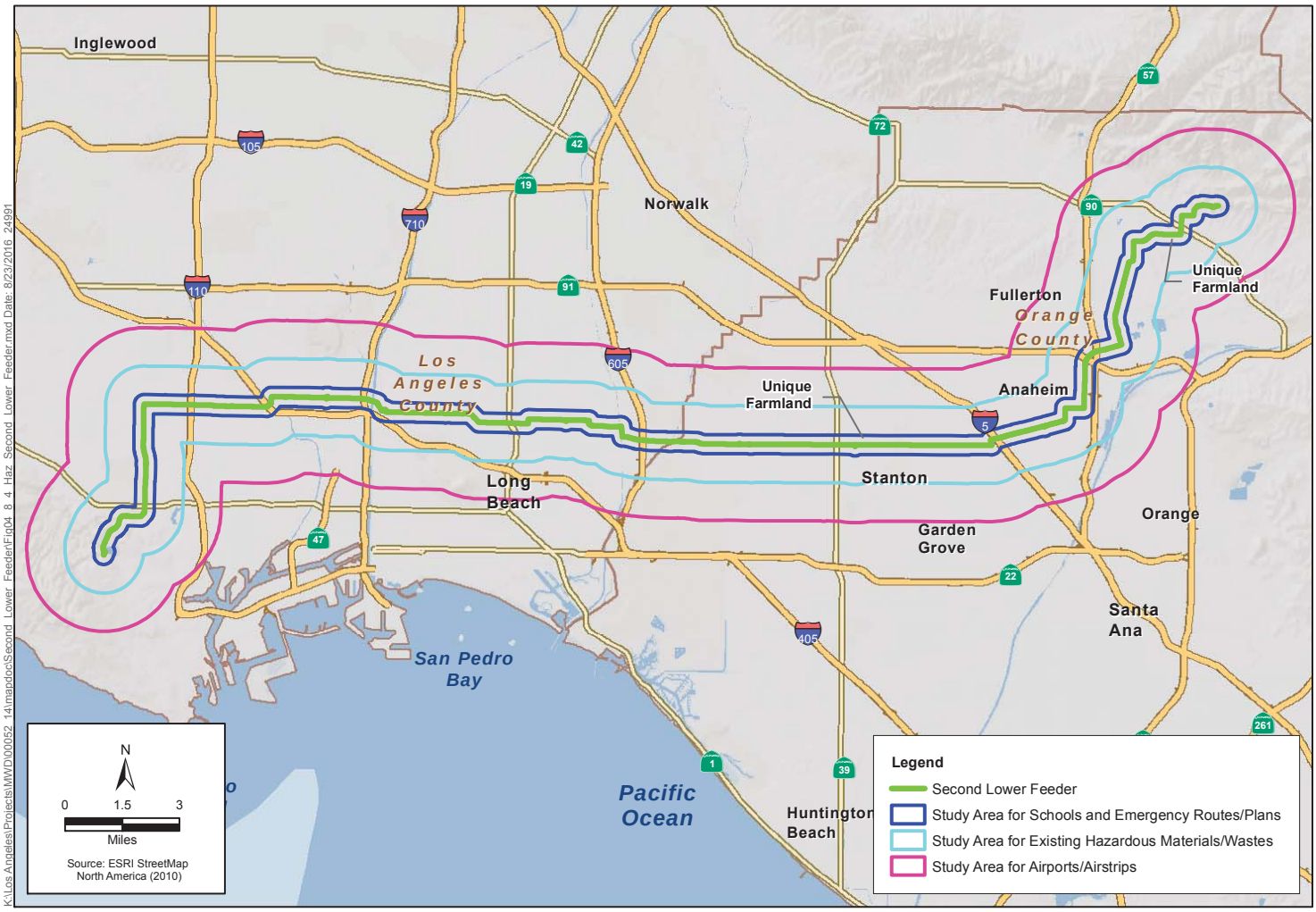


Figure 4.8-4
Second Lower Feeder Hazards Study Area
Metropolitan PCCP Program

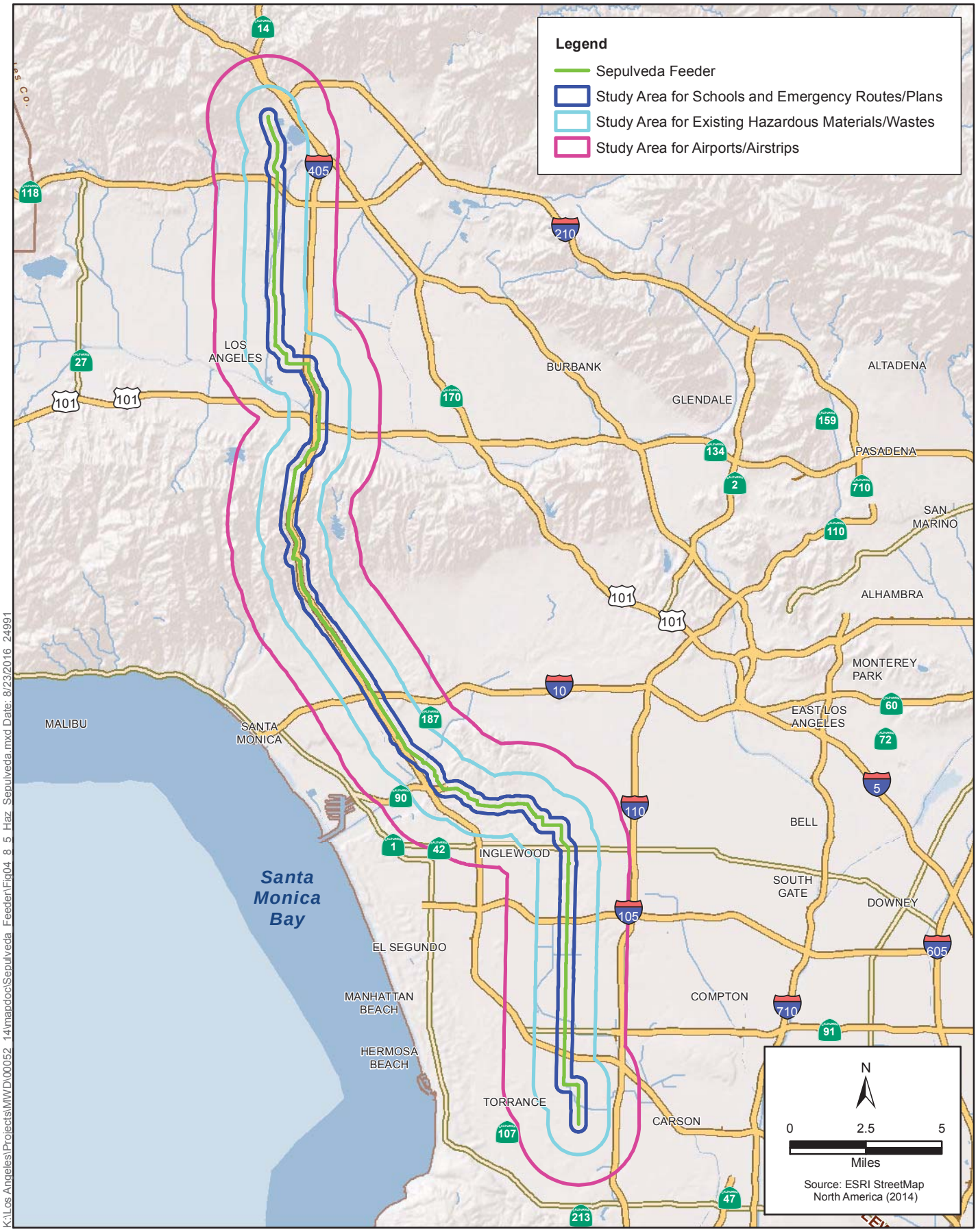


Figure 4.8-5
Sepulveda Feeder Hazards Study Area
Metropolitan PCCP Program

and contamination to both soil and groundwater. Initial environmental studies associated with the site identified 21 areas as potentially impacted on site, including the following.

- three landfill sites containing both hazardous and solid waste
- buried drums containing explosives
- low-level radioactive waste
- areas where PCBs, battery acids, leaded fuels, and other hazardous substances had been released

The site has undergone a multitude of studies and remedial activities. The site is listed as "currently on the Final NPL." The Allen-McColloch Pipeline study area passes through the northeastern portion of the El Toro Marine Corps Air Station NPL site.

Schools

Table 4.8-3 lists schools within 0.25 mile of the Allen-McColloch Pipeline.

Table 4.8-3. Schools in the Allen-McColloch Pipeline Study Area

School	Address	Approximate Distance from Allen-McColloch Pipeline
La Entrada High	4999 Casa Loma Avenue, Yorba Linda	70 feet east
Fairmont Elementary	5241 Fairmont Boulevard, Yorba Linda	60 feet west
Bernardo Yorba Middle	5350 Fairmont Boulevard, Yorba Linda	30 feet east
Woodsboro Elementary	7575 E. Woodsboro Avenue, Anaheim	0.25 mile east
Canyon High	220 S. Imperial Highway, Anaheim	30 feet east
Imperial Elementary	400 S. Imperial Highway, Anaheim	30 feet east
Portola Springs Elementary	12100 Portola Springs, Irvine	0.20 mile west
El Toro High	25255 Toledo Way, Lake Forest	0.23 mile west
Grace Christian Elementary	26052 Trabuco Road, Lake Forest	90 feet west

Public Airports, Airport Land Use Plans, and Private Airstrips

There are no public airports, applicable airport land use plans, or private airstrips in the study area for the Allen-McColloch Pipeline.

Emergency Response Plans and Emergency Evacuation Plans

The following emergency response and evacuation plans have been identified in the study area for the Allen-McColloch Pipeline.

- **City of Orange:** According to the City of Orange General Plan, Public Safety Element, all arterials in the city are recognized as primary emergency response routes. (City of Orange 2010)
- **City of Tustin:** According to the Tustin General Plan, Public Safety Element, Jamboree Road is an evacuation route in the Allen-McColloch Pipeline study area. (City of Tustin 2013)

- **City of Mission Viejo:** According to the City of Mission Viejo General Plan, Public Safety Element, there are city evacuation routes along Trabuco Road and Los Alisos Boulevard within the Allen-McColloch Pipeline study area. (City of Mission Viejo 2009)

Wildland Fire

According to the California Department of Forestry and Fire Protection (CAL FIRE), the Allen-McColloch Pipeline study area passes through a very high fire hazard severity zone in Santiago Oaks Regional Park just south of State Route 91 (SR-91) and in Limestone Canyon Regional Park along State Route 241 (SR-241)/State Route 261 (SR-261) (CAL FIRE 2011a).

4.8.2.2 Calabasas Feeder

Known Hazardous Materials Sites

According to information obtained from the EDR report, there are multiple hazardous materials sites within 1 mile of the Calabasas Feeder alignment. Table 4.8-4 shows the number of sites identified in federal, state and local, tribal, and EDR proprietary databases.

Table 4.8-4. Known Hazardous Materials Sites in the Calabasas Feeder Study Area

Type of Database	Number of Sites Identified in EDR Report
Federal Records	279
State and Local Records	1,009
Tribal Records	0
EDR Proprietary Records	169

Schools

Table 4.8-5 lists schools within 0.25 mile of the Calabasas Feeder.

Table 4.8-5. Schools in the Calabasas Feeder Study Area

School	Address	Approximate Distance from Calabasas Feeder
Academy for Advancement of Children with Autism	10824 Topanga Canyon Boulevard, Chatsworth (Los Angeles)	0.20 mile northwest
Nevada Avenue Elementary	22120 Chase Street, West Hills (Los Angeles)	20 feet south
Capistrano Avenue Elementary	8118 Capistrano Avenue, West Hills (Los Angeles)	30 feet north
Ingenium Charter	22250 Elkwood Street, Los Angeles	0.20 mile southeast
First United Methodist Preschool	22700 Sherman Way, West Hills (Los Angeles)	0.06 mile east
Enadia Way Elementary	22944 Enadia Way, West Hills (Los Angeles)	0.12 mile west

School	Address	Approximate Distance from Calabasas Feeder
Hamlin Charter Academy	22627 Hamlin Street, West Hills (Los Angeles)	0.12 mile east
Calabash Charter Academy	23055 Eugene Street, Woodland Hills (Los Angeles)	0.22 mile southeast

Public Airports, Airport Land Use Plans, and Private Airstrips

There are no public airports, airport land use plans, or private airstrips within 2 miles of the Calabasas Feeder alignment.

Emergency Response Plans and Emergency Evacuation Plans

The following emergency response and evacuation plans have been identified in the study area for the Calabasas Feeder.

- **City of Los Angeles:** According to the City of Los Angeles General Plan, Safety Element, there is a city disaster route on State Route 27 (SR-27) (Topanga Canyon Boulevard) in the Calabasas Feeder study area. (City of Los Angeles 1996)
- **City of Hidden Hills:** According to the Hidden Hills General Plan, Safety Element, there is an evacuation route on Long Valley Road in the Calabasas Feeder study area. (City of Hidden Hills 1995)

Wildland Fire

There are no high fire hazard severity zones in the Calabasas Feeder study area.

4.8.2.3 Rialto Pipeline

Known Hazardous Materials Sites

According to information obtained from the EDR report, there are multiple hazardous materials sites within 1 mile of the Rialto Pipeline alignment. Table 4.8-6 shows the number of sites identified in federal, state and local, tribal, and EDR proprietary databases.

Table 4.8-6. Known Hazardous Materials Sites in the Rialto Pipeline Study Area

Type of Database	Number of Sites Identified in EDR Report
Federal Records	110
State and Local Records	417
Tribal Records	0
EDR Proprietary Records	61

B.F. Goodrich

Amongst the sites identified in the federal records in Table 4.8-6 is the B.F. Goodrich site at 3196 N. Locust Avenue, Rialto. The site is a 160-acre NPL site with impacted soil and groundwater. Contaminants of concern include perchlorate, trichloroethene, and various other chemicals. The site was used initially by the U.S. Army as a rail and storage facility for bombs, ammunition, and other ordinances. In the late 1950s and early 1960s, the B.F. Goodrich Corporation used the facility for research, development, testing, and production of solid-fuel rocket propellant and solid-fuel missile and rocket motors. The property has also been occupied by defense contractors, fireworks manufacturers, and other users. Various investigations and remediation efforts have been conducted on site. The site is listed as "currently on the Final NPL." The Rialto Pipeline passes approximately 50 feet north of the B.F. Goodrich site along West Casa Grande Drive.

Newmark Ground Water Contamination

The Newmark Ground Water Contamination site is within the Newmark Well Field in San Bernardino. The Newmark Well Field is an area of approximately 700 square feet bounded by 48th Street, Magnolia Drive, Reservoir Drive, and the San Bernardino County Flood Control Channel. Various wells in the Newmark Well Field have been closed since the 1980s due to high levels of halogenated organic chemicals, including tetrachloroethylene and trichloroethylene. Impacts have been attributed to historic dumping occurring in the area from the late 1950s to the early 1960s. Remediation in the area has been ongoing since the late 1980s. The Rialto Pipeline passes through the northwestern portion of the contaminant plume.

Schools

Table 4.8-7 lists schools within 0.25 mile of the Rialto Pipeline.

Table 4.8-7. Schools in the Rialto Pipeline Study Area

School	Address	Approximate Distance from Rialto Pipeline
Kucera Middle	2140 W Buena Vista Drive, Rialto	0.21 mile north
Caryn Elementary	6290 Sierra Crestview Loop, Alta Loma (Rancho Cucamonga)	0.10 mile south
Los Osos High	6001 Milliken Avenue, Rancho Cucamonga	90 feet north
Chaffey College	5885 Haven Avenue, Rancho Cucamonga	100 feet north
Banyan Elementary	10900 Mirador Drive, Rancho Cucamonga	50 feet south
Rancho Heritage	9488 19th Street, Alta Loma (Rancho Cucamonga)	0.16 mile south
Pioneer Junior High	245 W 18th Street, Upland	90 feet north
Pepper Tree Elementary	1045 W 18th Street, Upland	50 feet north
Western Christian Schools	3105 Padua Avenue, Claremont	0.14 mile south
The Webb Schools	1175 W Baseline Road, Claremont	100 feet south

Public Airports, Airport Land Use Plans, and Private Airstrips

The Rialto Municipal Airport is 1.7 miles to the south of the Rialto Pipeline. The Cable Airport is approximately 1 mile south of the Rialto Pipeline. There are no private airstrips in the Rialto Pipeline study area.

Airport Land Use Plan for Rialto Municipal Airport

An airport land use plan (ALUP) is adopted for a public airport to provide for the orderly growth of the airport and the area surrounding the airport. The ALUP for the Rialto Municipal Airport was adopted in 1991 and is called the *Final Comprehensive Land Use Plan: Rialto Municipal Airport* (San Bernardino County ALUC 1991).

According to Figure III-7 of the ALUP for Rialto Municipal Airport, the Rialto Pipeline is just north and outside of the airport's safety zones, which are areas in the vicinity of the airport in which land use restrictions are established to protect the safety of the public. Because the Rialto Pipeline is outside the safety zones, the Rialto Airport ALUP is not applicable to the proposed program.

Airport Land Use Plan for Cable Airport

The ALUP for the Cable Airport was adopted in 1981 and is called the *Cable Airport Comprehensive Airport Land Use Plan* (West Valley Planning Agency ALUC 1981).

According to Figure 3 of the ALUP for Cable Airport, the Rialto Pipeline does not encroach into any of the airport's planning area boundaries. Therefore, the Cable Airport ALUP is not applicable to the proposed program.

Emergency Response Plans and Emergency Evacuation Plans

The following emergency route has been identified in the study area for the Rialto Pipeline.

- **County of San Bernardino**: According to the San Bernardino County General Plan, Safety Element, there are county evacuation routes on Interstate 210 (I-210), Interstate 15 (I-15), Interstate 215 (I-215), and State Route 83 (SR-83) (Euclid Avenue). (San Bernardino County 2014)

Wildland Fire

According to CAL FIRE, the Rialto Pipeline study area passes through a very high fire hazard severity zone in the cities of San Bernardino (CAL FIRE 2008), Claremont, and La Verne (CAL FIRE 2011b).

4.8.2.4 Second Lower Feeder

Known Hazardous Materials Sites

According to information obtained from the EDR report, there are multiple hazardous materials sites within 1 mile of the Second Lower Feeder alignment. Table 4.8-8 shows the number of sites identified in federal, state and local, tribal, and EDR proprietary databases.

Table 4.8-8. Known Hazardous Materials Sites in the Second Lower Feeder Study Area

Type of Database	Number of Sites Identified in EDR Report
Federal Records	667
State and Local Records	2,680
Tribal Records	0
EDR Proprietary Records	280

Montrose Chemical Corp

The Montrose Chemical Corp is at 20201 S. Normandie Avenue, Torrance. It is a 13-acre site that was identified as having impacted soil and groundwater. Historic operations at the site included formulation, grinding, packaging, and distribution of dichloro-diphenyltrichloroethane (also known as DDT). During its 35 years of operation, the Montrose plant released hazardous contaminants into the surrounding environment, including surface soils, surface drainage, stormwater pathways, sanitary sewers, the Pacific Ocean, and groundwater. The U.S. Environmental Protection Agency (EPA) began oversight of the site in 1983. Numerous investigations and remediation efforts have been conducted to address contamination. The site is listed as "currently on the Final NPL." The Second Lower Feeder passes approximately 0.08 mile south of the Montrose Chemical Corp site plume.

Schools

Table 4.8-9 lists schools within 0.25 mile of the Second Lower Feeder.

Table 4.8-9. Schools in the Second Lower Feeder Study Area

School	Address	Approximate Distance from Second Lower Feeder
Lakeview Elementary	17510 Lakeview Avenue, Yorba Linda	0.24 mile southeast
Little Friends Preschool	4221 Rose Drive, Yorba Linda	50 feet north
George Key	710 Golden Avenue, Placentia	0.22 mile northwest
Brookhaven Elementary	1851 Brookhaven Avenue, Placentia	50 feet west
El Dorado High	1651 Valencia Avenue, Placentia	20 feet east
Valencia High	500 Bradford Avenue, Placentia	0.10 mile west
Kraemer Middle	645 N. Angelina Drive, Placentia	70 feet west
Sunkist Elementary	500 N. Sunkist Street, Anaheim	20 feet east
South Junior High	2320 E. South Street, Anaheim	50 feet south
Theodore Roosevelt Elementary	1600 E. Vermont Avenue, Anaheim	30 feet south
Palm Lane Elementary	1646 W. Palm Lane, Anaheim	0.16 mile south
Loara High	1765 W. Cerritos Avenue, Anaheim	0.22 mile south
Gilbert High	1800 W. Ball Road, Anaheim	20 feet south
Magnolia High	2450 W. Ball Road, Anaheim	20 feet south
Dale Junior High	900 S. Dale Avenue, Anaheim	90 feet north

School	Address	Approximate Distance from Second Lower Feeder
Hansen Elementary	1300 S. Knott Avenue, Anaheim	0.09 mile south
Cypress High	9801 Valley View Street, Cypress	0.14 mile north
Los Alamitos High	3591 Cerritos Avenue, Los Alamitos	0.18 mile south
Keller Elementary	7020 E. Brittain Street, Long Beach	0.06 mile north
Henry K-8	3720 Canehill Avenue, Long Beach	50 feet north
Burcham Elementary	5610 E. Monlaco Road, Long Beach	0.20 mile south
Long Beach City College	4901 E. Carson Street, Long Beach	0.20 mile northwest
Charles Evans Hughes Middle	3846 California Avenue, Long Beach	50 feet north
Longfellow Elementary	3800 Olive Avenue, Long Beach	30 feet north
Los Cerritos Elementary	515 W San Antonio Drive, Long Beach	50 feet northwest
Rancho Dominguez Preparatory	4110 Santa Fe Avenue, Long Beach	50 feet north
Del Amo Elementary	21228 Water Street, Carson	0.25 mile north
Carnegie Middle	21820 Bonita Street, Carson	50 feet north
Bonita Street Elementary	21929 Bonita Street, Carson	30 feet north
Saint Philomena	21832 S Main Street, Carson	0.06 mile north
White Middle	22102 S Figueroa School, Carson	40 feet south
Meyler Street Elementary	1123 W 223rd Street, Torrance	0.13 mile south
Narbonne High	24300 S Western Avenue, Harbor City	50 feet east
Harbor City Elementary	1508 254th Street, Harbor City	0.20 mile east

Public Airports, Airport Land Use Plans, and Private Airstrips

The Joint Forces Training Base Los Alamitos is 1.2 miles south of the Second Lower Feeder. The pipeline runs through the northern portion of the Long Beach Municipal Airport. The Torrance Municipal Airport is 1.2 miles west of the Second Lower Feeder.

Airport Environs Land Use Plan for Joint Forces Training Base Los Alamitos

The ALUP for the Joint Forces Training Base Los Alamitos is the *Airport Environs Land Use Plan for Joint Forces Training Base Los Alamitos* adopted in 2002 (ALUC of Orange County 2015).

According to Appendix D of the ALUP for the Joint Forces Training Base Los Alamitos, the Second Lower Feeder is not within the airport's runway protection zones or clear zones, but is within a notification area. The notification areas are established to ensure that structures that may affect day-to-day airport operations are not built in their vicinities.

Los Angeles County Airport Land Use Plan

The *Los Angeles County Airport Land Use Plan* covers numerous airports in Los Angeles County, including Long Beach Municipal Airport (Los Angeles County ALUC 2004).

According to the Airport Influence Area map for the Long Beach Municipal Airport in the ALUP, the Second Lower Feeder crosses the northern portion of the airport property, within the airport's planning boundary/airport influence area and a runway protection zone. Runway protection zones are intended to provide for the unobstructed passage of landing aircraft through the above airspace. These zones are the most critical safety areas under the approach paths and should be kept free of all obstructions. No structures or congregation of people are allowed within runway protection zones.

Emergency Response Plans and Emergency Evacuation Plans

The following emergency response and evacuation plans have been identified in the study area for the Second Lower Feeder.

- **City of Lakewood:** According to the City of Lakewood General Plan, Safety Element, all city arterials are recognized as primary evacuation routes. (City of Lakewood 1995)
- **City of Carson:** According to the City of Carson, Safety Element, there are city evacuation routes on Carson Street, Santa Fe Avenue, Alameda Street, Wilmington Avenue, Avalon Boulevard, Main Street, Figueroa Street, and Broadway in the Second Lower Feeder study area. (City of Carson 1982)
- **City of Los Angeles:** According to the City of Los Angeles General Plan, Safety Element, Normandie Avenue and Vermont Avenue are city disaster routes in the Second Lower Feeder study area. (City of Los Angeles 1996)
- **City of Lomita:** According to the City of Lomita General Plan, Safety Element, city evacuation routes are located on Pacific Coast Highway, Western Avenue, Narbonne Avenue, and Lomita Boulevard in the Second Lower Feeder study area. (City of Lomita 1998)
- **City of Rolling Hills Estates:** According to the Rolling Hills Estates General Plan, Safety Element, city emergency evacuation routes are located on Palos Verdes Drive East and Palos Verdes Drive North in the Second Lower Feeder study area. (City of Rolling Hills Estates 1992)

Wildland Fire

According to CAL FIRE, the Second Lower Feeder study area passes through very high fire hazard severity zones in the cities of Yorba Linda (CAL FIRE 2011a) and Rolling Hills Estates (CAL FIRE 2011b).

4.8.2.5 Sepulveda Feeder

Known Hazardous Materials Sites

According to information obtained from the EDR report, there are multiple hazardous materials sites within 1 mile of the Sepulveda Feeder alignment. Table 4.8-10 shows the number of sites identified in federal, state and local, tribal, and EDR proprietary databases.

Table 4.8-10. Known Hazardous Materials Sites in the Sepulveda Feeder Study Area

Type of Database	Number of Sites Identified in EDR Report
Federal Records	1,077
State and Local Records	3,594
Tribal Records	0
EDR Proprietary Records	683

Del Amo

The Del Amo site is a 280-acre NPL site in the city of Los Angeles that was identified in the EDR report as having impacted groundwater. A synthetic rubber manufacturing facility operated at the site from the early 1940s to the early 1970s. A groundwater investigation conducted in 1998 identified multiple areas of concern connected to the on-site groundwater contamination. Contaminants of concern have included various volatile organic compounds and semi-volatile organic compounds such as benzene, toluene, ethylbenzene, and napthalene. Numerous investigations and remediation efforts have been conducted to address contamination. The site is listed as "currently on the Final NPL." The Sepulveda Feeder passes approximately 0.8 mile west of the Del Amo site.

Montrose Chemical Corp

See Section 4.8.2.4 for a description of the Montrose Chemical Corp site. The Sepulveda Feeder passes approximately 0.13 mile west of the Montrose Chemical Corp site plume.

Schools

Table 4.8-11 lists schools within 0.25 mile of the Sepulveda Feeder.

Table 4.8-11. Schools in the Sepulveda Feeder Study Area

School	Address	Approximate Distance from Sepulveda Feeder
Knollwood Elementary	11822 Gerald Avenue, Granada Hills	0.06 mile east
John F. Kennedy High	11254 Gothic Avenue, Granada Hills	0.25 mile east
Tulsa Street Elementary	10900 Hayvenhurst Avenue, Granada Hills	20 feet east
Saint John Baptist de la Salle	16535 Chatsworth Street, Granada Hills	20 feet east
Mayall Street Elementary	16701 Mayall Street, North Hills (Los Angeles)	0.08 mile west
Saint Bridget of Sweden	7120 Whitaker Avenue, Lake Balboa (Los Angeles)	0.23 mile west
Berkeley Hall	16000 Mulholland Drive, Los Angeles	0.08 mile west
Milken Community Middle	15900 Mulholland Drive, Los Angeles	0.08 mile east
Milken Community High	15800 Zeldins Way, Los Angeles	0.15 mile east
Daniel Webster Middle	11330 Graham Place, Los Angeles	0.23 mile west
Clover Avenue Elementary	11020 Clover Avenue, Los Angeles	0.12 mile east
Charnock Road Elementary	11133 Charnock Road, Los Angeles	30 feet east

School	Address	Approximate Distance from Sepulveda Feeder
Culver City High	4401 Elenda Street, Culver City	0.18 mile northeast
Frank D. Parent K-8	5354 West 64th Street, Inglewood.	30 feet south
La Tijera Elementary	1415 N. La Tijera Boulevard, Inglewood	30 feet north
Centinela Elementary	1123 N. Marlborough Avenue, Inglewood	0.13 mile south
Freeman Elementary	2602 W. 79th Street, Inglewood	50 feet west
El Nido Family Center	2152 W. Manchester Avenue, Los Angeles	50 feet east
Saint Eugene	9521 Haas Avenue, Los Angeles	50 feet east
Century Park Elementary	10935 Spinning Avenue, Inglewood	0.07 mile west
Cimarron Avenue Elementary	11559 Cimarron Avenue, Hawthorne	0.06 mile east
Purche Avenue Elementary	13210 Purche Avenue, Gardena	0.06 mile west
Junipero Serra High	14830 S. Van Ness Avenue, Gardena	30 feet east
One Hundred Fifty-Sixth Street	2100 W. 156th Street, Gardena	50 feet east
Lincoln Elementary	2418 166th Street, Torrance	50 feet west
Casimir Middle	17220 Casimir Avenue, Torrance	0.06 mile west
Arlington Elementary	17800 Van Ness Avenue, Torrance	30 feet east

Public Airports, Airport Land Use Plans, and Private Airstrips

The Sepulveda Feeder runs parallel and adjacent to the western side of the Van Nuys Airport. The Santa Monica Municipal Airport is approximately 1.1 miles west of the Sepulveda Feeder. The Hawthorne Municipal Airport is 0.5 mile west of the Sepulveda Feeder. There are no private airstrips in the Sepulveda Feeder study area.

Los Angeles County Airport Land Use Plan

Van Nuys Airport, Santa Monica Municipal Airport, and Hawthorne Airport are all covered by the *Los Angeles County Airport Land Use Plan*, adopted in 1991 (Los Angeles County ALUC 2004).

According to the ALUP's Airport Influence Area map for the Van Nuys Airport, the Sepulveda Feeder is in the airport's planning boundary/airport influence area, within the northern and southern runway protection zones. As discussed in Section 4.8.2.4 for the Long Beach Airport, runway protection zones are intended to provide for the unobstructed passage of landing aircraft through the above airspace. These zones are the most critical safety areas under the approach paths and should be kept free of all obstructions. No structures or congregation of people are allowed within runway protection zones.

According to the ALUP's Airport Influence Maps for Santa Monica Municipal Airport and Hawthorne Municipal Airport, the Second Lower Feeder is not within either airport's planning boundaries. Therefore, the sections of the ALUP for these airports are not applicable to the proposed program.

Emergency Response Plans and Emergency Evacuation Plans

The following evacuation routes have been identified in the study area for the Sepulveda Feeder.

- **Inglewood:** According to the Inglewood General Plan, Safety Element, city evacuation routes are located on La Cienega Boulevard, East Florence Avenue, Crenshaw Boulevard, and South Van Ness Avenue in the Sepulveda Feeder study area. (City of Inglewood 1995)

Wildland Fire

According to CAL FIRE, the Sepulveda Feeder study area passes through a high fire hazard severity zone in the Westbridge-Canyonback Wilderness Park (CAL FIRE 2011b).

4.8.3 Regulatory Framework

This section describes the plans, policies, and regulations related to hazards and hazardous materials that are applicable to the proposed program.

4.8.3.1 Federal

Resource Conservation and Recovery Act (42 U.S.C. § 6901 et seq.)

Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §6901 et seq. The RCRA was established in 1976 to protect human health and the environment, reduce waste, conserve energy and natural resources, and eliminate generation of hazardous waste. Under the authority of the RCRA, the regulatory framework for managing hazardous waste, including requirements for entities that generate, store, transport, treat, and dispose of hazardous waste, is found in 40 CFR 260–299.

Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. § 103)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as "Superfund," was enacted by Congress on December 11, 1980. This law (42 U.S.C. 103) provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA establishes requirements concerning closed and abandoned hazardous waste sites, provides for liability of persons responsible for releases of hazardous waste at these sites, and establishes a trust fund for cleanup when no responsible party can be identified. CERCLA also enabled revision of the National Contingency Plan (NCP). The NCP (Title 40, CFR Part 300) provides the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants. The NCP also established the NPL. CERCLA was amended by the Superfund Amendments and Reauthorization Act on October 17, 1986.

Clean Air Act (42 U.S.C. § 7401 et seq.)

The Clean Air Act was first enacted in 1963 but has been amended numerous times in subsequent years (1967, 1970, 1977, and 1990). The act establishes the National Ambient Air Quality Standards and specifies future dates for achieving compliance. The Clean Air Act also mandates that the states submit and implement State Implementation Plans for local areas not meeting those standards. The plans must include pollution control measures that demonstrate how the standards will be met.

Clean Water Act (33 U.S.C. 1251 et seq.)

The Clean Water Act is the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The Clean Water Act prohibits any discharge of pollutants into the nation's waters unless specifically authorized by a permit.

Toxic Substance Control Act (15 U.S.C. § 2601 et seq.)

The Toxic Substances Control Act became law on October 11, 1976. The act authorized EPA to secure information on all new and existing chemical substances, as well as to control any of the substances that were determined to cause unreasonable risk to public health or the environment.

Department of Transportation Hazardous Materials Regulations (49 CFR 100–185)

U.S. Department of Transportation Hazardous Materials Regulations cover all aspects of hazardous materials packaging, handling, and transportation. Parts 107 (Hazard Materials Program), 130 (Oil Spill Prevention and Response), 172 (Emergency Response), 173 (Packaging Requirements), 174 (Rail Transportation), 176 (Vessel Transportation), 177 (Highway Transportation), 178 (Packaging Specifications), and 180 (Packaging Maintenance) are examples.

Hazardous Materials Transportation Uniform Safety Act of 1990 (Public Law 101-615)

Congress enacted the Hazardous Materials Transportation Uniform Safety Act in 1990 to clarify conflicting state, local, and federal hazardous materials transportation regulations. The act requires the Secretary of Transportation to promulgate regulations for the safe transport of hazardous material in intrastate, interstate, and foreign commerce. The Secretary also retains authority to designate materials as hazardous when they pose unreasonable risks to health, safety, or property. The statute includes provisions to encourage uniformity among different state and local highway routing regulations, to develop criteria for the issuance of federal permits to motor carriers of hazardous materials, and to regulate the transport of radioactive materials.

4.8.3.2 State

California Public Resources Code, Section 21151.4

Section 21151.4 of the California Public Resources Code states that an EIR shall not be certified and a negative declaration shall not be approved for any project within 1/4 of a mile of a school involving the construction or alteration of a facility that might reasonably be anticipated to emit hazardous air emissions, handle extremely hazardous air emissions, or handle an extremely hazardous substance or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code.

Porter-Cologne Water Quality Control Act (Cal. Water Code § 13000 et seq.)

Sites that have contaminated groundwater fall within the jurisdiction of the Regional Water Quality Control Board and are subject to the requirements of the Porter-Cologne Water Quality Control Act.

Contaminated groundwater that is proposed to be discharged to surface waters or to a publicly owned treatment works would be subject to the applicable provisions of the Clean Water Act, including permitting and possibly pretreatment requirements. A National Pollutant Discharge Elimination System permit is required to discharge pumped groundwater to surface waters, including local storm drains, in accordance with California Water Code Section 13260. Additional restrictions may be imposed upon discharges to water bodies that are listed as impaired under Section 303(d) of the Clean Water Act.

Hazardous Materials Release Response Plans and Inventory Law (Cal. Health and Safety Code § 25500 et seq.)

Business and area plans were established to protect public health and safety and the environment from the handling and release or threatened release of hazardous materials. The establishment of a statewide environmental reporting system for these plans is a statewide requirement. Information related to the location, type, quantity, and health risks of hazardous materials handled, used, stored, or disposed of in the state is required to be submitted to firefighters, health officials, planners, public safety officers, health care providers, regulatory agencies, etc. The information provided by business and area plans is necessary in order to prevent or mitigate the damage to the health and safety of persons and the environment from the release or threatened release of hazardous materials.

Hazardous Waste Control Act (Cal. Health and Safety Code § 25100 et seq.)

The Department of Toxic Substances Control is responsible for the enforcement of the Hazardous Waste Control Act (California Health and Safety Code Section 25100 et seq.), which creates the framework under which hazardous wastes are managed in California. The law provides for the development of a state hazardous waste program that administers and implements the provisions of the federal RCRA cradle-to-grave waste management system in California. It also provides for the designation of California-only hazardous waste and development of standards that are equal to or, in some cases, more stringent than federal requirements.

Safe Drinking Water and Toxic Enforcement Act (Proposition 65, Cal. Health and Safety Code § 25249.5 et seq.)

The Safe Drinking Water and Toxic Enforcement Act of 1986 states that no person in the course of doing business shall knowingly discharge or release a chemical known to the state to cause cancer or reproductive toxicity into water or onto or into land where such chemical passes or probably will pass into any source of drinking water.

Cortese List Statute (Cal. Gov. Code § 65962.5 et seq.)

California Government Code 65962.5 (commonly referred to as the Cortese List) includes Department of Toxic Substances Control–listed hazardous waste facilities and sites, Department of Health Services lists of contaminated drinking water wells, sites listed by the State Water Resources Control Board as having underground storage tank leaks or a discharge of hazardous wastes or materials into the water or groundwater, and lists from local regulatory agencies of sites with a known migration of hazardous waste/material.

4.8.3.3 Local

Table 4.8-12 lists the applicable hazards and hazardous materials regulations for the proposed program.

Table 4.8-12. Applicable Regulations Related to Hazards and Hazardous Materials for the Proposed Program

Title of Plan, Policy, Regulation (date)	Applicable Regulation
Allen-McColloch Pipeline	
County of Orange General Plan Safety Element 2014	**Goals, Objectives, and Policies 2:** To respond to all emergency incidents to oversee and ensure that these incidents involving hazardous waste and medical waste are properly mitigated. **Goals, Objectives, and Policies 6:** To implement and administer all mandated laws, regulations, and ordinances relating to hazardous materials, hazardous waste, and medical waste.
City of Yorba Linda General Plan Public Safety Element 1993	**Goal 7:** Protect public health, safety and welfare and the environment from exposure to hazardous materials and waste.
City of Anaheim General Plan Safety Element 2004	**Goal 4.1:** Decrease the risk of exposure for life, property and the environment to hazardous materials and hazardous waste.
City of Orange General Plan Public Safety Element 2010	**Goal 4.0:** Minimize risks to life, property, and the environment associated with producing, using, storing, or transporting hazardous materials.
City of Tustin General Plan Public Safety Element 2013	**Goal 4:** Reduce the risk to the community's inhabitants from exposure to hazardous materials and wastes.
City of Irvine General Plan Safety Element 2012	**Objective J-2 Policy (d):** Continue to maintain and implement the City of Irvine's Emergency Plan.
City of Lake Forest General Plan Safety and Noise Element 1994	**Policy 2.2:** Reduce the risk to the community from the use and transport of hazardous materials.
Calabasas Feeder	
Safety Element of the Los Angeles City General Plan 1996	**VII-24:** Enforce the requirement that industrial facilities and construction sites have adequate Hazardous Materials Handling and Spill Response Plans to ensure that the goals of pollutant control are consistent with the City's public safety needs and the General Plan's water quality objectives.
City of Calabasas 2030 General Plan Safety Element	**Policy VII-21:** Manage activities within Calabasas involving the transport, use, store or dispose of hazardous materials in a responsible manner that protects public health, safety, and the environment.
Rialto Pipeline	
City of San Bernardino General Plan Safety Chapter 2005	**Goal 10.1:** Protect the environment, public health, safety, and welfare from hazardous wastes. **Goal 10.12:** Ensure the availability and effective response of emergency services in the event of a disaster.

Title of Plan, Policy, Regulation (date)	Applicable Regulation
County of San Bernardino General Plan Safety Element 2007	**Goal S2:** The County will minimize the generation of hazardous waste in the County and reduce the risk posed by storage, handling, transportation, and disposal of hazardous wastes. **Goal S 9:** The County's emergency evacuation routes will quickly and efficiently evacuate all residents in the event of wildland fires and other natural disasters, and will ensure adequate access of emergency vehicles to all communities.
City of Rialto General Plan The Safety and Noise Chapter 2010	**Goal 5-4:** Protect the health and welfare of the public, environment, and economy by providing for the safe and responsible management of hazardous materials and wastes **Goal 5-7:** Maintain a high level of emergency response capability.
City of Fontana General Plan Safety Element 2003	Goal 5 Policy 1: The City shall strive to reduce the potential for residents, workers, and visitors to Fontana to being exposed to hazardous materials and wastes.
Rancho Cucamonga General Plan Public Health and Safety 2010	**Goal PS-3**: Protect City residents, businesses, and employees from the potential hazards associated with the use, storage, transport, and disposal of hazardous materials in and through Rancho Cucamonga.
City of Upland General Plan Safety Element 2015	**Goal SAF-5:** A community protected from harmful effects of hazardous materials and waste. **Goal SAF-6:** Risks associated with aircraft operations at Cable Airport and Ontario International Airport are minimized.
City of Claremont General Plan Public Safety 2009	**Goal 6-2:** Minimize the risk of injury loss of life and damage to property resulting from natural and human-caused disasters and conditions. **Goal 6-7:** Minimize the risks associated with urban and wildland fires. **Goal 6-8:** Minimize the improper storage and dumping of hazardous waste materials.
County of Los Angeles General Plan 2015	**Goal S 4:** Maintain effective County emergency response management capabilities.
City of La Verne General Plan Public Safety 1998	**Goal 3 Policy 3.1:** Protect the public from the dangers of hazardous waste use and transport.
City of San Dimas General Plan Safety Element 1991	**Objective 1.3:** Provide for the safe use and transportation of hazardous materials and wastes.
Second Lower Feeder	
County of Orange General Plan Safety Element 2014	**Goals, Objectives, and Policies 6)**: To implement and administer all mandated laws, regulations, and ordinances relating to hazardous materials, hazardous waste, and medical waste.
City of Yorba Linda General Plan/EIR Public Safety Element 1993	**Goal 8:** Limit the transport of hazardous materials through the City of Yorba Linda in conformance with the State and County HAZMAT program.
City of Anaheim General Plan Safety Element 2004	**Goal 4.1:** Decrease the risk of exposure for life, property and the environment to hazardous materials and hazardous waste.

Title of Plan, Policy, Regulation (date)	Applicable Regulation
Buena Park General Plan Safety Element 2010	**Goal SAF-4:** Minimized threat to the public health and safety and to the environment posed by a release of hazardous materials.
Cypress General Plan Safety Element 2000	**SAF-3:** Minimize risks to life and property associated with the handling, transporting, treating, generating, and storing of hazardous materials
Los Alamitos General Plan Public Facilities and Safety Element 2015	**Policy 2.6 Hazardous materials:** The use and storage of hazardous materials shall comply with applicable federal, state, and local laws to prevent and mitigate hazardous materials releases.
City of Long Beach General Plan Program Public Safety Element 1975	**Protection Goal 2:** Protect existing land uses from the intrusion of safety hazards. **Protection Goal 3:** Reduce public exposure to safety hazards.
City of Lakewood Comprehensive General Plan Safety Element 1996	**Goal 7.0:** To ensure that the generation of hazardous waste is reduced, through elimination or recycling, to maximum extent feasible.
City of Carson General Plan Safety Element 1981	**SAF-4:** Minimize the threat to the public health and safety and to the environment posed by a release of hazardous materials.
Safety Element of the Los Angeles City General Plan 1996	**Goal 1:** A city where potential injury, loss of life, property damage and disruption of the social and economic life of the City due to fire, water related hazard, seismic event, geologic conditions or release of hazardous materials disasters is minimized.
City of Torrance General Plan Safety Element 2010	**Objective S.4:** To reduce the risk associated with the use, storage, transport, or disposal of hazardous waste.
Sepulveda Feeder	
Safety Element of the Los Angeles City General Plan 1996	**VII-24:** Enforce the requirement that industrial facilities and construction sites have adequate Hazardous Materials Handling and Spill Response Plans to ensure that the goals of pollutant control are consistent with the City's public safety needs and the General Plan's water quality objectives.
Gardena General Plan Community Safety Element 2006	**PS Goal 3:** Protect public health, safety and the environment from exposure to hazardous materials and other dangers.
Inglewood General Plan Safety Element 1995	**Safety Goal 5:** Reduce the adverse impacts of hazardous materials.
City of Torrance General Plan Safety Element 2010	**Objective S.4:** To reduce the risk associated with the use, storage, transport, or disposal of hazardous waste.

4.8.4 Thresholds and Methodology

4.8.4.1 Thresholds of Significance

Table 4.8-13 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to hazards and hazardous materials. These thresholds are addressed in the PEIR.

Table 4.8-13. CEQA Thresholds for Hazards and Hazardous Materials

Threshold *Would the proposed program:*
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?
c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?
d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?
e. For a project located within an airport land use plan or, where such plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
h. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including areas where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

4.8.4.2 Methodology

Transport, Use, or Disposal of Hazardous Materials

The potential transport, use, or disposal of hazardous materials during rehabilitation projects included in the program is addressed in this analysis. The analysis considers the requirement of all projects to comply with existing regulations for the transport, use, and disposal of hazardous materials, and Metropolitan's standard requirements for contractors involved in rehabilitation projects.

Risk of Upset

The potential risk of a foreseeable upset or accident occurring during rehabilitation that could release hazardous materials is addressed in this analysis. The analysis considers the requirement of all projects to comply with existing regulations for the transport, use, and disposal of hazardous

materials, and Metropolitan's standard requirements for contractors involved in rehabilitation projects.

Risk to Schools

Schools within 0.25 mile of the pipeline alignments are identified in Section 4.8.2. The potential of projects in the proposed program to expose these schools to hazardous emissions, substances, or wastes is evaluated in this analysis. The analysis considers the requirement of all projects to comply with existing regulations for the transport, use, and disposal of hazardous materials, and Metropolitan's standard requirements for contractors involved in rehabilitation projects.

Exposure to Existing Hazardous Sites

Existing known hazardous materials sites are summarized in Section 4.8.2. The potential of projects in the proposed program to create a significant hazard by exposing the public or environment to the effects of these sites is evaluated at a program level in this analysis. The analysis considers the requirement of all projects to comply with existing regulations for the transport, use, and disposal of hazardous materials, and Metropolitan's standard requirements for contractors involved in rehabilitation projects. Once rehabilitation locations are identified, a project-level analysis of surrounding sites would be required to determine the likelihood of potential impacts affecting the program.

Public Airports

Existing public use airports are identified in Section 4.8.2. The potential risks of working within 2 miles of a public airport and within an ALUP during rehabilitation are evaluated.

Private Airstrips

Existing private airstrips within 2 miles of the pipelines are identified in Section 4.8.2. The potential risks of working in proximity of a private airstrip during rehabilitation are evaluated.

Emergency Response Plans/Emergency Evacuation Plans

Evacuation routes associated with existing emergency response plans and emergency evacuation plans are identified in Section 4.8.2. The potential of the projects included in the proposed program to impair the implementation of or physically interfere with these plans is evaluated.

Wildland Fires

Locations of pipelines in areas with risk of wildland fires are identified in Section 4.8.2. The potential risks of working within these risk areas during rehabilitation are evaluated.

4.8.5 Impacts Analysis

4.8.5.1 Program Analysis

Threshold HAZ-A: Create a Significant Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials

Construction activities associated with the proposed program would require transport, use, and disposal of hazardous materials such as solvents, paints, oils, grease, and fuels. Such transport, use, and disposal must be compliant with applicable regulations such as the regulations discussed in Section 4.8.3, *Regulatory Framework*. Although solvents, paints, oils, grease, and fuels would be transported, used, and disposed of during the construction phase, these materials are typically used in construction projects and would not represent the transport, use, and disposal of acutely hazardous materials. Additionally, and as part of the proposed program, Metropolitan's contractors would implement the following environmental commitments during rehabilitation activities.

- Rehabilitation activities would incorporate Best Management Practices (BMPs), including a Stormwater Pollution Prevention Plan (SWPPP), as applicable, for sediment and erosion control, pollutant treatment, outlet protection, and general site management.
- A Spill Emergency Response Plan would be prepared prior to the start of construction and be responsible for ensuring that hazardous materials and waste are handled, stored, and disposed of in accordance with applicable federal and state laws and regulations. All materials and fuels within the staging areas and excavation sites and work zones would be stored in a manner that reduces the potential for spills.

Due to the implementation of these environmental commitments and because compliance with existing regulations is mandatory, the proposed program would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Impacts would be less than significant.

After rehabilitation is complete, the operation of the pipelines in the proposed program would be the same as the existing condition. Therefore, there would be no impacts related to hazardous materials associated with operation of the program pipelines.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold HAZ-B: Create a Significant Hazard to the Public or the Environment through Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment

As discussed in Threshold HAZ-A, construction activities associated with the proposed program would require transport, use, and disposal of hazardous materials such as solvents, paints, oils, grease, and fuels, which could result in upset or accidents that could release hazardous materials into the environment. Such transport, use, and disposal must be compliant with applicable regulations such as the regulations discussed in Section 4.8.3, *Regulatory Framework*. As discussed above, the proposed program would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; therefore, the risk of upset and accidents involving the release of hazardous materials into the environment would be less than significant.

After rehabilitation is complete, the operation of the pipelines in the proposed program would be the same as the existing condition. Therefore, there would be no impacts related to risk of upset and accidents involving the release of hazardous materials into the environment associated with operation of the program pipelines.

(See Threshold HAZ-D for potential release of hazardous materials related to existing known and unknown hazardous materials sites.)

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold HAZ-C: Emit Hazardous Emissions or Involve Handling Hazardous or Acutely Hazardous Materials, Substances, or Waste within 0.25 Mile of an Existing or Proposed School

As discussed in Section 4.8.2, *Existing Conditions*, there are multiple schools within 0.25 mile of the program pipelines. In addition, Metropolitan may use portions of school sites, including playing fields or school parking lots, as construction staging areas.

Although rehabilitation would involve hazardous materials typical of a construction project (as discussed above under Threshold HAZ-A), it is expected that the proposed program would be operated in compliance with the federal, state, and local regulations discussed in Section 4.8.3, *Regulatory Framework*. Additionally, any potential construction-related hazardous releases would be from commonly used materials such as fossil fuels, solvents, and paints and would not include substances listed in 40 CFR 355, Appendix A, Extremely Hazardous Substances and Their Threshold Planning Quantities. Any such releases of commonly used materials would be localized and immediately contained and cleaned up.

See Threshold HAZ-D regarding encountering existing hazardous materials during rehabilitation. As discussed there, it is possible that construction activities related to the proposed program may encounter contaminated media from nearby hazardous materials sites during excavations, potentially exposing the surrounding environment, including nearby schools, to hazardous conditions. These potential impacts would be significant. Implementation of MM HAZ-1 through MM HAZ-4 would reduce potential impacts on the surrounding environment, including school sites within 0.25 mile, to less-than-significant levels.

After rehabilitation is complete, the operation of the pipelines in the proposed program would be the same as the existing condition. Therefore, there would be no impacts on schools associated with operation of the program pipelines.

Mitigation Measures

Impacts that would result from the proposed program would be significant, but implementation of MM HAZ-1 through MM HAZ-4 (see discussion under Threshold HAZ-D) would reduce these impacts so that residual impacts would be less than significant.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM HAZ-1 through MM HAZ-4 would reduce these impacts so that residual impacts would be less than significant.

Threshold HAZ-D: Be Located on a Site That Is Included on a List of Hazardous Materials Sites and, as a Result, Create a Significant Hazard to the Public or the Environment

Rehabilitation activities would encounter numerous sites found in various environmental databases as discussed in Section 4.8.2, *Existing Conditions*. In some cases, the existing pipelines traverse areas within or near NPL sites. It is expected that most industrial and commercial facilities within 1 mile of the pipes that deal with storage, use, and disposal of hazardous materials comply with all appropriate federal, state, and local regulations, such as the regulations discussed in Section 4.8.3, *Regulatory Framework*, to ensure safety of the surrounding public and environment. However, it is possible that construction activities may encounter contaminated media during excavations either at known or unknown sites, resulting in a significant hazard to the construction workers, the public, or the environment. This would be a significant impact. Implementation of MM HAZ-1 through MM HAZ-4 would reduce potential impacts to less-than-significant levels.

After rehabilitation is complete, the operation of the pipelines in the proposed program would be the same as the existing condition. Therefore, there would be no impacts related to hazards to the public or environment associated with operation of the program pipelines.

Mitigation Measures

MM HAZ-1: Project-Level Hazardous Materials Sites Assessment Prior to Construction Activities

To avoid exposure of construction workers, the public, or the environment to previously identified hazardous materials, during design, qualified Metropolitan staff or consultant(s) ~~will~~

~~retain a professional environmental consultant~~ specializing in hazardous materials impact assessment will ~~to~~ conduct a project-level analysis to determine if there are existing hazardous materials sites in the vicinity of the construction site and potential for existing hazardous materials sites to affect construction. This assessment will consist of a search for environmental-related information present in publicly accessible databases. The information will be reviewed to determine if the construction footprint or adjacent properties are listed in the databases. If the construction footprint or adjacent properties are listed in the databases, qualified Metropolitan staff or consultant(s) ~~the professional environmental consultant~~ will determine the potential risk to construction workers, the public, or the environment from rehabilitation activities and identify all necessary avoidance, abatement, remediation, cleanup, disposal, monitoring, reporting, notifications, and/or other measures to prevent significant impacts.

MM HAZ-2: Encountering Unreported Hazardous Materials

To avoid exposure of construction workers, the public, or the environment to unreported hazardous materials in the soil, contractors will be required to inspect any site to be used for excavation, work zones, staging, or other rehabilitation-related activities prior to beginning construction. If odiferous, stained, or discolored soil is encountered, qualified Metropolitan staff or consultant(s) ~~a professional environmental consultant~~ specializing in the identification and handling of hazardous materials will be retained to assess the site. Identification of possible hazardous materials would typically involve soil samples and laboratory analysis. The suspect soil will be isolated, covered, and avoided by construction personnel until analytical results are reviewed by qualified personnel. Soils identified as hazardous or contaminated will be handled, transported, and treated in accordance with all federal, state, and local existing hazardous materials regulations ~~and based the professional environmental consultant's direction~~.

MM HAZ-3: Engineering Controls and Best Management Practices during Construction

To minimize human exposure to potential contaminants, during construction contractors will employ the use of engineering controls and BMPs. Engineering controls and construction BMPs will include, but are not limited to, the following:

- Contractor employees working on site handling hazardous materials on contaminated media will be certified in the Occupational Health and Safety Administration's 40-hour Hazardous Waste Operations and Emergency Response training.
- Contractors will water or mist soil as it is being excavated and stockpiled or loaded onto transportation trucks.

MM HAZ-4: Encountering Contaminated Groundwater

To avoid exposure of construction workers, the public, or the environment to contaminated groundwater, suspect water removed from excavation areas (but not including dewatering of the pipelines themselves) will be tested by a qualified laboratory ~~professional environmental consultant~~ specializing in the identification ~~and handling~~ of hazardous materials ~~and classified as hazardous or non-hazardous based on laboratory results~~. If groundwater is considered hazardous, Metropolitan will notify the Regional Water Quality Control Board and local Environmental Health agencies regarding assessment and remediation requirements.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM HAZ-1 through MM HAZ-4 would reduce these impacts so that residual impacts would be less than significant.

Threshold HAZ-E: For a Project Located within an Airport Land Use Plan or, Where Such Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport, Result in a Safety Hazard for People Residing or Working in the Project Area

Although the program pipelines are within 2 miles of several public airports, they are not within areas covered by ALUPs, except as described below.

The Second Lower Feeder is within a notification area for the ALUP for the Joint Forces Training Base Los Alamitos. Notification areas are established to ensure that structures that may affect day-to-day airport operations are not built in their vicinities. The proposed program would not include aboveground structures, except for small valve boxes and electrical panels. These structures would not affect airport operations. Therefore, the program would not result in a safety hazard for people residing or working in the vicinity of the Joint Forces Training Base Los Alamitos.

The Second Lower Feeder crosses under a portion of the Long Beach Municipal Airport and is within a runway protection zone. The Sepulveda Feeder runs parallel and adjacent to the western side of the Van Nuys Airport and is within the northern and southern runway protection zones. Runway protection zones are intended to provide for the unobstructed passage of landing aircraft through the above airspace. These zones are the most critical safety areas under the approach paths and should be kept free of all obstructions. No structures or congregation of people are allowed within runway protection zones. If any aboveground rehabilitation activities were to occur in these runway protection zones, construction equipment and/or personnel could interfere with airport operations. Also, where pipelines cross under runway or taxiway areas, there is the potential for below-ground construction activities to affect or be affected by airport operations and safety. Impacts would be significant. Implementation of MM HAZ-5 would reduce potential impacts to less-than-significant levels.

The only permanent aboveground elements of the proposed program would be manhole covers, valve boxes, and electrical panels. If these aboveground elements were located in a runway protection zone, they could interfere with airport operations and safety. Impacts would be significant. Implementation of MM HAZ-6 would reduce potential impacts to less-than-significant levels.

Mitigation Measures

MM HAZ-5 Construction Activities within Runway Protection Zones

During the design phase for any projects in the program within the runway protection zones for Long Beach Municipal Airport or Van Nuys Airport (even where all construction would be accessed from outside the runway protection zones), project engineers will coordinate with the management of Long Beach Municipal Airport (Second Lower Feeder) or Van Nuys Airport (Sepulveda Feeder), as appropriate, to determine the methods of construction that will be necessary to avoid impacts on airport operations and safety. All operations and safety

requirements of the airports will be incorporated into the construction design packages. All necessary requirements will be implemented during construction.

MM HAZ-6 Aboveground Elements in Runway Protection Zones

To avoid airport operations and safety impacts, no permanent aboveground elements of the proposed program, such as manhole covers, valve boxes, or electrical panels, will be located within runway protection zones (at Long Beach Municipal Airport for the Second Lower Feeder and Van Nuys Airport for the Sepulveda Feeder) without prior approval of the management of the appropriate airport.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM HAZ-5 and MM HAZ-6 would reduce these impacts so that residual impacts would be less than significant.

Threshold HAZ-F: For a Project within the Vicinity of a Private Airstrip, Result in a Safety Hazard for People Residing or Working in the Project Area

No private airstrips are in the vicinity of any of the pipelines; therefore, the project would not result in safety hazards to workers involved in the rehabilitation activities associated with the proposed program.

Mitigation Measures

There would be no impacts for the proposed program.

Residual Impacts

No impacts would result from the proposed program, and no mitigation is necessary. Therefore, there would be no residual impacts for the proposed program.

Threshold HAZ-G: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan

As discussed in Section 4.8.2, *Existing Conditions*, in some cases the proposed program pipelines are within street rights-of-way that serve as emergency response routes and/or evacuation routes. If excavation were to take place in roadways that serve as emergency/excavation routes and capacity of the affected streets was reduced during construction (such as reducing four lanes to two lanes), the ability of these streets to serve as emergency/evacuation routes may be impaired. This would be a significant impact during construction. Implementation of MM HAZ-7 would reduce these impacts to less-than-significant levels.

Once rehabilitation is complete, contractors would be required to return the street to pre-construction conditions. Therefore, there would be no long-term impacts on emergency response or evacuation.

Mitigation Measures

MM HAZ-7: Maintaining Emergency/Evacuation Routes

To avoid impacts on emergency/evacuation routes, excavation sites will typically not be placed in roadways that serve as designated emergency/evacuation routes. If such streets cannot be avoided, the contractor will work with the local jurisdiction responsible for the emergency/evacuation routes to maintain adequate capacity. This will be accomplished by utilizing unused portions of the street right-of-way for travel lanes (such as temporarily prohibiting parking, restriping medians or parkway space, or detouring bike lanes) or by detouring the emergency/evacuation route to other roadways during construction. If detours are necessary, appropriate notification of emergency personnel and temporary signage will be used to direct emergency/evacuation traffic during construction.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM HAZ-7 would reduce these impacts so that residual impacts would be less than significant.

Threshold HAZ-H: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Wildland Fires, Including Areas where Wildlands Are Adjacent to Urbanized Areas or where Residences Are Intermixed with Wildlands

Implementation of the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. As discussed in Section 4.8.2, *Existing Conditions*, portions of the Allen-McColloch Pipeline, Rialto Pipeline, Second Lower Feeder, and Sepulveda Feeder exist within CAL FIRE Very High Fire Hazard Severity Zones.

Although fire can be a significant threat in in these areas, people or structures would not be exposed to significant risk of loss, injury, or death due to the proposed program. The proposed program would not include habitable structures and would only bring a small number of people (construction workers) into the fire hazard severity zones during rehabilitation. Therefore, impacts related to exposing people or structures to risks involving wildland fires would be less than significant. (See Threshold HAZ-G regarding emergency/evacuation routes.)

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

4.8.5.2 Cumulative Analysis

The proposed program would be implemented over a long period of time; in many cases, implementation of the projects in the proposed program would occur past the planning horizons of

local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

The proposed program would not have a cumulatively considerable contribution to hazards and hazardous materials impacts. If hazardous materials release were to occur as a result of proposed program implementation, impacts would be site specific (and typically in small, localized quantities) and would not combine with other hazardous material impacts in the surrounding area. In addition, construction activities would be required to follow existing regulations, environmental commitments, and mitigation measures, thus reducing potential impacts on the surrounding environment and negating potential cumulative impacts. Therefore, impacts would not be cumulatively considerable.

Section 4.9
Hydrology and Water Quality

4.9.1 Introduction

This section describes the existing conditions for hydrology and water quality, the regulatory framework associated with hydrology and water quality, the impacts on hydrology and water quality that would result from the proposed program, and the mitigation measures that would reduce these impacts. As noted in the Initial Study, the proposed program would have potentially significant hydrology and water quality impacts.

4.9.2 Existing Conditions

The study area for hydrology and water quality is the pipeline easements or rights-of-way and 0.25 mile on either side of the alignments (a half-mile corridor).

4.9.2.1 Allen-McColloch Pipeline

There are 11 watersheds in Orange County that are grouped by similar characteristics into three Watershed Management Areas: North, Central, and South. The Allen-McColloch Pipeline is located across the North, Central, and South Watershed Management Areas.

The North Watershed Management Area encompasses 376 square miles in northern Orange County and is bordered by Los Angeles County to the north and west and San Bernardino County to the east (OCPW 2011). The three watersheds in this area are the San Gabriel River/Coyote Creek, Anaheim Bay-Huntington Harbour, and the Santa Ana River watersheds. All three watersheds lie within the Santa Ana Regional Water Quality Control Board (RWQCB) boundary.

The Central Watershed Management Area encompasses the entire Newport Bay watershed and the northern portion of the adjacent Newport Coastal Streams watershed and encompasses an area of approximately 154 square miles with overland flows draining toward the Pacific Coast into Newport Bay. The planning area, approximately 40 miles south of Los Angeles and 70 miles north of San Diego, is highly urbanized and is within the jurisdiction of the Santa Ana RWQCB.

The South Watershed Management Area includes the area that encompasses the San Juan Hydrologic Unit. The San Juan Hydrologic Unit is a collection of coastal watersheds that covers 496 square miles in San Diego, Orange, and Riverside counties. The San Juan Hydrologic Unit is naturally divided by major water bodies and represents an important water resource in one of the most arid regions of the nation. It comprises seven major watersheds: (1) Newport Coast, (2) Laguna Coastal Streams, (3) Aliso Creek, (4) Dana Point Coastal Streams (Salt Creek), (5) San Juan Creek, (6) San Clemente Coastal Streams, and (7) San Mateo Creek.

Surface Water Hydrology and Watersheds

The portion of the Allen-McColloch Pipeline in the North Watershed Management Area is within the Santa Ana River watershed (OCPW 2009d). The Santa Ana River watershed is the largest in Orange

County, covering approximately 210 square miles. The river begins almost 75 miles away in the San Bernardino Mountains, crossing central Orange County before emptying into the Pacific Ocean. The river serves as the main tributary to the watershed, with Santiago Creek being the largest tributary within Orange County.

The portion of the Allen-McColloch Pipeline in the Central Watershed Management Area is within the Newport Bay watershed (OCPW 2009b). The Newport Bay watershed drains approximately 152 square miles to the Pacific Ocean within southern Orange County. The watershed encompasses all waters draining to Newport Bay. The principal watercourse of the Newport Bay watershed is San Diego Creek. The main tributary to San Diego Creek is Peters Canyon Wash; smaller tributaries include Serrano Creek, Borrego Canyon Wash, Agua Chinon Wash, Bee Canyon Wash, Sand Canyon Wash, and Bonita Canyon Creek.

The portion of the Allen-McColloch Pipeline in the South Watershed Management Area is within the Aliso Creek and San Juan Creek watersheds (OCPW 2009a, 2009c). Aliso Creek is the main water body in the Aliso Creek watershed; it is a long, narrow coastal canyon with headwaters in the Cleveland National Forest. The Aliso Creek watershed is approximately 35 square miles. The creek ultimately discharges into the Pacific Ocean at Aliso Beach. The Aliso Creek watershed is mainly an urbanized area, with the exception of the Cleveland National Forest in the upper watershed and the Aliso Wood Canyon Regional Park in the lower watershed. The San Juan Creek watershed covers approximately 160 square miles; its main tributary, San Juan Creek, originates in the Santa Ana Mountains district of the Cleveland National Forest in the easternmost part of Orange County. The Arroyo Trabuco and Oso Creek are smaller tributaries.

Local Surface Water Hydrology

The northern portion of the Allen-McColloch Pipeline is situated on pervious surfaces associated with a golf course and natural lands. The alignment then follows street rights-of-way and developed areas (impervious surface) until crossing the Santa Ana River (Figure 4.9-1). The alignment crosses the Santa Ana River Reach 2 and adjacent recharge basins near Imperial Highway. The Santa Ana River Reach 2 and adjacent recharge basins in this location are natural soft bottom (pervious surface) to allow for recharge from the river. The alignment then follows street rights-of-way and developed areas (impervious surface), with the exception of few pervious hillside areas, until reaching Santiago Creek (Figure 4.9-1). The alignment crosses Santiago Creek Reach 1 near the intersection of Santiago Canyon Road and Cannon Street. Santiago Creek in this location is natural soft bottom (pervious surface) to allow for recharge from the creek. The remainder of the alignment typically follows street rights-of-way and developed areas (impervious surface).

The central portion of the Allen-McColloch Pipeline alignment is primarily situated on pervious surfaces associated with Peters Canyon Reservoir and agricultural and undeveloped lands until reaching the city of Lake Forest. Several washes are crossed through the agricultural and undeveloped lands including Borrego Canyon Wash, Serrano Creek, Aliso Creek, and smaller unnamed washes (Figure 4.9-1). These washes are natural soft bottom (pervious surface) where crossed by the Allen-McColloch Pipeline. The alignment then generally follows street rights-of-way and developed areas (impervious surface), with the exception of a few pervious hillside areas.

The southern portion of the Allen-McColloch Pipeline is primarily situated on impervious surfaces associated with street rights-of-way and developed areas.

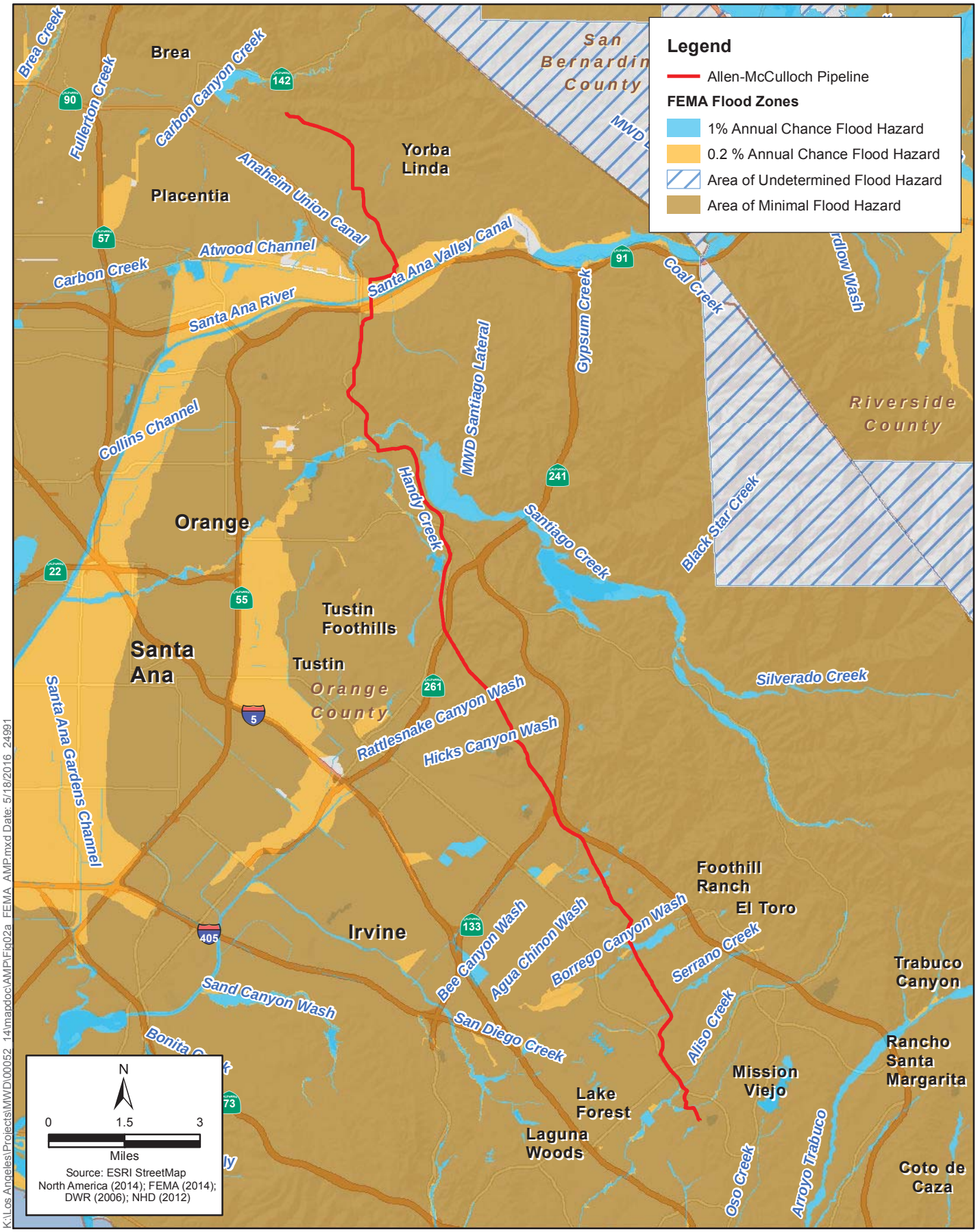


Figure 4.9-1
FEMA Flood Zones near the Allen-McColloch Pipeline
Metropolitan PCCP Program

The majority of the Allen-McColloch Pipeline alignment is within an area of minimal flood hazard (Figure 4.9-1). Where the alignment crosses the above-mentioned water bodies, the flood zone risk elevates to the 1 and 2 percent annual chance flood hazard.

Groundwater Hydrology

The northern portion of the Allen-McColloch Pipeline is situated over the Orange County groundwater basin (DWR 2013). The Orange County Basin is bounded by Coyote Hills and Chino Hills on the north, the Santa Ana Mountains on the northeast, the San Joaquin Hills on the south, and the Pacific Ocean and the Newport-Inglewood fault zone on the southwest (DWR 2004e). The Orange County Basin is separated from the Central Basin along Coyote Creek and the county line, although there is no physical barrier between the two basins. The Newport-Inglewood fault zone acts as a barrier to flow from the ocean along most of its length in Orange County except at ancient river-crossing gaps, most notably the Alamitos Gap along the Los Angeles County line and the Talbert Gap in Huntington Beach and Costa Mesa.

Orange County Water District (OCWD) currently owns and operates more than 1,000 acres of groundwater recharge ponds in and adjacent to the Santa Ana River and Santiago Creek. Water sources used for recharge include Santa Ana River baseflow and stormflow, Santiago Creek flows, imported water from Metropolitan and from the upper Santa Ana River watershed, and previously treated water from OCWD.

Water Quality

Under Section 303(d) of the Clean Water Act (CWA), the State Water Resources Control Board (SWRCB) is required to develop a list of impaired water bodies that do not meet water quality standards after the minimum technology-based effluent limitations have been implemented for point sources.[1] Lists are to be priority ranked for development of a total maximum daily load (TMDL). A TMDL is a calculation of the total maximum amount of a pollutant that a water body can receive on a daily basis and still safely meet water quality standards, established by the U.S. Environmental Protection Agency (EPA). The 303(d) listed impairments of receiving waters within the Allen-McColloch Pipeline study area and downstream receiving waters are shown in Table 4.9-1.

[1] A *point source* is an identifiable source of pollution where pollutants are discharged, such as a pipe, ditch, ship, factory, or sewage treatment plant. *Non-point sources* are sources of pollution that are widely distributed in the environment, such as land runoff and precipitation.

Table 4.9-1. Overview of Water Quality Impairments in the Allen-McColloch Pipeline Study Area

Water Body	Listed Impairments	Potential Sources	Estimated EPA TMDL Completion
Santa Ana River Reach 2	Indicator Bacteria	Source Unknown	2021
Borrego Creek	Ammonia (unionized) Indicator Bacteria	Other Urban Runoff Unknown Nonpoint Source	2021
Serrano Creek	Ammonia (unionized) Indicator Bacteria pH	Source Unknown	2021
Aliso Creek	Indicator Bacteria Phosphorus Selenium Total Nitrogen as N Toxicity	Nonpoint Source Natural Sources Unknown Nonpoint Source Natural Sources Source Unknown	EPA TMDL approval 2005 2019 2021 2019 2019
Source: SWRCB 2011.			

Seiche, Tsunami, and Mudflow

A seiche is a temporary disturbance or oscillation in water levels of a water body, most often caused by earthquakes. No large bodies of permanently stored water are located such that they would affect the Allen-McColloch Pipeline study area in the event of earthquake-induced failure or seiches. The Rattlesnake Reservoir is approximately 0.1 mile to the west of the pipeline.

A tsunami is a series of traveling ocean waves of great length and long period, which are generated by disturbances associated with earthquakes in oceanic and coastal regions. The Allen-McColloch Pipeline study area is over 8 miles from the Pacific Ocean at its closest point along the alignment. As a result, the study area is not subject to inundation from tsunami and is not identified by the California Department of Conservation as a designated tsunami area.

In general, the northern and southern ends of the Allen-McColloch Pipeline are located in relatively flat areas that are susceptible to mudflows. The middle segment of the alignment is within a hilly area, but the majority of the area is planted with agricultural crops and not subject to mudflows.

4.9.2.2 Calabasas Feeder

The Calabasas Feeder is within the Los Angeles River watershed.

Surface Water Hydrology and Watersheds

The Los Angeles River watershed covers a land area of 834 square miles (DPW 2007c). The eastern portion spans from the Santa Monica Mountains to the Simi Hills and the western portion spans from the Santa Susana Mountains to the San Gabriel Mountains. The watershed encompasses and is shaped by the path of the Los Angeles River, which flows from its headwaters in the mountains eastward to the northern corner of Griffith Park, where the channel turns southward through the Glendale Narrows before it flows across the coastal plain and into San Pedro Bay near Long Beach. Much of the watershed is highly developed, with residential (36 percent), open space and

agricultural (44 percent), and commercial/industrial/transportation (20 percent) being the predominant land uses. Overall, the watershed is approximately one-third impervious. Most portions of the Los Angeles River are completely channelized for flood protection, as are many of its tributaries including Compton Creek, Rio Hondo, Arroyo Seco, and Tujunga Wash. They are fed by a complex underground network of storm drains and a surface network of tributaries. Several dams and reservoirs have been constructed within the watershed for flood control and groundwater recharge.

Local Surface Water Hydrology

The majority of the Calabasas Feeder alignment is situated on impervious surfaces associated with street rights-of-way and developed areas. However, the alignment does cross over several concrete creeks, including Santa Susana Creek, Chatsworth Creek, Bell Creek, and Calabasas Creek (Figure 4.9-2). The alignment crosses over Santa Susana Creek near the intersection of Nordhoff Street and Owensmouth Avenue; the concrete channel is below street level. The alignment crosses over Chatsworth Creek near the intersection of Fallbrook Avenue and Saticoy Street; the concrete channel is below street level. The alignment then follows street rights-of-way and developed areas (impervious surface) until it crosses over Bell Creek near the intersection of Fallbrook Avenue and Sherman Way; the concrete channel is below street level. The alignment then follows rights-of-way and developed areas (impervious surface) until it crosses over Calabasas Creek near the intersection of Fallbrook Avenue and E. Hatteras Way; the concrete channel is below street level.

The majority of the Calabasas Feeder study area is within an area of minimal flood hazard (Figure 4.9-2). The very southern portion of the study area is within an area of 2 percent annual chance flood.

Groundwater Hydrology

The Calabasas Feeder study area is in the San Fernando Groundwater Basin (DWR 2013). The San Fernando Groundwater Basin is bounded on the northwest by the Santa Susana Mountains, on northeast by the San Gabriel Mountains, on the east by the San Raphael Hills, on the south by the Santa Monica Mountains, and on the west by the Simi Hills (DWR 2004d). The San Fernando Groundwater Basin underlies the upper Los Angeles River watershed and is an important source of drinking water for the cities of Los Angeles, Glendale, Burbank, San Fernando, La Cañada-Flintridge, and the unincorporated area of La Crescenta.

Recharge of the San Fernando Groundwater Basin is from a variety of sources. Spreading of imported water and runoff occurs in the Pacoima, Tujunga, and Hansen spreading grounds. Runoff contains natural streamflow from the surrounding mountains, precipitation falling on impervious areas, reclaimed wastewater, and industrial discharges. Water flowing in surface washes infiltrates, particularly in the eastern portion of the basin.

Groundwater levels in the San Fernando Groundwater Basin have undergone a general decline during recent years. Probable causes of this decline include increased urbanization and runoff leaving the basin, reduced artificial recharge, and continued groundwater extractions by the major pumping parties, the cities of Los Angeles, Burbank, and Glendale. The Upper Los Angeles River Area Watermaster is monitoring this situation and efforts to reverse this trend are underway.

Water Quality

The Los Angeles River and selected tributaries are impaired by pollutants mainly because of the watershed's large, dense population and the amount of impervious ground surface that prevents large quantities of runoff from infiltrating into the soils. The 303(d) listed impairments of receiving waters within the Calabasas Feeder study area and downstream receiving waters are shown in Table 4.9-2.

Table 4.9-2. Overview of Water Quality Impairments in the Calabasas Feeder Study Area

Water Body	Listed Impairments	Potential Sources	Estimated EPA TMDL Completion
Los Angeles River Reach 6	Coliform Bacteria	Nonpoint Source	EPA TMDL approval 2015
	Selenium	Source Unknown	EPA TMDL approval 2005
Bell Creek	Coliform Bacteria	Nonpoint Source	EPA TMDL approval 2009
Source: SWRCB 2011.			

Seiche, Tsunami, and Mudflow

No large bodies of permanently stored water are located such that they would affect the site in the event of earthquake-induced failure or seiches. The Chatsworth Reservoir is a dry reservoir approximately 0.3 mile to the west of the Calabasas Feeder; the reservoir was drained in 1972 and taken out of service due to safety concerns.

The Calabasas Feeder study area is over 8 miles from the Pacific Ocean at its closest point along the alignment. As a result, the study area is not subject to inundation from tsunami and is not identified by the California Department of Conservation as a designated tsunami area.

In general, the Calabasas Feeder is in relatively flat areas that are not susceptible to mudflows.

4.9.2.3 Rialto Pipeline

The Rialto Pipeline is within the counties of San Bernardino and Los Angeles. Within San Bernardino County, the Rialto Pipeline is situated across three watersheds: the Santa Ana River, Cucamonga Creek, and San Antonio watersheds. Within Los Angeles County, the Rialto Pipeline is within the San Gabriel River watershed.

Surface Water Hydrology and Watersheds

The Santa Ana River watershed is the largest stream system in Southern California. The headwaters originate in the San Bernardino Mountains and are discharged to the Pacific Ocean approximately 100 miles to the southwest in Orange County. The Santa Ana River watershed covers over 2,650 square miles of widely varying forested, rural, and urban terrain and covers the more populated urban areas of San Bernardino, Riverside, and Orange counties, as well as a lesser portion of Los Angeles County. The Upper Santa Ana River watershed consists of many tributaries flowing to the Santa Ana River. These tributaries exhibit a range of development from natural streams to concrete-lined channels. Many of the streams flow through heavily developed areas.

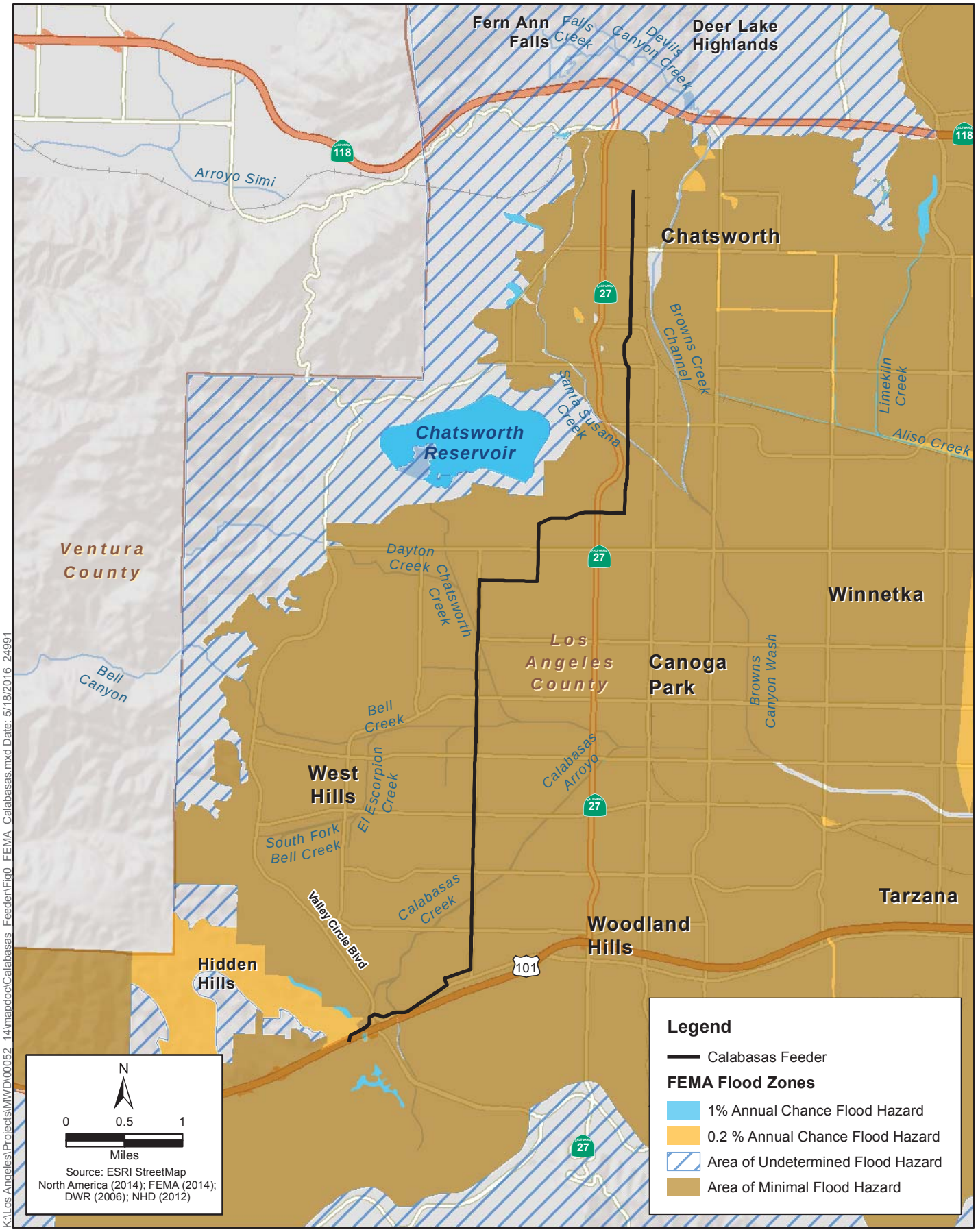


Figure 4.9-2
FEMA Flood Zones near the Calabasas Feeder
Metropolitan PCCP Program

The Cucamonga Creek watershed is approximately 92 square miles (Santa Ana RWQCB 2012; San Bernardino County 2015). The watershed includes portions of the cities of Chino, Ontario, Rancho Cucamonga, and Upland and sections of unincorporated Riverside and San Bernardino counties. The main water bodies in the watershed are Santa Ana River Reach 3 and Cucamonga Creek. Lower Deer Creek, West Cucamonga Channel, Upper Deer Canyon Wash, and Demens Creek are the main tributaries to Cucamonga Creek. There are numerous local storm drain outfalls discharging runoff into the channel and its tributaries.

The San Antonio watershed is at the western boundary of San Bernardino County and includes portions of the counties of San Bernardino, Los Angeles, and Riverside, all of the city of Montclair, and portions of the cities of Pomona, Claremont, Upland, Ontario, Chino, and Chino Hills (San Bernardino County 2015). The main water bodies in the watershed are Santa Ana River Reach 3, San Antonio Channel, and Chino Creek. Little Chino Creek, English Canyon, Carbon Canyon Creek, Los Serranos Channel, and Chino storm drain are the main tributaries.

The San Gabriel River watershed is in the eastern portion of Los Angeles County (DPW 2007d). It is bound by the San Gabriel Mountains to the north, most of San Bernardino County/Orange County to the east, the division of the Los Angeles River from the San Gabriel River to the west, and the Pacific Ocean to the south. The watershed drains into the San Gabriel River from the San Gabriel Mountains, flowing 58 miles south until its confluence with the Pacific Ocean. Major tributaries to the San Gabriel River include Walnut Creek, San Jose Creek, Coyote Creek, and numerous storm drains entering from the 19 cities that the San Gabriel River passes through. Channel flows pass through different sections in the San Gabriel River, diverting from the riverbed into four different spreading grounds, held behind several rubber dams for controlled flow and groundwater recharge, and controlled through 10 miles of concrete channel bottom from below Whittier Narrows Dam to past Coyote Creek.

Local Surface Water Hydrology

The portion of the Rialto Pipeline study area in the Santa Ana River watershed is situated along both pervious and impervious areas. The impervious areas are generally associated with residential and industrial land uses and the pervious areas are drainage features and undeveloped lands. Beginning from the eastern end of the Rialto Pipeline, the alignment follows street rights-of-way through residential and industrial areas (impervious surface) before crossing Cable Creek, Cajon Wash, and Lytle Creek (Figure 4.9-3). Cable Creek, Cajon Wash, and Lytle Creek in this location are natural soft bottom (pervious surface) to allow for recharge. The alignment then follows street rights-of-way and residential and industrial areas (impervious surface) before crossing East Etiwanda Creek west of Interstate 15 (I-15), followed by Day Creek and Deer Creek (Canyon Wash) crossings. East Etiwanda Creek is concrete lined (impervious surface) through the study area. Day Creek and Deer Canyon Wash are both natural and concrete lined. The alignment then continues to follow street rights-of-way and developed (impervious surface) until crossing Cucamonga Creek and then San Antonio Creek. Cucamonga Creek and San Antonio Creek are concrete lined (impervious surface) through the study area. The remainder of the alignment is within Los Angeles County and typically follows street rights-of-way and developed areas (impervious surface), but does cross Marshall Creek and San Dimas Wash, which are both natural soft bottom (pervious surface).

A large portion of the Rialto Pipeline alignment is within an area of minimal flood hazard (Figure 4.9-3). Where the alignment crosses the above-mentioned water bodies, the flood zone risk elevates

to the 1 and 2 percent annual chance flood hazard. Portions of the alignment are in areas of undetermined flood hazards.

Groundwater Hydrology

The Rialto Pipeline study area is in the Upper Santa Ana Valley groundwater basins in San Bernardino County and includes Bunker Hill, Rialto, Chino, and Cucamonga subbasins (SBVMWD 2015; DWR 2013).

The Bunker Hill Subbasin consists of the alluvial materials that underlie the San Bernardino Valley (DWR 2004i). This subbasin is bounded by contact with consolidated rocks of the San Gabriel Mountains, San Bernardino Mountains, and Crafton Hills, and by several faults. The southern boundary is the Banning fault, the eastern boundary is the Redlands fault, the San Andreas fault is roughly the northern boundary, the Glen Helen fault abuts the northwestern boundary, and the southwestern boundary is the San Jacinto fault. The Santa Ana River, Mill Creek, and Lytle Creek are the main tributary streams in the subbasin. Recharge to the Bunker Hill Subbasin historically has resulted from infiltration of runoff from the San Gabriel and San Bernardino Mountains. The Santa Ana River, Mill Creek, and Lytle Creek contribute more than 60 percent of the total recharge to the groundwater system. Lesser contributors include Cajon Creek, San Timoteo Creek, and most of the creeks flowing southward out of the San Bernardino Mountains. The subbasin is also replenished by deep percolation of water from precipitation and resulting runoff, percolation from delivered water, and water spread in streambeds and spreading grounds.

The Rialto-Colton Subbasin underlies a portion of the upper Santa Ana Valley in southwestern San Bernardino County and northwestern Riverside County (DWR 2004h). This subbasin is bounded by the San Gabriel Mountains on the north, the San Jacinto fault on the east, the Box Spring Mountains on the south, and the Rialto-Colton fault on the west. Lytle Creek drains this part of the valley southeastward to its confluence with the Santa Ana River in the southern part of the subbasin. The principal recharge areas are Lytle Creek in the northwestern part of the subbasin, Reche Canyon in the southeastern part, and the Santa Ana River in the south-central part. Lesser amounts of recharge are provided by percolation of precipitation to the valley floor, underflow, and irrigation and septic returns.

The Chino Subbasin is bounded on the east by the Rialto-Colton fault and on the southeast by the contact with impermeable rocks forming the Jurupa Mountains and low divides connecting the exposures (DWR 2004f). The subbasin is bounded on the south by contact with impermeable rocks of the Puente Hills and by the Chino fault, on the northwest by the San Jose fault, and on the north by impermeable rocks of the San Gabriel Mountains and by the Cucamonga fault. San Antonio Creek and Cucamonga Creek drain the surface of the subbasin southward to join the Santa Ana River. Groundwater recharge to the subbasin occurs by direct infiltration or precipitation on the subbasin floor, by infiltration of surface flow, and by underflow of groundwater from adjacent basins. The five recharge facilities in the subbasin are Deer Creek, Day Creek, East Etiwanda, San Sevaine, and Victoria.

The Cucamonga Subbasin underlies the northern part of upper Santa Ana Valley (DWR 2004g). It is bounded on the north by contact of alluvium with the San Gabriel Mountains and on the west, east, and south by the Red Hill fault. This portion of the upper Santa Ana Valley is drained by Cucamonga and Deer Creeks to the Santa Ana River. Recharge to the subbasin is provided by infiltration of stream flow, percolation of rainfall to the valley floor, underflow from the San Gabriel Mountains,

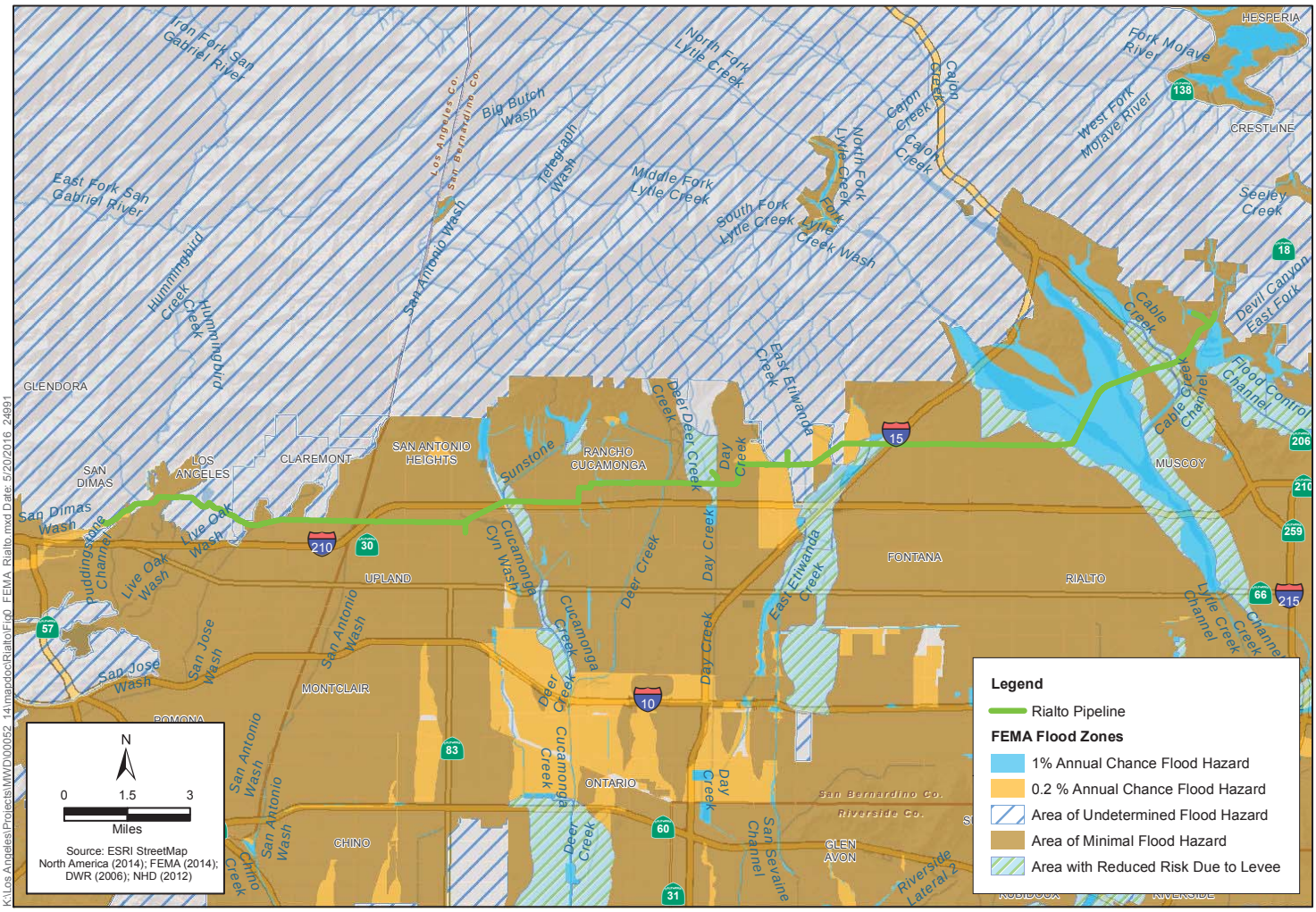


Figure 4.9-3
FEMA Flood Zones near the Rialto Pipeline
Metropolitan PCCP Program

and return irrigation flow. Additional recharge to the subbasin is from storm flow at spreading grounds along Cucamonga Creek and near Red Hill and Alta Loma.

Water Quality

The 303(d) listed impairments of receiving waters within the Rialto Pipeline study area and downstream receiving waters are shown in Table 4.9-3.

Table 4.9-3. Overview of Water Quality Impairments in the Rialto Pipeline Study Area

Water Body	Listed Impairments	Potential Sources	Estimated EPA TMDL Completion
Lytle Creek	Pathogens	Nonpoint Source	2019
San Antonio Creek	pH	Nonpoint Source	2021
Source: SWRCB 2011.			

Seiche, Tsunami, and Mudflow

No large bodies of permanently stored water are situated such that they would affect the Rialto Pipeline study area in the event of earthquake-induced failure or seiches. A portion of the Rialto Pipeline alignment (on Banyan Street between Haven Avenue and Archibald Avenue) is within a dam inundation area (San Bernardino County 2010). However, this area is considered a recharge basin and is not always filled with water that could result in inundation.

The Rialto Pipeline study area is over 30 miles from the Pacific Ocean at its closest point along the alignment. As a result, the study area is not subject to inundation from tsunami and is not identified by the California Department of Conservation as a designated tsunami area.

In general, the Rialto Pipeline alignment is in relatively flat areas that are not susceptible to mudflows. A portion of the western alignment is within the foothills; however, the majority of the area is naturally vegetated and not subject to mudflows.

4.9.2.4 Second Lower Feeder

The Second Lower Feeder is within Orange and Los Angeles counties. Within Orange County, the Second Lower Feeder is within the North Watershed Management Area. Within Los Angeles County, the pipeline is within the San Gabriel River watershed.

The North Watershed Management Area encompasses 376 square miles in northern Orange County and is bordered by Los Angeles County to the north and west and by San Bernardino County to the east. The three watersheds in this area are the Santa Ana River, San Gabriel River/Coyote Creek, and Anaheim Bay-Huntington Harbour. All three watersheds lie within the Santa Ana RWQCB boundary.

Surface Water Hydrology and Watersheds

The Santa Ana River watershed is the largest in Orange County, covering approximately 210 square miles. The river begins almost 75 miles away in the San Bernardino Mountains, crossing central Orange County before emptying into the Pacific Ocean. The river serves as the main tributary to the watershed with Santiago Creek being the largest tributary within Orange County.

The Lower San Gabriel River/Coyote Creek watershed is approximately 86 square miles within the northwestern corner of Orange County and includes parts of the cities of Anaheim, Brea, Buena Park, Cypress, Fullerton, La Habra, La Palma, Los Alamitos, Placentia, and Seal Beach. The primary surface water body within the watershed is Coyote Creek, which flows from Los Angeles County to the San Gabriel River. Carbon Creek flows from the foothills to the San Gabriel River and has six retarding basins. Other creeks/channels include Brea Creek, Moody Creek, Fullerton Creek, and Los Alamitos Channel.

The Anaheim-Bay Huntington Harbour watershed is approximately 80 square miles south and includes portions of the cities of Anaheim, Cypress, Fountain Valley, Garden Grove, Huntington Beach, Los Alamitos, Santa Ana, Seal Beach, Stanton, and Westminster. Surface water systems provide drainage within this watershed, including the Bolsa Chica Channel that provides drainage to Anaheim Bay-Huntington Harbour, and the East Garden Grove-Wintersburg Channel that carries flow to Bolsa Bay and ultimately to Huntington Harbour. Westminster Channel connects to the Bolsa Chica Channel and Sunset Channel.

The San Gabriel River watershed is in the eastern portion of Los Angeles County. (See description in Section 4.9.2.3, *Rialto Pipeline*.)

Local Surface Water Hydrology

The portion of the Second Lower Feeder alignment in the North Watershed Management Area is situated along both pervious and impervious areas. The impervious areas are generally associated with residential and industrial land uses and the pervious areas are drainage features and undeveloped lands. Beginning from the eastern end of the Second Lower Feeder, the alignment generally follows street rights-of-way through residential, commercial, and industrial areas (impervious surface) before crossing the Anaheim Union Canal (Figure 4.9-4). Anaheim Union Canal in this location is concrete lined (impervious surface). The alignment then follows street rights-of-way and developed areas (impervious surface) before crossing Carbon Creek west of Anaheim Lake. Carbon Creek is riprap lined (pervious surface) through the study area. The alignment then continues to follow street rights-of-way and developed (impervious surface) until crossing Carbon Canyon Creek near the intersection of Ball Road and Valley View Street. Carbon Canyon Creek has concrete walls with riprap lining (pervious surface) through the study area. The alignment then continues to follow street rights-of-way and developed areas (impervious surface) until crossing Coyote Creek near the Los Angeles County line. Coyote Creek is concrete lined (impervious surface) through the study area. The remainder of the alignment is within Los Angeles County and follows street rights-of-way and developed areas (impervious surface), and crosses the Artesia-Norwalk Drain, San Gabriel River Reach 1, an unnamed drainage, Los Angeles River Reach 1, and Dominguez Channel Estuary, which are all concrete-lined drainages (impervious surface).

A large portion of the Second Lower Feeder alignment is within an area of minimal flood hazard (Figure 4.9-4). Where the alignment crosses the above-mentioned water bodies, the flood zone risk elevates to the 1 and 2 percent annual chance flood hazard.

Groundwater Hydrology

The Second Lower Feeder study area is in the Coastal Plain of Orange County Groundwater Basin and the Coastal Plain of Los Angeles Groundwater Basin, Central Subbasin, in Los Angeles County (DWR 2013).

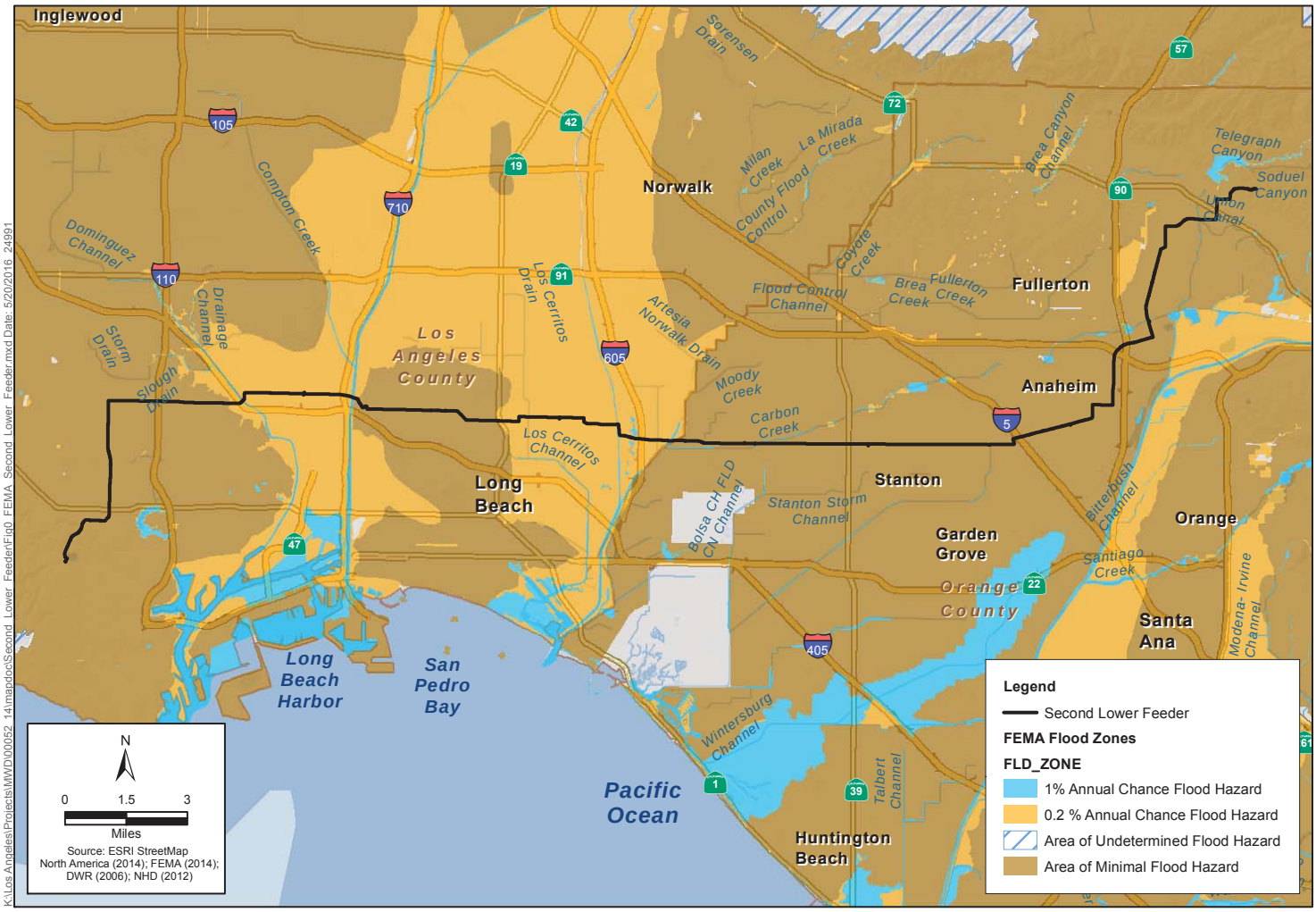


Figure 4.9-4
FEMA Flood Zones near the Second Lower Feeder Pipeline
Metropolitan PCCP Program

The Coastal Plain of Orange County Groundwater Basin underlies northern and central Orange County and covers an area of approximately 350 square miles, bordered by the Coyote Hills and Chino Hills to the north, the Santa Ana Mountains to the northeast, and the Pacific Ocean to the southwest (OCWD 2015a). The basin boundary extends to the Orange County-Los Angeles County line to the northwest, where groundwater flow is unrestricted across the county line into the Coastal Plain of Los Angeles Groundwater Basin. The groundwater basin is divided into three major aquifer systems—the Shallow, Principal, and Deep—which are hydraulically connected, as groundwater is able to flow between them via leakage through the intervening aquitards or discontinuities in the aquitards (OCWD 2015b). Recharge to the basin is derived from percolation of Santa Ana River flow, infiltration of precipitation, and injection into wells. The Santa Ana River flow contains natural flow, reclaimed water, and imported water that is spread in the basin forebay.

The Central Subbasin occupies a large portion of the southeastern part of the Coastal Plain of Los Angeles Groundwater Basin (DWR 2004c). This subbasin is commonly referred to as the "Central Basin" and is bounded on the north by a surface divide called the La Brea high, and on the northeast and east by emergent, less permeable Tertiary rocks of the Elysian, Repetto, Merced, and Puente Hills. The southeastern boundary between the Central Basin and Coastal Plain of Orange County Groundwater Basin roughly follows Coyote Creek, which is a regional drainage province boundary. The southwestern boundary is formed by the Newport Inglewood fault system and the associated folded rocks of the Newport Inglewood uplift. The Los Angeles and San Gabriel rivers drain inland basins and pass across the surface of the Central Basin on their way to the Pacific Ocean. Groundwater enters the Central Basin through surface and subsurface flow and by direct percolation of precipitation, stream flow, and applied water, and replenishes the aquifers dominantly in the forebay areas where permeable sediments are exposed at ground surface. Natural replenishment of the subbasin's groundwater supply is largely from surface inflow through Whittier Narrows (and some underflow) from the San Gabriel Valley. Percolation into the Los Angeles Forebay Area is restricted due to paving and development of the surface of the forebay. Imported water purchased from Metropolitan and recycled water from the Whittier and San Jose treatment plants are used for artificial recharge in the Montebello Forebay at the Rio Hondo and San Gabriel River spreading grounds.

Water Quality

The 303(d) listed impairments of receiving waters within the Second Lower Feeder study area and downstream receiving waters are shown in Table 4.9-4.

Table 4.9-4. Overview of Water Quality Impairments in the Second Lower Feeder Study Area

Water Body	Listed Impairments	Potential Sources	Estimated EPA TMDL Completion
Coyote Creek	Ammonia	Point Source	2019
	Dissolved Copper	Source Unknown	EPA TMDL approval 2007
	Diazinon	Source Unknown	2019
	Indicator Bacteria	Source Unknown	2009
	Lead	Major Municipal Point Source-wet weather discharge	EPA TMDL approval 2007
	pH	Source Unknown	2019

Water Body	Listed Impairments	Potential Sources	Estimated EPA TMDL Completion
	Toxicity	Point Source	2008
San Gabriel River Reach 1	Coliform Bacteria	Source Unknown	2019
	pH	Source Unknown	2009
Los Angeles River Reach 1	Ammonia	Point/Non-Point Source	2004
	Cadmium	Source Unknown	2005
	Coliform Bacteria	Point/Non-Point Source	2009
	Dissolved Copper	Point Source	2005
	Cyanide	Source Unknown	2019
	Diazinon	Source Unknown	2019
	Lead	Point/Non-Point Source	2005
	Nutrients (algae)	Point/Non-Point Source	2004
	pH	Point/Non-Point Source	2003
	Trash	Nonpoint Source Surface Runoff Urban Runoff/Storm Sewers	2008
	Dissolved Zinc	Point/Non-Point Source	2005
Dominguez Channel Estuary	Ammonia	Point/Non-Point Source	2019
	Benthic Community Effects	Point/Non-Point Source	2019
	Benzo(a)anthracene	Source Unknown	2019
	Benzo(a)pyrene	Source Unknown	2019
	Chlordane (tissue)	Point/Non-Point Source	2019
	Chrysene	Source Unknown	2019
	Coliform Bacteria	Point/Non-Point Source	2007
	DDT (tissue and sediment)	Point/Non-Point Source	2019
	Dieldrin (tissue)	Point/Non-Point Source	2019
	Lead (tissue)	Point/Non-Point Source	2019
	PCBs	Source Unknown	2019
	Phenanthrene	Source Unknown	2019
	Pyrene	Source Unknown	2019
	Sediment Toxicity	Atmospheric Deposition Nonpoint Source Surface Runoff Urban Runoff/Storm Sewers	2021
	Zinc (sediment)	Point/Non-Point Source	2019

Source: SWRCB 2011.

Seiche, Tsunami, and Mudflow

No large bodies of permanently stored water are located such that they would affect the Second Lower Feeder study area in the event of earthquake-induced failure or seiches.

The Second Lower Feeder study area is over 3 miles from the Pacific Ocean at its closest point along the alignment. Due to the topography and elevation of the study area, the portion of the alignment closest to the Pacific Ocean is not subject to inundation from tsunami and is not identified by the California Department of Conservation as a designated tsunami area.

In general, the Second Lower Feeder is in relatively flat areas that are not susceptible to mudflows.

4.9.2.5 Sepulveda Feeder

The Sepulveda Feeder is in Los Angeles County within the Los Angeles River, Santa Monica Bay, and Dominguez Channel watersheds.

Surface Water Hydrology and Watersheds

The Los Angeles River watershed covers a land area of 834 square miles. (See description in Section 4.9.2.2, *Calabasas Feeder*.)

The Santa Monica Bay watersheds include the North Santa Monica Bay, South Santa Monica Bay, Ballona Creek, and Marina Del Rey watersheds; the Sepulveda Feeder study area is within Ballona Creek watershed (DPW 2007a). Ballona Creek flows as an open channel for just under 10 miles from mid-Los Angeles (south of Hancock Park) through Culver City, reaching the Pacific Ocean at Playa del Rey (Marina del Rey Harbor) (City of Los Angeles 2016). The estuary portion (from Centinela Avenue to the outlet) is soft bottomed, while the remainder of the creek is lined in concrete. Ballona Creek is fed by a network of underground storm drains. Major tributaries of the creek and estuary include Centinela Creek, Sepulveda Channel, Benedict Canyon Channel, and numerous storm drains (DPW 2016a).

The Dominguez watershed is within the southern portion of Los Angeles County and encompasses approximately 133 square miles of land and water (DPW 2016b). Approximately 96 percent of the land is developed. Residential development covers nearly 40 percent of the watershed, and another 41 percent is made up by industrial, commercial, and transportation uses. Rather than being defined by the natural topography of its drainage area, the Dominguez watershed boundary is defined by a complex network of storm drains and smaller flood control channels. The Dominguez Channel extends from Los Angeles International Airport to Los Angeles Harbor.

Local Surface Water Hydrology

The portion of the Sepulveda Feeder in the Los Angeles River watershed is situated along both pervious and impervious areas. The impervious areas are generally associated with residential and industrial land uses and the pervious areas are drainage features. Beginning from the northern end of the Sepulveda Feeder, the alignment generally follows street rights-of-way through developed areas (impervious surface) before crossing Bull Creek near State Route 118 (SR-118) (Figure 4.9-5). Bull Creek in this location is channelized underground. The alignment then follows street rights-of-way and developed areas (impervious surface) before crossing an unnamed concrete flood control channel that confluences with Bull Creek; the alignment once again crosses Bull Creek approximately 0.25 mile from the confluence with the flood control channel (near the intersection of Hayvenhurst Avenue and Plummer Street). The alignment then continues to follow street rights-of-way and developed areas (impervious surface) until crossing the Los Angeles River Reach 4 near the intersection of U.S. Highway 101 (US-101) and Interstate 405 (I-405). The Los Angeles River is concrete lined (impervious surface) through the Sepulveda Feeder study area.

The portion of the Sepulveda Feeder in the Ballona Creek watershed is situated along both pervious and impervious areas. The impervious areas are generally associated with residential and transportation land uses and the pervious areas are drainage features and undeveloped land. Beginning from the northern end of the Ballona Creek watershed, the alignment generally follows I-405, developed areas, and street rights-of-way before crossing Ballona Creek. Ballona Creek in this area is concrete lined. The alignment then follows street rights-of-way and developed areas (impervious surface) before crossing Dominguez Channel. Dominguez Channel in this area is concrete lined.

A large portion of the Sepulveda Feeder alignment is within an area of minimal flood hazard (Figure 4.9-5). A small portion of the alignment is within an area of undetermined flood hazards.

Groundwater Hydrology

The Sepulveda Feeder study area is in the San Fernando Groundwater Basin (described in Section 4.9.1.2) and the Coastal Plain of Los Angeles Groundwater Basin, Santa Monica and West Coast subbasins, in Los Angeles County (DWR 2013).

The Santa Monica Subbasin underlies the northwestern part of the Central Basin (DWR 2004a). It is bounded by impermeable rocks of the Santa Monica Mountains on the north and by the Ballona escarpment, an abandoned erosional channel from the Los Angeles River, on the south. The subbasin extends from the Pacific Ocean on the west to the Inglewood fault on the east. Ballona Creek is the dominant hydrologic feature and drains surface waters to the Pacific Ocean. Replenishment of groundwater in the Santa Monica Basin is mainly by percolation of precipitation and surface runoff onto the subbasin from the Santa Monica Mountains. The Inglewood fault appears to inhibit replenishment by underflow from the Central Basin to the east, though some inflow may occur at its northern end.

The West Coast Basin is bounded on the north by the Ballona escarpment, on the east by the Newport-Inglewood fault zone, and on the south and west by the Pacific Ocean and consolidated rocks of the Palos Verdes Hills (DWR 2004b). The surface of the subbasin is crossed in the south by the Los Angeles River through the Dominguez Gap and the San Gabriel River through the Alamitos Gap, both of which then flow into San Pedro Bay. Natural replenishment of the basin's groundwater supply is largely limited to underflow from the Central Basin through and over the Newport-Inglewood fault zone. Water spread in the Central Basin percolates into aquifers there, and eventually some cross the Newport-Inglewood fault to supplement the groundwater supply in the West Coast Basin.

Water Quality

The 303(d) listed impairments of receiving waters within the Sepulveda Feeder study area and downstream receiving waters are shown in Table 4.9-5.

Table 4.9-5. Overview of Water Quality Impairments in the Sepulveda Feeder Study Area

Water Body	Listed Impairments	Potential Sources	Estimated EPA TMDL Completion
Bull Creek	Indicator Bacteria	Source Unknown	2021

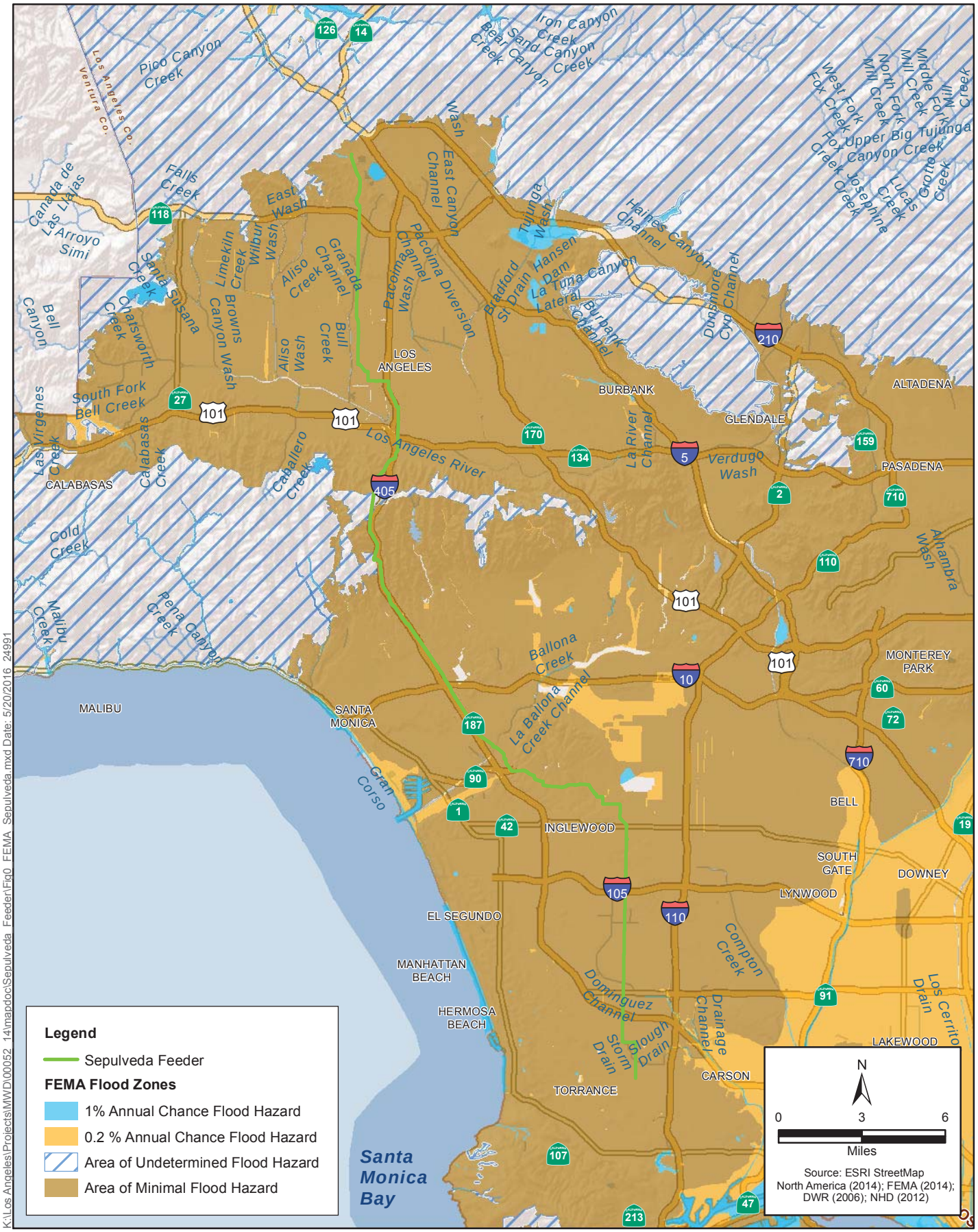


Figure 4.9-5
FEMA Flood Zones near the Sepulveda Feeder
Metropolitan PCCP Program

Water Body	Listed Impairments	Potential Sources	Estimated EPA TMDL Completion
Los Angeles River Reach 4	Ammonia	Point/Non-Point Source	2004
	Coliform Bacteria	Point/Non-Point Source	2019
	Copper	Source Unknown	2005
	Lead	Point/Non-Point Source	2005
	Nutrients (algae)	Point/Non-Point Source	2004
	Trash	Nonpoint Source Surface Runoff Urban Runoff/Storm Sewers	2008
Ballona Creek	Cadmium (sediment)	Point/Non-Point Source	205
	Coliform Bacteria	Point/Non-Point Source	2007
	Dissolved Copper	Non-Point Source	2005
	Cyanide	Source Unknown	2019
	Lead	Source Unknown	2005
	Selenium	Source Unknown	2005
	Toxicity	Source Unknown	2005
	Trash	Source Unknown	2001
	Viruses	Point/Non-Point Source	2007
	Zinc	Source Unknown	2005
Dominguez Channel (lined portion above Vermont Avenue)	Ammonia	Point/Non-Point Source	2019
	Copper	Point/Non-Point Source	2019
	Diazinon	Source Unknown	2021
	Indicator Bacteria	Point/Non-Point Source	2007
	Lead	Point/Non-Point Source	2019
	Toxicity	Point/Non-Point Source	2021
	Zinc	Point/Non-Point Source	2019
Source: SWRCB 2011.			

Seiche, Tsunami, and Mudflow

No large bodies of permanently stored water are located such that they would affect the Sepulveda Feeder study area in the event of earthquake-induced failure or seiches.

The Sepulveda Feeder is over 3.5 miles from the Pacific Ocean at its closest point along the alignment. As a result, the study area is not subject to inundation from tsunami and is not identified by the California Department of Conservation as a designated tsunami area.

In general, the Sepulveda Feeder alignment is in relatively flat areas that are not susceptible to mudflows, with the exception of the alignment through the Santa Monica Mountains. A portion of the alignment travels through the Santa Monica Mountains; however, the majority of the alignment is in developed areas and is not subject to mudflows.

4.9.3 Regulatory Framework

This section describes the plans, policies, and regulations related to hydrology and water quality that are applicable to the proposed program.

4.9.3.1 Federal

Clean Water Act (33 U.S.C. § 1251 et seq.)

The federal CWA of 1977 (33 U.S. Code Section 1251 et seq.), which amended the federal Water Pollution Control Act of 1972, establishes the basic structure for regulating discharges of pollutants into waters of the United States (not including groundwater). The CWA delegates authority to EPA to implement pollution control programs. Under the CWA, it is unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a National Pollutant Discharge Elimination System (NPDES) permit is obtained and implemented within compliance. In addition, the CWA requires the states to adopt water quality standards for receiving water bodies and to have those standards approved by EPA. Water quality standards consist of designated beneficial uses for a particular receiving water body (e.g., wildlife habitat, agricultural supply, fishing), along with water quality criteria necessary to support those uses.

Section 303: Impaired Water Bodies (303(d) list) and Total Maximum Daily Loads

Under Section 303(d) of the CWA, SWRCB is required to develop a list of impaired water bodies that do not meet water quality standards (promulgated under the National Toxics Rule or the California Toxics Rule) after the minimum technology-based effluent limitations have been implemented for point sources. Lists are to be priority ranked for development of a TMDL. A TMDL is a calculation of the total maximum amount of a pollutant that a water body can receive on a daily basis and still safely meet water quality standards. The California RWQCBs and EPA are responsible for establishing TMDL waste-load allocations and incorporating improved load allocations into water quality control plans, NPDES permits, and waste discharge requirements. Section 305(b) of the CWA requires that states assess the status of water quality conditions within the state in a report to be submitted every 2 years.

Section 402: National Pollutant Discharge Elimination System Permits

Section 402(p) of the CWA was amended in 1987 to require EPA to establish regulations for permitting of municipal and industrial (including active construction sites) stormwater discharges under the NPDES permit program. EPA published final regulations for industrial and municipal stormwater discharges on November 16, 1990. The NPDES program requires all industrial facilities and municipalities of a certain size that discharge pollutants into waters of the United States to obtain a permit. Stormwater discharges in California are commonly regulated through general and individual NPDES permits, which are adopted by SWRCB or the RWQCBs and are administered by the RWQCBs. EPA requires NPDES permits to be revised to incorporate waste-load allocations for TMDLs when the TMDLs are approved (40 Code of Federal Regulations [CFR] 122).

4.9.3.2 State

Responsibility for the protection of water quality in California resides with SWRCB and the nine RWQCBs. SWRCB establishes statewide policies and regulations for the implementation of water

quality control programs mandated by federal and state water quality statutes and regulations. The Los Angeles, Santa Ana, and San Diego RWQCBs and SWRCB implement a number of federal and state laws regarding water quality, the most important of which are the State of California's Porter-Cologne Water Quality Control Act and the federal CWA.

Porter-Cologne Water Quality Control Act (Cal. Water Code § 13000 et seq.)

The State of California's Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) provides the basis for water quality regulation within California, including the California Toxics Rule, the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan, or SIP), Inland Surface Water Quality Standards, the California Urban Water Management Act, and NPDES permits. SWRCB administers water rights, water pollution control, and water quality functions throughout the state, while the RWQCBs conduct planning, permitting, and enforcement activities. The Porter-Cologne Water Quality Control Act authorizes SWRCB to adopt, review, and revise policies for all waters of the state (including both surface and groundwater) and directs the RWQCBs to develop regional water quality control plans (Basin Plans). Section 13170 of the California Water Code also authorizes SWRCB to adopt Basin Plans on its own initiative.

The RWQCBs are required, by law, to develop, adopt, and implement a Basin Plan for the entire region. The principal elements of the Basin Plan are a statement of beneficial water uses that the RWQCBs will protect; water quality objectives needed to protect the designated beneficial water uses; and strategies and time schedules for achieving the water quality objectives. The water quality objectives are achieved primarily through the establishment and enforcement of waste discharge requirements (WDRs).

National Pollutant Discharge Elimination System Permits

Construction General Permit

Pursuant to CWA Section 402(p) and as related to the goals of the Porter-Cologne Water Quality Control Act, SWRCB has issued a statewide NPDES General Permit for Stormwater Discharges Associated with Construction Activity (Order No. 2009-0009-DWQ, NPDES No. CAS000002, as amended by Order 2010-0014-DWQ and 2012-006-DWQ) (Construction General Permit), adopted September 2, 2009 (SWRCB 2012). Every construction project that disturbs 1 or more acres of land surface or that is part of a common plan of development or sale that disturbs more than 1 acre of land surface would require coverage under this Construction General Permit. To obtain coverage under this Construction General Permit, the landowner or other applicable entity must file Permit Registration Documents prior to the commencement of construction activity, which include a Notice of Intent (NOI) and Stormwater Pollution Prevention Plan (SWPPP) prepared by a Qualified SWPPP Developer, and mail the appropriate permit fee to SWRCB.

Construction activities subject to the Construction General Permit include clearing, grading, and disturbances to the ground, such as stockpiling or excavation, that result in soil disturbances of at least 1 acre of total land area. The SWPPP has two major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of stormwater discharges; and (2) to describe and ensure the implementation of best management practices (BMPs) to reduce or eliminate sediment and other pollutants in stormwater and non-stormwater discharges. BMPs are intended to reduce impacts to the maximum extent practicable (MEP), which is a standard created

by Congress to allow regulators the flexibility necessary to tailor programs to the site-specific nature of municipal stormwater discharges. The SWPPP is required to be implemented and monitored regularly by a Qualified SWPPP Practitioner. Reducing impacts to the MEP generally relies on BMPs that emphasize pollution prevention and source control, with additional structural controls as needed. The Construction General Permit requires that specific minimum BMPs are incorporated into the SWPPP, depending on the project's sediment risk to receiving waters based on the project's erosion potential and receiving water sensitivity to sediment.

Municipal Separate Storm Sewer System

CWA Section 402 mandates permits for municipal stormwater discharges, which are regulated under the NPDES General Permit for Municipal Separate Storm Sewer Systems (MS4 Permit). Phase I MS4 Permit regulations cover medium (serving between 100,000 and 250,000 people) and large (serving more than 250,000 people) municipalities. Phase II (Small MS4 Permit) regulations require that stormwater management plans/programs be developed by municipalities with populations smaller than 100,000, including non-traditional Small MS4s, which are facilities such as military bases, public campuses, and prison and hospital complexes.

MS4 Permits require that cities and counties develop and implement programs and measures, including BMPs, control techniques, system design and engineering methods, and other measures as appropriate, to reduce the discharge of pollutants in stormwater to the maximum extent possible. As part of permit compliance, these permit holders have created stormwater management plans for their respective locations. These plans outline the requirements for municipal operations, industrial and commercial businesses, construction sites, and planning and land development. These requirements may include multiple measures to control pollutants in stormwater discharge. During implementation of specific projects under the program, project applicants are required to follow the guidance contained in the stormwater management plans as defined by the permit holder in that location.

SWRCB is advancing Low-Impact Development (LID) in California as a means of complying with municipal stormwater permits. LID incorporates site design, including among other things the use of vegetated swales and retention basins and minimization of impermeable surfaces, to manage stormwater to maintain a site's predevelopment runoff rates and volumes.

4.9.3.3 Regional

Regional Water Quality Control Boards

The RWQCBs develop and implement Basin Plans that consider regional beneficial uses, water quality characteristics, and water quality problems.

Basin Plans and Water Quality Objectives

The preparation and adoption of Basin Plans is required by the California Water Code (Section 13240) and supported by the CWA. Section 303 of the CWA requires states to adopt water quality standards that "consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses." According to Section 13050 of the California Water Code, Basin Plans consist of a designation or establishment for the waters within a specified area of beneficial uses to be protected, water quality objectives to protect those uses, and a program of

implementation needed for achieving the objectives. Because beneficial uses, together with their corresponding water quality objectives, can be defined per federal regulations as water quality standards, the Basin Plans are regulatory references for meeting the state and federal requirements for water quality control.

Water quality standards are set forth in the regional Basin Plan. Designated beneficial uses, along with water quality objectives to meet beneficial uses, compose the relevant water quality standards. Water quality objectives are achieved primarily through the establishment and enforcement of WDRs. All dischargers of waste to waters of the state are subject to regulation under the Porter-Cologne Water Quality Control Act. This includes both point- and nonpoint-source dischargers. All current and proposed discharges to land must be regulated under WDRs, waivers of WDRs, a Basin Plan prohibition, or some combination of these administrative tools. Discharges of waste directly to state waters would be subject to an individual or general NPDES permit, which also serves as a WDR.

The RWQCBs specifically designate beneficial uses for surface and groundwater; set narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's antidegradation policy; and describe implementation programs to protect all waters in the region. In cases where the Basin Plan does not contain a criterion for a particular pollutant, other criteria are used to establish a water quality objective. These may be applied from SWRCB documents (e.g., the Inland Surface Waters Plan, the Pollutant Policy Document) or from water quality criteria developed under Section 304(a) of the CWA, which requires development of criteria for water quality that accurately reflect the latest scientific knowledge (e.g., California Toxics Rule).

Discharges from artificial conveyances, such as flood control channels and minor lakes that are part of the storm drain system, may not have designated beneficial uses or water quality objectives. For those waters that don't have specific beneficial uses or water quality objectives, the tributary rule[2] applies.

Stormwater Management Programs

The proposed program study area is within the jurisdiction of the Los Angeles, Santa Ana, and San Diego RWQCBs.

Los Angeles RWQCB

Los Angeles County Municipal Stormwater NPDES Permit (MS4 Permit)

The current MS4 Permit for Los Angeles County (Order No. R4-2012-0175, as amended by SWRCB Order WQ 2015-0075) was adopted on November 8, 2012, became effective December 28, 2012, and will expire on December 28, 2017. Order No. R4-2012-0175 is the fourth iteration of the stormwater permit for the MS4s in the Los Angeles region, which includes the Los Angeles County Flood Control District, county of Los Angeles, and 84 incorporated cities (including the study area cities in Los Angeles County) within the county watersheds, excluding the city of Long Beach. The permit contains requirements that are necessary to improve efforts to reduce the discharge of pollutants in stormwater runoff to the MEP and achieve water quality standards. This permit

[2] The "tributary rule" refers to any streams not specifically listed in the Basin Plan that are deemed to have the same beneficial uses and water quality objectives of the listed stream, river, or lake to which they are a tributary.

requires that runoff is addressed during the major phases of urban development (planning, construction, and operation) in order to reduce the discharge of pollutants from stormwater to the MEP, effectively prohibiting non-stormwater discharges and protecting receiving waters. The MS4 Permit also includes construction requirements for implementation of minimum construction site BMPs for erosion, sediment, non-stormwater management, and waste management on construction sites.

The permit also requires the design and implementation of specific post-construction controls to mitigate stormwater pollution, prior to project completion, for all "new development" and "redevelopment" projects that meet certain criteria as specified in the permit. During operation of new development or redevelopment, the permit prohibits non-stormwater discharges from the development (with some conditional exceptions), and requires BMPs to eliminate discharges to the MEP. Stormwater effluent must meet water quality–based effluent limitations, or water quality standards for discharge leaving the site, and must not cause or contribute to the exceedance of receiving water limitations (water quality standards for receiving waters).

Redevelopment projects are all discretionary permit projects or project phases that have not been deemed complete for processing. The proposed program may be considered a redevelopment project subject to permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, should the following criteria apply within the Los Angeles program study area (except the City of Long Beach).

1. Where redevelopment results in an alteration to more than 50 percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction storm water quality control requirements, the entire project must be mitigated.
2. Where redevelopment results in an alteration of less than 50 percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction storm water quality control requirements, only the alteration must be mitigated, and not the entire development.
    a. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility, or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways that does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

Long Beach City Municipal Stormwater NPDES Permit (MS4 Permit)

In March 2014, Los Angeles RWQCB reissued the City of Long Beach MS4 Storm Water Permit as WDR Order R4-2014-0024 (NPDES Permit No. CAS004003). Pursuant to this MS4 Permit, the City of Long Beach is required to develop and implement Minimum Control Measures as part of a Stormwater Management Program. In order to comply with the updated MS4 Permit, the *Low Impact Development (LID) Best Management Practices (BMP) Design Manual* was developed (City of Long Beach 2013) in advance of the final permit, which details actions for compliance with the LID regulations adopted in City Ordinance No. ORD-10-035, such as land development policies pertaining to LID and hydromodification for new development and significant redevelopment projects. The use of LID BMPs in project planning and design is to preserve a site's predevelopment hydrology by minimizing the loss of natural hydrologic processes such as infiltration,

evapotranspiration, and runoff detention. LID BMPs try to offset these losses by introducing structural and non-structural design components that restore these water quality functions into the project's land plan.

One component of the New Development/Significant Redevelopment section of the City's Stormwater Management Plan is the provision to prepare a project-specific LID Plan to infiltrate, evapotranspire, and/or capture and use stormwater runoff to prevent pollutants from leaving the site. If partial or complete on-site compliance is infeasible, the LID Plan is required to comply with, at a minimum, all applicable Standard Urban Stormwater Management Plan (SUSMP) requirements. This includes operation and maintenance requirements for all structural or treatment control BMPs required for specific categories of developments to reduce pollutants in post-development runoff to the MEP. All development and redevelopment in Long Beach is subject to LID requirements of the City's Department of Development Services' *Low Impact Development (LID) Best Management Practices (BMP) Design Manual*, except for the following projects.

- A development or redevelopment that does not require a building permit
- A development or redevelopment creating, adding, or replacing less than 500 square feet of impervious surface area
- A development or redevelopment involving only emergency construction activity required to immediately protect public health and safety
- A development or redevelopment involving the grinding/overlaying and replacement of existing parking lots
- A development or redevelopment involving only re-striping of permitted parking lots
- A redevelopment resulting in land-disturbing activities or replacement of 50 percent or less of an existing building, structure, or impervious surface area
- An infrastructure project within the public right-of-way
- A development or redevelopment involving only activity related to gas, water, cable, or electricity services on private property
- A project involving only exterior movie and television production sets, or façades on an existing developed site
- A development or redevelopment where LID requirements are technically infeasible

As required by the City's LID Ordinance on stormwater quality management, all development or redevelopment that does not meet the above-listed exemptions must submit a LID Plan to the City for approval prior to the City issuing any building or grading permits.

The proposed program may be considered exempt from compliance with the Long Beach MS4 Permit should the infrastructure project occur only within the public right-of-way, involve only activity related to water on private property, or not require a building permit. Should any of these conditions not apply, the proposed program may be subject to the Long Beach MS4 Permit.

Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles

Discharges of treated or untreated groundwater generated from permanent or temporary dewatering operations or other applicable wastewater discharges not specifically covered in other

general or individual NPDES permits are currently regulated under a regional general permit, General Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties (General Permit) (Order No. R4-2013-0095, NPDES No. CAG994004). Permittees are required to monitor their discharges from groundwater extraction waste from construction and dewatering activities to ensure that proposed effluent limitations for constituents are not exceeded.

Construction dewatering wastes (except stormwater) are regulated as low-threat discharges to surface waters. An NOI and Report of Waste Discharge must be submitted to the Los Angeles RWQCB to comply with this General Permit. Based on the depth to groundwater, it is anticipated that the proposed program would require groundwater dewatering during construction, and would be subject to the requirements of this General Permit within Los Angeles RWQCB jurisdiction. During the design phase, each pipeline segment is evaluated with site-specific boring tests to determine exact location and potential for groundwater during construction activities. Sites that require dewatering activities due to groundwater encountered on site are required to either obtain permission to discharge to the sanitary sewer system through the local sewer agency or file for the General Permit to discharge to the MS4.

Santa Ana RWQCB

Orange County Municipal Stormwater NPDES Permit (MS4 Permit)

Orange County is split into two RWQCB jurisdictional areas. North and central Orange County (any area north of El Toro Road) are part of the Santa Ana RWQCB. South Orange County (any area south of El Toro Road) is part of the San Diego RWQCB. The County of Orange (unincorporated area) and cities of Laguna Hills, Laguna Woods, and Lake Forest have land area in both regions.

Stormwater discharges from northern and central Orange County are currently regulated under the Waste Discharge Requirements for the County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County within the Santa Ana Region Areawide Urban Storm Water Runoff (Order No. R8-2009-0030, NPDES No. CAS618030, as amended by Order No. R8-2010-0062) (MS4 Permit). The MS4 Permit requires that discharges from the MS4s shall not cause or contribute to exceedances of receiving water quality standards (designated beneficial uses and water quality objectives) for surface water or groundwater.

The Orange County Flood Control District and certain cities within the county are all co-permittees of this MS4 Permit (including the Orange County study area cities except Mission Viejo); are responsible for the management of storm drain systems within their jurisdictions; and are required to implement management programs, monitoring programs, implementation plans, and all BMPs within each respective jurisdiction and to take any other actions as may be necessary to meet the MEP standard. Provisions for a Monitoring and Reporting Program and compliance inspections are incorporated in the MS4 Permit and include requirements for construction site inspections, including review of erosion control and BMP implementation plans and effectiveness. Each co-permittee is also required to enforce its ordinances and permits at all construction sites.

Developments that qualify as a development or redevelopment project, as specified by criteria in the MS4 Permit, are required to develop a site-specific water quality management plan (WQMP), which includes site design, source control, and treatment control elements to reduce the discharge of pollutants in urban runoff. The WQMP requires identification of hydrologic conditions of concern, which are defined as a significant impact on downstream channels caused by an alteration in the

project site hydrologic regime. Alterations in a hydrologic regime include the following for a 2-year frequency storm event: increases in runoff volume, decreases in infiltration, changes in time of concentration, potential for increases in post-development downstream erosion, and potential for adverse downstream impacts on physical structure and aquatic and riparian habitat.

Significant redevelopment is defined as projects that include the addition or replacement of 5,000 square feet or more of impervious surface on a developed site. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of the facility, or emergency redevelopment activity required to protect public health and safety. Where redevelopment results in the addition or replacement of less than 50 percent of the impervious surfaces of a previously existing developed site, and the existing development was not subject to WQMP requirements, the numeric sizing criterion applies only to the addition or replacement, and not to the entire developed site. Where redevelopment results in the addition or replacement of more than 50 percent of the impervious surfaces of a previously existing developed site, the numeric sizing criterion applies to the entire development. The proposed program may be considered a redevelopment project subject to permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, should the above-listed criteria apply within the Orange County program study area (except the City of Mission Viejo).

San Bernardino County Municipal Stormwater NPDES Permit (MS4 Permit)

On January 29, 2010 the Santa Ana RWQCB adopted Order No. R8-2010-0036 (NPDES Permit CAS618036), the area-wide MS4 Permit for the Santa Ana Region of San Bernardino County. This order was the fourth permit issued to the permit area since 1990 and it expired on January 29, 2015.[3] The MS4 program currently designates the Flood Control District as the principal permittee. The County of San Bernardino and the study area cities of Fontana, Rancho Cucamonga, Rialto, San Bernardino, and Upland are designated as co-permittees. The permit contains provisions for receiving water limitations, discharge prohibitions, and stormwater management, monitoring, and reporting for reducing pollutants to the MEP standard.

The County developed a Model Area-Wide Local Implementation Plan (LIP) in July 2010 that was approved by the Santa Ana RWQCB in January 2011. The LIP, a requirement of the MS4 Permit, describes how the permittees implement the requirements of the MS4 Permit within their own jurisdictions. In addition, the County developed an in-depth Technical Guidance Document for WQMPs in July 2011. Accordingly, the LIP and Technical Guidance Document are the principal documents that comprehensively translate the MS4 Permit requirements into standards, conditions of approval, and actions that manage water quality in the local MS4. Each permittee shall require a project-specific WQMP for priority projects as early as possible during the environmental review or planning phase (land use entitlement). The combination of site design/LID BMPs (where feasible), source control, and/or treatment control BMPs, including regional treatment systems, in project-specific WQMPs shall address all identified pollutants and hydrologic conditions of concern from new development and/or significant redevelopment projects.

Significant redevelopment is defined as projects that include the addition or replacement of 5,000 square feet or more of impervious surface on a developed site subject to discretionary approval of the permittee. Redevelopment does not include routine maintenance activities that are conducted to

[3] Although this permit has expired, it is still in effect until a new permit has been issued.

maintain original line and grade, hydraulic capacity, original purpose of the facility, or emergency redevelopment activity required to protect public health and safety. Where redevelopment results in the addition or replacement of less than 50 percent of the impervious surfaces of a previously existing developed site, and the existing development was not subject to WQMP requirements, the numeric sizing criterion applies only to the addition or replacement, and not to the entire developed site. Where redevelopment results in the addition or replacement of more than 50 percent of the impervious surfaces of a previously existing developed site, the numeric sizing criterion applies to the entire development. The proposed program may be considered a redevelopment project subject to permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, should the above-listed criteria apply within the San Bernardino County program study area.

General Waste Discharge Requirements for Low-Threat Discharges to Surface Waters

Low-threat discharges are currently regulated under a regional general permit, General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant Threat to Water Quality (Low Threat Discharge General Permit) (Order No. R8-2015-0004, NPDES No. CAG998001). Low-threat discharges are not expected to cause toxicity; therefore, no toxicity limits are specified in the Low Threat Discharge General Permit. However, effluent limitations are specified for TDS, Total Inorganic Nitrogen, Total Petroleum Hydrocarbons, Total Residual Chlorine, Suspended Solids, Sulfides, Oil and Grease, and pH.

Construction dewatering wastes (except stormwater) are regulated as low-threat discharges to surface waters. An NOI and Report of Waste Discharge must be submitted to the Santa Ana RWQCB to comply with this Low Threat Discharge General Permit. Based on the depth to groundwater expected in many segments of the program area, it is anticipated the proposed program would require groundwater dewatering during construction and would be subject to the requirements of this Low Threat Discharge General Permit within the Santa Ana RWQCB jurisdiction.

San Diego RWQCB

Orange County Municipal Stormwater NPDES Permit (MS4 Permit)

On May 8, 2013, the San Diego RWQCB approved a regional MS4 Permit for San Diego, southern Orange, and southwestern Riverside counties (Order No. R9-2013-0001). The region-wide NPDES Permit (commonly referred to as the Regional MS4 Permit) sets the framework for municipalities, such as the City of Mission Viejo, to implement a collaborative watershed-based approach to restore and maintain the health of surface waters. The Regional MS4 Permit requires development of Water Quality Improvement Plans that will allow permittees to prioritize and address pollutants through an appropriate suite of BMPs in each watershed.

To implement the requirements of the Regional MS4 Permit, the co-permittees developed a Drainage Area Master Plan (DAMP) that includes a Model New Development and Redevelopment Program. Per the requirements in the DAMP and the Regional MS4 Permit, the permittees are required to adopt a LIP to implement the DAMP and Regional MS4 Permit in their jurisdictions. Using the LIP as a guide, the permittees will approve WQMPs for new development and redevelopment projects within their jurisdictions as part of the development plan and entitlement approval process. WQMPs for new development and significant redevelopment projects that fall under specific priority project categories must include Site Design, Routine Structural and Nonstructural, and Treatment Control BMPs; include an Operations and Maintenance Plan; and

address LID retention/biofiltration and hydromodification criteria. The priority project categories are those determined by the San Diego RWQCB to have the greatest potential to affect receiving waters with polluted runoff.

A Priority Development Project is defined as a redevelopment project that creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. The proposed program may be considered a Priority Redevelopment Project subject to permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, should the above-listed criteria apply within the south Orange County program study area (Mission Viejo).

General Waste Discharge Requirements for Discharges from Groundwater Extraction and Similar Discharges to Surface Waters

On March 12, 2008, the San Diego RWQCB issued the General WDRs for Discharges from Groundwater Extraction and Similar Discharges to Surface Waters within the San Diego Region Except for San Diego Bay (Order No. R9-2008-0002, Permit No. CAG919002) (Groundwater Discharge Permit). This permit regulates discharges of treated and untreated groundwater from construction to surface waters. It specifies the discharge prohibitions, receiving water limitations, monitoring and reporting program requirements, and general compliance determination criteria for groundwater dewatering during construction activities and drilling, construction, and purging of wells. Dischargers are required to collect and analyze representative groundwater samples for all constituents listed in the Groundwater Discharge Permit. Based on the results, dischargers would be required to provide treatment for any toxic compounds detected above the applicable screening levels. To obtain coverage under the Groundwater Discharge Permit, each permittee must submit an NOI to begin the application process.

4.9.3.4 Local

Table 4.9-6 lists the applicable hydrology and water quality regulations for the proposed program.

Table 4.9-6. Applicable Hydrology and Water Quality Regulations for the Proposed Program

Local Agency	Title of Plan, Policy, Regulation (date)	Applicable Regulation
Allen-McColloch Pipeline		
City of Yorba Linda	Municipal Code Chapter 16.04, Water Quality Control	The purpose of this chapter is to participate in the improvement of water quality and comply with federal requirements for the control of urban pollutants to stormwater runoff. This section of the Municipal Code requires compliance with the municipal NPDES permit and other applicable laws or regulations.
City of Anaheim	Municipal Code Chapters 17.04, 10.09, and 10.19	Chapter 17.04, Grading, Excavations, Fills, Watercourses, reduces the potential for excessive stormwater runoff and erosion and sediment transport; Chapter 10.09, NPDES, ensures compliance with the Municipal Stormwater NPDES Permit and minimization of water quality degradation; and Chapter 10.19, Landscape Water Efficiency, reduces the

Local Agency	Title of Plan, Policy, Regulation (date)	Applicable Regulation
		potential for dry-weather runoff.
City of Orange	Local Implementation Plan (2011)	The City LIP implements the various programs of the DAMP such as the inspection of industrial and commercial businesses, construction projects, new development projects, illegal discharges/illicit connections, and other requirements. The plan describes the activities that the City is currently undertaking to meet the requirements of its NPDES permits and to make meaningful improvements in urban water quality.
City of Tustin	Guidelines for Preliminary Water Quality Management Plans (2015)	The Guidelines identify projects requiring a WQMP. The preliminary WQMP is designed to address a project's quality and quantity of stormwater runoff to allow for the implementation of LID and hydromodification control BMPs. The combination of Site Design, Source Control, and LID and Treatment Control BMPs must adequately address all identified potential pollutants and hydrologic conditions of concern.
City of Irvine	City Council Ordinance No. 10-06 (2010) / Local Implementation Plan (LIP) (2007)	The purpose of the ordinance is to continue the City's participation in the improvement of water quality and to ensure adequate legal authority exists for the City to enforce federal and state requirements for the control of pollutants from stormwater/urban runoff.
City of Lake Forest	Local Implementation Plan (2010)	The City LIP is the principal stormwater guidance and compliance document specific to the City's jurisdiction. The LIP provides description and detail of the City's water quality program implementation activities. The LIP is designed to work in conjunction with the Orange County DAMP.
City of Mission Viejo	Local Implementation Plan (2010)	The City LIP describes the City-specific programs and activities that are being implemented to meet the requirements of the NPDES permit. The City's implementation of the LIP and related countywide programs are managed by the Public Works Department, which coordinates the development, implementation, and administration of the stormwater program for the City overall.
Calabasas Feeder		
City of Los Angeles	City of Los Angeles Low-Impact Development Ordinance and Manual (2011)	The City of Los Angeles institutionalized the use of LID techniques for development and redevelopment projects. Subsequent to the adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook: Low Impact Development Manual*, dated June 2011, to describe the required BMPs.
City of Hidden Hills	Storm Water Management and Discharge Control Ordinance	The intent of the ordinance is to protect and enhance the quality of watercourses, water bodies, and wetlands within the City in a manner consistent with the Municipal NPDES Permit. The ordinance is intended to provide the City with the legal authority necessary to control discharges to and from those portions of the stormwater system over which it has jurisdiction.
City of Calabasas	Standard Urban Storm Water Mitigation Plan (2005)	The SUSMP was developed as part of the municipal stormwater program to address stormwater pollution from new development and redevelopment. The SUSMP contains a

Local Agency	Title of Plan, Policy, Regulation (date)	Applicable Regulation
		list of the minimum required BMPs that must be used for a designated project. Additional BMPs may be required on a case-by-case basis.
Rialto Pipeline		
City of San Bernardino	Municipal Code Chapter 8.80, Storm Water Drainage System	The purpose of the chapter is to ensure the health, safety, and general welfare of the residents by prescribing regulations to effectively prohibit non-storm water discharges into the City's stormwater drainage system.
City of Rialto	Municipal Code Chapter 12.60, Municipal Separate Storm Sewer System	The intent is to protect and enhance the quality of watercourses, water bodies, groundwater, and wetlands within the City in a manner consistent with the Municipal NPDES Permit. This chapter is also intended to confirm and consolidate the City's legal authority necessary to control discharges to and from those portions of the MS4 over which it has jurisdiction. This chapter is also intended to ensure the health, safety, and general welfare of the residents by prescribing reasonable regulations to control effectively non-stormwater discharges containing pollutants into the city's MS4 to the MEP.
City of Fontana	Municipal Code Chapter 23-Article IX, Preventing Discharge of Pollutants Into Storm Drains	The purpose is to protect and enhance the water quality of watercourses, water bodies, groundwater, and wetlands in a manner consistent with federal, state, and local laws and regulations, and to implement the requirements of the City's NPDES permit. The environmental manager is authorized to impose BMPs on all users of the storm drain system, including users from existing residential or commercial development.
City of Rancho Cucamonga	Local Implementation Plan (2015)	The LIP describes how the City implements the requirements of the MS4 Permit within its own jurisdiction. Accordingly, the Municipal Stormwater Management Plan and the LIP are the principal documents that comprehensively translate the MS4 Permit requirements into actions that manage water quality in the local MS4. The LIP provides information regarding stormwater management requirements associated with new development or significant redevelopment projects.
City of Upland	Title 13 Public Services, Chapter 13.32, Environmental Quality Enterprise, Article IV. Stormwater Drainage Management	This section of the Municipal Code requires compliance with the Municipal NPDES Permit and other applicable laws or regulations.
City of Claremont	Chapter 8.28 of Title 8, Stormwater and Runoff Pollution Control (2014)	The purpose of the chapter is to protect the health and safety of the residents by protecting the beneficial uses, marine habitats, and ecosystems of receiving waters from pollutants carried by stormwater and non-stormwater discharges.
City of La Verne	Municipal Code Chapter 13.50 Stormwater And Urban Runoff Pollution Control	The purpose is to protect and enhance the water quality of watercourses, water bodies, groundwater, and wetlands in a manner consistent with the CWA. The purpose is to eliminate non-stormwater discharges to the municipal storm drain; control the discharge from spills, dumping, or disposal of materials other than stormwater to municipal storm drains;

Local Agency	Title of Plan, Policy, Regulation (date)	Applicable Regulation
		and reduce pollutants in stormwater discharges to the MEP. This section of the Municipal Code requires compliance with the Municipal NPDES Permit.
City of San Dimas	Municipal Code Chapter 14.11, Stormwater Management and Discharge	This section of the Municipal Code requires the submittal of an urban stormwater mitigation plan prior to the submittal of an application for a new development project, which shall be designed to reduce project runoff through incorporation of design elements and principles that include maximizing the percentage of permeable surfaces on site, minimizing the amount of stormwater directed to impermeable areas, and minimizing parking lot pollution through the effective use of BMPs.
Second Lower Feeder		
City of Yorba Linda	Municipal Code Chapter 16.04, Water Quality Control	The purpose of this chapter is to participate in the improvement of water quality and comply with federal requirements for the control of urban pollutants to stormwater runoff. This section of the Municipal Code requires compliance with the SUSMP.
City of Placentia	Municipal Code Chapter 16.20, Stormwater Runoff And Urban Pollutant Control	The purpose of the chapter is to participate in the improvement of water quality and comply with federal requirements for the control of urban pollutants to stormwater runoff, which enters the network of storm drains throughout Placentia. This section of the Municipal Code requires compliance with the Municipal NPDES Permit and Orange County DAMP.
City of Anaheim	Municipal Code Chapters 17.04, 10.09, and 10.19	Chapter 17.04, Grading, Excavations, Fills, Watercourses, reduces the potential for excessive stormwater runoff and erosion and sediment transport; Chapter 10.09, NPDES, ensures compliance with the Municipal Stormwater NPDES Permit and minimization of water quality degradation; and Chapter 10.19, Landscape Water Efficiency, reduces the potential for dry-weather runoff.
City of Buena Park	Municipal Code Chapter 13.32, Stormwater Drainage	This section of the Municipal Code requires compliance with the Municipal NPDES Permit.
City of Cypress	Local Implementation Plan	The LIP describes the activities the City performs to comply with the permit requirements. This includes the incorporation of design criteria containing water quality protection measures into all new development and redevelopment projects that occur within the City. This is done through the preparation of a WQMP. A Model WQMP document has been developed to assist in this preparation.
City of Los Alamitos	Municipal Code Chapter 8.44, Stormwater and Urban Runoff Pollutant Controls	The purpose of this chapter is to protect the health and safety of the waters of the state and the United States, those who recreate in and consume food from those waters, and marine habitats and ecosystems. This section of the Municipal Code requires compliance with the Municipal NPDES Permit.
City of Long Beach	Municipal Code Chapter 18.74, Low	Requires the use of LID standards and practices in future developments and redevelopments to encourage the beneficial

Local Agency	Title of Plan, Policy, Regulation (date)	Applicable Regulation
	Impact Development Standards (2010)	use of rainwater and urban runoff; reduce stormwater/urban runoff while improving water quality; reduce off-site runoff and provide increased groundwater recharge; and reduce erosion and hydrologic impacts downstream. The requirement to incorporate LID standards into the design plans of development and redevelopment projects to mitigate stormwater quality impacts is implemented through the City's plan review and approval process.
City of Lakewood	Stormwater and Runoff Pollution Control Ordinance	The City adopted the same ordinance as the County of Los Angeles stormwater and runoff pollution control ordinance. The purpose is to protect the beneficial uses, marine habitats, and ecosystems of receiving waters from pollutants carried by stormwater and non-stormwater discharges.
City of Carson	Storm Water Management and Discharge Control Ordinance	This section of the Municipal Code requires compliance with the Municipal NPDES Permit.
City of Los Angeles	City of Los Angeles Low-Impact Development Ordinance and Manual (2011)	The City of Los Angeles institutionalized the use of LID techniques for development and redevelopment projects. Subsequent to the adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook: Low Impact Development Manual* to describe the required BMPs.
City of Torrance	Municipal Code Chapter 10, Storm Water And Urban Runoff Pollution Control	This section of the Municipal Code requires compliance with the Municipal NPDES Permit.
City of Lomita	Stormwater and Runoff Pollution Control Ordinance	The City adopted the same ordinance as the County of Los Angeles stormwater and runoff pollution control ordinance. The ordinance requires compliance with the Municipal NPDES Permit.
City of Rolling Hills Estates	Municipal Code Chapter 8.38, Stormwater and Urban Runoff Pollution Control	The purpose of this chapter is to implement the City's municipal NPDES permit by reducing pollutants in stormwater discharges to the MEP and incorporating BMPs and other mitigation measures and design features regarding stormwater runoff in new development and redevelopment projects.
Sepulveda Feeder		
City of Los Angeles	City of Los Angeles Low-Impact Development Ordinance and Manual (2011)	The City of Los Angeles institutionalized the use of LID techniques for development and redevelopment projects. Subsequent to the adoption of the Stormwater LID Ordinance, the City prepared the *Development Best Management Practices Handbook: Low Impact Development Manual* to describe the required BMPs.
City of Culver City	Municipal Code Chapter 5.05, Storm Water And Urban Runoff Pollution Control	The purpose of this chapter is to implement the City's municipal NPDES permit by reducing pollutants in stormwater discharges to the MEP and incorporating BMPs and other mitigation measures and design features regarding stormwater runoff in new development and redevelopment

Local Agency	Title of Plan, Policy, Regulation (date)	Applicable Regulation
		projects.
City of Gardena	Municipal Code Chapter 8.70, Storm Water And Runoff Pollution Control	The purpose of this chapter is to protect the public health, welfare, and safety and to reduce the quantity of pollutants being discharged to waters of the United States through the elimination of non-stormwater discharges to the municipal stormwater system, the elimination of the discharge of pollutants into the municipal storm drain system, the reduction of pollutants in stormwater discharges to the MEP, and the protection and enhancement of the quality of the waters of the United States in a manner consistent with the provisions of the CWA.
City of Hawthorne	Municipal Code Chapter 8.50, Storm Water And Runoff Pollution Control	This section of the Municipal Code requires compliance with the Municipal NPDES Permit.
City of Inglewood	Municipal Code Article 16, Stormwater Management And Discharge Control	The ordinance requires discharges to the storm drain to be composed entirely of stormwater except as permitted; appropriate BMPs; regular sweeping and cleaning of all parking lots with 25 or more spaces; and compliance with all applicable NPDES requirements.
City of Torrance	Municipal Code Chapter 10, Storm Water And Urban Runoff Pollution Control	This section of the Municipal Code requires compliance with the Municipal NPDES Permit.

4.9.4 Thresholds and Methodology

4.9.4.1 Thresholds of Significance

Table 4.9-7 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to hydrology and water quality. It indicates which impacts were determined to be less than significant in the Initial Study and therefore do not require additional analysis and which impacts must be analyzed in the PEIR for the proposed program.

Table 4.9-7. CEQA Thresholds for Hydrology and Water Quality

Threshold *Would the proposed program:*	**Analysis Required for the Proposed Program**
a. Violate any water quality standards or waste discharge requirements?	X
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits	N/A*

Threshold *Would the proposed program:*	**Analysis Required for the Proposed Program**
have been granted)?	
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site?	X
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site?	X
e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	X
f. Otherwise substantially degrade water quality?	X
g. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	N/A*
h. Place within a 100-year flood hazard area structures that would impede or redirect floodflows?	N/A*
i. Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	N/A*
j. Expose people or structures to inundation by seiche, tsunami, or mudflow?	X
*Determined to be less than significant in the Initial Study (Appendix A).	

4.9.4.2 Methodology

Water Quality Standards and Waste Discharge Requirements

This analysis identifies applicable water quality standards and waste discharge standards for the program pipeline alignments and determines if the typical construction scenarios would be consistent with these standards. This analysis assumes that each project would incorporate Metropolitan's environmental commitments and typical BMPs and comply with applicable regulations. Mitigation is provided to reduce potentially significant impacts to less-than-significant levels. ~~and/or to require further analysis at the project level, if necessary.~~

As part of the program, Metropolitan has agreed to implement the following environmental commitment related to water quality standards and waste discharge requirements, and this commitment is considered part of the program for analysis purposes.

- **Sediment and Erosion Control – Post Construction BMPs**. The Contractor shall submit its construction Storm Water Pollution Prevention Plan (SWPPP) for projects over one acre or Water Pollution Control Plan (WPCP) for projects under one acre, whichever is required by the project, to the Engineer for review and approval. The submitted SWPPP or WPCP shall be fully compliant with the requirements of the SWRCB, Construction Storm Water Program. Upon acceptance of Contractor-prepared SWPPP, Metropolitan will file the SWPPP together with the

Notice of Intent (NOI) and obtain a Waste Discharge Identification number (WDID) from the SWRCB. At a minimum, the SWPPP or WPCP shall contain the following, as required:

- Names and qualifications of its SWPPP Manager, Qualified SWPPP Developer (QSD), and Qualified SWPPP Practitioner (QSP).
- Site and source descriptions (including the elements and characteristics specific to the site).
- Descriptions of BMPs for erosion and sediment control, which shall:
  - Prevent runoff from flowing over unprotected slopes.
  - Keep disturbed areas to the minimum necessary for construction.
  - Control sediment transport within the site and prevent sediment transport from the site, using appropriate BMPs, including but not limited to check dams, fiber rolls sand bags, and siltation fences. Reduce sediment transport off site through construction of appropriately designed desilting and retention ponds.
  - Remove and dispose of all construction-generated siltation collected within or behind BMPs, including retention ponds.
  - Confine soil disturbance activities to the dry season, whenever possible. If construction needs to be scheduled for the wet season, ensure that erosion and sediment transport control measures are implemented prior to disturbance of soil and/or vegetation.
  - Stabilize disturbed areas as quickly as possible but in no case shall the time of stabilization exceed the time limits specified by the Permit.
  - Maintain existing temporary controls until they are replaced with permanent controls.
  - Maintain and improve existing controls as necessary to comply with the Permit for construction activity.
- BMPs for construction waste handling and disposal.
- Implementation of approved local plans.
- A sampling plan and/or sampling contingency plan, as required and based on project risk level.
  - The Contractor shall make visual inspections of all erosion control and sediment transport devices as necessary to ensure proper operation not less than once per week, and promptly before and after every rainstorm and at least every 24 hours during an extended rainfall event. If such inspection reveals that additional measures are needed to prevent erosion and sediment transport, the Contractor shall promptly maintain, modify, or install additional devices as needed. The Contractor shall use the forms in the SWPPP for all inspections, and all completed forms shall be included in the SWPPP, and submitted to Metropolitan.
  - The Contractor shall perform routine maintenance, which shall include maintenance and repair of BMPs, debris removal, silt/sediment removal, clearing of vegetation around flow control devices to prevent clogging, and maintenance of healthy vegetative cover.
- Comply with post-construction BMPs for post-construction erosion and sediment control prepared by Metropolitan.

- Non-storm water management.
- All annual compliance certifications, monitoring program reports, and data as required by terms and conditions of the CGP [Construction General Permit] and SWPPP.

- **Dewatering**. If required, the Contractor shall obtain coverage and comply with the applicable NPDES Dewatering Permit for hydrostatic testing, leak testing and disinfection water, and uncontaminated groundwater if discharged into storm drain. Construction (non-storm) waters may include, but are not limited to water from hydrostatic and other leak tests. Waters shall not be discharged to inland surface waters, including storm drains, or groundwater bodies, without first meeting the discharge requirements of the applicable NPDES Dewatering Permit. Waters shall not be discharged into sanitary sewers or storm water drains without first obtaining permits required by all applicable agencies.

Drainage Patterns, Erosion, and Siltation

This analysis considers the typical construction scenarios that would be part of the proposed program to determine if they may result in water discharge, alteration of drainage patterns, increased runoff, and impacts related to erosion or siltation. This analysis assumes that each project would incorporate Metropolitan's environmental commitments and typical BMPs and comply with applicable regulations. ~~Mitigation is provided to reduce potentially significant impacts to less-than-significant levels and/or to require further analysis at the project level, if necessary.~~

Drainage Patterns, Runoff, and Flooding

This analysis considers the typical construction scenarios that would be part of the proposed program to determine if they may result in water discharge, alteration of drainage patterns, increased runoff, and impacts related to flooding on or off the rehabilitation sites. This analysis determined if the proposed program would create or contribute to runoff water that would exceed the capacity of existing or planned drainage systems or provide substantial additional sources of polluted runoff. This analysis assumes that each project would incorporate Metropolitan's environmental commitments and typical BMPs and comply with applicable regulations. ~~Mitigation is provided to reduce potentially significant impacts to less-than-significant levels and/or to require further analysis at the project level, if necessary.~~

Water Quality

Impacts of the program on surface water quality are analyzed considering the program-related sources of pollution during rehabilitation, such as sediments and other construction materials. The proposed program is analyzed for potential impacts on beneficial uses and water quality objectives (i.e., pollutants of concern) of receiving waters. Receiving waters with CWA Section 303(d) impaired water quality are identified, along with the impairment (pollutant/stressor) and an indication of whether the impairment would have the potential to be further affected by projects in the proposed program. Surface water quality impacts are discussed for land disturbance activities occurring near water bodies or storm drains, pipe dewatering into surface waters, and other potential impacts related to stormwater or non-stormwater discharges. This analysis assumes that each project would incorporate Metropolitan's environmental commitments and typical BMPs and comply with applicable regulations. ~~Mitigation is provided to reduce potentially significant impacts to less-than-significant levels and/or to require further analysis at the project level, if necessary.~~

Seiche, Tsunami, and Mudflow

Areas within the study area for each pipeline that are subject to seiche, tsunami, or mudflow are identified in Section 4.9.2. This analysis addresses how the projects in the proposed program would relate to these factors, if rehabilitation activities were to occur in the subjected areas. This analysis assumes that each project would incorporate Metropolitan's environmental commitments and typical BMPs and comply with applicable regulations. ~~Mitigation is provided to reduce potentially significant impacts to less-than-significant levels and/or to require further analysis at the project level, if necessary.~~

4.9.5 Impacts Analysis

4.9.5.1 Program Analysis

Threshold WQ-A: Violate Any Water Quality Standards or Waste Discharge Requirements

Multiple excavation areas would be needed to rehabilitate the pipelines and buried equipment vaults included in the proposed program. For each mile of PCCP line, from three up to five excavation sites may be necessary (though fewer sites would be necessary in most locations). Each excavation area would be approximately 20 feet wide and 50 feet long and would be on average approximately 15 to 20 feet deep; however, these dimensions would vary from site to site based upon the size and depth of the pipe or vault to be rehabilitated. Construction of each excavation area would require the use of heavy equipment and construction-related chemicals, such as fuels, oils, grease, solvents, and paints, that would be stored in limited quantities on site. In the absence of proper controls, these construction activities could result in accidental spills or disposal of potentially harmful materials used during construction that could wash into and pollute surface waters or groundwater. Materials that could potentially contaminate the construction area from a spill or leak include diesel fuel, gasoline, lubrication oil, hydraulic fluid, antifreeze, transmission fluid, lubricating grease, and other fluids.

Existing surface improvements, such as road pavements, sidewalks, and landscaping, would be removed at each excavation area, and soils would be excavated and temporarily removed from the site to expose the existing pipeline. Once rehabilitation is complete, the excavation area would be backfilled with soils originally excavated, and the surface of each excavation area and surrounding work zone would be restored to existing conditions. This would involve repaving existing roads, replacing or repairing existing sidewalks, and replanting landscaping. Metropolitan would incorporate Sediment and Erosion Control – Post Construction BMPs standard practices and requirements, as identified in Section 4.9.4.2, *Methodology*, into each project to minimize any construction-related runoff impacts.

Because the proposed program would be implemented incrementally over time, there would be no single construction discharge permitting process. Instead, as construction of each of the proposed projects is initiated, individual construction discharge permits would be acquired. As identified in Section 4.9.4.2, *Methodology*, where the anticipated total disturbance for a facility would be greater than 1 acre, coverage under the statewide Construction General Permit (SWRCB Water Quality Order 2009-0009-DWQ) would be fulfilled by submitting an NOI to comply with the Construction

General Permit and having a Qualified SWPPP Developer prepare and implement the SWPPP, among other things. The SWPPP would include BMPs to control erosion, sedimentation, and hazardous materials release from construction sites into surface waters. Construction BMPs would be designed to minimize erosion and sedimentation and prevent spills. Various BMPs may be needed at different times during construction, because activities are constantly changing site conditions. Selection of erosion control BMPs is based on minimizing disturbed areas, stabilizing disturbed areas, and protecting water quality. Selection of sediment control BMPs is based on retaining sediment on site and controlling the site perimeter. In addition, the SWPPP identifies the following: equipment storage, cleaning, and maintenance areas/activities; points of ingress and egress to the construction site; material loading, unloading, and storage practices and areas, including construction materials, building materials, and waste materials; and materials, equipment, or vehicles that may come in contact with stormwater. These measures would prevent excavated and eroded soils, construction materials, or debris from being transported to receiving waters.

If anticipated disturbance is less than 1 acre, the Construction General Permit would not apply. Instead, the project would be required to comply with minimum BMPs as specified by the applicable MS4 Permit (Los Angeles, Long Beach, Orange County, San Bernardino), which would similarly require implementation of BMPs to provide erosion control, sediment control, and waste management strategies for construction sites.

In select areas, shallow groundwater may be present and could potentially interfere with construction activities, requiring groundwater dewatering in support of construction. Metropolitan would incorporate Groundwater Dewatering standard practices and requirements, as identified in Section 4.9.4.2, *Methodology*, into each project to minimize any construction-related dewatering impacts. If groundwater dewatering is determined to be necessary during construction, an NOI to comply with the applicable Groundwater Dewatering General Permit would be required. Dewatering typically involves the extraction of shallow groundwater and subsequent discharge into nearby storm drains or other receiving bodies in order to facilitate the construction of underground facilities. Compliance with the conditions of the applicable general permit would ensure that dewatering discharges would not elevate pollutant concentrations beyond existing water quality limitations or otherwise deleteriously affect beneficial use of receiving waters.

Because the precise location of the PCCP line improvements and the appropriate construction techniques are not known at this time, the specific location of potential effects cannot be determined. However, the sensitive water resources identified along the program pipelines (as identified in Section 4.9.2) could be affected by the proposed program improvements, resulting in impacts on hydrology and water quality. While the work generally would be performed in areas of low environmental sensitivity (street rights-of-way), there are several channels and streams the proposed program crosses that could be potentially affected. The following discussion breaks down the different impacts that could occur on the various water resources within the program area. The analyses describe the impacts on water resources in terms of impervious and pervious surfaces. Impervious surfaces are further broken down to describe impacts within the paved right-of-way and concrete channels. Pervious surfaces are broken down further to describe impacts within natural channels and on natural lands.

Paved Right-of-Way (Impervious)

The existing PCCP lines are predominantly within public rights-of-way. Construction would generally take place in the existing public rights-of-way because that is the current location of the

pipeline. Impacts on hydrology and water quality would be minimized in these paved right-of-way areas. Existing surface improvements, such as road pavements, sidewalks, and landscaping, would be removed at each excavation area, and soils would be excavated and temporarily removed from the site to expose the existing pipeline. Soil stockpiles would be located away from drainage courses, drain inlets, or concentrated flows of stormwater. Non-active soil stockpiles would be covered and contained within temporary perimeter sediment barriers, such as berms, dikes, silt fences, or sandbag barriers. Because excavation areas would be on average approximately 15 to 20 feet deep, potential pollutants generally would be contained within the excavated areas, minimizing the potential discharge of pollutants from the project site to receiving waters. Because Metropolitan would require the contractor to comply with all applicable NPDES regulations, including the Municipal and Construction General permits (Sediment and Erosion Control – Post Construction BMPs standard practices and requirements, as identified in Section 4.9.4.2, *Methodology*), and because the proposed work would occur predominantly in public rights-of-way and below ground, impacts would be less than significant.

Concrete Channel (Impervious)

The existing PCCP lines cross several concrete channels with the program study area (as identified in Section 4.9.2). The surface waters the proposed program facilities cross are channelized and thus have a set drainage pattern; no excavation areas would occur within or adjacent to concrete channels to minimize the potential for discharge to these drainages. Proposed facility operations would not involve the alteration of these channels. It is anticipated the bed and banks of each concrete channel would not be altered because the primary component simply retrofits the existing pipeline under the channels. Because Metropolitan would require the contractor to comply with all applicable NPDES regulations, including the Municipal and Construction General permits (Sediment and Erosion Control – Post Construction BMPs standard practices and requirements, as identified in Section 4.9.4.2, Methodology), and because the proposed work would not occur within the concrete channel, impacts would be less than significant. New pipeline alignments across the concrete channels would require further environmental review and may be subject to additional permitting requirements.

Natural Channel/Streams (Pervious)

The existing PCCP lines cross several natural channels with the program area (as identified in Section 4.9.2). The natural channels the proposed program facilities cross are not channelized and thus have a meandering drainage pattern, such as Cajon Wash and Lytle Creek; no excavation areas would occur within or adjacent to natural channels to minimize the disturbance to these natural drainages. Proposed facility operations would not involve the alteration of these channels. It is anticipated the bed and banks of each natural channel would not be altered because the primary component simply retrofits the existing pipeline under the channels. Because Metropolitan would require the contractor to comply with all applicable NPDES regulations, including the Municipal and Construction General permits (Sediment and Erosion Control – Post Construction BMPs standard practices and requirements, as identified in Section 4.9.4.2, *Methodology*), and because the proposed work would not occur within the bed and banks of the natural channel, impacts would be less than significant. New pipeline alignments across the natural channels would require further environmental review and would be subject to additional permitting requirements.

Natural Land (Hillside/Undeveloped) (Pervious)

While the existing PCCP line is predominantly within public rights-of-way, several portions of the Allen-McColloch Pipeline, Rialto Pipeline, and Sepulveda Feeder traverse natural lands, including hillsides and undeveloped and agricultural land uses. Some of these natural areas are also associated with natural drainages; no excavation areas would occur within or adjacent to natural drainages to minimize the disturbance to these natural drainages. Impacts on hydrology and water quality generally would be minimized in these natural areas. Existing landscaping would be removed at each excavation area, and soils would be excavated and temporarily removed from the site to expose the existing pipeline. Soil stockpiles would be located away from drainage courses, drain inlets, or concentrated flows of stormwater. Non-active soil stockpiles would be covered and contained within temporary perimeter sediment barriers, such as berms, dikes, silt fences, or sandbag barriers. Because excavation areas would be on average approximately 15 to 20 feet deep, potential pollutants generally would be contained within the excavated areas, minimizing the potential discharge of pollutants from the project site to receiving waters. Once rehabilitation is complete, the excavation area would be backfilled with soils originally excavated, and the surface of each excavation area and surrounding work zone would be restored to existing conditions. Because Metropolitan would require the contractor to comply with all applicable NPDES regulations, including the Municipal and Construction General permits (Sediment and Erosion Control – Post Construction BMPs standard practices and requirements, as identified in Section 4.9.4.2, *Methodology*), and because the work zone would be restored to existing conditions, impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold WQ-C: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including through the Alteration of the Course of a Stream or River, in a Manner that Would Result in Substantial Erosion or Siltation On or Off Site

The proposed program facilities would not alter the course of a stream or river. The proposed program would not involve the alteration of these channels, nor is it expected to increase the flow within these channels. As a result, there would be no increase in erosion or siltation along river or stream channels.

Implementation of the proposed program could alter existing drainage patterns at each project site in other ways. Construction would include excavation and the overall disturbance of existing hardscape and landscape, would expose bare soil, and could temporarily alter drainage patterns with the potential to cause erosion and sedimentation. Adherence to applicable NPDES regulations, including the Municipal and Construction General permits (Sediment and Erosion Control – Post Construction BMPs standard practices and requirements, as identified in Section 4.9.4.2, *Methodology*), would ensure erosion or siltation does not occur on site through implementation of

erosion and sediment control BMPs during construction of the projects. These requirements would include the implementation of BMPs for erosion, sediment, non-stormwater management, and waste management, as described further in Threshold WQ-A. Furthermore, once rehabilitation is complete, the excavation area would be backfilled with soils originally excavated, and the surface of each excavation area and surrounding work zone would be restored to existing conditions. With implementation of erosion and sediment control BMPs and restoration of the site, construction-related impacts related to alteration of an existing drainage pattern that could result in substantial erosion or siltation on or off site from the proposed program would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold WQ-D: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including through the Alteration of the Course of a Stream or River, or Substantially Increase the Rate or Amount of Surface Runoff in a Manner That Would Result in Flooding On or Off Site

The proposed program facilities would not alter the course of a stream or river. The proposed program would not involve the alteration of these channels, nor is it expected to increase the flow within these channels. As a result, there would be no associated potential for flooding.

Implementation of the proposed program could alter existing drainage patterns at each project site in other ways. The presence of new aboveground facilities at each project site may change the extent of permeable or impermeable surfaces, which could alter the direction and volume of overland flows during both wet and dry periods. Aboveground enclosures are typically located on sidewalk median strips and house back-flow preventer valves and air vents. For aboveground enclosures on existing impervious surfaces, the addition of the structure would not alter the drainage pattern and no impact would occur. However, for aboveground enclosures on existing pervious surfaces, the addition of the structure may alter the drainage pattern, resulting in flooding on or off site. Given the small size of these structures, they are unlikely to significantly affect the drainage pattern. However, because the precise location of the aboveground facilities and the appropriate construction techniques are not known at this time, the specific location of potential effects cannot be determined. During project design of aboveground enclosures, overland flows and drainage at each project site with pervious conditions would be assessed and drainage facilities designed such that no net increase in runoff would occur, in accordance with the applicable MS4 Permit. As required by MM HYD-1, a grading and drainage plan would be developed during project design for aboveground facilities within pervious areas and implemented to ensure no increase in flooding on or off site. This also would ensure no substantial increases in erosion or sedimentation and no exceedance of the existing capacity of stormwater drainage systems. Impacts would be less than significant with mitigation.

Mitigation Measures

MM HYD-1 Implementation of a Grading and Drainage Plan.

Prior to construction of aboveground project facilities, Metropolitan will prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in flooding, erosion, or sedimentation potential in accordance with applicable regulations and in coordination with ~~requirements for~~ the county and/or the city in which the facility would be located. The ~~In accordance with local requirements, the~~ plan will identify and implement best management practices and other measures to ensure that potential increases in stormwater flows and erosion are minimized.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM HYD-1 would reduce these impacts so that residual impacts would be less than significant.

Threshold WQ-E: Create or Contribute Runoff Water that Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems or Provide Substantial Additional Sources of Polluted Runoff

Runoff could be generated during construction of the proposed program facilities during a storm event or from non-stormwater discharges, such as water used for dust control or hydrostatic testing of the pipelines. If BMPs are improperly installed, this could result in runoff that could overwhelm the stormwater drainage system or result in sedimentation. Stormwater controls would be necessary to prevent runoff in amounts that would overwhelm the stormwater drainage system and to prevent pollutants, such as sediments, to increase in concentration and discharge from the project site. Metropolitan would incorporate Sediment and Erosion Control – Post Construction BMPs standard practices and requirements, as identified in Section 4.9.4.2, *Methodology*, into each project to minimize any construction-related runoff impacts. Metropolitan would also incorporate Groundwater Dewatering standard practices and requirements, as identified in Section 4.9.4.2, *Methodology*, into each project to minimize any construction-related dewatering impacts. Dewatering typically involves the extraction of shallow groundwater and subsequent discharge into nearby storm drains or other receiving bodies in order to facilitate the construction of underground facilities. Compliance with the conditions of the applicable general permit would ensure that dewatering discharges would not elevate pollutant concentrations.

Moreover, the work generally would be performed in areas of low environmental sensitivity (public rights-of-way); no excavation areas would be within or adjacent to channels to minimize the disturbance to these drainages. However, the Second Lower Feeder crosses the Dominguez Channel near the I-405 and Carson Street intersection. The downstream receiving waters of the Dominguez Channel Estuary is a 303(d)-listed water body as impaired for sediment toxicity. As a result, this waterway is particularly sensitive to sediment discharges, and additional BMPs may be necessary during construction to control and capture sediment from the project site to prevent discharge. As required by the RWQCB, the SWPPP or WPCP would identify the water body as sensitive for sediment and would implement BMPs to ensure the beneficial uses and water quality objectives are upheld. BMPs would be regularly inspected and monitored for performance during construction activities. Additional BMPs would be installed as necessary to ensure the waterways are protected

to the MEP. Metropolitan would be required to comply with all applicable regulations and permits as noted under Threshold WQ-A. Therefore, impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold WQ-J: Expose People or Structures to Inundation by Seiche, Tsunami, or Mudflow

The program study area does not include coastal areas that could be subject to tsunami. The program area includes some areas that are adjacent to enclosed bodies of water that could be subject to seiche under extreme conditions. However, the flood inundation area is a pre-existing condition within the project area, and the placement of the proposed project facilities in the inundation area would not exacerbate this condition. The proposed program facilities consist of either subterranean improvements or low-profile features (permanent appurtenant structures) that are generally not considered susceptible to substantive damage from these hazards. Aboveground enclosures, typically located on sidewalk median strips, house back-flow preventer valves and air vents. No permanent structures would be staffed and any potential damage the aboveground enclosures might incur would likely be relatively easily repaired. As a result, the potential impact on structures subject to inundation by seiche would be less than significant.

In general, the proposed program would be in relatively flat areas that are not susceptible to mudflows. However, small portions of the Allen-McColloch Pipeline, Rialto Pipeline, and Sepulveda Feeder are within hilly areas that may be susceptible to mudflow under extreme conditions. However, the proposed program is an existing facility, and the proposed program would not add new aboveground facilities that would exacerbate mudflow conditions. Furthermore, proposed program facilities consist of either subterranean improvements or low-profile features that are generally not considered susceptible to substantive damage from these hazards. As a result, the potential impact on structures subject to mudflow would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

4.9.5.2 Cumulative Analysis

The proposed program would be implemented over a long period of time; in many cases implementation of the projects in the proposed program would occur past the planning horizons of

local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

The geographic scope of analysis for cumulative impacts on hydrology and water quality includes the watershed in which the program would occur. The proposed program would involve land-disturbing activities that would expose soils and, as such, would require compliance with the Construction General Permit. Compliance with the Construction General Permit would require development and implementation of a SWPPP by a Qualified SWPPP Developer, which would list BMPs that would be implemented by a Qualified SWPPP Practitioner to protect stormwater runoff and include a monitoring plan for measuring BMP effectiveness. At a minimum, BMPs would include practices to minimize the contact of construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, adhesives) with stormwater. The SWPPP would specify properly designed, centralized storage areas that keep these materials out of the rain. The primary BMPs selected would focus on erosion control (i.e., keeping sediment in place), followed by sediment control (i.e., keeping sediment on the site). In addition to the SWPPP, implementation of Metropolitan's environmental commitments and typical BMPs would be required, which would reduce impacts on water quality.

The proposed program would not contribute to a cumulative degradation of water quality. Development of the proposed program and other development within the study area could degrade stormwater quality by contributing pollutants during construction. When the effects of the proposed program on water quality are considered in combination with the potential effects of other cumulative projects, there is the potential for cumulative impacts on surface water, stormwater, and groundwater quality. The incremental water quality impact contribution from implementation of the proposed program would be minor because required BMPs would reduce the potential for pollutant discharge in stormwater runoff. The combined effects on water quality from the proposed program and other projects in the study area could result in a cumulatively significant impact. However, new projects within the study area are also subject to the requirements of the associated Municipal NPDES Permit, the Construction General Permit, and the applicable municipal codes as they relate to water quality; these regulatory requirements have been designed to be protective of water quality. Additionally, development projects would be subject to an environmental review process, which would identify potential site- and/or project-specific water quality impacts and mitigate for any potential significant impacts. Therefore, the proposed program, in conjunction with other cumulative projects, would not result in significant cumulative impacts on hydrology and water quality resources within the program study area, and the proposed program's contribution to impacts would not be cumulatively considerable.

Section 4.10
Land Use

4.10.1 Introduction

This section describes the existing conditions for land use, the regulatory framework associated with land use, the impacts on land use that would result from the proposed program, and the mitigation measures that would reduce these impacts. As noted in the Initial Study, the proposed program would have potentially significant land use impacts.

4.10.2 Existing Conditions

The study area for land use is the pipeline easements or rights-of-way and the immediately adjacent properties. (Note to reader: No figures are provided for existing or planned land uses in this document because it is not practical to map land uses at the program-level scale, and because the proposed program would not change any existing or planned land uses.)

4.10.2.1 Allen-McColloch Pipeline

The Allen-McColloch Pipeline, which is approximately 26 miles in length, is located in Orange County and within the city limits of Yorba Linda, Anaheim, Orange, Tustin, Lake Forest, and Mission Viejo. The Allen-McColloch Pipeline originates from the Diemer Water Treatment Plant in unincorporated Orange County. The pipeline exits the Diemer Water Treatment Plant to the southeast below the Black Gold Golf Club, prior to continuing south between residential and commercial land uses in Yorba Linda. After crossing the Santa Ana River and State Route 91 (SR-91)), the Allen-McColloch Pipeline generally runs parallel to Imperial Highway before crossing undeveloped and residential land uses. It continues southeast along the outskirts of Orange, North Tustin, and Irvine, traversing primarily undeveloped and agricultural land uses until entering residential and commercial land uses of Lake Forest. The Allen-McColloch Pipeline terminates at the El Toro Reservoir in Mission Viejo.

Planned land uses through which the Allen-McColloch Pipeline travels are identified in Table 4.10-1.

Table 4.10-1. Planned Land Uses Associated with the Allen-McColloch Pipeline

Jurisdiction	Planned Land Uses
City of Yorba Linda	Residential, Commercial, Open Space (City of Yorba Linda 1993)
City of Anaheim	Commercial, Parks, Residential (City of Anaheim 2004)
City of Orange	Open Space, Residential (City of Orange 2010)
City of Tustin	Residential, Planned Community Public/Institutional (City of Tustin 2013)
City of Lake Forest	Open Space, Residential, Commercial, Public Facility (City of Lake Forest 1994)
City of Mission Viejo	Residential, Recreation/Open Space, Community Facility (City of Mission Viejo 2013)

Jurisdiction	Planned Land Uses
Unincorporated Orange County	Public Facilities, Open Space (Orange County 2014)

4.10.2.2 Calabasas Feeder

The Calabasas Feeder, which is approximately 9.3 miles in length, is located in Los Angeles County and travels primarily within the city limits of Los Angeles, with a short portion of the pipeline within the city limits of Hidden Hills and Calabasas. The Calabasas Feeder originates from West Valley Feeder No. 2 in the city of Los Angeles and follows Owensmouth Avenue south through densely populated residential and commercial land uses. At Chase Street, the Calabasas Feeder heads west and south, continuing through residential land uses. The Calabasas Feeder then turns southwest and parallels U.S. Highway 101 (US-101) through primarily commercial land uses prior to terminating at the Las Virgenes Municipal Water District Service Connection in Calabasas.

Planned land uses through which the Calabasas Feeder travels are identified in Table 4.10-2.

Table 4.10-2. Planned Land Uses Associated with the Calabasas Feeder

Jurisdiction	Planned Land Uses
City of Los Angeles	Regional Commercial, Residential (City of Los Angeles 2001)
City of Hidden Hills	Commercial (City of Hidden Hills 1995)
City of Calabasas	Public Facilities (City of Calabasas 2015)

4.10.2.3 Rialto Pipeline

The Rialto Pipeline, which is approximately 30 miles in length, is located in San Bernardino and Los Angeles counties and travels within the city limits of San Bernardino, Rialto, Fontana, Rancho Cucamonga, Upland, Claremont, La Verne, and San Dimas, as well as small portions of unincorporated areas in the two counties. The Rialto Pipeline originates at the California Department of Water Resources' Devil Canyon Facility in the city of San Bernardino and exits the facility to the southwest along Pine Avenue through residential land uses. After crossing Interstate 215 (I-215), the Rialto Pipeline continues southwest through vacant land and industrial land uses until entering the northern portions of Rialto and Fontana, where the pipeline traverses a mixture of residential, commercial, and open space land uses. In Rancho Cucamonga, Upland, and Claremont, the Rialto Pipeline travels generally along Interstate 210 (I-210) through primarily residential and open space land uses. After traveling to the south of Live Oak Reservoir, the Rialto Pipeline continues through La Verne, traveling through residential land uses, open space land uses, and golf courses. The Rialto Pipeline continues into San Dimas, where it parallels North San Dimas Canyon Road through open space and residential land uses prior to terminating at the San Dimas Power Plant Control Structure.

Planned land uses through which the Rialto Pipeline travels are identified in Table 4.10-3.

Table 4.10-3. Planned Land Uses Associated with the Rialto Pipeline

Jurisdiction	Planned Land Uses
City of San Bernardino	Industrial, Residential, Public Facility (City of San Bernardino 2005)
City of Rialto	Residential, Business Park, Light Industrial, Open Space (City of Rialto 2010)
City of Fontana	Public Utility Corridors, Public Facilities, Residential (City of Fontana 2003)
City of Rancho Cucamonga	Residential, Flood Control/Utility Corridor, Conservation, Open Space (City of Rancho Cucamonga 2010)
City of Upland	Open Space, Residential, Civic/School, Public Utilities (City of Upland 2015)
City of Claremont	Open Space, Residential, Transportation and Utilities (City of Claremont 2009)
City of La Verne	Open Space, Residential, Transportation and Utilities (City of La Verne 1999)
City of San Dimas	Open Space, Residential (City of San Dimas 2003)
Unincorporated San Bernardino County	Open Space (San Bernardino County 2014)
Unincorporated Los Angeles County	Open Space (Los Angeles County 2015)

4.10.2.4 Second Lower Feeder

The Second Lower Feeder, which is approximately 39 miles in length, is located in Orange County and Los Angeles County and travels within the city limits of Yorba Linda, Placentia, Anaheim, Buena Park, Cypress, Los Alamitos, Long Beach, Carson, Los Angeles, Torrance, Lomita, and Rolling Hills Estates, plus unincorporated areas of the two counties. The Second Lower Feeder originates at the Diemer Water Treatment Plant in Yorba Linda and exits the facility to the west across vacant land, before turning south and crossing the Black Gold Golf Course. It continues southwest through Yorba Linda, traversing residential and commercial land uses along several roadways. Upon entering Placentia, the Second Lower Feeder parallels Angelina Drive through residential, open space, and commercial land uses. The pipeline continues southwest through Anaheim, traversing more residential, open space, and commercial land uses, prior to heading west along Ball Road through Buena Park and Cypress. In Los Alamitos, the Second Lower Feeder crosses west through El Dorado East Regional Park and continues west into Long Beach (and slightly into Lakewood) through residential land uses prior to paralleling the northern edge of the Skylinks at Long Beach Golf Course and the Long Beach Airport. The pipeline continues west along roadways in residential land uses prior to crossing the Los Angeles River and Interstate 710 (I-710) just north of Interstate 405 (I-405). The Second Lower Feeder enters Carson along Carson Street and continues west, traveling through business, residential, and commercial land uses. In west Carson, it travels south along Western Avenue through residential and commercial land uses, and continues through a small portion of unincorporated Los Angeles County and the city of Los Angeles. Prior to terminating at the Palos Verdes Reservoir, the Second Lower Feeder travels southwest, barely touching into Torrance and Lomita, and through Rolling Hills Country Club along Palos Verdes Drive.

Planned land uses through which the Second Lower Feeder travels are identified in Table 4.10-4.

Table 4.10-4. Planned Land Uses Associated with the Second Lower Feeder

Jurisdiction	Planned Land Use
City of Yorba Linda	Residential, Commercial, Open Space (City of Yorba Linda 1993)
City of Placentia	Residential, Commercial (City of Placentia 1989)
City of Anaheim	Parks, Open Space, Water, Residential, Mixed-Use (City of Anaheim 2004)
City of Buena Park	Open Space, Residential (City of Buena Park 2010)
City of Cypress	Commercial, Residential, Education Facilities, Public Parks (City of Cypress 2001)
City of Los Alamitos	Residential, Retail Business (City of Los Alamitos 2015)
City of Long Beach	Open Space/Parks, Residential, Harbor/Airport, Mixed Uses (City of Long Beach 1997)
City of Carson	Light Industrial, Residential, Public Facilities, Commercial (City of Carson 1982)
City of Los Angeles	Residential, Commercial (City of Los Angeles 2001)
City of Rolling Hills Estates	Residential, Commercial Recreation (City of Rolling Hills Estates 1992)

4.10.2.5 Sepulveda Feeder

The Sepulveda Feeder, which is approximately 42 miles in length, is located in Los Angeles County and travels within the city limits of Los Angeles, Culver City, Inglewood, Hawthorne, Gardena, and Torrance, plus a small unincorporated area of Los Angeles County. The Sepulveda Feeder originates at the Jensen Water Treatment Plant in the city of Los Angeles and exits the facility to the south through residential land uses and the eastern portion of the Knollwood Golf Course. The Sepulveda Feeder continues south along Hayvenhurst Avenue, traversing residential and commercial land uses, vacant land and agricultural fields, and the Van Nuys Airport. Just north of the Van Nuys Golf Course, the Sepulveda Feeder turns east through residential land uses and crosses I-405, prior to paralleling the freeway south into commercial and residential land uses of the Sherman Oaks and Encino neighborhoods of Los Angeles. The Sepulveda Feeder continues to generally parallel I-405 toward the southeast into Culver City and Inglewood, where it traverses commercial and residential land uses. Near the Ladera Heights neighborhood, the Sepulveda Feeder travels east through primarily residential land uses before turning south and paralleling Van Ness Avenue through commercial, residential, and industrial land uses of Hawthorne, Gardena, and Torrance. The Sepulveda Feeder terminates at the Second Lower Feeder Interconnection in Torrance.

Planned land uses through which the Sepulveda Feeder travels are identified in Table 4.10-5.

Table 4.10-5. Planned Land Uses Associated with the Sepulveda Feeder

City	Planned Land Use
City of Los Angeles	Residential, Open Space, Public Facilities, Industrial (City of Los Angeles 2001)
City of Culver City	Residential, Commercial, Open Space, Freeway (City of Culver City 1995)
City of Inglewood	Residential (City of Inglewood 2009)
City of Hawthorne	Residential, Commercial, Industrial (City of Hawthorne 2016)
City of Gardena	Residential, Commercial (City of Gardena 2013)

City	Planned Land Use
City of Torrance	Residential, Public/Open Space, Business Park, Industrial (City of Torrance 2010)

4.10.3 Regulatory Framework

Land use plans and policy documents set forth regulations pertaining to allowed development. For a description of applicable plans, laws, and regulations associated with specific resources, such as air quality, historical structures or cultural resources, marine environment, noise, recreation, and traffic and transportation, refer to each specific resource section in this document. For example, all applicable South Coast Air Quality Management District plans and regulations related to air quality are specifically discussed and addressed in Section 4.3, *Air Quality*. Proposed program ~~Project and proposed Program~~ -related land use plans, policies, and regulations are discussed in this section.

4.10.3.1 Federal

Federal land use planning regulations are not applicable to the proposed program elements because land use and planning decisions are made at the local level. None of the pipelines pass through federal lands.

4.10.3.2 State

Regulation of Local Agencies by Counties and Cities (California Government Code Section 53091)

California Government Code Section 53091 limits the powers of local jurisdictions over other agencies. Specifically, it states that building ordinances and zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water by a local agency.

4.10.3.3 Local

Table 4.10-6 lists the applicable land use elements of the general plans for the proposed program.

Table 4.10-6. Applicable Land Use Plans for Proposed Program

Jurisdiction	Applicable General Plan
Allen-McColloch Pipeline	
City of Yorba Linda	City of Yorba Lind General Plan (1993)
City of Anaheim	City of Anaheim General Plan (2004)
City of Orange	Orange General Plan (2010)
City of Tustin	Tustin General Plan (2013)
City of Irvine	City of Irvine General Plan (2012)
City of Lake Forest	Lake Forest General Plan (1994)
City of Mission Viejo	Mission Viejo General Plan (2013)

Jurisdiction	Applicable General Plan
County of Orange	County of Orange General Plan (2014)
Calabasas Feeder	
City of Los Angeles	The City of Los Angeles General Plan (2001)
City of Hidden Hills	City of Hidden Hills General Plan (1995)
City of Calabasas	City of Calabasas 2030 General Plan (2015)
Rialto Pipeline	
City of San Bernardino	City of San Bernardino General Plan (2005)
City of Rialto	Rialto General Plan (2010)
City of Fontana	City of Fontana General Plan (2003)
City of Rancho Cucamonga	Rancho Cucamonga General Plan (2010)
City of Upland	City of Upland General Plan (2015)
City of Claremont	City of Claremont General Plan (2009)
City of La Verne	The City of La Verne General Plan (1999)
City of San Dimas	City of San Dimas General Plan (2003)
San Bernardino County	County of San Bernardino 2007 General Plan (revised 2014)
Los Angeles County	Los Angeles County 2035 General Plan (2015)
Second Lower Feeder	
City of Yorba Linda	City of Yorba Lind General Plan (1993)
City of Placentia	City of Placentia General Plan (1989)
City of Anaheim	City of Anaheim General Plan (2004)
City of Buena Park	Buena Park 2035 General Plan (2010)
City of Cypress	Cypress General Plan (2001)
City of Los Alamitos	Los Alamitos General Plan (2015)
City of Long Beach	City of Long Beach General Plan (1997)
City of Lakewood	The City of Lakewood Comprehensive General Plan (1996)
City of Carson	Carson General Plan (1982)
City of Los Angeles	The City of Los Angeles General Plan (2001)
City of Torrance	City of Torrance General Plan (2010)
City of Lomita	City of Lomita General Plan (1998)
City of Rolling Hills Estates	City of Rolling Hills Estates General Plan (1992)
Orange County	County of Orange General Plan (2014)
Los Angeles County	Los Angeles County 2035 General Plan (2015)
Sepulveda Feeder	
City of Los Angeles	The City of Los Angeles General Plan (2001)
City of Culver City	Culver City General Plan (1995)
City of Inglewood	City of Inglewood General Plan (2009)
City of Hawthorne	City of Hawthorne General Plan (2016)
City of Gardena	Gardena General Plan (2013)
City of Torrance	City of Torrance General Plan (2010)
Los Angeles County	Los Angeles County 2035 General Plan (2015)

4.10.4 Thresholds and Methodology

4.10.4.1 Thresholds of Significance

Table 4.10-7 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to land use. It indicates which impacts must be analyzed in the PEIR for the proposed program.

Table 4.10-7. CEQA Thresholds for Land Use

Threshold *Would the proposed program:*
a. Physically divide an established community?
b. Conflict with applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?*
*See impacts discussion in Section 4.4, *Biological Resources*.

4.10.4.2 Methodology

Division of a Community

The majority of the proposed program elements would be within existing public rights-of-way. During construction, the rehabilitation projects could temporarily create a division within a community if access within the community, especially between residences and community facilities (e.g., parks, schools), were impeded. This potential impact is evaluated in this section under Threshold LU-A.

Conflicts with Plans, Policies, or Regulations

This analysis evaluates the consistency or compliance of the proposed project with relevant land use plans, policies, and regulations. Because the proposed program would not change land uses, the program's consistency with land use plans would be the same as the existing condition. Therefore, under CEQA, the proposed program would not result in impacts related to conflicts with land use plans, policies, and regulations.

Existing plans, policies, and regulations governing specific resources such as aesthetics, agriculture, air quality, etc. are addressed in the relevant resource sections of this PEIR (Sections 4.1 through 4.9 and 4.11 through 4.14).

4.10.5 Impacts Analysis

4.10.5.1 Program Analysis

Threshold LU-A: Physically Divide an Established Community

Rehabilitation work would involve excavation sites, work zones, and staging land uses. Barriers would be used to confine construction for safety purposes. The proposed program consists of improvements to an existing subsurface water distribution pipeline and would not involve the construction or operation of any permanent structures or alterations that would physically divide an established community.

In some cases, construction work areas, primarily for the excavation sites, may require access to certain facilities to be blocked or rerouted during construction. This could temporarily create barriers that would physically divide communities from the most direct access to community facilities. Because these changes would not be permanent and would only affect a given area for a duration between 6 and 9 months, and because the contractors would be required to maintain access to facilities in some manner, these impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold LU-B: Conflict with Applicable Land Use Plan, Policy, or Regulation of an Agency with Jurisdiction over the Project Adopted for the Purpose of Avoiding or Mitigating an Environmental Effect

Because the proposed program would not change land uses, the program's consistency with land use plans would be the same as the existing condition. Therefore, under CEQA, the proposed program would not result in impacts related to conflicts with land use plans, policies, and regulations.

Existing plans, policies, and regulations governing specific resources such as aesthetics, agriculture, air quality, etc. are addressed in the relevant resource sections of this PEIR (Sections 4.1 through 4.9 and 4.11 through 4.14).

Mitigation Measures

There would be no impacts for the proposed program and therefore no mitigation is necessary.

Residual Impacts

No impacts would result from the proposed program, and no mitigation is necessary. Therefore, there would be no residual impacts for the proposed program.

4.10.5.2 Cumulative Analysis

Program Analysis

The proposed program would be implemented over a long period of time; in many cases implementation of the projects in the proposed program would occur past the planning horizons of local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

The only land use impact identified for the proposed program was the potential for construction to create temporary barriers within an established community. These impacts would be temporary and less than significant. Because they would be very localized, they would not combine with other neighborhood division impacts to result in a considerable contribution to a cumulative impact.

Section 4.11
Noise

4.11.1 Introduction

This section describes the existing conditions related to noise, the regulatory framework associated with noise, the impacts caused by noise that would result from the proposed program, and the mitigation measures that would reduce these impacts. As noted in the Initial Study, the proposed program would have potentially significant noise impacts.

4.11.2 Existing Conditions

The study area for noise is the pipeline easements or rights-of-way, and the immediately adjacent properties.

Because specific rehabilitation sites have not been identified for the proposed program's approximate 100 miles of pipelines, ambient noise levels are not provided in this analysis. The existing conditions discussion identifies potential sensitive noise receptors ~~receivers~~. Sensitive receptors ~~receivers~~ include the following.

- residential dwellings
- schools and daycare centers
- churches and other religious facilities
- hospitals
- parks, playgrounds, picnic areas, recreation areas, and some trails
- amphitheaters and auditoriums
- campgrounds
- cemeteries
- hospitals
- libraries
- some public meeting rooms, and public and nonprofit institutional structures
- radio, television, and recording studios
- some historic properties
- other uses that may be sensitive to increased noise levels

Vibration-sensitive land uses include buildings where low ambient vibration is essential for operations within the building, such as concert halls, some forms of manufacturers, hospitals with vibration-sensitive equipment, and university research centers. Residential land uses or other places where people sleep, such as hotels and hospitals, can also be sensitive to vibration levels. Finally, historic buildings and structures may be sensitive to high vibration levels.

Not all of these uses are identifiable at the program level, so this analysis focuses on ones that can be identified (using Google Earth mapping and other sources), and how additional sensitive receptors ~~receivers~~ will be identified prior to construction of any program element.

4.11.2.1 Allen-McColloch Pipeline

Table 4.11-1 lists known noise- and vibration-sensitive land uses in the Allen-McColloch Pipeline study area.

Table 4.11-1. Known Noise- and Vibration-Sensitive Land Uses in Allen-McColloch Pipeline Study Area

Jurisdiction	Land Use
City of Yorba Linda	• Residential land uses • Black Gold Golf Course • Yorba Linda High School • Fairmont Knolls Park • Fairmont Elementary School • Bernardo Yorba Middle School • Bike/horse trail adjacent to Fairmont Boulevard • Ivy Crest Montessori School • Canyon Hills Friends Church
City of Anaheim	• Residential land uses • Santa Ana River Trail • Canyon High School • Imperial Elementary School
City of Orange	• Residential land uses • Salem Lutheran Church and Salem Lutheran School • Riding Academy of Orange County • Cemetery of the Holy Sepulcher • Santiago Canyon College • Peters Canyon Regional Park • Peters Canyon Regional Trail and Bikeway • East Ridge View Trail • Mountains to the Sea Trail
Unincorporated Orange County	• Residential land uses
City of Tustin	• Residential land uses • Pioneer Road Park
City of Irvine	• Residential land uses
City of Lake Forest	• Residential land uses • Santiago de Compostela Catholic Church • El Toro Memorial Park • Trabuco Side Path (trail) • Aliso Creek Bikeway • Grace Community Church/Grace Christian Schools
City of Mission Viejo	• Residential land uses

4.11.2.2 Calabasas Feeder

Table 4.11-2 lists known noise- and vibration-sensitive land uses in the Calabasas Feeder study area.

Table 4.11-2. Known Noise- and Vibration-Sensitive Land Uses in Calabasas Feeder Study Area

Jurisdiction	Land Use
City of Los Angeles	• Residential land uses • Living Praise Christian Center • Nevada Avenue Elementary School • Capistrano Avenue Elementary School • West Hills Church • New Life Church • Beth Ariel Messianic Congregation • Adventure Planet Montessori Learning Center • Beit Hamidrash of Woodland Hills (religious facility) • First Baptist Church • Beit Avraham – Sephardic Community Synagogue
City of Hidden Hills	• Residential land uses
City of Calabasas	• Leonis Adobe Museum

4.11.2.3 Rialto Pipeline

Table 4.11-3 lists known noise- and vibration-sensitive land uses in the Rialto Pipeline study area.

Table 4.11-3. Known Noise- and Vibration-Sensitive Land Uses in Rialto Pipeline Study Area

Jurisdiction	Land Use
City of San Bernardino	• Residential land uses • Trail (adjacent to Pine Avenue North)
City of Rialto	• Residential land uses • Kingdom Hall of Jehovah's Witnesses • Fergusson Park
City of Fontana	• Residential land uses • Hunter's Ridge Park
City of Rancho Cucamonga	• Residential land uses • Trail (adjacent of Crescenta Way) • Trail (adjacent to 24th Street/Wilson Avenue) • Ashley Park • John L. Golden Elementary School • Day Creek Park • Los Osos High School • Trail (adjacent to Banyan Street) • Banyan Elementary School • Chaffey College • Shepherd of the Hills Lutheran Church • Beryl Park • Church of Jesus Christ of Latter-day Saints

Jurisdiction	Land Use
City of Upland	• Residential land uses • Trail (center median of Euclid Avenue) • Pioneer Junior High School • Chaffey Communities Cultural Center/Pioneer Park • Pepper Tree Elementary School
City of Claremont	• Residential land uses • Thompson Creek Trail • La Puerta Sports Park • The Webb Schools
City of La Verne	• Residential land uses • Live Oak Park • Sierra La Verne County Club (golf)
City of San Dimas	• Residential land uses • San Dimas Canyon Golf Course • San Dimas Canyon Park

4.11.2.4 Second Lower Feeder

Table 4.11-4 lists known noise- and vibration-sensitive land uses in the Second Lower Feeder study area.

Table 4.11-4. Known Noise- and Vibration-Sensitive Land Uses in Second Lower Feeder Study Area

Jurisdiction	Land Use
City of Yorba Linda	• Residential land uses • Black Gold Golf Course • Heritage Oak Private Education • Emanuel Danish Lutheran Church and Cultural Center • Friends Christian Middle School
City of Placentia	• Residential land uses • Brookhaven Elementary School • El Dorado High School • Blessed Sacrament Episcopal Church • Kraemer Middle School
City of Anaheim	• Residential land uses • Miraloma Park/Family Resource Center • Kingdom Hall of Jehovah's Witnesses • Pioneer Park • Church of Dream Builders • Iglesia Sunkist (religious facility) • South Junior High School • Mission Community Church • Boysen Park • Theodore Roosevelt Elementary School • Olive Street Elementary School • Walnut Grove Park

Jurisdiction	Land Use
	• Caodai Center (religious facility) • Multiple hotels/motels along Disneyland Drive and Ball Road • Prince of Peace Lutheran Church and School • Gilbert High School • Grace Missionary Baptist Church • Saint Justin Martyr Catholic Church and School • West Anaheim United Methodist Church • Magnolia High School • Korea Buddhist Temple Jung Hye Sa • Anaheim Baptist Fellowship
City of Buena Park	• Residential land uses • Dickerson Elementary School
City of Cypress	• Residential land uses • Cypress Church • Islamic Center of Cypress • Juliet Morris Elementary School • Darrell Essex Park • Veterans Park • Cypress Nature Park
City of Los Alamitos	• Residential land uses
City of Long Beach	• Residential land uses • Coyote Creek Bikeway • Newcomb Academy • El Dorado Regional Park • San Gabriel River Trail • Henry Elementary School • Rosie the Riveter Park and Interpretive Center • Skylinks at Long Beach Golf Course • California Heights United Methodist Church • Charles Evans Hughes Middle School • Longfellow Elementary School • Los Cerritos Park • Los Cerritos Elementary School • The Fitting Studio (golf range) • Rancho Dominguez Preparatory School
City of Lakewood	• Residential land uses
City of Carson	• Residential land uses • Our Lady of Guadalupe Old Catholic Church • Central Baptist Church • Bethel Baptist Church and Christian School • Econo Lodge Carson • United Samoan Congregational Church • John D. Calas, Sr. Community Park • Bonita Elementary School • Carson Community Deliverance (religious facility) • Immanuel Missionary Baptist Church

Jurisdiction	Land Use
	• First Christian Church of Carson • White Middle School • United Baptist Church • Christian Enrichment Center
City of Torrance	• Residential land uses
City of Los Angeles	• Residential land uses • Narbonne High School • George S. Patton Continuation School • The Pines Christian School • Canaan New Life Christian Church
City of Lomita	• Residential land uses • The Harbor Church and Harbor Church Schools
City of Rolling Hills Estates	• Residential land uses • Bridlewood Trail • Rolling Hills Country Club (golf) • Bridle Trail • Dapplegray Park • Rolling Hills Estates Community Center • George F. Canyon Preserve and Nature Center • Native Plant Demonstration Garden • Miller's Trail • Carriage Trail • Stein Hale Nature Trail (Georgette Trail)

4.11.2.5 Sepulveda Feeder

Table 4.11-5 lists known noise- and vibration-sensitive land uses in the Sepulveda Feeder study area.

Table 4.11-5. Known Noise- and Vibration-Sensitive Land Uses in Sepulveda Feeder Study Area

Jurisdiction	Land Use
City of Los Angeles	• Residential land uses • Granada Hills Youth Recreation Center • Knollwood Golf Course • Saint Andrew and Saint Charles Church • Rinaldi Convalescent Hospital • Concordia Granada Hills (school) • First Baptist Church of Granada Hills • Tulsa Street Elementary School • Saint John Baptist de la Salle School • Holy Martyrs Armenian School • Church of Scientology of the Valley • Van Nuys Golf Course • Hampton Inn & Suites Los Angeles/Sherman Oaks • Best Western Plus Carriage Inn

Jurisdiction	Land Use
	• Kingdom Hall of Jehovah's Witnesses • Starlight Cottage (hotel) • Saint Mary Romanian Greek Catholic Church • Sherman Oaks Castle Park • Berkley Hall School • Milken Community Middle School • Skirball Cultural Center • Los Angeles County Open Space • Mountain Gate Country Club (golf) • Getty View Park • Getty Center South Building • Hotel Angeleno • Luxe Sunset Boulevard (hotel) • Village Church Westwood Lutheran • Ahavat Torah Synagogue Los Angeles • Los Angeles National Cemetery • Westwood Recreation Center • Best Western Royal Palace Inn & Suites • Charnock Road Elementary School • Multiple hotels/motels on Sepulveda Boulevard between Venice Boulevard and Washington Place • Saint Eugene's Catholic Church and School
City of Culver City	• Residential land uses • Culver Palms United Methodist Church
City of Inglewood	• Residential land uses • Frank D. Parent Elementary School • Inglewood Park Cemetery • Warren Lane Elementary School • Circle Park • Century Academy for Excellence • Brethren Elementary and Junior High School • El Nido Family Center (school)
City of Hawthorne	• Residential land uses • Hollypark Little League • Chester Washington Golf Course
City of Gardena	• Residential land uses • Hollypark United Methodist Church • Rowley Park • Maria Regina Catholic Church and School • Junipero Serra High School
City of Torrance	• Residential land uses • Lincoln Elementary School • Arlington Elementary School

4.11.3 Regulatory Framework

This section describes the plans, policies, and regulations related to noise that are applicable to the proposed program.

4.11.3.1 Federal

There are no federal regulations related to noise applicable to the program.

4.11.3.2 State

California Noise Control Act (Cal. Health and Safety Code, § 46010 et seq.)

The California Noise Control Act of 1973 gave cities and communities the power to set noise ordinances and enforce them as necessary. The goal of the state and local governments is to prohibit unnecessary, annoying, intrusive, or dangerous noise.

4.11.3.3 Local

Table 4.11-6 lists the applicable regulations related to noise for each jurisdiction for the proposed program. The table includes information found in local jurisdiction general plans, noise ordinances, and CEQA noise guidelines (if the agencies have adopted them).[1] Note that information contained in a general plan regarding noise typically relates to the operation of projects and the ambient noise levels assigned to land use development matrices. The noise ordinance and local CEQA noise guidelines (if adopted) typically regulate noise generated during construction activities. It should be noted that California Government Code Section 53091 exempts Metropolitan, as a regional public water purveyor and utility, from local zoning and building ordinances (but not from noise ordinances that are outside of the zoning and building ordinances). Despite this exemption from local planning ordinances, for purposes of full disclosure of potential impacts on the environment, this assessment of potential noise impacts evaluates proposed program compatibility with noise-related general plan policies and noise ordinances of the cities along the pipeline alignments.

[1] Public agencies are required to adopt implementing procedures for administering their responsibilities under CEQA, including CEQA guidelines (14 CCR Section 15022). In most cases, public agencies adopt the State CEQA Guidelines as their procedures, but in some cases agencies will tailor the guidelines to meet their unique conditions and produce local CEQA guidelines.

Table 4.11-6. Applicable Noise Regulations for the Proposed Program

General Plan Noise Element	Noise Ordinance	Has agency adopted local CEQA Guidelines for noise?
Allen-McColloch Pipeline		
City of Yorba Linda		
No (nothing applicable to construction)	Section 8.32.060 (D): Construction is an exemption as long as it doesn't occur during the hours of 8 p.m. and 7 a.m. on weekdays/Saturday, Sunday or federal holidays. (City of Yorba Linda 2015)	No
City of Anaheim		
• Table N-3 (page N-9) identifies the adopted State of California Noise Standards. • Construction sound exempt from Municipal Code during 7 a.m.–7 p.m. (City of Anaheim 2004)	No (nothing applicable to construction)	No
City of Orange		
Interior/exterior noise standards Table N-3 and N-4. (City of Orange 2010)	Section 8.24.070 E: Construction noise exempt as long as it does not take place between 8 p.m. and 7 a.m. on weekdays, including Saturday or any time on Sunday or a federal holiday. (City of Orange 2014)	No
City of Tustin		
No (nothing applicable to construction)	Chapter 6 Section 4616 (2): Construction activity prohibited between 6 p.m. and 7 a.m. M–F and 5 p.m. and 9 a.m. on Saturday, all hours Sunday, and city-observed federal holidays. Can be permitted outside of these hours with temporary exception by the Department of Public Works. (City of Tustin 2015)	No
City of Irvine		
Requires new construction to meet City Noise Ordinance. (City of Irvine 2012a)	• Chapter 2 Noise ordinance includes Noise Standards dBA. • Sec. 6-8-205: Special Provisions (including construction), as long as occurs between 7 a.m. and 7 p.m. Monday through Friday and 9 a.m. and 6 p.m. on Saturdays. No construction on Sundays and federal holidays. Temporary waiver could be granted by the Chief Building Official. (City of Irvine 2014)	• Outlines considerations for noise impacts and gives direction on what is needed for existing conditions; project impacts; applicable plans, policies and programs; determining impact significance; formulating

		mitigation; and determining significance after mitigation. • Notes the City adopted Appendix G of the CEQA guidelines as the significance threshold for noise. (City of Irvine 2012b)
City of Lake Forest		
• Noise sources not related to transportation, including construction, and may be controlled to minimize exposure to excessive noise levels. • Work schedule limits. (City of Lake Forest 1994)	Noise Control Section 11.16.060 Exemptions, (D). "Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of eight p.m. and seven a.m. on weekdays, including Saturday, or at any time on Sunday or a Federal holiday." (City of Lake Forest 2014)	No (nothing applicable to construction)
City of Mission Viejo		
Table N-4 establishes construction noise levels at 50 feet. (City of Mission Viejo 2009)	Section 9: Special Provisions (Section 9.22.035)—noise sources from construction are short-term impacts (ambient noise), are exempt as long as they don't take place between 8 p.m. and 7 a.m. on weekdays, including Saturday, or any time on Sunday or a federal holiday. (City of Mission Viejo 2014)	No
Calabasas Feeder		
City of Los Angeles		
No (nothing applicable to construction)	• Sec. 41.41: (a) construction, including staging and delivery, not allowed between 9 p.m. and 7 a.m. • Can be outside of these hours with written permission from the Board of Police. (City of Los Angeles 2015)	• Section I, Noise • Adopted the Appendix G CEQA checklist for construction noise and operational noise. • Includes screening criteria; determination of significance threshold and methodology; data, resources and references; categories of construction equipment; and legislation for construction. • Includes screening criteria; determination of significance threshold and methodology;

		data, resources and references; stationary and mobile sources; and legislation for operation. (City of Los Angeles 2006)
City of Hidden Hills		
No (nothing applicable to construction)	• Section 3-8-5: Construction noise prohibited after 8 p.m. or before 7 a.m. on weekdays/after 8 p.m. or before 8 a.m. Saturdays/any time on Sunday or holidays. • Exemption to Section 3-8-6 with written permission of the Building Official. (City of Hidden Hills 1994)	No
City of Calabasas		
No (nothing applicable to construction)	• Noise code 17.20.160 Section C(4). Construction is exempt as long as don't take place before 7 a.m. and after 6 p.m. on weekdays/Saturday not allowed before 8 a.m. or after 5 p.m. No construction on Sundays or federal holidays. • May be modified with a Conditional Use Permit. (City of Calabasas 2015)	No
Rialto Pipeline		
City of San Bernardino		
No (nothing applicable to construction)	Chapter 8.54 Noise Control Section 8.54.070: Construction activities limited to within 7 a.m.–8 p.m. (City of San Bernardino 2009)	No
San Bernardino County		
No (nothing applicable to construction)	• Chapter 83.01 General Performance Standards • Section 83.01.080 Noise (County Development Code) • Exemption from standards include: construction between 7 a.m. and 7 p.m. Monday through Saturday, excluding federal holidays. (San Bernardino County 2007)	No
City of Rialto		
No (nothing applicable to construction)	• Chapter 9.50-Noise Control • Chapter 9.50.070 Disturbances from Construction Activity. • (B) identifies the permitted construction hours by month/day. October 1–April 30: M–F 7 a.m.–5:30 p.m./Saturday 8 a.m.–5 p.m. Sunday and state holiday not permissible. • May 1–September 30: M–F 6 a.m.–7 p.m./Saturday 8 a.m.–5 p.m. Sunday and state holidays not permissible. (City of Rialto 2008)	No

City of Fontana		
No (nothing applicable to construction)	• Article II. Noise. Section 18-63. Scope, enumeration of prohibited noises. • (b)(7): construction between 7 a.m. and 6 p.m. on weekdays and between 8 a.m. and 5 p.m. on Saturdays. Outside of this, permit from building inspector may be granted for up to 3 days. (City of Fontana 2007)	No
City of Rancho Cucamonga		
No (nothing applicable to construction)	• Noise standards Section 17.66.050. • D-4: a- when adjacent to residential land use, school, church or similar, cannot take place between 8 p.m. and 7 a.m. on weekdays, including Saturday/any time on Sunday or national holiday. Cannot exceed 65 dBA when measured at the adjacent property. • D-4: b- when adjacent to a commercial or industrial use, cannot take place between 10 p.m. and 6 a.m. on weekdays, including Saturday and Sunday, and cannot exceed 70 dBA when measured at the adjacent property. (City of Rancho Cucamonga 2012)	No
City of Upland		
Noise Element states preparation of a noise ordinance that will utilize the Model Noise Ordinance of CA and EPA. (City of Upland 2015)	No (nothing applicable to construction except buildings)	No
City of Claremont		
Construction identified as a non-transportation noise source in the element. Notes that the City regulates construction activity for prevention on nights/weekends (Policy 6-12.3). (City of Claremont 2009)	• Noise and Vibration standards 16.154.020 (under Environmental Protective Standards) • F. Exemptions (4a): noise/vibration associated with construction within 7 a.m.–7 p.m. weekdays and Saturdays; no national holidays, providing it doesn't exceed levels set in Section 16.154.020D. (City of Claremont 2005)	No
City of La Verne		
Goal 1g: require stringent mitigation measures to limit construction noise for new projects. (City of La Verne 1999)	• Chapter 8 Health and Safety • D.1. Construction activities between 8 p.m. and 7 a.m. weekdays, any time on Sundays, or legal holidays not allowed. • Identifies "Noisy Construction Activity" as construction noise that disturbs residences.	No

	• States noise sensitive areas are designated by the City Code Enforcement Officer or City Planning Technician. (City of La Verne 2015)	
City of San Dimas		
No (nothing applicable to construction)	• Chapter 8-Noise Ordinance Section 8.36.100 A: construction within or within 500 feet of residential zone prohibited between 8 p.m.–7 a.m. Monday–Saturday, any time on Sunday, or any public holiday. • (B) Can obtain a permit from the building and safety division of the community development department to perform construction activities outside of these hours. (City of San Dimas 1987)	No
Second Lower Feeder		
Orange County		
No (nothing applicable to construction)	Noise Ordinance, Article 4: Section 4-6-7. Special Provisions (e) Construction cannot take place between 8 p.m. and 7 a.m. on weekdays, including Saturday or any time on Sunday or a federal holiday. (Orange County 1975)	No
City of Yorba Linda		
No (nothing applicable to construction)	Section 8.32.060 (D): Construction is an exemption as long as doesn't occur during the hours of 8 p.m. and 7 a.m. on weekdays/Saturday, Sunday or federal holiday. (City of Yorba Linda 2015)	No
City of Placentia		
No (nothing applicable to construction)	• Chapter 23.76 Noise Control. 23.76.070 Activities – Special Provisions (8): Construction noise sources prohibited between 7 p.m. and 7 a.m. Monday through Friday, 6 p.m.–9 a.m. Saturday and Sunday and holidays (23.81.170). • Remodeling/repair and maintenance allowed between 10 a.m. and 5 p.m. on Sunday and Holidays. (City of Placentia 2015)	No
City of Anaheim		
• Table N-3 (page N-9) identifies the adopted State of California Noise Standards. • Construction sound exempt from Municipal Code during 7 a.m.–7 p.m. (City of Anaheim 2004)	No (nothing applicable to construction)	No
City of Buena Park		

No (nothing applicable to construction)	Section 8.28.040: Noise from construction prohibited between 8 p.m. and 7 a.m., Monday through Saturday and anytime Sundays. The Noise Ordinance does not include specific noise level limits for construction activities. (City of Buena Park 2015)	No
City of Cypress		
No (nothing applicable to construction)	Sec. 13-70. Special Provisions (e): Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 8 p.m.–7 a.m. on weekdays, before 9 a.m. and after 8 p.m. on Saturday, or anytime on Sunday or a federal holiday. (City of Cypress 1976)	No
City of Los Alamitos		
No (nothing applicable to construction)	17.24.020 Exemptions (D) – Noise sources associated with construction does not take place between the hours of 8 p.m. and 7 a.m. on weekdays, including Saturday or anytime on Sunday or a federal holiday. (City of Los Alamitos 2006)	No
City of Long Beach		
No (nothing applicable to construction)	• Noise. 8.80.202 Construction Activity-Noise regulations for permitted construction. • Weekdays and federal holidays: not during 7 p.m. and 7 a.m. • Saturdays: not during 7 p.m. (Friday) and 7 a.m. (Saturday) and after 6 p.m. (Saturday). • Sundays: no construction, unless have a Sunday work permit form the Noise Control Officer. (City of Long Beach 1977)	No
City of Los Angeles		
No (nothing applicable to construction)	• Sec. 41.41: (a) construction, including staging and delivering, not allowed between 9 p.m. and 7 a.m. • Can be outside of these hours with written permission from the Board of Police. (City of Los Angeles 2015)	• Section I, Noise • Adopted the Appendix G CEQA checklist for construction noise and operational noise. • Includes screening criteria; determination of significance threshold and methodology; data, resources, and references; categories of construction equipment; and legislation for construction. • Includes screening criteria;

		determination of significance threshold and methodology; data, resources, and references; stationary and mobile sources; and legislation for operation. (City of Los Angeles 2006)
City of Lakewood		
No (nothing applicable to construction)	08.36.010: Noise Control (B)(8). Sounds originating from construction between the hours of 10 p.m. and 7 a.m. on weekdays and 10 p.m. and 9 a.m. on weekends are prohibited. (City of Lakewood 1999)	No
City of Carson		
No (nothing applicable to construction)	Chapter 5, 5502 A. sets noise and time limits for single-family and multi-family residential. No general construction exemptions. (City of Carson 2015)	No
Los Angeles County		
No (nothing applicable to construction)	Section 12.08.440 Construction Noise: Contains noise restrictions and schedule for affected structures, but generally operating construction equipment between 7 p.m. and 7 a.m./Sundays or holidays is prohibited. (Los Angeles County 1978)	No
City of Torrance		
No (nothing applicable to construction)	• Article 3- construction. 46.3.1: Construction between 7:30 a.m. to 6 p.m. Monday through Friday/9 a.m. to 5 p.m. on Saturdays. Prohibited on Sundays and Holidays observed by City Hall. • Can request extended hours from the Community Development Director. (City of Torrance 2015)	No
City of Lomita		
No (nothing applicable to construction)	• Article 3, Section 4-4.11 states construction equipment can operate between 7 a.m. and 6 p.m. M–F, except holidays and 9 a.m.–5 p.m. Saturday and Sunday. • Can't reach more than 35 dB for cumulative period of 15 minutes of an hour at any receiving property line. (City of Lomita 2000)	No
Rolling Hills Estates		
No (nothing applicable to construction)	Chapter 8.32- Noise: 8.32.210 A. Permitted construction hours and days. Monday through Friday 7 a.m.–5 p.m./Saturday 9 a.m.–5 p.m. Not allowed any time on Sunday and holidays. (City of Rolling Hills Estates	No

	1997)	
Sepulveda Feeder		
City of Los Angeles		
No (nothing applicable to construction)	• Sec. 41.41: (a) construction, including staging and delivery, not allowed between 9 p.m. and 7 a.m. • Can be outside of these hours with written permission from the Board of Police. (Los Angeles County 1978)	• Section I, Noise • Adopted the Appendix G CEQA checklist for construction noise and operational noise. • Includes screening criteria; determination of significance threshold and methodology; data, resources, and references; categories of construction equipment; and legislation for construction. • Includes screening criteria; determination of significance threshold and methodology; data, resources, and references; stationary and mobile sources; and legislation for operation. (City of Los Angeles 2006)
Culver City		
No (nothing applicable to construction)	• Chapter 9.07 – Noise Regulations. • Section 9.07.035: Constructed prohibited outside of 8 a.m. and 8 p.m. Monday through Friday; 9 a.m. and 7 p.m. Saturdays; 10 a.m. and 7 p.m. Sundays. (Culver City 2015)	No
City of Inglewood		
No (nothing applicable to construction)	• Article 2, Noise Regulations. Section 5-41. Within residential zone, or 500 feet, can't perform construction activities between 8 p.m. and 7 a.m. (Ord. 88-29, 9-13-88). • Can obtain a permit for work outside these hours. (City of Inglewood 1985)	No
City of Hawthorne		
No (nothing applicable to construction)	Nothing specific to noise in Municipal Code	No
City of Gardena		

No (nothing applicable to construction)	• Chapter 8.36 Noise • Noise associated with construction prohibited between 6 p.m. and 7 a.m. on weekdays/6 p.m. and 9 a.m. on Saturdays/any time on Sunday or a federal holiday. (City of Gardena 2006)	No
City of Torrance		
No (nothing applicable to construction)	• Article 3- construction. 46.3.1: Construction between 7:30 a.m. to 6 p.m. Monday through Friday/9 a.m. to 5 p.m. on Saturdays. Prohibited on Sundays and Holidays observed by City Hall. • Can request extended hours from the Community Development Director. (City of Torrance 2015)	No

4.11.4 Thresholds and Methodology

4.11.4.1 Thresholds of Significance

Table 4.11-7 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to noise. These thresholds are addressed in the PEIR.

Table 4.11-7. CEQA Thresholds for Noise

Threshold *Would the proposed program:*
a. Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies?
b. Expose persons to or generate excessive groundborne vibration or groundborne noise levels?
c. Result in a substantial permanent increase in ambient noise levels in the project vicinity, above levels existing without the project?
d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity, above levels existing without the project?
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels?
f. For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels?

4.11.4.2 Methodology

Noise Standards

As documented in Table 4.11-6, most jurisdictions through which the existing pipelines in the proposed program travel have construction noise standards, usually established in the local noise ordinance, but occasionally also in their general plans or CEQA guidelines. This analysis discusses the relationship between the types of noise levels likely to be produced during rehabilitation of the pipelines and these standards. As discussed in Section 3.7.1, where possible, construction activities would occur during daytime hours, Monday through Friday and potentially Saturday. However, in order to prevent significant water delivery interruptions, accommodate a request from an affected jurisdiction, or expedite rehabilitation, it is likely that construction activities could proceed outside of the hours allowed by local regulations (i.e., during nighttime or on Sundays).

Vibration

As discussed in Section 4.11.2, certain types of land uses are particularly sensitive to vibration related to construction. This analysis discusses the types of impacts that could occur from construction and whether it is likely to affect any of the known sensitive land uses. It also addresses the potential for unidentified vibration-sensitive land uses to occur in the vicinity of rehabilitation

projects, and provides mitigation to address these impacts or require further analysis once construction locations are known.

Permanent Increased Noise Levels

The proposed program would not result in any permanent increase in noise levels after rehabilitation is complete. This is documented in the analysis.

Temporary or Periodic Increased Noise Levels

The proposed program would result in increased noise levels in the vicinity of the rehabilitation sites. As discussed in Section 4.11.2, certain types of land uses are considered sensitive receptors ~~receivers~~ for noise. This analysis discusses the types of noise impacts that could occur from construction and the factors that would result in significant noise impacts on adjacent sensitive land uses. However, specific noise levels cannot be determined until the locations of rehabilitation projects have been identified. Therefore, any projects near sensitive receptors ~~receivers~~ would require further analysis once site-specific construction information is known. This program-level analysis identifies locations where further analysis would be required and provides mitigation strategies to address impacts.

Exposure to Existing Aircraft Noise

Areas of the study area within airport land use plans and in the vicinity of private airstrips are identified in Section 4.8, *Hazards and Hazardous Materials*. The potential for construction workers to be exposed to excessive noise levels in these areas are addressed in this analysis.

4.11.5 Impacts Analysis

4.11.5.1 Program Analysis

Threshold NOI-A: Expose Persons to or Generate Noise Levels in Excess of Standards Established in the Local General Plan or Noise Ordinance or Applicable Standards of Other Agencies

As documented in Table 4.11-6, most jurisdictions through which the existing pipelines in the proposed program have construction noise standards, usually established in the local noise ordinance, but occasionally also in their general plans or CEQA guidelines. For this analysis, specific city or county regulations were examined. It is likely that work on some construction reaches would occur outside ~~it is assumed that construction would be limited to~~ the hours allowed by local regulations. ~~For any projects that would require construction outside of these hours, supplemental site-specific noise analysis and environmental documentation would be required prior to construction.~~

~~For jurisdictions where the noise policies, ordinances, and/or CEQA guidelines stipulate only hours and/or days when construction would be allowed, there would be no violation of local noise standards because the contractors would be required to conduct rehabilitation activities only within~~

~~the allowable hours. However, some noise policies, ordinances, and guidelines specify a maximum allowable noise level.~~

- ~~Allen-McColloch Pipeline: City of Irvine (noise ordinance), City of Mission Viejo (general plan)~~
- ~~Calabasas Feeder: none~~
- ~~Rialto Pipeline: City of Rancho Cucamonga (noise ordinance)~~
- ~~Second Lower Feeder: City of Carson (noise ordinance), City of Lomita (noise ordinance)~~
- ~~Sepulveda Feeder: none~~

As discussed for Threshold NOI-D, noise levels during rehabilitation, specifically during excavation and concrete sawing, would be likely to reach very high levels, generally exceeding any noise-level restrictions set by these local jurisdictions. Therefore, if construction were to occur in these jurisdictions, it is likely that noise levels would exceed local standards.

The ~~severity and~~ location of the impacts cannot be determined until excavation sites are identified. The severity of the impacts would vary depending upon how close these locations are to sensitive receptors ~~receivers~~. However, because much of the pipeline in Rancho Cucamonga, Carson, and Lomita is located in residential neighborhoods or near other sensitive receptors ~~receivers~~, it is likely that there would be some areas where the impacts would be significant. (It should be noted that in Irvine most of the pipeline travels through unoccupied open space, so in that jurisdiction construction is not likely to result in significant impacts related to exceeding noise standards.)

As discussed in Threshold NOI-D, because of the type of construction and its location, there is no effective mitigation that would reduce this impact below a level of significance. Therefore, impacts would be significant and unavoidable, at least at some locations. At the project level, additional analysis will be required for construction in the cities of Irvine, Mission Viejo, Rancho Cucamonga, Carson, and Lomita to determine whether noise levels would exceed noise levels in local noise policies. In other jurisdictions, if construction would be necessary outside the hours stipulated in local noise policies, additional analysis will also be conducted.

Mitigation Measures

Implement Mitigation Measures MM NOI-2 through MM NOI-4, as described under Threshold NOI-D.

Residual Impacts

Impacts that would result from the proposed program may be significant, but the severity or location of the impacts cannot be determined at this time. Therefore, these impacts are assumed to be significant and unavoidable. Further environmental analysis and documentation is necessary prior to construction to determine if a significant impact would occur and if mitigation would reduce the impact to a less-than-significant level.

Threshold NOI-B: Expose Persons to or Generate Excessive Groundborne Vibration or Groundborne Noise Levels

For most locations, vibration from construction activities would not be great enough to result in impacts on vibration-sensitive receptors ~~receivers~~. However, at some locations, excavation, concrete-sawing, and other construction activities could generate vibration levels that could affect adjacent activities, such as near performing arts centers, hospitals, or where residences are close to

the excavation site. Vibration could also affect historic structures if they are located near the excavation site (see Section 4.5, *Cultural Resources*).

The effects of construction vibration cannot be determined without knowing the location of the construction sites. Therefore, it cannot be determined at this time where vibration impacts would occur or their severity. Implementation of Mitigation Measure MM NOI-1 would reduce any impacts to less-than-significant levels.

Mitigation Measures

MM NOI-1 Locate Excavation Sites Away From Vibration-Sensitive Uses

A noise and vibration consultant will be retained during excavation site planning to determine if there are vibration-sensitive land uses that could be affected by construction. Whenever possible, excavation ~~Excavation~~ sites will then be located so that vibration impacts would not affect vibration-sensitive land uses or mitigation would be included to reduce vibration levels at vibration-sensitive land uses to less-than-significant levels.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM NOI-1 would reduce these impacts so that residual impacts would be less than significant.

Threshold NOI-C: Result in a Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity, Above Levels Existing without the Project

The proposed program would not result in any permanent changes in noise levels after rehabilitation is complete. After construction is complete, the noise levels would be the same as the existing conditions. Therefore, there would be no impact.

Mitigation Measures

There would be no impacts for the proposed program.

Residual Impacts

No impacts would result from the proposed program, and no mitigation is necessary. Therefore, there would be no residual impacts for the proposed program.

Threshold NOI-D: Result in a Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity, Above Levels Existing without the Project

Noise Generation from Rehabilitation Activities

During rehabilitation activities, noise would be generated from construction equipment, especially at excavation sites from excavators, concrete saws, ventilation fans, power sources, and other sources. Noise is measured in units called decibels (dB). In environmental analyses, noise is often expressed in A-weighted decibels (dBA), which is a more accurate representation of how the human

ear perceives sound. (In the A-weighted system, the decibel values of sound at low frequency are reduced.)

The most constant noise would be from power generators, used to provide an energy supply for tools, construction trailers, and ventilation. These would operate nearly continuously during active construction hours, and they may be standalone or truck-mounted units. Noise levels from these generators vary greatly depending on the size and type of generators used.

An excavator would be used to dig the trench and expose the pipe. The types of excavators used for the projects in the proposed program would usually be relatively small to provide for easy access in narrow areas (such as within city streets), and because large track-mounted models may damage existing roadways. Noise from these types of excavators was measured at previous pipeline rehabilitation projects at average levels of 66 to 74 dBA at a distance of 42 feet.

Likely the noisiest operation at the rehabilitation sites would be concrete sawing. Although these saws would operate within the excavated pit, which would partially attenuate the noise, the concrete saws have been recorded producing average noise levels of 92 to 96 dBA at a distance of 18 feet from the pit and 72 to 83 dBA at a distance of 42 feet.

Pipe ventilation fans would be necessary for work in the pipe to provide fresh air for workers underground. During subterranean work, pipeline segments are usually ventilated in two locations, one intake and one exhaust. These fans must operate as long as there are workers in the pipe. Noise levels would vary depending on equipment used. When electric fans powered by "quiet" Whisperwatt diesel generators are used, the noise levels were measured at 75 dBA at 30 feet for the generator and fan combined (60 dBA for the generator on its own). If more traditional fans and/or generators are used, noise levels would be dramatically greater.

Substantial amounts of the rehabilitation work would occur underground. Underground construction activities would not usually generate substantial noise, but ventilation and power generation would be required for underground work. Other noise sources would include traffic noise associated with trucks delivering materials and workers commuting to the site, back-up alarms on trucks and equipment, cranes and other equipment for positioning pipes, and other typical construction noise. At the end of construction there would be additional noise generated from backhoes used to fill in the work area and roadway repaving with slurry.

Noise would also occur at staging locations, primarily from traffic.

Potential Noise Impacts

The effects of construction noise cannot be determined without knowing the location of the construction sites. Determining noise impacts requires an analysis of the ambient condition (the existing noise level), the location of receptors ~~receivers~~ (how far the receptors ~~receivers~~ would be from where the noise is generated), and attenuation of the noise (if there are any intervening structures, landscaping, etc.). Therefore, it cannot be determined at this time where noise impacts would occur or their severity. ~~It is likely, however, that noise~~ Noise levels in some locations would result in substantial temporary increases in ambient noise levels in the vicinity of construction, above existing levels. This would be a significant impact. Mitigation may be available to reduce noise levels somewhat, but would ~~likely~~ not reduce all impacts to less-than-significant levels due to the high levels of noise generated and the close proximity of sensitive receptors, especially residents on relatively narrow streets. Therefore, impacts would be significant and unavoidable, at least as some

locations. At the project level, additional analysis will be conducted to determine whether sensitive receptors are present, if construction would increase noise levels substantially at sensitive receptors, and whether mitigation could reduce any significant impacts to less-than-significant levels.

Mitigation Measures

MM NOI-2 Locate Excavation Sites Away From Noise-Sensitive Receptors ~~Receivers~~ Where Feasible.

A noise consultant will be retained during excavation site planning to determine if there are sensitive receptors ~~receivers~~ that could be affected by construction. Whenever possible, the excavation sites will be located in areas that would not affect sensitive receptors ~~receivers~~ or where receptors ~~receivers~~ can be shielded from construction noise.

MM NOI-3 Conduct Project-Level Noise Studies at Each Excavation Site Where Noise-Sensitive Receptors ~~Receivers~~ Are Present.

Project-level noise studies will be required at all excavation sites where sensitive receptors ~~receivers~~ are present, as required in the planning stage by MM NOI-2. Such noise studies will identify the ambient noise levels, the receptors ~~number of receivers~~ that would be affected, the noise levels the receptors ~~receivers~~ will experience during construction, and any measures that can be used to reduce noise levels. All feasible mitigation measures identified in this noise study will be implemented. ~~and the amount of noise reduction that would occur with implementation of these measures.~~

MM NOI-4 Locate Staging Areas Away from Noise-Sensitive Receptors ~~Receivers~~ or Provide Noise Attenuation.

Whenever feasible ~~possible~~, staging areas will be located in areas that would not affect sensitive receptors ~~receivers~~ or where receptors ~~receivers~~ can be shielded from staging-area noise. Where possible, noise ~~Noise~~ screening will include temporary noise barriers with openings in the barriers kept to the minimum necessary for access.

Residual Impacts

Impacts that would result from the proposed program may be significant, but the severity or location of the impacts cannot be determined at this time. MM NOI-2 through MM NOI-4 may reduce these impacts; however, whether these measures would reduce all noise impacts to less-than-significant levels is not known. Therefore, these impacts are assumed to be significant and unavoidable. ~~Further environmental analysis and documentation is necessary prior to construction to determine if a significant impact would occur and if mitigation would reduce the impact to a less-than-significant level.~~

Threshold NOI-E: For a Project Located within an Airport Land Use Plan or, Where Such a Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport, Expose People Residing or Working in the Project Area to Excessive Noise Levels

Some portions of the existing pipelines are within airport land use plan areas or near airports (see Section 4.8, *Hazards and Hazardous Materials*). Airport land use plans establish allowable land uses within areas that are subject to high noise levels. However, because the program would not change land uses, and construction workers would be wearing noise safety gear as required by the federal Occupational Safety and Health Administration, noise impacts related to nearby airports would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold NOI-F: For a Project within the Vicinity of a Private Airstrip, Expose People Residing or Working in the Project Area to Excessive Noise Levels

There are no private airstrips in the vicinity of the existing pipelines (see Section 4.8, *Hazards and Hazardous Materials*). Therefore, there would be no impacts associated with noise from private airstrips.

Mitigation Measures

There would be no impacts for the proposed program.

Residual Impacts

No impacts would result from the proposed program, and no mitigation is necessary. Therefore, there would be no residual impacts for the proposed program.

4.11.5.2 Cumulative Analysis

The proposed program would be implemented over a long period of time; in many cases, implementation of the projects in the proposed program would occur past the planning horizons of local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

Construction noise and vibration are localized and site specific. Only when noise from multiple projects affect the same receptors ~~receiver~~ would noise result in cumulative impacts. This would be unlikely to occur with the proposed program. Therefore, the projects in the proposed program would not contribute to a cumulative noise impact.

Section 4.12
Recreation

4.12.1 Introduction

This section describes the existing conditions for recreation, the regulatory framework associated with recreation, the impacts on recreation that would result from the proposed program, and the mitigation measures that would reduce these impacts. As noted in the Initial Study, the proposed program would have potentially significant recreation impacts.

4.12.2 Existing Conditions

The study area for recreation is the pipeline easements or rights-of-way and immediately adjacent properties. The term *recreation* is used to refer to land uses used primarily for recreation, including publicly owned parks and trails, school recreational areas, and privately owned outdoor facilities, including golf courses and tennis facilities.

4.12.2.1 Allen-McColloch Pipeline

Table 4.12-1 lists the recreational facilities in the Allen-McColloch Pipeline study area.

Table 4.12-1. Recreational Facilities in Allen-McColloch Pipeline Study Area

Parks	Trails	Other Recreational Facilities (including recreational facilities at schools)
Fairmont Knolls Park	Equestrian trail west of Paso Fino Way	Black Hills Golf Club
Kingsbriar Park	Bike/horse trail along Fairmount Connector and Fairmount Boulevard	La Entrada High School
Imperial Park	Santa Ana River Trail/Bikeway	Fairmont Elementary School
	Trail along East Santiago Canyon Road	Bernardo Yorba Middle School
	Peters Canyon Regional Trail and Bikeway	Ivy Crest Montessori School
		Canyon High School
		Imperial Elementary School
		Riding Academy of Orange County (equestrian facility)

4.12.2.2 Calabasas Feeder

Table 4.12-2 lists the recreational facilities in the Calabasas Feeder study area.

Table 4.12-2. Recreational Facilities in Calabasas Feeder Study Area

Parks	Trails	Other Recreational Facilities (including recreational facilities at schools)
None	None	Nevada Avenue Elementary School
		Capistrano Avenue Elementary School

4.12.2.3 Rialto Pipeline

Table 4.12-3 lists the recreational facilities in the Rialto Pipeline study area.

Table 4.12-3. Recreational Facilities in Rialto Pipeline Study Area

Parks	Trails	Other Recreational Facilities (including recreational facilities at schools)
Hunter's Ridge Park	Hunter's Ridge Trails	Los Osos High School
Mini Park at southeast corner of Bluegrass Avenue and 24th Street	Trail along Crescenta Way	Banyan Elementary School
Day Creek Park	Trail along Bluegrass Avenue	Pioneer Junior High School
Grigsby Park	Trail along Banyan Street	Pepper Tree Elementary School
Beryl Park	Thomson Creek Trail	Sierra La Verne Golf Course
Pioneer Park		San Dimas Canyon Golf Course
La Puerta Sports Park		
Higginbotham Park		
Live Oak Park		
Mills Park		
San Dimas Canyon Park		

4.12.2.4 Second Lower Feeder

Table 4.12-4 lists the recreational facilities in the Second Lower Feeder study area.

Table 4.12-4. Recreational Facilities in Second Lower Feeder Study Area

Parks	Trails	Other Recreational Facilities (including recreational facilities at schools)
Pioneer Park	San Gabriel River Mid Trail	Black Hills Golf Club

Parks	Trails	Other Recreational Facilities (including recreational facilities at schools)
Boysen Park	Bridlewood Trail	Heritage Oak School
Walnut Grove Park	June's Trail	Brookhaven Elementary School
Larwin Park	Sorrel Trail	El Dorado High School
Darrell Essex Park	Bridle Trail (southeast corner of Palos Verdes Drive East and Palos Verdes Drive North)	Theodore Roosevelt Elementary School
Veterans Park	Carriage Trail (western terminus of Second Lower Feeder)	Gilbert High School
Cypress Nature Park	Miller's Trail	Elizabeth Dickerson Elementary School
Stansbury Park	Stein Hale Nature Trail (Georgette Trail)	Juliet Morris Elementary School
El Dorado Regional Park		Skylinks at Long Beach Golf Course
Rosie the Riveter Park and Interpretive Center		Charles Evans Hughes Middle School
Los Cerritos Park		Longfellow Elementary School
Calas Park		Los Cerritos Elementary School
Dapplegray Park		Rancho Dominguez Preparatory School
		Carnegie Middle School
		Bonita Street Elementary School
		George S. Patton Continuation School
		Nathaniel Narbonne High School
		The Pines Christian School
		Rolling Hills Country Club

4.12.2.5 Sepulveda Feeder

Table 4.12-5 lists the recreational facilities in the Sepulveda Feeder study area.

Table 4.12-5. Recreational Facilities in Sepulveda Feeder Study Area

Parks	Trails	Other Recreational Facilities
Castle Park Monterey	None	Granada Hills Youth Recreational Center
Getty View Park		Golf Course (west of Gerald Avenue)
Westwood Park and		Jewish Educational Trade School

Parks	Trails	Other Recreational Facilities
Recreation Center		
Circle Park		Holy Martyrs Armenian School
Holly Park		Van Nuys Golf Course
Rowley Park		Tennis Courts (northwest corner of Sepulveda Boulevard and Valley Meadow Road)
		Steven S. Wise High School
		Berkeley Hall School
		Milken Community Middle School
		Charnock Road Elementary School
		Tennis courts (east of Charnock Road)
		Culver-Palms Family YMCA
		Frank D. Parent Elementary School
		Warren Lane Elementary School
		St. Eugene School
		Chester Washington Golf Course
		Crescendo Charter School
		Maria Regina School
		Junipero Serra High School

4.12.3 Regulatory Framework

This section describes the plans, policies, and regulations related to recreation that are applicable to the proposed program.

4.12.3.1 Federal

There are no federal regulations related to recreation applicable to the program.

4.12.3.2 State

California Public Park Preservation Act (Cal. Public Res. Code §§ 5400–5409)

The California Public Park Preservation Act provides that a public agency that acquires public parkland for non-park use must either pay compensation that is sufficient to acquire substantially equivalent substitute parkland or provide substitute parkland of comparable characteristics.

4.12.3.3 Local

Local policies related to recreation address providing adequate parks and other recreational facilities within their jurisdictions to serve their populations. Generally, such policies do not address temporary construction-related activities at existing recreational facilities.

4.12.4 Thresholds and Methodology

4.12.4.1 Thresholds of Significance

Table 4.12-6 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to recreation. These thresholds are addressed in the PEIR.

Table 4.12-6. CEQA Thresholds for Recreation

Threshold *Would the proposed program:*
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?
b. Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

4.12.4.2 Methodology

As documented in Section 4.12.2, this PEIR identifies known recreational facilities within the study area of the pipeline alignments. The proposed program would generally not have long-term effects on recreation, because only minor permanent changes would potentially occur as a result of projects within the program, such as the addition of access manholes, small above-ground valve boxes, and electrical panels. All other permanent changes would be underground, and once rehabilitation is complete, there would be no permanent changes to recreational facilities.

During rehabilitation, construction may have adverse effects on these recreational facilities. Under CEQA, these effects would only result in significant impacts if they were to result in physical deterioration of the facilities, increase the use of a recreational facility, or require construction or expansion of recreational facilities. Permanent physical deterioration would only occur if the permanent elements interfered with use of the recreational use of the facility (such as an access manhole in the middle of a trail or play field) or if damage occurred during construction (such as locating construction staging areas in natural habitat areas without thorough clean-up and revegetation).

During construction, temporary effects on recreational uses could be significant if two conditions occurred: (1) the construction interfered with the use of the recreational facility to the extent that the recreational uses at that facility would be precluded; and (2) there are insufficient similar recreational facilities available nearby where the activities could be relocated. An example would be if construction interfered with play fields so that scheduled league sports could not be played, and that there were not enough similar fields available to handle relocated games.

4.12.5 Impacts Analysis

4.12.5.1 Program Analysis

Threshold REC-A: Increase the Use of Existing Neighborhood and Regional Parks or Other Recreational Facilities Such That Substantial Physical Deterioration of the Facilities Would Occur or Be Accelerated

Portions of the PCCP pipelines are located in rights-of-way or easements within recreational facilities, such as through parks, golf courses, or school yards. For these portions of the pipelines, excavation sites may be located within the recreational facility. In these locations, excavation sites and work areas could result in part or all of the facility being unavailable during construction, for a maximum of approximately 6 months.[1] Also, construction staging areas may be located in parks, school yards, golf courses, or other recreational facilities for months or longer, depending on how many excavation sites the staging area is serving.

Metropolitan would work with the local jurisdictions and schools to ensure that rehabilitation would not result in significant temporary impacts on recreational activities or permanent physical deterioration of recreational facilities. Generally, excavation or staging areas would not be placed in active play areas (e.g., baseball/ softball, soccer, football, tennis) where recreational activities are scheduled (such as sports league games and school activities). If rehabilitation activities were located within trails or bike routes, safe detours would be provided during construction and the trail or bikeway would be restored when construction is complete. Excavations and staging within recreational facilities intended for natural areas would be avoided, if possible, and any required biological mitigation would be implemented (see Section 4.4, *Biological Resources.*)

Because rehabilitation activities would not permanently preclude recreational uses, requiring them to be relocated elsewhere, rehabilitation could lead to increased deterioration of recreational facilities. Impacts would be less than significant.

Because contractors would be required to return the site to preconstruction conditions once rehabilitation is complete, the PCCP program would not result in permanent physical deterioration of recreational facilities. Permanent aboveground elements (manholes, valve boxes, or electrical panels) would be placed in such a way as to not interfere with the use of the facility. Permanent impacts would be less than significant.

When there are recreation facilities located adjacent to or near excavation sites, construction activities could affect the use of the recreational facilities. These effects would include localized air quality effects, excessive noise, and limitations on access. These effects are discussed in Sections 4.3, *Air Quality*, 4.11, *Noise*, and 4.13, *Transportation*, respectively.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

[1] Work areas may include access areas, staging areas, parking areas, safety areas, etc.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold REC-B: Include Recreational Facilities or Require the Construction or Expansion of Recreational Facilities, Which Might Have an Adverse Physical Effect on the Environment

The proposed program does not include construction of recreational facilities. It would not result in increased population that would require the construction or expansion of recreational facilities. Therefore, the proposed program would not result in adverse physical effects on the environment related to construction of recreational facilities.

Mitigation Measures

There would be no impacts for the proposed program.

Residual Impacts

No impacts would result from the proposed program, and no mitigation is necessary. Therefore, there would be no residual impacts for the proposed program.

4.12.5.2 Cumulative Analysis

Program Analysis

The proposed program would be implemented over a long period of time; in many cases, implementation of the projects in the proposed program would occur past the planning horizons of local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

The proposed program would result in less-than-significant effects on recreational facilities. These impacts would be temporary and/or localized, and would not combine with impacts on recreational facilities from other projects to result in a considerable contribution to cumulative impacts.

Section 4.13
Transportation and Traffic

4.13.1 Introduction

This section describes the existing conditions for transportation and traffic, the regulatory framework associated with transportation and traffic, the impacts on transportation and traffic that would result from the proposed program, and the mitigation measures that would reduce these impacts. As noted in the Initial Study, the proposed program would have potentially significant transportation and traffic impacts. Figures 4.13-1 through 4.13-5 show the major transportation facilities in the transportation study area, including major highways, off-road trails and bicycle routes, and airports.

4.13.2 Existing Conditions

The study area for vehicular, transit, bicycle, and pedestrian traffic includes the streets in which the pipelines are located or cross. For air transportation, the study area includes the airport land use plan areas in which the pipelines are located.

The narratives provided in this section summarize the general roadway information characterizing the streets and highways through which the five pipelines are aligned, and/or where construction is anticipated. Each of the pipelines traverses multiple local jurisdictions, with overlying roadways of various size and functionality, ranging from 24-foot-wide, two-lane residential streets to 100-foot-wide, eight-lane regional corridors. The inventoried information provided in Tables 4.13-1 to 4.13-5 includes the following.

- Name of agency (or agencies) having jurisdiction over the roadway
- Street name
- Street width (curb-to-curb)
- Functional classification, per the jurisdictions' general plans
- Number of through travel lanes (total for both directions)
- Type of center median divider (if any)
- Presence of on-street parking lanes (if any)
- Type of adjacent driveway access
- Multimodal facilities provided within and/or along the roadway (e.g., fixed bus routes, rail service, bicycle lanes, pedestrian sidewalks, equestrian trail access)
- Additional information about the pipeline alignment such as direction, length of the segment, major street crossings (perpendicular to the alignment), shared jurisdictional boundaries of the roadway, and nearby freeway interchanges

4.13.2.1 Allen-McColloch Pipeline

The Allen-McColloch Pipeline begins at Metropolitan's Robert Diemer Water Treatment Plant in Yorba Linda and ends 25 miles to the south at the El Toro Water District reservoir in Mission Viejo. The pipeline extends southeast from the Diemer Plant through the Black Gold Golf Club, circumventing several residential neighborhoods before turning southward through Yorba Linda. It crosses Bastanchury Road and turns eastward along a short, 1,000-foot centerline length of Yorba Linda Boulevard before turning south along the centerline of Fairmont Boulevard. The Allen-McColloch Pipeline follows Fairmont Boulevard for nearly 2 miles, crossing Paseo De Las Palmas and Village Center Drive before angling southwest and downhill along the Fairmont Connector onto Esperanza Road. The pipeline follows Esperanza Road west for 0.5 mile and then turns south to travel underneath the adjacent railroad tracks and southward under Chrisden Street in Anaheim. The alignment continues south for another 0.5 mile, crossing La Palma Avenue, the Santa Ana River, State Route 91 (SR-91), and Via Cortez along the east side of Canyon Plaza before turning west on Santa Ana Canyon Road. Just east of Imperial Highway, the Allen-McColloch Pipeline angles southwesterly across the athletic fields and turns south under the northbound lanes of Imperial Highway. It then continues south for nearly 3 miles into the city of Orange, crossing Nohl Ranch Road, Cannon Street, and Serrano Avenue, before turning east along Santiago Canyon Road. The pipeline follows Santiago Canyon Road southeast for 2 miles, then turns south along the west side of Jamboree Road (mostly off-street) for 2.5 miles. The Allen-McColloch Pipeline alignment then turns southeast and traverses a 5.5-mile distance across State Route 261 (SR-261), State Route 241 (SR-241), and State Route 133 (SR-133) in Irvine before crossing Portola Parkway. The pipeline continues south for 4 miles into Lake Forest, crossing Alton Parkway, Bake Parkway, and Lake Forest Drive before turning southeast under the northbound lanes of Trabuco Road. At a point approximately 200 feet south of the Lake Forest/Mission Viejo boundary line, the Allen-McColloch Pipeline turns south through a multi-family residential community before turning east onto Los Alisos Boulevard for a distance of 900 feet, then again to the southeast for a distance of 1,500 feet until its terminus at the El Toro Reservoir.

Vehicular Transportation

Table 4.13-1 provides an inventory of the types of streets in which the existing Allen-McColloch Pipeline is located.

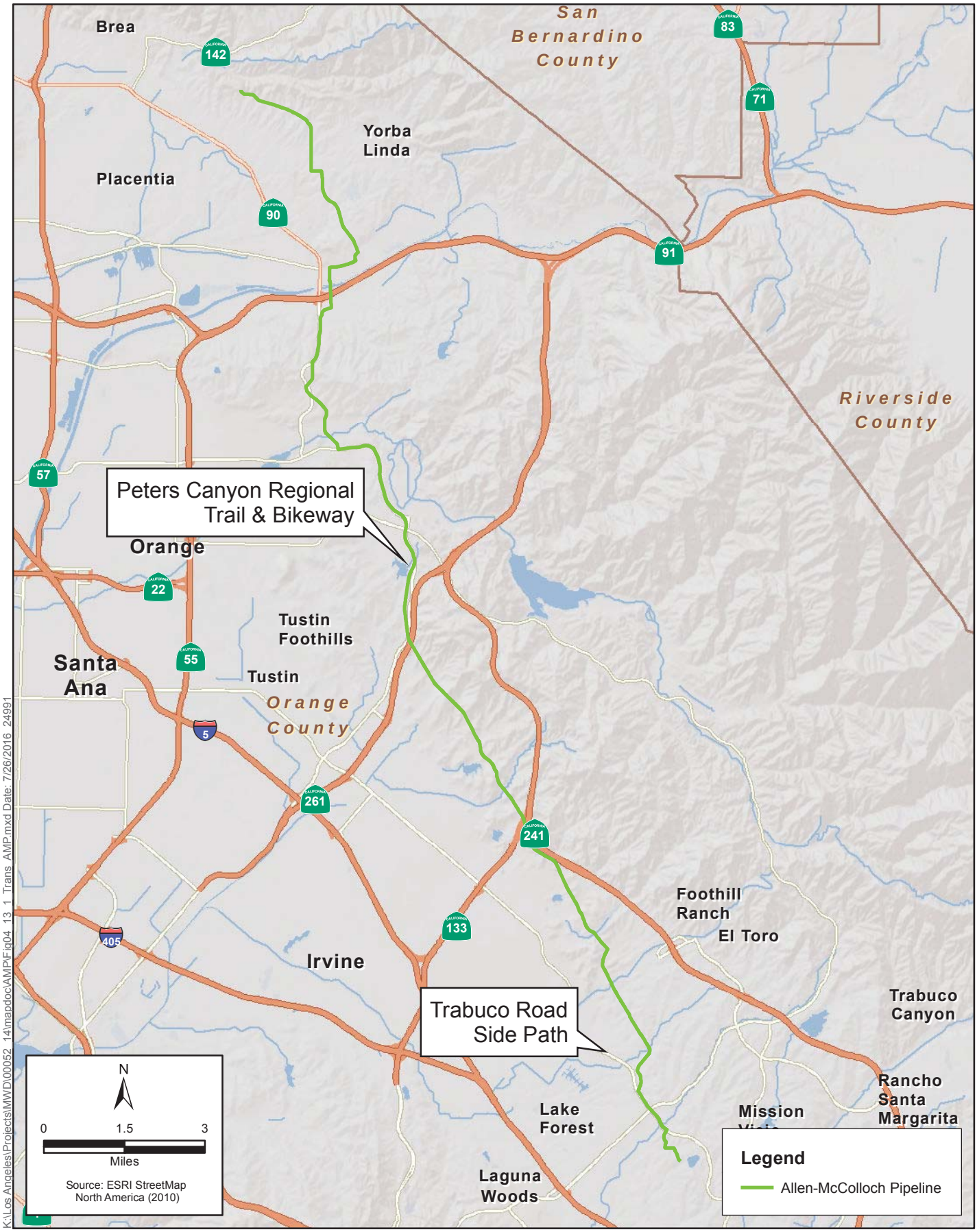


Figure 4.13-1
Major Transportation Facilities – Allen-McColloch Pipeline
Metropolitan PCCP Program

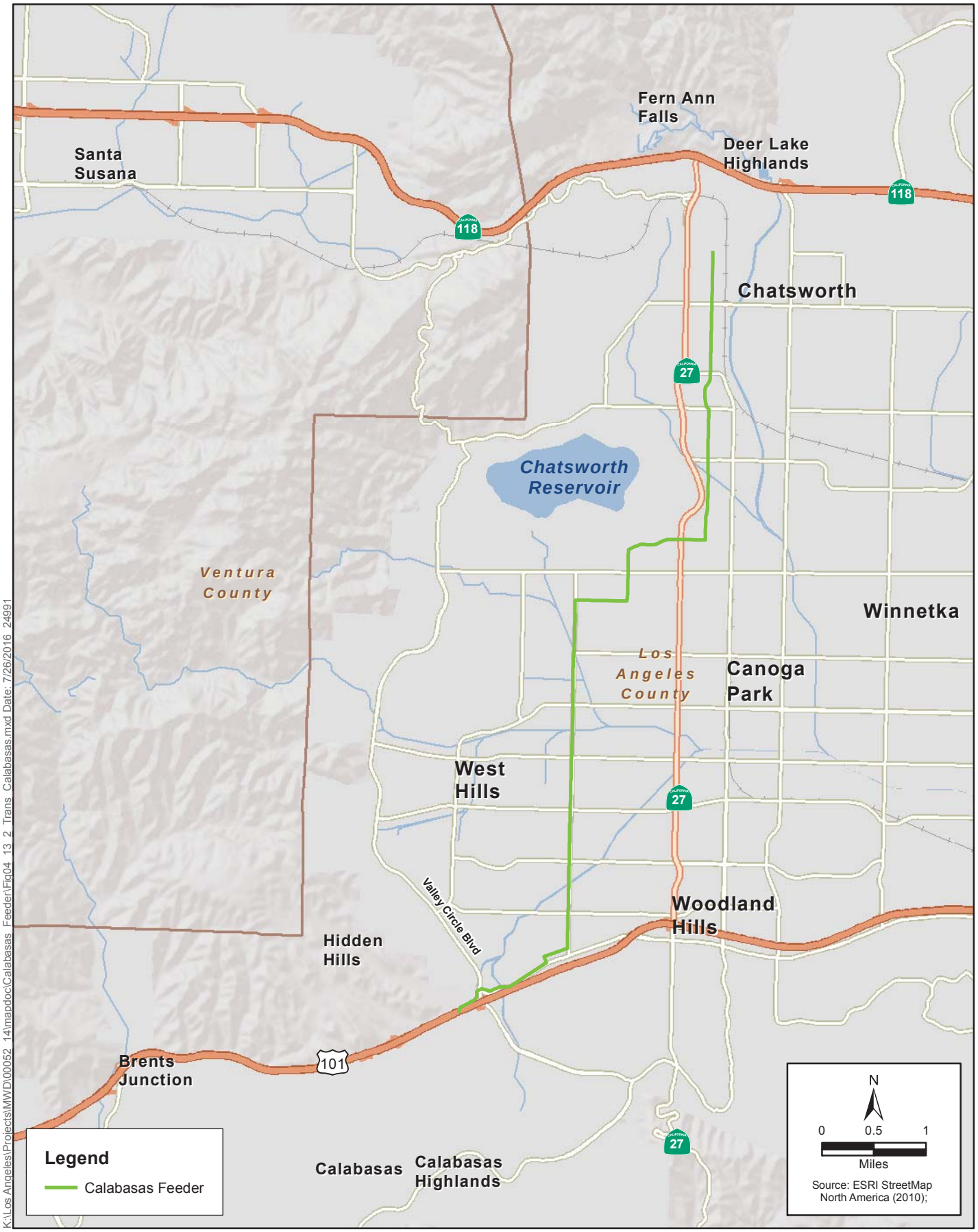


Figure 4.13-2
Major Transportation Facilities – Calabasas Feeder
Metropolitan PCCP Program

Figure 4.13-3
Major Transportation Facilities – Rialto Pipeline
Metropolitan PCCP Program

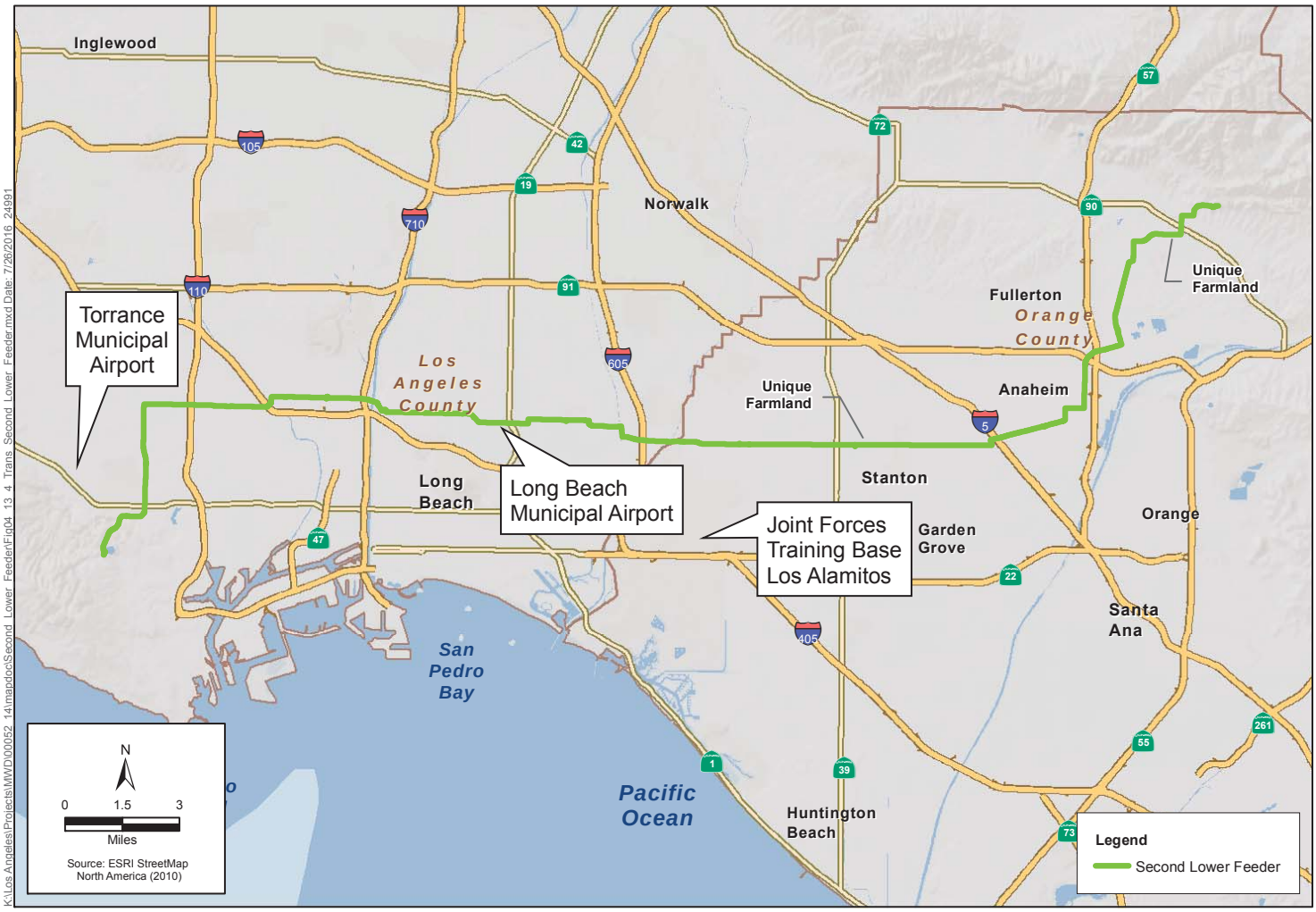


Figure 4.13-4
Major Transportation Facilities – Second Lower Feeder
Metropolitan PCCP Program

Figure 4.13-5
Major Transportation Facilities – Sepulveda Feeder
Metropolitan PCCP Program

Table 4.13-1. Inventory of Streets in Allen-McColloch Pipeline Study Area

	Roadway Information							Modal Facilities			Pipeline Alignment Information		
Agency	Street	Width (feet)	Type (per General Plan)	Lanes	Median	Parking Lanes	Driveway Access	Transit Routes	Bicycle Routes	Pedestrian Facilities	Direction	Length (feet)	Notes
Yorba Linda	Bastanchury Road	64	Modified Primary Arterial	4	Raised	---	Limited	---	Class II	Sidewalks	South	64	Crosses roadway briefly
Yorba Linda	Yorba Linda Boulevard	84	Primary Arterial	6	Raised	---	Commercial	OCTA 26	---	Sidewalks	East	1,000	
Yorba Linda	Fairmount Boulevard	64-78	Primary Arterial	4	Raised/2-way left-turn lanes	---	School	OCTA 26	Class II	Sidewalks	Southeast	9,950	
Anaheim	North Chrisden Street	40	Local Street	2	---	2 sides	Commercial Alley	OCTA 30 OCTA 38	---	Sidewalks	South	750	
Anaheim	East La Palma Avenue	80	Primary Arterial	6	Raised/2-way left-turn lanes	---	Commercial	---	---	Sidewalks	South	82	Crosses roadway briefly
Anaheim	Via Cortez	40	Local Street	2	---	1 side	None	---	---	Sidewalk (west side)	South	500	
Anaheim	Santa Ana Canyon Road	96	Primary Arterial	5	Raised	---	Limited	---	Class II (one side)	Trail (south side)	Southwest	600	Alignment adjacent to southern curb
Anaheim	Imperial Highway	90	Major/Primary Arterial	4-5	Raised	---	Commercial, School	---	Class II	Sidewalks	South	4,500	
Orange	Cannon Street	100	Major Arterial	4	Raised	---	None	---	Class II	Sidewalks	Southwest/ Southeast	100 /100	Crosses street twice
Orange	Serrano Avenue	62	Primary Arterial	4	Raised	---	None	---	---	Sidewalk (south side)	South	70	Crosses roadway briefly
Orange	Yellowstone Boulevard	50	Local Street	2	Raised	---	None	---	---	Sidewalks	South	1,250	
Orange	East Santiago Canyon Road	80	Major Arterial	4	Raised	---	Limited	---	Class II	Sidewalks Trails	East/ Southeast	11,300	
Orange	Jamboree Road	104	Major Arterial	6	Raised	---	None	---	Class II	Sidewalks Trails	South	4,000	Located mostly off-street
Tustin	Hewes Avenue	36	Private Road	2	---	---	None	---	---	Sidewalks	South	350	Entry drive into residential community; crosses Pioneer Road
Irvine	Portola Parkway	80	Major Highway	4	Raised	---	Maintenance only	---	Class II	Sidewalks Trails	South	80	Crosses roadway briefly
Irvine	Alton Parkway	100	Major Highway	6	Raised	---	Maintenance only	OCTA 188 OCTA 211 OCTA 480	Class II	Sidewalks	Southeast	102	Crosses roadway briefly
Lake Forest	Arctic Ocean Drive	42	Local Street	2	2-way left-turn lanes	---	Office Parks	---	---	Sidewalks	Southeast	42	Crosses roadway briefly
Lake Forest	Bake Parkway	82	Primary Arterial	4	Raised	---	None	OCTA 206 OCTA 480	Class II	Sidewalks	Southeast	86	Crosses roadway briefly
Lake Forest	Marin	24	Local Street	2	---	---	Multiple (residential)	OCTA 177	---	None	Southeast	350	
Lake Forest	Lake Forest Drive	86	Primary Arterial	4	Raised	---	Commercial	---	Class II	Sidewalks	Southwest	130	Crosses roadway briefly
Lake Forest	Old Trabuco Road	36	Local Street	2	---	---	Church Residential	---	---	Sidewalk (east side)	Southeast	1350	Cul-de-sac at south end
Lake Forest	Trabuco Road	100	Major Arterial	4-6	Raised	---	Private Commercial	OCTA 188	Class I Class II	Sidewalks	Southeast	4,550	South city limit of Lake Forest Crosses El Toro Road
Mission Viejo	Trabuco Road	84	Primary Arterial	4	Raised	---	Church	OCTA 188	Class II	Sidewalks	Southeast	300	North city limit of Mission Viejo
Mission Viejo	Via Pimiento	40	Private Road	2	---	Marked	Multiple (residential)	---	---	Sidewalks	South	1,400	
Mission Viejo	Los Alisos Boulevard	100	Major Arterial	6	Raised	---	None	OCTA 86	Class II	Sidewalks	East	900	
Mission Viejo	La Glorieta	34	Local Street	2	---	---	Residential	---	---	Sidewalk (west side)	Southeast	1000	

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Transit and Rail

The Allen-McColloch Pipeline traverses local agencies within Orange County. The Orange County Transportation Authority (OCTA) owns and operates the vast majority of transit and rail services. OCTA runs numerous fixed bus routes on streets that the Allen-McColloch Pipeline crosses or where it is aligned, including the following.

- Line 26 on Yorba Linda Boulevard (city of Yorba Linda)
- Line 30 on Esperanza Road (city of Yorba Linda)
- Line 38 on Chrisden Street (city of Anaheim)
- Line 86 (city of Mission Viejo)
- Line 177 (city of Lake Forest)
- Line 188 (cities of Irvine, Mission Viejo, and Lake Forest)
- Line 206 (city of Lake Forest)
- Line 211 (city of Irvine)
- Line 480 (city of Lake Forest)

Bicycle Facilities

There are numerous bikeway facilities found within the vicinity of the Allen-McColloch Pipeline alignment. The following streets contain designated facilities for bicyclists.

- Class I (off-street bike path) bikeways
    - Peters Canyon Regional Trail & Bikeway (cities of Orange and Tustin): The Allen-McColloch Pipeline follows a north/south alignment along the west of Jamboree Road, crossing several different points along the Peters Canyon and Ridge View Trail, a combined path for pedestrians and bicyclists.
    - Trabuco Road Side Path (city of Lake Forest)
- Class II (on-street marked bike lanes) bikeways
    - Bastanchury Road (city of Yorba Linda)
    - Fairmont Boulevard (city of Yorba Linda)
    - Esperanza Road (city of Yorba Linda)
    - Santa Ana Canyon Road (city of Anaheim, one side)
    - Imperial Highway (city of Anaheim)
    - Cannon Street (city of Orange)
    - E. Santiago Canyon Road (city of Orange)
    - Portola Parkway (city of Irvine)
    - Alton Parkway (city of Irvine)
    - Bake Parkway (city of Lake Forest)

- Lake Forest Drive (city of Lake Forest)
- Trabuco Road (city of Lake Forest)
- Los Alisos Boulevard (city of Mission Viejo)

Pedestrian Facilities

A survey of the existing roadside conditions revealed that virtually all of the streets and highways aligned over and/or crossing the Allen-McColloch Pipeline contain paved pedestrian sidewalks and/or equestrian trails along the roadside. Some streets (e.g., Esperanza Road, Serrano Avenue, Old Trabuco Road, La Glorieta) provide sidewalks along only one side of the street, due to the surrounding physical constraints. The following pedestrian facilities were found to be located along a significant length of the Allen-McColloch Pipeline alignment.

- Peters Canyon Regional Trail & Bikeway (cities of Orange and Tustin): The Allen-McColloch Pipeline follows a north/south alignment along the west of Jamboree Road, crossing several different points along the Peters Canyon and Ridge View Trail, a combined path for pedestrians and bicyclists.
- Fairmont Boulevard (city of Yorba Linda): Sidewalks on the eastern side of Fairmont Boulevard north and south of Paseo De Las Palomas are within 10 feet of the pipeline centerline.
- Santiago Canyon Road (city of Orange): South of Newport Boulevard to Jamboree Road the sidewalk on the north side of Santiago Canyon Road is near and crosses the Allen-McColloch Pipeline at several points.
- Jamboree Road (city of Orange): There is a Class I (off-street bicycle path) facility along Jamboree Road where the Allen-McColloch Pipeline is aligned off-street.

Air Transportation

There are no public airports, applicable airport land use plans, or private airstrips in the study area for the Allen-McColloch Pipeline.

Emergency Response Plans and Emergency Evacuation Plans

The following emergency response and evacuation plans have been identified in the study area for the Allen-McColloch Pipeline.

- **City of Orange:** According to the City of Orange General Plan, Public Safety Element, all arterials in the city are recognized as primary emergency response routes. (City of Orange 2010)
- **City of Tustin:** According to the Tustin General Plan, Public Safety Element, Jamboree Road is an evacuation route in the Allen-McColloch Pipeline study area. (City of Tustin 2013)
- **City of Mission Viejo:** According to the City of Mission Viejo General Plan, Public Safety Element, there are city evacuation routes along Trabuco Road and Los Alisos Boulevard within the Allen-McColloch Pipeline study area. (City of Mission Viejo 2009)

4.13.2.2 Calabasas Feeder

The Calabasas Feeder begins at the intersection of Chatsworth Street and Owensmouth Avenue in the city of Los Angeles (Chatsworth-Porter Ranch neighborhood) and ends 9.25 miles to the south in

the city of Calabasas. There are six major alignment shifts in the Calabasas Feeder, each of which generally orients the pipeline further the south or west. The northernmost portion of the Calabasas Feeder is 2.75 miles in length, travels southerly along Owensmouth Avenue through the city of Los Angeles, and traverses both residential and industrial areas of the community. Major arterial crossings include Devonshire Street, Lassen Street, Plummer Street, Nordhoff Street, and Parthenia Street. In the southern part of the neighborhood, the Calabasas Feeder turns west on Chase Street for a distance of approximately 4,000 feet before turning southward again on Shoup Avenue along the northbound lanes. This segment of the pipeline is crossed by Roscoe Boulevard, which serves as the boundary line between the Chatsworth-Porter Ranch and Canoga-Woodland Hills communities. At approximately 0.5 mile south of Chase Street, the Calabasas Feeder turns westward at Strathern Street for 0.5 mile, then southward again at Fallbrook Avenue. The alignment continues south on Fallbrook Avenue for a distance of just over 3 miles, crossing Saticoy Street, Sherman Way, Vanowen Street, Victory Boulevard, and Burbank Boulevard before turning southwest toward Mulholland Drive. West of Fallbrook Avenue, the pipeline meanders through local streets in a southwesterly direction before first crossing Valley Circle Boulevard and then U.S. Highway 101 (US-101) to its terminus within Metropolitan's Las Virgenes Municipal Water District Service Connection.

Vehicular Transportation

Table 4.13-2 provides an inventory of the types of streets in which the existing Calabasas Feeder is located.

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Table 4.13-2. Inventory of Streets in Calabasas Feeder Study Area

	Roadway Information							Modal Facilities			Pipeline Alignment Information		
Agency	Street	Width (feet)	Type (per General Plan)	Lanes	Median	Parking Lanes	Driveway Access	Transit Routes	Bicycle Routes	Pedestrian Facilities	Direction	Length (feet)	Notes
Los Angeles	Chatsworth Street	50	Secondary Arterial	2	---	---	Residential	---	---	Sidewalk (north side)	South	50	Crosses roadway briefly
Los Angeles	Owensmouth Avenue	40	Collector	2	---	2 sides	Residential Industrial	MTA 166 MTA 364	---	Sidewalks	South	14,650	Heavy on-street parking; industrial access
Los Angeles	Chase Street	36	Collector	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	West	4,000	
Los Angeles	Shoup Street	36	Secondary Arterial	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	South	2,600	
Los Angeles	Strathern Street	40	Collector	2	---	2 sides	Multiple (Residential)	MTA 152 MTA 353	---	Sidewalks	West	2,650	
Los Angeles	Fallbrook Avenue	80	Major Highway Class II	4	2-way left-turn lanes	2 sides	Multiple (residential)	MTA 152 MTA 165 MTA 169 MTA 353	Class II	Sidewalks	South	17,650	
Los Angeles	Leonora Drive	34	Local Street	2	---	6 p.m.–8 a.m.	Multiple (residential)	---	---	---	Southwest	1,250	
Los Angeles	Royer Avenue	40	Local Street	2	---	2 sides	None	---	---	Sidewalks	Southeast	350	
Los Angeles	Ventura Boulevard	90	Major Highway CL2	4	2-way left-turn lanes	2 sides	Commercial Retail	---	---	Sidewalks	Southwest	2,750	
Los Angeles	Leonora Drive	40	Local Street	2	---	1 side	Residential	---	---	---	West	650	Cul-de-sac at eastern end
Los Angeles	Valley Circle Boulevard	94	Major Highway CL2	4	---	---	Limited	---	---	Sidewalks	West	116	Crosses roadway briefly near US-101 interchange
Los Angeles	Long Valley Road	40	Local Street	3	---	---	None	---	---	---	Southwest	1,300	Located off-street. Travels south under US-101

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Transit and Rail

The Calabasas Feeder travels mostly through the city of Los Angeles, with its southerly terminus very briefly crossing the boundary lines of the cities of Hidden Hills and Calabasas. The Los Angeles County Metropolitan Transportation Authority (MTA) owns and operates commuter rail service throughout the city of Los Angeles, as well as large majority of fixed-route local transit. The following three bus routes are located on the Calabasas Feeder alignment.

- MTA Line 152/353 (Fallbrook Avenue)
- MTA Line 165 (Vanowen Street crossing Fallbrook Avenue)
- MTA Line 166/364 (Owensmouth Avenue)

Bicycle Facilities

The only designated bikeway facility in the Calabasas Feeder project area is on Fallbrook Avenue. Along the entirety of its length, Fallbrook Avenue provides both a marked on-street parking lane and a Class II bikeway (on-street marked bike lanes). The Calabasas Feeder meanders between the northbound and southbound lanes.

Pedestrian Facilities

Paved concrete sidewalks are provided on both sides of all streets within the project area, except for Leonora Drive and Long Valley Road. In some cases the pipeline alignment is near the existing curb, near the pedestrian facilities, such as in the following locations.

- The eastern sidewalk on Owensmouth Avenue from Lassen Street to Prairie Street
- The eastern sidewalk on Owensmouth Avenue south of Osbourne Street to Chase Street
- Shoup Avenue north of Roscoe Boulevard

Air Transportation

There are no public airports, airport land use plans, or private airstrips within 2 miles of the Calabasas Feeder alignment.

Emergency Response Plans and Emergency Evacuation Plans

The following emergency response and evacuation plans have been identified in the study area for the Calabasas Feeder.

- **City of Los Angeles:** According to the City of Los Angeles General Plan, Safety Element, there is a city disaster route on State Route 27 (SR-27) (Topanga Canyon Boulevard) in the Calabasas Feeder study area. (City of Los Angeles 1996)
- **City of Hidden Hills:** According to the Hidden Hills General Plan, Safety Element, there is an evacuation route on Long Valley Road in the Calabasas Feeder study area. (City of Hidden Hills 1995)

4.13.2.3 Rialto Pipeline

The Rialto Pipeline begins at the California Department of Water Resources facility in the city of San Bernardino and ends 30 miles to the west at the San Dimas Power Plant in the city of San Dimas. The Rialto Pipeline begins by extending southwest from the California Department of Water Resources facility and along the east side of Pine Avenue through a nearby residential community. The pipeline crosses under Kendall Drive, Interstate 215 (I-215), and Cajon Boulevard and traverses a 2-mile stretch of vacant area in San Bernardino County before crossing under Riverside Avenue in the city of Rialto. The pipeline continues westward along Casa Grande Drive, crossing Alder Avenue, Sierra Avenue, Citrus Avenue, Interstate 15 (I-15), and Cherry Avenue before turning southwest across a 0.25-mile stretch of vacant county land toward Crescenta Way in the neighboring city of Rancho Cucamonga. From Crescenta Way, the Rialto Pipeline alignment turns westward onto Wilson Avenue, crossing over to the eastbound lanes (west of Wardman Bullock Road), and then continues off-street and to the west along the southerly right-of-way line on Wilson Avenue. The pipeline turns south at Bluegrass Avenue, then west again at Banyan Street across the southeasterly parking lot of John Golden Elementary. The alignment then continues for 3.5 miles on Banyan Street, crossing Day Creek Boulevard, Milliken Avenue, and Haven Avenue before turning south at Archibald Avenue. From Archibald Avenue, the pipeline turns to the west and south onto Amethyst Avenue and along several utility easements, crossing Carnelian Street, Sapphire Street, and the Cucamonga Creek storm channel at the boundary line between the cities of Rancho Cucamonga and Upland. The pipeline then crosses under Interstate 210 (I-210) to the south into the city of Upland, travels along Campus Avenue through the Crossroads Colonies shopping center, and then turns west along 18th Street. The Rialto Pipeline alignment continues along 18th Street until its terminus, crossing Euclid Avenue, San Antonio Avenue, Mountain Avenue, and Benson Avenue. From the end of 18th Street, the pipeline continues west beyond I-210, and into the neighboring city of Claremont for 1.25 miles following the east/west alignment of Miramar Avenue. At the westerly terminus of Miramar Avenue at Forbes Avenue the alignment continues west along the Thompson Creek Trail through an unincorporated portion of Los Angeles County, northwest into the city of La Verne where it joins to the Live Oak Reservoir, then westward again, crossing Esperanza Drive toward the adjacent residential community. The alignment proceeds west for 5,000 feet past Esperanza Drive, where it turns south at Wheeler Avenue, then west again at the T-intersection of Wheeler Avenue and Via Arroyo. The westernmost 0.75-mile portion of the pipeline travels southwest into the city of San Dimas along San Dimas Canyon Road, then to Sycamore Canyon Road where it turns west and terminates at the city's Power Plant facility.

Vehicular Transportation

Table 4.13-3 provides an inventory of the types of streets in which the existing Rialto Pipeline is located.

Table 4.13-3. Inventory of Streets in Rialto Pipeline Study Area

	Roadway Information							Modal Facilities			Pipeline Alignment Information		
Agency	Street	Width (feet)	Type (per General Plan)	Lanes	Median	Parking Lanes	Driveway Access	Transit Routes	Bicycle Routes	Pedestrian Facilities	Direction	Length (feet)	Notes
San Bernardino	West Ohio Street	40	Collector	2	---	---	Residential	---	---	Sidewalk (southwest side)	Southwest	40	Crosses roadway briefly
San Bernardino	Pine Avenue North	40-64	Collector/Secondary	2-4	2-way left-turn lanes/Center Lane	---	Residential (northern portion)	---	---	Sidewalks	Southwest	4,900	Briefly crosses Torrey Pine Road and White Pine Avenue
San Bernardino	Kendall Drive	75	Major Arterial	4	Paved	---	None	Omnitrans 2	Class II	Sidewalks	Southwest	100	Crosses roadway briefly
San Bernardino	Industrial Parkway	64	Secondary Arterial	4	2-way left-turn lanes	---	None			Sidewalk (south side)	West	600	
San Bernardino	Cajon Boulevard	50	Major Arterial	2	---	---	None	---	---	---	Southwest	50	Crosses roadway briefly Historic Route 66
Rialto	Riverside Avenue	50	Major Arterial	2	---	---	Residential	---	---	Sidewalk (southwest side)	West	100	Crosses roadway briefly
Rialto	West Casa Grande Drive	64	Secondary Arterial	3-4	---	---	None	Omnitrans 22	Class II	Sidewalks	West	6,600	
Rialto	Alder Avenue	72	Major Arterial	4	Raised	---	None	Omnitrans 22	Class II	Sidewalks	West	100	Crosses roadway briefly
Fontana	Citrus Avenue	80	Primary Highway	4	Raised	---	None	---	Class II	Sidewalks	West	100	Crosses roadway briefly
Fontana	Knox Avenue	44	Collector Street	2	---	---	None	---	---	Sidewalks	West	1,300	
Fontana	Coyote Canyon Road	70	Secondary Highway	2	Paved	---	None	---	Class II	Sidewalk (northwest side)	West	100	Crosses roadway briefly
Fontana	Cherry Avenue	72	Modified Primary Highway	4	Raised	---	None	---	Class II	Sidewalks	West	72	Crosses roadway briefly
Rancho Cucamonga	San Sevaine Road	36	Local Street	2	---	---	None	---	Class I	Sidewalks, Trails	Southwest	45	Crosses roadway briefly
Rancho Cucamonga	Crescenta Way	36	Local Street	2	---	---	Multiple (residential) (north side)	---	---	Sidewalk (south side)	Southwest	2,150	Mostly off-street Briefly crosses Crestline Place Briefly crosses Ridgeline Place
Rancho Cucamonga	Wardman Bullock Road	44	Modified Secondary + Median	2-4	2-way left-turn lanes/Center Lane	---	None	---	Class I	Sidewalks, Trails	West	75	Crosses roadway briefly
Rancho Cucamonga	Wilson Avenue	68	Modified Major + Median	2-4	Raised	---	None	---	Class I	Sidewalks, Trails	West	4,080	Mostly off-street Elbow briefly crosses at East Avenue
Rancho Cucamonga	Bluegrass Avenue	42	Local Street	2	---	---	None	---	---	Sidewalks	South	1,700	50% off-street 90-degree turn under Golden Elementary School
Rancho Cucamonga	Banyan Street	50	Collector	2	2-way left-turn lanes/Center Lane	1 side	Schools	---	Class II	Sidewalks, Trails	West	11,000	Heavy on-street parking between Milliken Avenue and Rochester
Rancho Cucamonga	Day Creek Boulevard	75	Modified Major + Median	4	Raised	---	None	---	Class II	Sidewalks	West	100	Crosses roadway briefly
Rancho Cucamonga	Milliken Avenue	94	Major Arterial	5	Raised	---	School	Omnitrans 85	Class II	Sidewalks	West	125	Crosses roadway briefly
Rancho Cucamonga	Merlot Court	36	Private Road	2	---	---	Multiple (residential)	---	---	Sidewalk (south side)	West	550	Largely off-street; cul-de-sac at western end
Rancho Cucamonga	Haven Avenue	94	Major Divided Arterial	6	Raised	---	None	Omnitrans 80 Omnitrans 81	---	Sidewalks	West	100	Crosses roadway briefly; traverses church parking lot
Rancho Cucamonga	Archibald Avenue	60	Major Arterial	4	2-way left-turn lanes	---	None	Omnitrans 67	---	Sidewalks	South	650	
Rancho Cucamonga	Klusman Avenue/ Jadieite Avenue	36	Local Street	2	---	---	Multiple (residential)	---	---	Sidewalks	West	100	Crosses 2 roadways briefly

	Roadway Information							Modal Facilities			Pipeline Alignment Information		
Agency	**Street**	**Width (feet)**	**Type (per General Plan)**	**Lanes**	**Median**	**Parking Lanes**	**Driveway Access**	**Transit Routes**	**Bicycle Routes**	**Pedestrian Facilities**	**Direction**	**Length (feet)**	**Notes**
Rancho Cucamonga	Amethyst Avenue	42	Collector	2	---	---	Multiple (residential)	---	---	Sidewalks	South	1,900	
Rancho Cucamonga	Highland Avenue	34	Local Street	2	---	---	Multiple (residential)	---	---	Sidewalks	West	200	Elbow turn at Highland Avenue/ Broken Star Court
Rancho Cucamonga	Camelian Street	72	Secondary Arterial	4	---	---	Limited	---	---	Sidewalks	West	100	Crosses roadway briefly
Rancho Cucamonga	Highland Avenue	44	Collector Street	2	---	---	None	---	---	Sidewalks	West	3,500	
Upland	North Campus Avenue	72	Secondary Arterial	4	Raised	---	Commercial	Omnitrans 83	Class II	Sidewalks	Southwest	1,700	Additional 90-foot crossing of intersecting 19th Street
Upland	Winston Avenue	36	Local Street	2	---	---	Multiple (residential) (east side)	---	---	Sidewalks	South	1,300	Feeder branches off to the south from mainline
Upland	18th Street	40	Local Street	2	---	1 side	School	Omnitrans 83 Omnitrans 84	---	Sidewalks	West	11,000	Heavy on-street parking near Pioneer Junior High School; crosses San Antonio Avenue, Mountain Avenue, Benson Avenue
Upland	Euclid Avenue	150	Major Arterial	4	Raised	2 sides	Limited	Omnitrans 83 Omnitrans 84	Class II	Sidewalks	West	150	Crosses roadway briefly
Claremont	East Miramar Avenue	20-50	Private Road/Local Street	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	West	6,500	Briefly crosses Padua Avenue, Grand Avenue, Mills Avenue, Bonnie Brae Avenue
La Verne	Wheeler Avenue	70	Secondary Arterial	4	2-way left-turn lanes	---	Multiple (residential)	---	---	Sidewalks	Southwest	1,050	Briefly crosses 36-foot section of Old Wheeler Road
San Dimas	San Dimas Canyon Road	46	Scenic Parkway	2	2-way left-turn lanes	---	Residential	---	---	Sidewalk (north side)	Southwest	3,800	

Transit and Rail

The Rialto Pipeline passes through eight local cities and various unincorporated areas in San Bernardino County. San Bernardino County Public Transit (Omnitrans) is the primary public transit agency in the San Bernardino Valley, providing fixed local and intercity routes from Chino Hills to Yucaipa. The following bus routes are within the vicinity of the Rialto Pipeline alignment.

- Omnitrans Line 2 (Kendall Drive—city of San Bernardino)
- Omnitrans Line 22 (West Casa Grande Drive, Alder Avenue—city of Rialto)
- Omnitrans Line 67 (Archibald Avenue—city of Rancho Cucamonga)
- Omnitrans Line 85 (Milliken Avenue—city of Rancho Cucamonga)
- Omnitrans Line 80/81 (Haven Avenue—city of Rancho Cucamonga)
- Omnitrans Line 83 (North Campus Avenue—city of Upland)
- Omnitrans Line 84 (18th Street, Euclid Avenue—city of Upland)

Bicycle Facilities

There are several bikeway facilities in the vicinity of the Rialto Pipeline. The following streets contain designated facilities for bicyclists.

- Class I (off-street bike path) bikeways
    - San Sevaine Road (city of Rancho Cucamonga)
    - Wardman Bullock Road (city of Rancho Cucamonga)
    - Wilson Avenue (city of Rancho Cucamonga)
- Class II (on-street marked bike lanes) bikeways
    - Kendall Drive (city of San Bernardino)
    - West Casa Grande Drive (city of Rialto)
    - Alder Avenue (city of Rialto)
    - Citrus Avenue (city of Fontana)
    - Coyote Canyon Road (city of Fontana)
    - Cherry Avenue (city of Fontana)
    - Banyan Street (city of Rancho Cucamonga)
    - Day Creek Boulevard (city of Rancho Cucamonga)
    - Milliken Street (city of Rancho Cucamonga)
    - North Campus Avenue (city of Upland)
    - Euclid Avenue (city of Upland)

Pedestrian Facilities

Paved concrete sidewalks for pedestrians are provided on all of the streets along which the Rialto Pipeline travels. Some streets (e.g., Ohio Avenue, Industrial Parkway, Crescenta Way, San Dimas Canyon Road) provide sidewalks along only one side of the street, due to the surrounding physical constraints. Certain portions of the pipeline alignment are at or near the existing curb, such as in the following locations.

- South sidewalk on Pine Avenue between Ohio Avenue and Irvington Avenue (city of San Bernardino)
- South sidewalk on Crescenta Way (city of Rancho Cucamonga)
- South sidewalk on Wilson Avenue west of Wardman Bullock Road for a distance of approximately 3,000 feet (city of Rancho Cucamonga)
- South sidewalk on 24th Street (city of Rancho Cucamonga)
- Bluegrass Avenue south of Chellendon Drive, north of Etiwanda Elementary (city of Rancho Cucamonga)
- South sidewalk on Banyan Street between Cantabria Avenue near Banyan Elementary to Muscat Place (city of Rancho Cucamonga)
- East sidewalk on Amethyst Avenue south of Apricot Avenue to Highland Avenue (city of Rancho Cucamonga)
- Thompson Creek Road trail between Indian Hill Avenue and Mountain Avenue (city of Claremont)

Air Transportation

The Rialto Municipal Airport is 1.7 miles to the south of the Rialto Pipeline. The Cable Airport is approximately 1 mile south of the Rialto Pipeline. There are no private airstrips in the Rialto Pipeline study area.

Airport Land Use Plan for Rialto Municipal Airport

An airport land use plan (ALUP) is adopted for a public airport to provide for the orderly growth of the airport and the area surrounding the airport. The ALUP for the Rialto Municipal Airport was adopted in 1991 and is called the *Final Comprehensive Land Use Plan: Rialto Municipal Airport* (San Bernardino County ALUC 1991).

According to Figure III-7 of the ALUP for Rialto Municipal Airport, the Rialto Pipeline is just north and outside of the airport's safety zones, which are areas in the vicinity of the airport in which land use restrictions are established to protect the safety of the public. Because the Rialto Pipeline is outside the safety zones, the Rialto Airport ALUP is not applicable to the proposed program.

Airport Land Use Plan for Cable Airport

The ALUP for the Cable Airport was adopted in 1981 and is called the *Cable Airport Comprehensive Airport Land Use Plan* (West Valley Planning Agency ALUC 1981).

According to Figure 3 of the ALUP for Cable Airport, the Rialto Pipeline does not encroach into any of the airport's planning area boundaries. Therefore, the Cable Airport ALUP is not applicable to the proposed program.

Emergency Response Plans and Emergency Evacuation Plans

The following emergency route has been identified in the study area for the Rialto Pipeline.

- **County of San Bernardino**: According to the San Bernardino County General Plan, Safety Element, there are county evacuation routes on I-210, I-15, I-215, and State Route 83 (SR-83) (Euclid Avenue). (San Bernardino County 2014)

4.13.2.4 Second Lower Feeder

The Second Lower Feeder begins at Metropolitan's Robert Diemer Water Treatment Plant in the city of Yorba Linda and ends 40 miles to the west in the city of Rolling Hills Estates. The pipeline begins by extending southwesterly through residential neighborhoods in the northwestern part of the city of Yorba Linda, crossing Valley View Avenue and Valley View Circle, then turning west to follow the length of Wabash Avenue to where the street intersects Prospect Avenue. The alignment follows Prospect Avenue south, continues past Imperial Highway, turns west onto Bastanchury Road, then proceeds along the westbound lanes of Bastanchury Road into the neighboring city of Placentia, crossing Rose Drive, McCormack Lane, and Valencia Avenue. After a 2-mile distance on Bastanchury Road, the pipeline turns south onto Brookhaven Avenue for 1 mile, briefly turns west onto Yorba Linda Boulevard for a 0.25-mile distance, then angles southwest onto Angelina Drive north of Kraemer Boulevard. The alignment proceeds beyond Morse Avenue, along Kraemer Boulevard for a 0.5-mile distance, then continues along the same bearing onto Angelina Drive, south of Kraemer Boulevard, and along the east side of Kraemer Middle School and Valencia High School campuses. Once reaching the end of Angelina Drive 1.5 miles to the south, the alignment proceeds south beyond the railroad tracks and turns slightly southeast through an industrial park and toward Metropolitan's Carbon Creek Pressure Control Structure facility in the city of Anaheim. Beginning from this facility for a distance of approximately 9 miles, the pipeline is steel lined. At approximately the 15.7-mile mark, the pipeline reverts to PCCP along Ball Road, just east of Dale Avenue. The alignment continues west on Ball Road for four cities, crossing several major north-south arterials in Anaheim, Buena Park, Cypress, and Los Alamitos before crossing Interstate 605 (I-605) in the city of Long Beach (where Ball Road becomes Wardlow Road). At the San Gabriel River, the alignment turns north for a 0.5-mile distance, turns west to follow Keynote Street, crosses Studebaker Road and Los Coyotes Diagonal, turns north again on Iroquois Avenue, and then turns west once more along Conant Street. The pipeline traverses several blocks of residential neighborhoods, following Conant Street for 3 miles before turning south onto Clark Avenue. Just north of the Fire Station driveway, the pipeline turns west and follows a utility easement along the northern boundary of the Skylinks Golf Course, crosses Lakewood Boulevard, continues through the Long Beach Airport, then angles northwest to begin a westerly alignment along Bixby Road. The Bixby Road portion of the pipeline extends just over 3.5 miles through residential neighborhoods situated between the airport and Interstate 710 (I-710). At the west end of Bixby Road, the alignment jogs to the north and west across I-710 and proceeds along Carson Street for 5.5 miles through the neighboring city of Carson. Just before reaching the undercrossing at the Carson Street/Interstate 405 (I-405) interchange, the alignment turns south through a residential block on Acarus Avenue, then angles southwest to cross I-405 and the adjacent flood control channel. Just west of I-405, the pipeline proceeds westward along 220th Street for 6.5 miles, crossing Avalon Boulevard, Dolores Street, Main Street, Figueroa

Street, and Interstate 110 (I-110). Beyond I-110 the alignment continues on 220th Street through West Carson (unincorporated Los Angeles County), crossing intersections at Vermont Avenue and Normandie Avenue before reaching Western Avenue where it joins with the Sepulveda Feeder from the north. Beginning from the intersection of Western Avenue and 220th Street, the pipeline proceeds south, where the jurisdictions of the cities of Torrance and Los Angeles are to the west and east of the roadway, respectively. The pipeline continues south along Western Avenue, crossing 223rd Street, 228th Street, Sepulveda Boulevard, and 235th Street before reaching 238th Street, where Western Avenue is located completely within the city of Los Angeles boundary. The alignment then crosses Lomita Boulevard, Pacific Coast Highway, and Anaheim Street before entering the city of Lomita just south of 261st Street. The pipeline turns west at 262nd Street for 1 mile, then turns south at Oak Street toward the neighboring city of Rolling Hills Estates. Beginning at the Oak Street PCS facility, the pipeline turns southward onto Palos Verdes Drive East for a distance of 1 mile, crossing Palos Verdes Drive North and terminating at Metropolitan's Palos Verdes Reservoir.

Vehicular Transportation

Table 4.13-4 provides an inventory of the types of streets in which the existing Second Lower Feeder is located.

Table 4.13-4. Inventory of Streets in Second Lower Feeder Study Area

	Roadway Information							Modal Facilities			Pipeline Alignment Information		
Agency	Street	Width (feet)	Type (per General Plan)	Lanes	Median	Parking Lanes	Driveway Access	Transit Routes	Bicycle Routes	Pedestrian Facilities	Direction	Length (feet)	Notes
Yorba Linda	Valley View Avenue	44	Primary Arterial	2	Raised	---	None	---	---	Sidewalks	West	50	
Yorba Linda	Valley View Circle	44	Local Street	2	Raised	---	Maintenance only	---	---	Sidewalks, trails	South	44	
Yorba Linda	Wabash Avenue	44	Local Street	2	---	2 sides	Multiple (residential)	---	---	Sidewalks, trails	West	1,300	
Yorba Linda	Prospect Avenue	40	Local Street	2	---	1 side (west)	Commercial Industrial	---	---	Sidewalks	South	2,650	Crosses Imperial Highway
Yorba Linda	Imperial Highway	100	Modified Major Arterial	6	Raised; 2-way left-turn lanes	---	Commercial	OCTA 20	---	Sidewalks	South	135	State Route 90 Crosses roadway briefly
Yorba Linda	Bastanchury Road	64	Modified Primary Arterial	4	2-way left-turn lanes	---	Limited (community, church)	---	Class II	Sidewalks	West	2,400	Western city limit
Placentia	Bastanchury Road	64	Modified Primary Arterial	4	2-way left-turn lanes	1 side	Residential (south side)	---	---	Sidewalks	West/Southwest	4,600	Crosses McCormack Lane, Valencia Avenue; turns at Brookhaven Avenue
Placentia	Brookhaven Avenue	40	Local Street	2	---	---	Multiple (residential)	---	---	Sidewalks	South	2,600	Brookhaven Elementary School, traverses back of El Dorado High School athletic fields
Placentia	Yorba Linda Boulevard	84	Modified Major Arterial	4	Raised	---	Medical-dental office	OCTA 26	---	Sidewalks	Southwest	700	Turns south just east of Palm Drive
Placentia	North Angelina Drive	32	Local Street	2	---	---	Commercial	---	---	Sidewalks	Southwest	1,000	
Placentia	North Kraemer Boulevard	84	Modified Major Arterial	4	Raised	---	Limited	OCTA 129	---	Sidewalks	Southwest	1,500	
Placentia	North Angelina Drive	40	Local Street	2	---	---	Residential, school	---	---	Sidewalks	Southwest	3,700	Crosses East Chapman Avenue Kraemer Middle School at North Angelina Drive/Alta Vista Street
Anaheim	North Community Drive	40	Local Street	2	---	2 sides	Residential alley access	---	---	Sidewalks	Southeast	1,200	
Anaheim	Ball Road	84	Major Arterial	4	2-way left-turn lanes	2 sides	Residential Commercial	OCTA 46	Class II	Sidewalks	West	14,700	Crosses Dale Avenue, Beach Boulevard, Western Avenue, Knott Avenue
Buena Park	Ball Road	72	Primary Highway	4	2-way left-turn lanes	---	None	OCTA 46	Class II	Sidewalks	West	650	
Cypress	Ball Road	84	Major Highway	4	Raised	---	Commercial	OCTA 46	Class II	Sidewalks	West	14,700	Crosses Valley View Street, Walker Street, Moody Street, Denni Street, Bloomfield Street
Los Alamitos	Ball Road	84	Principal Arterial	4	Paved	---	None	---	Class II	Sidewalks	West	1,350	50% off-street
Long Beach	Wardlow Road	70	Minor Avenue	4	Raised	---	None	LBT 102	Class II	Sidewalks	West	6,150	Briefly crosses Studebaker Road
Long Beach	East Keynote Street	36	Local Street	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	West	1,750	
Long Beach	Studebaker Road	74	Minor Avenue	4	None/Raised	---	None	LBT 173	Class II	Sidewalks	West	115	Briefly crosses Studebaker Road
Long Beach	East Keynote Street	36	Local Street	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	West	1,850	
Long Beach	Los Coyotes Diagonal	74	Boulevard	4		---	Residential (east side)	---	---	Sidewalks	West	85	

	Roadway Information							Modal Facilities			Pipeline Alignment Information		
Agency	**Street**	**Width (feet)**	**Type (per General Plan)**	**Lanes**	**Median**	**Parking Lanes**	**Driveway Access**	**Transit Routes**	**Bicycle Routes**	**Pedestrian Facilities**	**Direction**	**Length (feet)**	**Notes**
Long Beach	Iroquois Avenue	32	Local Street	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	North	650	
Long Beach	East Conant Street	36-56	Neighborhood Collector	2		2 sides	Multiple (residential)	---	---	Sidewalks	West	8,400	Crosses Palo Verde Avenue, Woodruff Avenue, Bellflower Boulevard
Long Beach	Clark Avenue (service road)	28	Local Street	2	---	1 side	Residential	---	---	Sidewalk (east side)	South	600	
Long Beach	Lakewood Boulevard	100	Regional Corridor	8	Raised	---	None	LBT 111	---	Sidewalks	West	115	State Route 19
Long Beach	Bixby Road	60	Neighborhood Collector	2	---	2 sides	Industrial Residential	---	Class II	Sidewalks	West	10,000	Crosses Cherry Avenue, Orange Avenue, Atlantic Avenue, Long Beach Boulevard
Long Beach	Country Club Drive	40	Local Street	2	---	2 sides	None	---	---	Sidewalks	North	310	
Long Beach	West San Antonio Drive	40	Minor Avenue	2	---	2 sides	None	---	---	Sidewalks	Southwest	480	
Long Beach	Del Mar Avenue	40	Local Street	2	---	2 sides	None	---	---	Sidewalks	Northwest	1,300	
Carson	West Carson Street	64	Major Highway	4	Raised; 2-way left-turn lanes/center lane	2 sides	Multiple (commercial, office, industrial)	LBT 191 LBT 192 MTA 202	---	Sidewalks	West	10,300	Crosses Alameda Street overcrossing, Wilmington Avenue
Carson	Acarus Avenue	40	Local Street	2	---	2 sides	Residential	---	---	Sidewalks	South	700	
Carson	East 220th Street	36	Collector	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	West	10,200	Crosses Avalon Boulevard, Main Street, Interstate 120/Figueroa Street interchange
Los Angeles County	East 220th Street	36	Major Collector	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	West	3,400	Harbor-UCLA Medical Center on north side
Los Angeles/Torrance	Western Avenue	84	Major Highway Class II	4	Raised	2 sides	Commercial	GTrans 2	---	Sidewalks	South	6,900	Crosses 223rd Street, Sepulveda Boulevard
Los Angeles	Western Avenue	84	Major Highway Class II	4	Raised	2 sides	Commercial Residential	GTrans 2 MTA 205	---	Sidewalks	South	8,550	Crosses 238th Street, 242nd Place, 247th Street, Lomita Boulevard, 253rd Street, Pacific Coast Highway, Anaheim Street
Lomita	Western Avenue	84	Major Highway	4	Raised	2 sides	Commercial Industrial	---	---	Sidewalks	South	400	Crosses 262nd Street
Lomita	262nd Street	40	Collector Street	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	West	2,500	60-foot jog in alignment at Eshelman Avenue/Appian Way
Lomita	Oak Street	40	Local Street	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	Southwest	330	
Rolling Hills Estates	Palos Verdes Drive East	32	Arterial	2	2-way left-turn lanes/center lane	---	Limited	---	---	---	South	4,600	Crosses Palos Verdes Drive North

Transit and Rail

The Second Lower Feeder traverses both Orange County and Los Angeles County. Within Orange County limits (Yorba Linda, Placentia, Anaheim, Buena Park, Cypress, Los Alamitos), OCTA owns and operates the majority of all transit and rail services. Within the limits of Los Angeles County (Long Beach, Carson, West Carson/Los Angeles County, Los Angeles, Torrance, Lomita, Rolling Hills Estates), local fixed route and intercity transit is offered by several agencies, such as MTA, Long Beach Transit (LBT), and GTrans (formerly Gardena Municipal Bus), which provides bus services through the South Bay. The following bus lines are within the vicinity of the Second Lower Feeder alignment.

- OCTA Line 20 (Imperial Highway—city of Yorba Linda)
- OCTA Line 26 (Brookhaven Avenue—city of Placentia)
- OCTA Line 46 (Ball Road—cities of Anaheim, Buena Park, and Cypress)
- OCTA Line 129 (Kraemer Boulevard—city of Placentia)
- LBT Line 102 (Wardlow Road—city of Long Beach)
- LBT Line 111 (Lakewood Boulevard—city of Long Beach)
- LBT Line 173 (Studebaker Road—city of Long Beach)
- LBT Line 191/192 and MTA 202 (Carson Street—city of Carson)
- GTrans Line 2 and MTA Line 205 (Western Avenue—cities of Los Angeles and Torrance)

Bicycle Facilities

There are several bikeway facilities in the vicinity of the Second Lower Feeder. The following streets contain designated Class II bikeways (on-street marked bicycle lanes).

- Bastanchury Road (city of Yorba Linda)
- Ball Road/Wardlow Road (cities of Anaheim, Buena Park, Cypress, Los Alamitos, and Long Beach)
- Studebaker Road (city of Long Beach)
- Los Coyotes Diagonal (city of Long Beach)
- Bixby Road (city of Long Beach)

Pedestrian Facilities

A survey of the existing roadside conditions revealed that nearly all streets and highways aligned over and/or crossing the Second Lower Feeder contain paved pedestrian sidewalks along the roadside (with equestrian trails in the city of Yorba Linda). Only Clark Avenue provides sidewalks on only one side of the street; however, Clark Avenue where the pipeline aligns functions primarily as a service road. The only two pedestrian facilities within or near the centerline of the Second Lower Feeder alignment are the eastern sidewalk on Brookhaven Avenue (city of Placentia) and the northern sidewalk on 220th Street between Main Street and Dolores Street (city of Carson)

Air Transportation

The Joint Forces Training Base Los Alamitos is 1.2 miles south of the Second Lower Feeder. The pipeline runs through the northern portion of the Long Beach Municipal Airport. The Torrance Municipal Airport is 1.2 miles west of the pipeline.

Airport Environs Land Use Plan for Joint Forces Training Base Los Alamitos

The ALUP for the Joint Forces Training Base Los Alamitos is the *Airport Environs Land Use Plan for Joint Forces Training Base Los Alamitos* adopted in 2002 (ALUC of Orange County 2015).

According to Appendix D of the ALUP for the Joint Forces Training Base Los Alamitos, the Second Lower Feeder is not within the airport's runway protection zones or clear zones, but is within a notification area. The notification areas are established to ensure that structures that may affect day-to-day airport operations are not built in their vicinities.

Los Angeles County Airport Land Use Plan

The *Los Angeles County Airport Land Use Plan* covers numerous airports in Los Angeles County, including Long Beach Municipal Airport (Los Angeles County ALUC 2004).

According to the Airport Influence Area map for the Long Beach Municipal Airport in the ALUP, the Second Lower Feeder crosses the northern portion of the airport property, within the airport's planning boundary/airport influence area and a runway protection zone. Runway protection zones are intended to provide for the unobstructed passage of landing aircraft through the above airspace. These zones are the most critical safety areas under the approach paths and should be kept free of all obstructions. No structures or congregations of people are allowed within runway protection zones.

Emergency Response Plans and Emergency Evacuation Plans

The following emergency response and evacuation plans have been identified in the study area for the Second Lower Feeder.

- **City of Lakewood:** According to the City of Lakewood General Plan, Safety Element, all city arterials are recognized as primary evacuation routes. (City of Lakewood 1995)
- **City of Carson:** According to the City of Carson, Safety Element, there are city evacuation routes on Carson Street, Santa Fe Avenue, Alameda Street, Wilmington Avenue, Avalon Boulevard, Main Street, Figueroa Street, and Broadway in the Second Lower Feeder study area. (City of Carson 2006)
- **City of Los Angeles:** According to the City of Los Angeles General Plan, Safety Element, Normandie Avenue and Vermont Avenue are city disaster routes in the Second Lower Feeder study area. (City of Los Angeles 1996)
- **City of Lomita:** According to the City of Lomita General Plan, Safety Element, city evacuation routes are located on Pacific Coast Highway, Western Avenue, Narbonne Avenue, and Lomita Boulevard in the Second Lower Feeder study area. (City of Lomita 1998)
- **City of Rolling Hills Estates:** According to the Rolling Hills Estates General Plan, Safety Element, city emergency evacuation routes are located on Palos Verdes Drive East and Palos Verdes Drive North in the Second Lower Feeder study area. (City of Rolling Hills Estates 1992)

4.13.2.5 Sepulveda Feeder

The Sepulveda Feeder begins at the Jensen Water Treatment Plan in the city of Los Angeles near the Interstate 5 (I-5)/I-210 interchange and ends 41 miles to the south at its interconnection with the Second Lower Feeder in the city of Torrance. The Sepulveda Feeder leaves the Jensen facility on a southerly alignment, traveling through residential neighborhoods in the North Granada Hills area. Its first major arterial crossing is Rinaldi Street, where it turns directly south to follow the alignment of Hayvenhurst Avenue under State Route 118 (SR-118), then crosses major streets through the North Hills and Lake Balboa areas including San Fernando Mission Boulevard, Chatsworth Street, Devonshire Street, Lassen Street, Plumer Street, Nordhoff Street, Parthenia Street, Roscoe Boulevard, and Sherman Way. The pipeline also traverses the Van Nuys Airport in a north-south direction and angles across the southern portion of the airstrip at Hart Street toward Vanowen Street. Once on Vanowen Street, the pipeline turns south for 1.5 blocks on Valjean Avenue, then 0.75 mile east on Haynes Street where it crosses under I-405, then turns southeast on Blucher Avenue. Just south of the corner of Blucher Avenue and Erwin Street the pipeline turns directly south to cross the MTA Orange Line Busway/Bike Path before following another southeast alignment on Hatteras Street and toward Sepulveda Boulevard. The pipeline turns 90 degrees at the intersection of Hatteras Street/Sepulveda Boulevard then travels south for 4 miles on West Sepulveda Boulevard, crossing several major roadways north of the Sepulveda Pass including Burbank Boulevard, Magnolia Boulevard, US-101, Ventura Boulevard, I-405, and Mulholland Drive. South of the Sepulveda Pass, the pipeline follows North Sepulveda Boulevard along the west side of I-405, crossing under to the east side of the freeway at the I-405/Sepulveda Boulevard interchange near Metropolitan's facility at 1751 Sepulveda Boulevard. The Sepulveda Feeder pipeline continues south for 1 mile before turning west to cross under I-405, continuing for 1 mile south on Church Lane, then crossing back under to the east side of I-405 onto Sepulveda Boulevard. From this point, the pipeline travels for 6 miles through west Los Angeles and the city of Culver City, crossing major arterials and highways such as Wilshire Boulevard, Santa Monica Boulevard, Olympic Boulevard, Pico Boulevard, I-10, National Boulevard, Palms Boulevard, Venice Boulevard, Washington Boulevard, Culver Boulevard, and Jefferson Boulevard before turning east through the Fox Hills Mall via Hannum Avenue toward southeast Culver City. The pipeline then travels southeast, meandering through 5.5 miles of residential neighborhoods in the cities of Los Angeles and Inglewood before aligning south along Van Ness Avenue, which serves as the boundary line between Inglewood and the city of Los Angeles and County of Los Angeles north of Interstate 105 (I-105). Major arterial crossings along this portion of the alignment include Manchester Avenue, Century Boulevard, and Imperial Highway. Once the pipeline crosses into the city of Hawthorne at Imperial Highway on Van Ness Avenue, it then crosses under I-105 and proceeds south beyond El Segundo Boulevard into the city of Gardena. The pipeline travels for 2 miles through the city of Gardena along Van Ness Avenue, crossing 135th Street, Rosecrans Avenue, and Marine Avenue before entering the city of Torrance just south of Redondo Beach Boulevard. The Sepulveda Feeder pipeline then travels for 2.7 miles south, crossing Artesia Boulevard, 182nd Street, I-405, and 190th Street, and then turns east for 0.25 mile at Del Amo Boulevard before turning south again onto Western Avenue, which serves as the boundary line between the cities of Torrance and Los Angeles. The alignment continues for 1.3 miles on Western Avenue before connecting with the Second Lower Feeder at 220th Street.

Vehicular Transportation

Table 4.13-5 provides an inventory of the types of streets in which the existing Sepulveda Feeder is located.

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Table 4.13-5. Inventory of Streets in Sepulveda Feeder Study Area

	Roadway Information							Modal Facilities			Pipeline Alignment Information		
Agency	Street	Width (feet)	Type (per General Plan)	Lanes	Median	Parking Lanes	Driveway Access	Transit Routes	Bicycle Routes	Pedestrian Facilities	Direction	Length (feet)	Notes
Los Angeles	Woodley Avenue	40	Collector	2	---	---	Residential	---	---	Sidewalks	Southeast	1,450	Briefly crosses 40-foot section of Knollwood Drive, Pineridge Drive
Los Angeles	Rinaldi Street	80	Major Highway Class II	4	2-way left-turn lanes	2 sides	Limited, school	MTA 236 MTA 237 MTA 239	Class II	---	South	80	Crosses roadway briefly
Los Angeles	Hayvenhurst Avenue	70	Secondary Arterial	4	---	2 sides	Residential Industrial	MTA 169	---	Sidewalks	South	30,000	Traverses through Van Nuys Airport
Los Angeles	Vanowen Street	64	Secondary Arterial	4	2-way left-turn lanes	2 sides	Multiple (residential, industrial)	MTA 165	---	Sidewalks	East	500	
Los Angeles	Valjean Avenue	44	Local Street	2	---	2 sides	Multiple (industrial)	---	---	Sidewalks	South	1,700	
Los Angeles	Haynes Street (west of I-405)	36	Local Street	2	---	2 sides	Multiple (residential)	---	---	Sidewalk (south side)	East	3,300	Briefly crosses Haskell Avenue, I-405, Aqueduct Avenue
Los Angeles	Haynes Street (east of I-405)	36	Local Street	2	---	2 sides	Multiple (residential)	---	---	---	East	300	
Los Angeles	Blucher Avenue	36	Local Street	2	---	---	Multiple (residential)	---	---	---	South	1,300	Briefly crosses 90-foot section of Victory Boulevard
Los Angeles	West Sepulveda Boulevard (Hatteras Street to US-101)	88	Major Highway Class II	6	2-way left-turn lanes	2 sides	Multiple (commercial/ retail)	MTA 154 MTA 234 MTA 734 MTA 788	---	Sidewalks	South	5,900	Near I-405/Burbank interchange Near US-101/Sepulveda Boulevard interchange
Los Angeles	West Sepulveda Boulevard (US-101 to I-405)	88	Major Highway Class II	6	2-way left-turn lanes	---	Multiple (commercial/ retail)	MTA 183 MTA 233 MTA 234 MTA 734 MTA 477 LADOT CE 549	---	Sidewalks	South	4,500	Near US-101/Sepulveda Boulevard interchange Near I-405/Greenleaf Street interchange Near I-405/Ventura Boulevard interchange
Los Angeles	West Sepulveda Boulevard (I-405 to Mulholland Drive)	60	Major Highway Class II	4	2-way left-turn lanes	---	Multiple (residential) (east side)	MTA 234 MTA 734	Class II	Some sidewalks	Southwest	8,000	Bypasses curved portion between Valley Meadow Road and Dartford Way
Los Angeles	North Sepulveda Boulevard (Mulholland Drive to 1751 Plant)	50-64	Major Highway Class II	4	Paved; 2-way left-turn lanes/center lane	---	None	MTA 234 MTA 734	---	---	South	12,200	Bypasses portion between tunnel and I-405 southbound ramps south of Skirball Center Drive
Los Angeles	North Sepulveda Boulevard (1751 Plant to Moraga Drive)	50-60	Major Highway Class II	4	Paved/center lane	---	None	MTA 234 MTA 734	---	---	Southeast	6,450	Bypasses portion between tunnel and I-405 southbound ramps south of Skirball Center Drive
Los Angeles	Beverly Park Drive	24	Private road	2	---	---	Getty Center South Building	---	---	---	Southeast	400	
Los Angeles	North Church Lane	56	Collector	3	Center Lane/ Raised/ Paved	---	Limited	MTA 2 MTA 302 MTA 234 MTA 734	---	Sidewalks	Southeast	650	Near I-405 southbound off-ramps at Church Lane
Los Angeles	South Church Lane	32	Collector	2	---	1 side	None	MTA 2 MTA 302	---	Sidewalk (west side)	Southeast	4,800	

	Roadway Information							Modal Facilities			Pipeline Alignment Information		
Agency	Street	Width (feet)	Type (per General Plan)	Lanes	Median	Parking Lanes	Driveway Access	Transit Routes	Bicycle Routes	Pedestrian Facilities	Direction	Length (feet)	Notes
Los Angeles	South Sepulveda Boulevard (Los Angeles Cemetery to I-10)	60	Major Highway Class II	4	2-way left-turn lanes	Metered	Multiple (commercial, office)	MTA 2 MTA 302 MTA 6 MTA 6R Expo 806	---	Sidewalks	Southeast	13,850	Crosses Wilshire Boulevard, Ohio Avenue, Santa Monica Boulevard, Exposition Boulevard
Los Angeles	South Sepulveda Boulevard (I-10 to Metropolitan's 3816 Tuller facility)	64	Major Highway Class II	4	2-way left-turn lanes/ center lane	2:30 p.m.–12 a.m.	Multiple (commercial, office)	MTA 6 MTA 6R MTA 8	Class II	Sidewalks	Southeast	8,500	Crosses National Boulevard, Palms Boulevard, Venice Boulevard
Los Angeles	South Sepulveda Boulevard (Metropolitan's 3816 Tuller facility to Ballona Creek)	75	Major Highway Class II	4	2-way left-turn lanes	1-hour, metered	Multiple (commercial)	MTA 6 MTA 6R MTA 8 MTA 7 LADOT CE 437	---	Sidewalks	Southeast	6,150	Crosses Washington Place/ Boulevard, Culver Boulevard
Culver City	South Sepulveda Boulevard (Ballona Creek to Bush Way)	84	Major Highway	4-5	2-way left-turn lanes	Metered	Multiple (commercial)	MTA 3 MTA 4 MTA 6 MTA 6R	---	Sidewalks	Southeast/ south	2,950	Crosses Jefferson Boulevard, Sawtelle Boulevard
Culver City	Bush Way	40	Local Street	2	---	2 sides	Alleys	---	---	Sidewalks	East	300	
Culver City	Hannum Avenue	40-75	Local Street	2-4	Paved, 2-way left-turn lanes/center lane	2 sides (north segment)	Multiple (residential)	MTA 3 MTA 110	---	Sidewalk (north side)	South/ southeast/ east	5,150	Residential street north of Playa Street; Westfield Mall South of Playa; Crosses Slauson Avenue
Culver City	Cambridge Way	48	Local Street	2	---	2 sides	Residential access	---	---	Sidewalks	Southeast	350	
Los Angeles County	61st Street	36	Local Street	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	Southeast	1,500	
Los Angeles County	South Halm Avenue	36	Local Street	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	Southeast	700	
Los Angeles County/Los Angeles	64th Street	50	Local Street	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	Southeast/ east	1,600	Los Angeles city limits east of Flight Avenue (350 feet west of La Cienega Boulevard)
Los Angeles	South La Cienega Boulevard	100	Major Highway Class II	6	Raised	---	None	---	---	Sidewalks	South	850	Located mostly off-street; crosses roadway at Fairview Boulevard
Inglewood	West/East Fairview Boulevard	50	Collector	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	East	8,750	Traverses large residential neighborhood; crosses La Brea Avenue
Inglewood	North Gay Street/North Long Street	30	Local Street	2	---	1 side	Residential	---	---	Sidewalks	Southeast	2,600	130-foot jog in alignment at East 68th Street; Los Angeles County Department of Public Social Services building at south end
Inglewood/Los Angeles	West Florence Avenue	60	Major Arterial	4-6	2-way left-turn lanes	9 a.m.–4 p.m. 7 p.m.–7 a.m.	Commercial	MTA 40 MTA 111 MTA 311	---	Sidewalks	East	1,200	West of West Boulevard—Inglewood East of West Boulevard—Los Angeles
Inglewood/Los Angeles	South Victoria Avenue	32	Local Street	2	---	2 sides (no parking Tuesday 12–2 p.m.	Multiple (residential)	---	---	Sidewalks	South	1,350	North of 74th Street—Los Angeles South of 74th Street—Inglewood (west side) and Los Angeles (east side)
Los Angeles	West 76th Street	36-40	Local Street	2	---	2 sides	Multiple (residential)	MTA 210	---	Sidewalks	East	3,300	Traverses 5 blocks of residential neighborhoods; turns at 5th Avenue roundabout

	Roadway Information							Modal Facilities			Pipeline Alignment Information		
Agency	**Street**	**Width (feet)**	**Type (per General Plan)**	**Lanes**	**Median**	**Parking Lanes**	**Driveway Access**	**Transit Routes**	**Bicycle Routes**	**Pedestrian Facilities**	**Direction**	**Length (feet)**	**Notes**
Inglewood	South 5th Avenue	40	Collector	2	---	2 sides	Residential	---	---	Sidewalks	South	2,400	Warren Lane Elementary School; 8 blocks of residential neighborhood; turns at park/roundabout
Inglewood/Los Angeles	Byrd Avenue South	56	Local Street	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	Southeast	1,600	Crosses roadway briefly at signalized intersection @ Van Ness Avenue
Inglewood/Los Angeles	West Manchester Avenue	76	Major Arterial	4-5	Raised	2-hour (9 a.m.–6 p.m.)	Commercial	MTA 115 MTA 442	---	Sidewalks	Southeast	85	
Inglewood/Los Angeles	South Van Ness Avenue	48	Major Arterial	2	2-way left-turn lanes	2 sides	Multiple (residential)	MTA 209	---	Sidewalks	South	5,200	7 residential blocks; west side—Inglewood; east side—Los Angeles
Inglewood/Los Angeles County	Century Boulevard	75	Major Arterial	6	2-way left-turn lanes	1 side (north)	Multiple (residential)	MTA 117 MTA 209	---	Sidewalks	South	75	Crosses roadway briefly
Inglewood/Los Angeles County	South Van Ness Avenue	54	Major Arterial	4	---	2 sides	Multiple (residential)	MTA 209	---	Sidewalks	South	5,200	7 residential blocks; west side—Inglewood; east side—Los Angeles County
Inglewood/Los Angeles County	Imperial Highway	75	Major Arterial	6	Raised	---	None	MTA 5 MTA 120 MTA 209	---	Sidewalks	South	100	Crosses roadway briefly
Hawthorne	South Van Ness Avenue	54-75	Major Arterial	4	---	2 sides	Limited	MTA 5 MTA 209	---	Sidewalks	South	5,200	Near Cimarron Elementary School, Chester Washington Golf Course, I-105 overcrossing
Gardena	El Segundo Boulevard	80	Arterial	6	2-way left-turn lanes/ paved	---	Commercial	MTA 5 MTA 209 TT 2	---	Sidewalks	South	100	Crosses roadway briefly
Gardena	South Van Ness Avenue	60	Major Collector	4	---	2 sides	Residential Commercial	MTA 5	---	Sidewalks	South	11,100	Crosses 132nd Street, 135th Street, 139th Street, Rosecrans Avenue, 147th Street, Marine Avenue, 154th Street, 156th Street, Manhattan Beach Boulevard
Gardena	Rosecrans Avenue	80	Arterial	6	Raised	---	Commercial Industrial	MTA 125	---	Sidewalks	South	100	Crosses roadway briefly
Gardena	Marine Avenue	64	Major Collector	4	---	2 sides	Residential Commercial	---	---	Sidewalks	South	70	Crosses roadway briefly
Gardena	Redondo Beach Boulevard	80	Arterial	4	Paved	2 sides	Commercial	MTA 5	---	Sidewalks	South	100	Crosses roadway briefly
Torrance	South Van Ness Avenue	54	Minor Arterial	4	Center lane/2-way left-turn lanes	2 sides	Residential School Commercial Industrial	MTA 5 MTA 130 MTA 344	---	Sidewalks	South	14,100	Crosses 166th Street, Artesia Boulevard, 182nd Street, I-405 undercrossing, 190th Street; turns at Del Amo Boulevard
Torrance	West Artesia Boulevard	90	Major Arterial	6	Raised	2 sides	Residential Commercial	MTA 130 MTA 344	---	Sidewalks	South	110	Crosses roadway briefly
Torrance	Del Amo Boulevard	64	Major Arterial	4	2-way left-turn lanes	2 sides	Multiple (industrial)	---	---	Sidewalks	East	2,500	
Torrance	Western Avenue	84	Major Arterial	4-5	Raised	1 side	Commercial Residential	GTrans 2	---	Sidewalks	South	6,850	Crosses Torrance Boulevard, Carson Street; ends at West 220th Street
Torrance	Torrance Boulevard	120	Major Arterial	4	Raised	---	Residential Industrial	TT 1 TT 4	---	Sidewalks	South	140	Crosses roadway briefly
Torrance	Carson Street	70	Major Arterial	4	2-way left-turn lanes	1 side	Commercial Industrial	TT 3 TT R3	---	Sidewalks	South	90	Crosses roadway briefly
Torrance	West 220th Street	32	Street	2	---	2 sides	Multiple (residential)	---	---	Sidewalks	South	25	Crosses roadway briefly; joins Second Lower Feeder

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Transit and Rail

The Sepulveda Feeder traverses several communities in the city of Los Angeles, within which MTA provides the majority of public transportation services. Of the five distribution systems, the Sepulveda Feeder pipeline is within the highest concentration of MTA bus lines and also includes Los Angeles Department of Transportation (LADOT) Commuter Express (CE), GTrans and Torrance Transit (TT) bus routes, and an MTA Expo rail line route (Expo). The following routes are close to the Sepulveda Feeder alignment.

- MTA 236/237/239 (Rinaldi Street—city of Los Angeles)
- MTA 169 (Hayvenhurst Avenue—city of Los Angeles)
- MTA 165 (Vanowen Street—city of Los Angeles)
- MTA 154/234/734/788 (West Sepulveda Boulevard, Hatteras Street to US-101—city of Los Angeles)
- MTA 183/233/234/734, 744/LADOT CE 549 (West Sepulveda Boulevard, US-101 to I-405—city of Los Angeles)
- MTA 234/734 (West Sepulveda Boulevard, I-405 to Moraga Drive—city of Los Angeles)
- MTA 2/302/234/734 (North Church Lane—city of Los Angeles)
- MTA 2/302 (South Church Lane—city of Los Angeles)
- MTA 2/302/6/6R/Expo 806 (South Sepulveda, Los Angeles Cemetery to I-10—city of Los Angeles)
- MTA 6/6R/8 (South Sepulveda Boulevard, I-10 to Metropolitan's 3816 Tuller Avenue facility—city of Los Angeles)
- MTA 6/6R/8/7/LADOT CE 437 (South Sepulveda, 3816 Tuller Avenue to Ballona Creek—city of Los Angeles)
- MTA 3/4/6/6R (South Sepulveda Boulevard, Ballona Creek to Bush Way—city of Culver City)
- MTA 3/110 (Hannum Avenue—city of Culver City)
- MTA 40/111/311 (West Florence Avenue—cities of Inglewood/Los Angeles)
- MTA 210 (West 76th Street—city of Los Angeles)
- MTA 115/442 (West Manchester Avenue—cities of Inglewood/Los Angeles)
- MTA 209 (South Van Ness Avenue—cities of Inglewood/Los Angeles)
- MTA 117/209 (Century Boulevard—city of Inglewood/Los Angeles County)
- MTA 209 (South Van Ness Avenue—city of Inglewood/Los Angeles County)
- MTA 5/120/209 (Imperial Highway—city of Inglewood/Los Angeles County)
- MTA 5/209 (South Van Ness Avenue—city of Hawthorne)
- MTA 5/209, TT 2 (El Segundo Boulevard—city of Gardena)
- MTA 5 (South Van Ness Avenue—city of Gardena)

- MTA 125 (Rosecrans Avenue—city of Gardena)
- MTA 5 (Redondo Beach Boulevard—city of Gardena)
- MTA 5/130/344 (South Van Ness Avenue—city of Torrance)
- MTA 130/344 (West Artesia Boulevard—city of Torrance)
- GTrans 2 (Western Avenue—city of Torrance)
- TT 1/4 (Torrance Boulevard—city of Torrance)
- TT 3/R3 (Carson Street—city of Torrance)

Bicycle Facilities

In contrast to the transit-oriented nature of the transportation system through which the Sepulveda Feeder travels, there are many fewer on-street bikeway facilities in the vicinity of the pipeline. The following streets contain designated Class II bikeways (on-street marked bicycle lanes) along the Sepulveda Feeder pipeline.

- Rinaldi Street (city of Los Angeles)
- West Sepulveda Boulevard between I-405 and the Mulholland Drive bridge (city of Los Angeles)
- South Sepulveda Boulevard between I-10 and 3816 Tuller Avenue (city of Los Angeles)

Pedestrian Facilities

Most of the streets along the pipeline and also crossing the Sepulveda Feeder contain paved sidewalks for pedestrians. Certain areas with steep grades or those that intersect complex interchange areas have limited pedestrian access or none at all. The following pedestrian facilities are within or near the Sepulveda Feeder alignment.

- Off-street trails in Knowlwood Country Club (Granada Hills community in city of Los Angeles)
- East sidewalk on Hayvenhurst Avenue between Parthenia Street and Chase Street (city of Los Angeles)
- North sidewalks on Hannum Avenue between Playa Street at State Route 90 (SR-90)(city of Culver City)
- East sidewalk on Van Ness Avenue north of Marine Avenue (city of Gardena)

Air Transportation

The Sepulveda Feeder runs parallel and adjacent to the western side of the Van Nuys Airport. The Santa Monica Municipal Airport is approximately 1.1 miles west of the Sepulveda Feeder. The Hawthorne Municipal Airport is 0.5 mile west of the Sepulveda Feeder. There are no private airstrips in the Sepulveda Feeder study area.

Los Angeles County Airport Land Use Plan

Van Nuys Airport, Santa Monica Municipal Airport, and Hawthorne Airport are all covered by the *Los Angeles County Airport Land Use Plan*, adopted in 1991 (Los Angeles County ALUC 2004).

According to the ALUP's Airport Influence Area map for the Van Nuys Airport, the Sepulveda Feeder is in the airport's planning boundary/airport influence area, within the northern and southern runway protection zones. As discussed in Section 4.13.2.4 for the Long Beach Airport, runway protection zones are intended to provide for the unobstructed passage of landing aircraft through the above airspace. These zones are the most critical safety areas under the approach paths and should be kept free of all obstructions. No structures or congregations of people are allowed within runway protection zones.

According to the ALUP's Airport Influence Maps for Santa Monica Municipal Airport and Hawthorne Municipal Airport, the Second Lower Feeder is not within either airport's planning boundaries. Therefore, the sections of the ALUP for these airports are not applicable to the proposed program.

Emergency Response Plans and Emergency Evacuation Plans

The following evacuation routes have been identified in the study area for the Sepulveda Feeder.

- **Inglewood:** According to the Inglewood General Plan, Safety Element, city evacuation routes are located on La Cienega Boulevard, East Florence Avenue, Crenshaw Boulevard, and South Van Ness Avenue in the Sepulveda Feeder study area. (City of Inglewood 1995)

4.13.3 Regulatory Framework

4.13.3.1 Federal

The Americans with Disabilities Act of 1991

The American with Disabilities Act of 1991 is a federal civil rights act that prohibits discrimination against those with disabilities. The act covers employment, housing, and access to all public places whether they are privately or publicly owned or operated. Federal policies and procedures require that when pedestrian access is restricted, modified, or relocated as a result of construction activities it must conform to the U.S. Access Board's American with Disabilities Act Accessibility Guidelines.

4.13.3.2 State

Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA (January 20, 2016)

CEQA serves as the standard for managing project-generated environmental impact thresholds in California. Some agencies have developed and adopted a modified version of the CEQA manual to better represent local community needs and to address recent legislative changes due to Senate Bill (SB) 743. SB 743 requires that Metropolitan Planning Organizations (MPOs) and local agencies alike revisit their transportation impact analysis procedures to consider vehicle-miles traveled (VMT) as the primary metric for evaluating transportation impacts under CEQA. In addition, the effects of SB 743 will result in agencies adopting the use of one or more standardized models for estimating VMT, as a product of project location, design, and travel choices, with a broader focus on multimodal transportation solutions rather than those suited only for automobile-centric travel. Under SB 743 lead agencies may elect to be governed by the provisions of the proposed new section of the State CEQA Guidelines (Section 15064.3) to determine the transportation impact significance of

development projects (based on VMT and/or proximity to major transit stops and existing high-quality transit corridors) or transportation projects (based on induced vehicle travel compared with the existing conditions). In the interim, project impacts will be defined in accordance with the current adopted standards by the controlling jurisdiction(s) where a project is located, and is required to conform. The California Department of Transportation's (Caltrans) Environmental Handbook, Volume I, Chapter 26 (traffic section) will be used as the default basis to identify and develop solutions to potential mobility and safety impacts due to the proposed construction activities on the surrounding street systems. Where the local or regional agency has identified alternative methodologies to analyze traffic impacts, the locally adopted model will be used.

Complete Streets Act (Assembly Bill 1358)

The California Complete Streets Act of 2008 requires circulation elements to address the transportation system from a multi-modal perspective. Assembly Bill (AB) 1358 states that streets, roads, and highways must "meet the needs of all users…in a manner suitable to the rural, suburban, or urban context of the general plan." Essentially, AB 1358 requires a circulation element to plan for all modes of transportation where appropriate including walking, biking, car travel, and transit. The Complete Streets Act also requires circulation elements to consider the multiple users of the transportation system, including children, adults, seniors, and the disabled.

4.13.3.3 Local

Regional and Local Southern California Association of Governments Regional Transportation Plan

Under federal law, MPOs and Regional Transportation Planning Agencies are required to prepare a 20-year Regional Transportation Plan (RTP), which is updated every 4 years. In this region, the Southern California Association of Governments (SCAG) is both the MPO and the Regional Transportation Planning Agency. Only projects and programs included in the RTP are eligible for federal and State funding. The focus areas of the RTP are: Active Transportation; Aviation; Environmental Mitigation; Goods Movement; Growth Forecasts; Highways and Arterials; Land Use; Passenger Rail; Transit; Transportation Demand Management (TDM); Transportation Finance; and Transportation Safety and Security. SCAG's plan takes into account operations and maintenance costs to ensure reliability, longevity, and cost effectiveness. In addition, the RTP will be supported by a combination of transportation and land use strategies that will help the region achieve State greenhouse gas emission reduction goals and federal Clean Air Act requirements, preserve open space areas, improve public health and roadway safety, support the vital goods movement industry, and utilize resources more efficiently.

The Sustainable Communities Strategy is a new element of the RTP that demonstrates the integration of land use, transportation strategies, and transportation investments within the RTP. This new requirement was put in place by the passage of SB 375, with the goal of ensuring that the SCAG region can meet its regional greenhouse gas reduction targets set by the California Air Resources Board. On April 7, 2016, SCAG's Regional Council adopted the 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy.

Orange County Congestion Management Plan

In June 1990, the passage of the Proposition 111 gas tax increase required California's urbanized areas—areas with populations of 50,000 or more—to adopt a Congestion Management Program (CMP). The following year, Orange County's local governments designated OCTA as the Congestion Management Agency (CMA) for the County. As a result, OCTA is responsible for the development, monitoring, and biennial updating of Orange County's CMP. The passage of AB 2419, in July 1996, provided local agencies the option to elect out of the CMP process without the risk of losing State transportation funding. However, local jurisdictions in Orange County expressed a desire to continue the existing CMP process, because the requirements were similar to those of the Orange County Measure M Growth Management Program and because it contributes to fulfilling federal requirements for the Congestion Management Process (23 CFR 450.320), prepared by SCAG. The OCTA Board of Directors affirmed the decision to continue with the existing CMP process on January 13, 1997. Although the CMP ended with the sunset of Measure M, the CMP remains relevant as an eligibility requirement under Measure M2. The CMP contributes to federal Congestion Management Process requirements, which is a systematic and regionally accepted approach for managing congestion. The federal Congestion Management Process provides accurate, up-to-date information on transportation system performance and assesses alternative strategies for congestion management that meet state and local needs. The Congestion Management Process is also intended to serve as a systematic process that provides for consistent and effective integrated monitoring and management of the multimodal transportation system.

The goals of Orange County's CMP are to support regional mobility objectives by reducing traffic congestion, to provide a mechanism for coordinating land use and development decisions that support the regional economy, and to determine gas tax fund eligibility. To meet these goals, the CMP contains a number of policies designed to monitor and address system performance issues. OCTA developed the policies that make up Orange County's CMP in coordination with local jurisdictions, Caltrans, and the South Coast Air Quality Management District.

Traffic level of service (LOS) standards must be established for a system of highways and roadways. The highways and roadway system is designated by OCTA and includes, at minimum, all state highways and principal arterials. None of the designated facilities may be removed, and new state highways and principal arterials must be added, except if they are within an infill opportunity zone. The LOS must be measured using a 2015 CMP 7 method that is consistent with the Transportation Research Board's *Highway Capacity Manual* (HCM). The LOS standards must not be below LOS E, unless the LOS from the baseline CMP dataset were lower. If a CMP Highway System (CMPHS) segment or intersection does not meet the minimum LOS standard outside an infill opportunity zone, a deficiency plan must be adopted (subject to exclusions). The CMP contains traffic LOS standards for CMP intersections, as required by State legislation. During every odd year, OCTA collects traffic count data at all CMP intersections to demonstrate current LOS on the CMPHS.

- Local jurisdictions must maintain the LOS standard on all CMP intersections under their control.
- Local jurisdictions must review and provide any comments on the traffic count data to OCTA, in addition to submitting the LOS Monitoring Checklist.

As stated above, the Orange County CMP currently uses LOS standards for evaluating highway and roadway performance. With the passage of SB 743, OCTA will be required to revisit its transportation impact analysis procedures to consider VMT as the primary metric for evaluating traffic.

Smart Street Network

OCTA has designated all state highways and the OCTA-adopted Smart Street network as the CMPHS. The Smart Street network was adopted as part of Measure M. No designated highway or roadway may be removed, and all new state highways must be designated as part of the system, except when they occur in an infill opportunity zone (subdivision (c) of Section 65088.4). Infill opportunity zones are specific areas designated by a city or county for new compact or mixed use developments and close to transit. OCTA measures LOS at CMP intersections using the Intersection Capacity Utilization (ICU) methodology.

Level of Service Standards

ICU ranges are assigned an LOS grade from A to F to indicate decreasing performance. As required by CMP legislation, the LOS standard for CMPHS intersections is LOS E or better (i.e., an ICU of 1.00 or better). Intersections that had an LOS F in the 1992 CMP baseline are allowed to exceed the LOS E standard, but may not increase by more than 0.1 above the baseline ICU value. If an intersection is found to exceed the LOS standard and is not statutorily exempt, OCTA flags it as potentially deficient and the local jurisdiction must identify improvements necessary to meet the LOS standards.

Los Angeles County Congestion Management Program

The Los Angeles County CMP defines a network of state highways and arterials, LOS standards, and related procedures and provides technical justification for the approach. The CMP for Los Angeles County is prepared and maintained by MTA. The requirements of the Los Angeles County CMP became effective with voter approval of Proposition 111, which functions as a tool to link land use, transportation, and air quality decisions, to develop a partnership among transportation decision-makers in devising appropriate transportation solutions that include all modes of travel, and to propose transportation projects that are eligible to compete for State gas tax funds. The CMP also serves to consistently track trends during peak traffic hours at major intersections in the county and identify areas in great need of improvements where traffic congestion is worsening. The CMP requires that intersections that are designated as being officially monitored by the CMP be analyzed under the County's CMP criteria if the proposed project is expected to generate 50 or more peak hour trips on a CMP-designated facility.

The Los Angeles County CMP currently uses LOS standards for evaluating highway and roadway performance. With the passage of SB 743, MTA will be required to revisit its transportation impact analysis procedures to consider VMT as the primary metric for evaluating traffic.

San Bernardino County Congestion Management Program

The San Bernardino County CMP defines the network of state highways and arterials, LOS standards and related procedures, a process for mitigation of the impacts of new development on the transportation system, and technical justification for the approach for projects in San Bernardino County. The policies and technical information contained in the CMP document are subject to ongoing review, with updates required every 2 years, at a minimum. Opportunities for review are provided through meetings of the San Bernardino Association of Governments Transportation Technical Advisory Committee, policy committees, and Board of Directors.

Traffic Impact Analysis (TIA) reports must be prepared by local jurisdictions when local criteria and thresholds indicate they are necessary as a result of the estimated impact of project-generated

traffic (i.e., when a proposed change in land use, a development project, or, at local discretion, a group of projects are forecast to equal or exceed the CMP threshold of 250 two-way peak hour trips generated, based on trip generation rates published for the applicable use or uses in the Institute of Transportation Engineers' Trip Generation or other CMA-approved data source). All TIA reports must be copied to the CMA. If a TIA report is prepared by the local jurisdiction as stated above, and if the TIA report determines that the project would add 50 or more two-way peak hour trips to a CMP arterial within another jurisdiction or 100 two-way peak-hour trips to a freeway, that jurisdiction (and Caltrans, if a state highway) must be provided a copy of the TIA report by the permitting jurisdiction. However, these criteria are not intended to determine when a local jurisdiction prepares a TIA report.

The San Bernardino County CMP currently uses LOS standards for evaluating highway and roadway performance. With the passage of SB 743, the Technical Advisory Committee will be required to revisit its transportation impact analysis procedures to consider VMT as the primary metric for evaluating traffic.

4.13.4 Thresholds and Methodology

4.13.4.1 Thresholds of Significance

Table 4.13-6 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to transportation and traffic. It indicates which impacts must be analyzed in the PEIR for the proposed program.

Table 4.13-6. CEQA Thresholds for Transportation and Traffic

Threshold *Would the proposed program:*
a. Conflict with an applicable plan, ordinance, or policy that establishes measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel, and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, and pedestrian and bicycle paths?
b. Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways?
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks?
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
e. Result in inadequate emergency access?
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities or otherwise decrease the performance or safety of such facilities?

4.13.4.2 Methodology

Conflicts with Transportation Policies

Because the proposed program would include rehabilitation of existing pipelines, which are underground, there would be minimal impacts related to long-term transportation plans, ordinances, or policies that establish measures of effectiveness for the performance of the transportation system.

Conflicts with Congestion Management Plan

Because the proposed program would include rehabilitation of existing pipelines, which are underground, there would be minimal impacts related to long-term congestion management plans.

Change in Air Traffic Patterns

Existing public use airports are identified in Section 4.13.2. The potential for construction to affect air traffic patterns related to public and private airports is evaluated.

Hazards Due to a Design Feature

Because the proposed program would include rehabilitation of existing pipelines, which are underground, there would be minimal impacts related to permanent designs of roadways. This analysis addresses potential impacts that may occur due to street or lane closures during construction.

Change in Emergency Access

Emergency access routes associated with existing emergency response plans and emergency evacuation plans are identified in Section 4.13.2. The potential of the projects included in the proposed program to impair the implementation of or physically interfere with these plans is evaluated.

Conflict with Public Transit, Bicycle, or Pedestrian Policies or Safety

Because the proposed program would include rehabilitation of existing pipelines, which are underground, there would be minimal long-term impacts related to public transit, bicycle facilities, or pedestrian facilities. This analysis addresses potential impacts on transit, bicycle, or pedestrian facilities or safety during construction.

4.13.5 Impacts Analysis

4.13.5.1 Program Analysis

Threshold TRA-A: Conflict with an Applicable Plan, Ordinance, or Policy that Establishes Measures of Effectiveness for the Performance of the Circulation System, Taking into Account All Modes of Transportation, Including Mass Transit and Non-Motorized Travel, and Relevant Components of the Circulation System, Including, but not Limited to, Intersections, Streets, Highways and Freeways, and Pedestrian and Bicycle Paths

Because the proposed program would include rehabilitation of existing pipelines, which are underground, there would be minimal impacts related to long-term transportation plans, ordinances, or policies that establish measures of effectiveness for the performance of the transportation system.

During the course of the pipeline rehabilitation work, work zones would be established within existing roadways, requiring lane closures, temporary signage, traffic cones and delineators, fencing, and barriers (i.e., concrete trapezoidal "K rail," or Caltrans Temporary Type K railing). Typically, a work zone would be established above the pipeline, enclosing the excavation area, which would be approximately 20 feet wide by 50 feet long. The work zone would include areas for access to the excavation site, storage of construction equipment and materials, and safety setbacks. The work zones would vary from site to site.

Where work zones are located within streets, temporary impacts on transportation would occur due to the reduction in roadway capacity. Impacts could include the following.

- Increased congestion and increased travel times due to reduction in the number or width of lanes
- Increased congestion and reduced access due to reduction of left-turn movements where work zones are within median or center lanes
- Reduced access to adjacent land uses where work zones block driveways or access roads
- Increased congestion on parallel roadways when traffic is detoured or when drivers voluntarily reroute to avoid construction areas
- Impacts on transit routes (primarily buses) when public transit is affected by construction or when transit stops are temporarily removed or relocated
- Impacts on bike routes if such facilities are detoured around work zones or forced to share the road with vehicular traffic
- Impacts on pedestrian routes if work zones require the use of sidewalks or the closure of sidewalks for safety reasons

In some cases, traffic and non-vehicular impacts would be localized. Where work zones are situated on local streets, only the immediate area would be affected by traffic, but the impacts on vehicular traffic, bike routes, pedestrians, parking, and access at each location could be significant during the 6- to 9-month construction period.

Where work zones are situated on major collectors, arterials, or highways, the impacts could affect traffic within a larger area. Local and through traffic could be affected by the disruptions in traffic patterns and the increased congestion. In some cases, a single roadway would be subjected to multiple disruptions, simultaneously or sequentially. Each work zone would typically affect traffic for approximately 6 to 9 months. Impacts of multiple excavation sites along the same roadway could occur at the locations listed in Table 4.13-7. In these circumstances, traffic impacts could result in significant disruptions for an extended period of time.

Table 4.13-7. Major Roadway Segments Requiring Multiple Excavation Sites

Roadway [1]	Jurisdiction	Roadway Classification [2]	Length (feet)	Potential Max. No. of Excavations [3]
Allen-McColloch Pipeline (none)				
Calabasas Feeder				
Owensmouth Avenue	City of Los Angeles	Collector	14,650	10
Fallbrook Avenue	City of Los Angeles	Major Highway Class II	17,650	12
Rialto Pipeline				
Banyon Street	City of Rancho Cucamonga	Collector	11,000	8
Second Lower Feeder				
Ball Road [4] Wardlow Road	City of Anaheim City of Buena Park City of Cypress City of Los Alamitos City of Long Beach	Major Arterial Primary Highway Major Highway Principal Arterial Minor Avenue	38,900	26
Bixby Road	City of Long Beach	Neighborhood Collector	10,000	7
West Carson Street	City of Carson	Major Highway	10,300	7
East 220th Street	City of Carson Los Angeles County	Collector Major Collector	13,600	9
Western Avenue	City of Los Angeles City of Torrance City of Lomita	Major Highway Class II Major Highway	15,850	11
Sepulveda Feeder				
Hayvenhurst Avenue	City of Los Angeles	Secondary Arterial	30,000	20
West Sepulveda Boulevard North Sepulveda Boulevard South Sepulveda Boulevard	City of Los Angeles City of Culver City	Major Highway Class II Major Highway	68,800	46
South Van Ness Avenue	City of Inglewood City of Los Angeles City of Hawthorne City of Gardena City of Torrance Los Angeles County	Major Arterial Major Collector Minor Arterial	40,800	28

Notes:
[1] Street name may vary but roadway is generally continuous.
[2] Roadway classification may vary with jurisdiction
[3] Based on the minimum excavation spacing (1,500 feet). The actually number of excavation sites would likely be

Roadway [1]	Jurisdiction	Roadway Classification [2]	Length (feet)	Potential Max. No. of Excavations [3]
lower due to the ability to maximize spacing and availability of off-road sites for excavation.				
[4] Much of the pipeline in Ball Road in Anaheim is steel pipe rather than PCCP, requiring fewer excavations.				

The disruption of local and regional traffic caused by capacity reduction would ~~could~~ be significant at some locations, but the level will need to be determined at the project level when rehabilitation locations are known. Analysis to determine the individual projects' impacts on VMT and/or LOS may be required. Implementation of MM TRA-1 would reduce these impacts in some locations, but would not be feasible in all circumstances. Therefore, impacts on local and regional transportation would ~~may~~ be significant and unavoidable.

Proposed construction activities would generate construction-related vehicle trips on a daily basis on regional highways and local streets, although these would result in a relatively small increase in the daily traffic volume compared with the daily traffic volumes on most major arterials. Construction-related traffic would be temporary and is not expected to degrade operations on any of the major roadways significantly or on a long-term basis. Construction vehicle access to each pipeline would require lane closures at various access points on select streets, which could temporarily decrease road capacity and potentially increase vehicle travel time. Although construction traffic impacts at some locations may be temporarily significant, this impact would be reduced to less-than-significant levels with implementation of MM TRA-2.

Work zones and staging areas could also potentially displace existing parking at various locations (e.g., school and roadways). Such impacts could be significant. Implementation of MM TRA-3 would reduce these impacts to less-than-significant levels.

Mitigation Measures

MM TRA-1 Excavation Siting to Minimize Traffic Impacts

Excavation sites would be located to avoid traffic impacts to the maximum extent feasible ~~possible~~, considering the logistical requirements for pipeline rehabilitation (e.g., adequate spacing, pipeline logistics) and other impacts such as habitat and noise. To the maximum extent feasible ~~possible~~, the following will be considered when locating excavation sites:

- Whenever feasible ~~possible~~, where an off-road excavation site is available that would not result in other significant environmental impacts (e.g., to habitat, land uses), the off-road location will be used.
- Whenever feasible ~~possible~~, excavation sites in roadways will be situated within medians where available, especially if the medians are not used for left-turn lanes and do not include large street trees or other features that would be difficult to restore after rehabilitation.
- Whenever feasible ~~possible~~, excavation sites will be situated where the existing number of travel lanes can be maintained by temporarily removing parking (where adequate parking is available in the local area), temporarily relocating bike lanes to adjacent roadways, or temporarily restriping to provide narrower lanes (where they can be safely accommodated).
- Whenever feasible ~~possible~~, excavation sites will be situated so that adequate access to adjacent properties can be maintained, including left-turn entrances.

- Whenever feasible ~~possible~~, excavation sites will be situated so that bicycle and pedestrian circulation can be safely maintained, either by use of barriers or other safety features, or by providing alternative bicycle and pedestrian routes, with appropriate signage. Where feasible, siting ~~Siting~~ excavation near heavily used pedestrian areas, such as around schools, hospitals, and transit stops, will be avoided. Where feasible, siting ~~Siting~~ excavation in areas designated as safe routes to school will be avoided, or alternative routes will be developed in coordination ~~by working~~ with the local jurisdictions and school districts and providing appropriate signage, notification, and traffic controls.

MM TRA-2 Construction Traffic Control Plans

Metropolitan and/or its contractors will coordinate with the counties of Los Angeles, Orange, and San Bernardino as well as each local jurisdiction through which the pipelines travels (see tables above) to develop construction traffic control measures and procedures prior to the start of construction on each project. Measures to reduce temporary construction traffic and transportation impacts on city streets may include, but not be limited to, the following:

- Development of traffic control plans in coordination with local jurisdictions. The traffic control plans will be implemented and revised, as necessary and applicable.
- Provision of advance written notification of construction activities to residences and businesses around each construction site.
- Identification of travel routes and establishment of optimal arrival and departure times to minimize conflicts with residents, schools, and businesses, as feasible to minimize conflicts.
- Provisions to detour pedestrians and bicyclists from ~~for~~ project activities ~~impacts~~ near or ~~/~~on the sidewalks and bike lanes.
- Implementation of safety measures, such as signs, flaggers, cones, signage, and advance notice, as appropriate.
- Covering of all open trenches when not in use or at the end of each work day, as applicable.

MM TRA-3 Maintaining Adequate Parking

Whenever feasible ~~possible~~, excavation work zones and construction staging areas will not be sited in such a way that they result in inadequate availability of parking for adjacent land uses. If work zones or staging areas are planned for parking areas, a parking study will be completed by a qualified traffic consultant prior to construction to identify if adequate parking would be available locally.

Residual Impacts

Impacts related to temporary traffic disruptions and reduced capacity that would result from the proposed program would be significant at some locations, but the severity or location of the impacts cannot be determined at this time. Implementation of MM TRA-1 would reduce these impacts; however, residual impacts would still be significant and unavoidable.

Impacts related to construction traffic and parking that would result from the proposed program would be significant, but implementation of MM TRA-2 and MM TRA-3 would reduce these impacts so that residual impacts would be less than significant.

Threshold TRA-B: Conflict with an Applicable Congestion Management Program, Including, but not Limited to, Level-of-Service Standards and Travel Demand Measures or Other Standards Established by the County Congestion Management Agency for Designated Roads or Highways

Because the proposed program would include rehabilitation of existing pipelines, which are underground, there would be minimal impacts related to long-term congestion management plans.

Various segments of the PCCP program pipelines are within CMP roadways. The CMP intersections along these streets are found in the respective CMPs of each governing MPO. Although construction-related trips would increase traffic on regional access highways and the major local streets that connect the project sites and highways, the project would generate only a small number of truck trips and employee commuter trips compared with the daily traffic volumes for these access roads, and individual projects would take place over a few months or years. Once rehabilitation is complete in the CMP roadway, the street would be restored to preconstruction conditions. There would be no long-term impacts on CMP roadways. Therefore, program-generated traffic would not be expected to affect current traffic operations substantially on highways and CMP roadways in the project vicinity. This impact would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold TRA-C: Result in a Change in Air Traffic Patterns, Including either an Increase in Traffic Levels or a Change in Location that Would Result in Substantial Safety Risks

The Second Lower Feeder is within a notification area for the ALUP for the Joint Forces Training Base Los Alamitos. Notification areas are established to ensure that structures that may affect day-to-day airport operations are not built in their vicinities. The proposed program would not include aboveground structures, except for small valve boxes and electrical panels. These structures would not affect airport operations. Therefore, the program would not result in a safety hazard for people residing or working in the vicinity of the Joint Forces Training Base Los Alamitos.

The Second Lower Feeder crosses under a portion of the Long Beach Municipal Airport and is within a runway protection zone. The Sepulveda Feeder runs parallel and adjacent to the western side of the Van Nuys Airport and is within the northern and southern runway protection zones. Runway protection zones are intended to provide for the unobstructed passage of landing aircraft through the above airspace. These zones are the most critical safety areas under the approach paths and should be kept free of all obstructions. No structures or congregations of people are allowed within runway protection zones. If any aboveground rehabilitation activities were to occur in these runway protection zones, construction equipment and/or personnel could interfere with airport operations. Also, where pipelines cross under runway or taxiway areas, there is the potential for below-ground construction activities to affect or be affected by airport operations and safety. Impacts would be

significant. Implementation of MM HAZ-5 in Section 4.8, *Hazards and Hazardous Materials*, would reduce potential impacts to less-than-significant levels.

The only permanent aboveground elements of the proposed program would be manhole covers, valve boxes, and electrical panels. If these aboveground elements were located in a runway protection zone, they could interfere with airport operations and safety. Impacts would be significant. Implementation of MM HAZ-6 in Section 4.8, *Hazards and Hazardous Materials*, would reduce potential impacts to less-than-significant levels.

Mitigation Measures

See MM HAZ-5 and MM HAZ-6 in Section 4.8, *Hazards and Hazardous Materials*.

Residual Impacts

Impacts that would result from the proposed program could be significant, but implementation of MM HAZ-5 and MM HAZ-6 in Section 4.8, *Hazards and Hazardous Materials*, would reduce these impacts so that residual impacts would be less than significant.

Threshold TRA-D: Substantially Increase Hazards Due to a Design Feature or Incompatible Uses

No obstacles that would affect sight distance are expected to result from project construction. The maneuvering of construction-related vehicles and equipment among general-purpose traffic on local streets could potentially cause safety hazards. In addition, temporary lane closures could affect non-motorized travel along affected road sections. These impacts could be significant. Implementation of MM TRA-2, described under Threshold TRA-A, would reduce these impacts to less-than-significant levels.

Mitigation Measures

See MM TRA-2 for Threshold TRA-A.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM TRA-2 would reduce these impacts so that residual impacts would be less than significant.

Threshold TRA-E: Result in Inadequate Emergency Access

As discussed in Section 4.13.2, *Existing Conditions*, in some cases the proposed program pipelines are within street rights-of-way that serve as emergency response routes and/or evacuation routes. If excavation were to take place in roadways that serve as emergency access and capacity of the affected streets was reduced during construction (such as reducing four lanes to two lanes), the ability of these streets to serve as emergency access routes may be impaired. This would be a significant impact during construction. Implementation of MM HAZ-7 in Section 4.8, *Hazards and Hazardous Materials*, would reduce these impacts to less-than-significant levels.

Once rehabilitation is complete, contractors would be required to return the street to preconstruction conditions. Therefore, there would be no long-term impacts on emergency access.

Mitigation Measures

See MM HAZ-7 in Section 4.8, *Hazards and Hazardous Materials*.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM HAZ-7 in Section 4.8, *Hazards and Hazardous Materials*, would reduce these impacts so that residual impacts would be less than significant.

Threshold TRA-F: Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities or Otherwise Decrease the Performance or Safety of Such Facilities

Rehabilitation would require temporary lane closures on certain streets. Where the pipeline directly travels under Class II bikeways (on-street marked bicycle lanes) or encroaches on existing bus stops (e.g., MTA, OCTA, Omnitrans), work zones could interfere with bus services and bicycle traffic on these streets. Lane closures would be restricted to a short distance and would be short in duration, but temporary impacts could be significant. Implementation of MM TRA-1 and MM TRA-2, described under Threshold TRA-A, would reduce these impacts to less-than-significant levels.

Mitigation Measures

See MM TRA-1 and MM TRA-2 for Threshold TRA-A.

Residual Impacts

Impacts that would result from the proposed program would be significant, but implementation of MM TRA-1 and MM TRA-2 would reduce these impacts so that residual impacts would be less than significant.

4.13.5.2 Cumulative Analysis

The proposed program would be implemented over a long period of time; in many cases, implementation of the projects in the proposed program would occur past the planning horizons of local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

Because the project consists of improvements to an existing underground water conveyance pipeline and no additional maintenance activities (beyond existing maintenance of the pipeline) would occur after construction, the project would have no long-term cumulative operational impacts on public roadways. Cumulative traffic impacts could occur where surface excavation and work zones are close to major development projects within the local setting. Implementation of MM TRA-1, MM TRA-2, and MM TRA-3, described under Threshold TRA-A, would reduce the program's contribution to short-term cumulative traffic impacts, but in some cases rehabilitation in roadways may result in a considerable contribution to cumulative traffic impacts.

Section 4.14
Utilities and Service Systems

4.14.1 Introduction

This section describes the existing conditions for utilities and service systems, the regulatory framework associated with utilities and service systems, the impacts on utilities and service systems that would result from the proposed program, and the mitigation measures that would reduce these impacts. As noted in the Initial Study, the proposed program would have potentially significant utilities and service systems impacts.

4.14.2 Existing Conditions

The study area for utilities and service systems is the pipeline alignments and the roadway rights-of-way in which the pipelines are located, plus 0.25 mile on either side of the pipeline. Figures 4.14-1 through 4.14-5 show the utilities study areas for each pipeline.

Roadway rights-of-way are typically used by a variety of utility providers for locating their linear components. These include overhead and underground power lines and telecommunication lines (including telephone, cable, fiber optics, etc.), underground sewer lines and water lines (including Metropolitan's feed lines, local water lines, and recycled water), storm drains and flood control channels, and gas and oil lines. Sometimes non-linear above-ground facilities associated with utility uses are also located in the study area, such as water treatment facilities, water reservoirs, electrical power substations, solar power facilities, and tank farms for oil storage.

4.14.2.1 Allen-McColloch Pipeline

In addition to the standard utilities within rights-of-way and easements identified above, the study area for the Allen-McColloch Pipeline includes such major utilities as a water treatment facility, water reservoirs, an electrical substation, major electrical transmission lines, and flood control channels and basins.

Areas along the Allen-McColloch Pipeline are served by the following landfills.

- Frank R. Bowerman, Irvine: anticipated closure date approximately 2053 (OC Waste & Recycling 2016a)
- Olinda Alpha, Brea: anticipated closure date approximately 2021 (CalRecycle 2016a)
- Prima Deschecha, San Juan Capistrano: anticipated closure date approximately 2067 (OC Waste & Recycling 2016b)

4.14.2.2 Calabasas Feeder

In addition to the standard utilities within rights-of-way and easements identified above, the study area for the Calabasas Feeder includes major electrical transmission lines and flood control channels.

Areas along the Calabasas Feeder are served by the following landfills.

- Burbank, La Crescenta: anticipated closure date approximately 2053 (CalRecycle 2016b)
- Calabasas, Calabasas: anticipated closure date approximately 2048 (accepts waste only from the Calabasas watershed, including the Calabasas Feeder study area) (Belmond 2013)
- Chiquita Canyon, Del Valle: anticipated closure date approximately 2019 (CalRecycle 2016c)
- Sunshine Canyon, Santa Clarita: anticipated closure date approximately 2037 (CalRecycle 2016d)

4.14.2.3 Rialto Pipeline

In addition to the standard utilities within rights-of-way and easements identified above, the study area for the Rialto Pipeline includes water treatment facilities, water reservoirs, electrical substations, major electrical transmission lines, and flood control channels.

Areas along the Rialto Pipeline are served by the following landfills.

- California Street Landfill, Redlands: anticipated closure date approximately 2042 (CalRecycle 2016e)
- Mid-Valley Landfill, Rialto: anticipated closure date approximately 2033 (CalRecycle 2016f)
- Burbank, La Crescenta: anticipated closure date approximately 2053 (CalRecycle 2016b)
- Chiquita Canyon, Del Valle: anticipated closure date approximately 2019 (CalRecycle 2016c)
- Sunshine Canyon, Santa Clarita: anticipated closure date approximately 2037 (CalRecycle 2016d)

4.14.2.4 Second Lower Feeder

In addition to the standard utilities within rights-of-way and easements identified above, the study area for the Second Lower Feeder includes major water treatment facilities, water reservoirs, electrical transmission lines, solar power facilities, and flood control channels and basins.

Areas along the Second Lower Feeder are served by the following landfills.

- Frank R. Bowerman, Irvine: anticipated closure date approximately 2053 (OC Waste & Recycling 2016a)
- Olinda Alpha, Brea: anticipated closure date approximately 2021 (CalRecycle 2016a)
- Prima Deschecha, San Juan Capistrano: anticipated closure date approximately 2067 (OC Waste & Recycling 2016b)
- Burbank, La Crescenta: anticipated closure date approximately 2053 (CalRecycle 2016b)
- Chiquita Canyon, Del Valle: anticipated closure date approximately 2019 (CalRecycle 2016c)
- Sunshine Canyon, Santa Clarita: anticipated closure date approximately 2037 (CalRecycle 2016d)

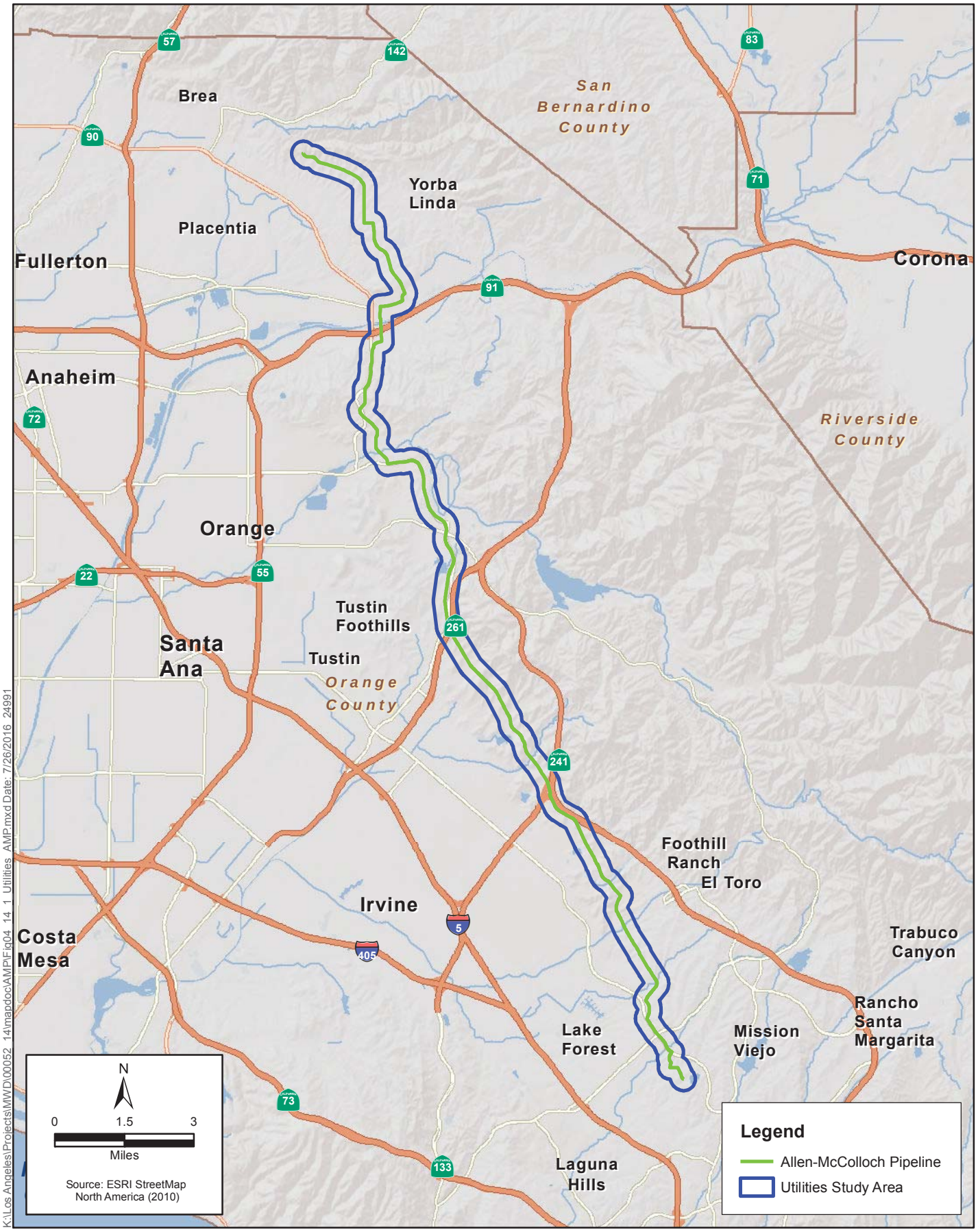

Figure 4.14-1
Allen-McColloch Pipeline Utilities Study Area
Metropolitan PCCP Program

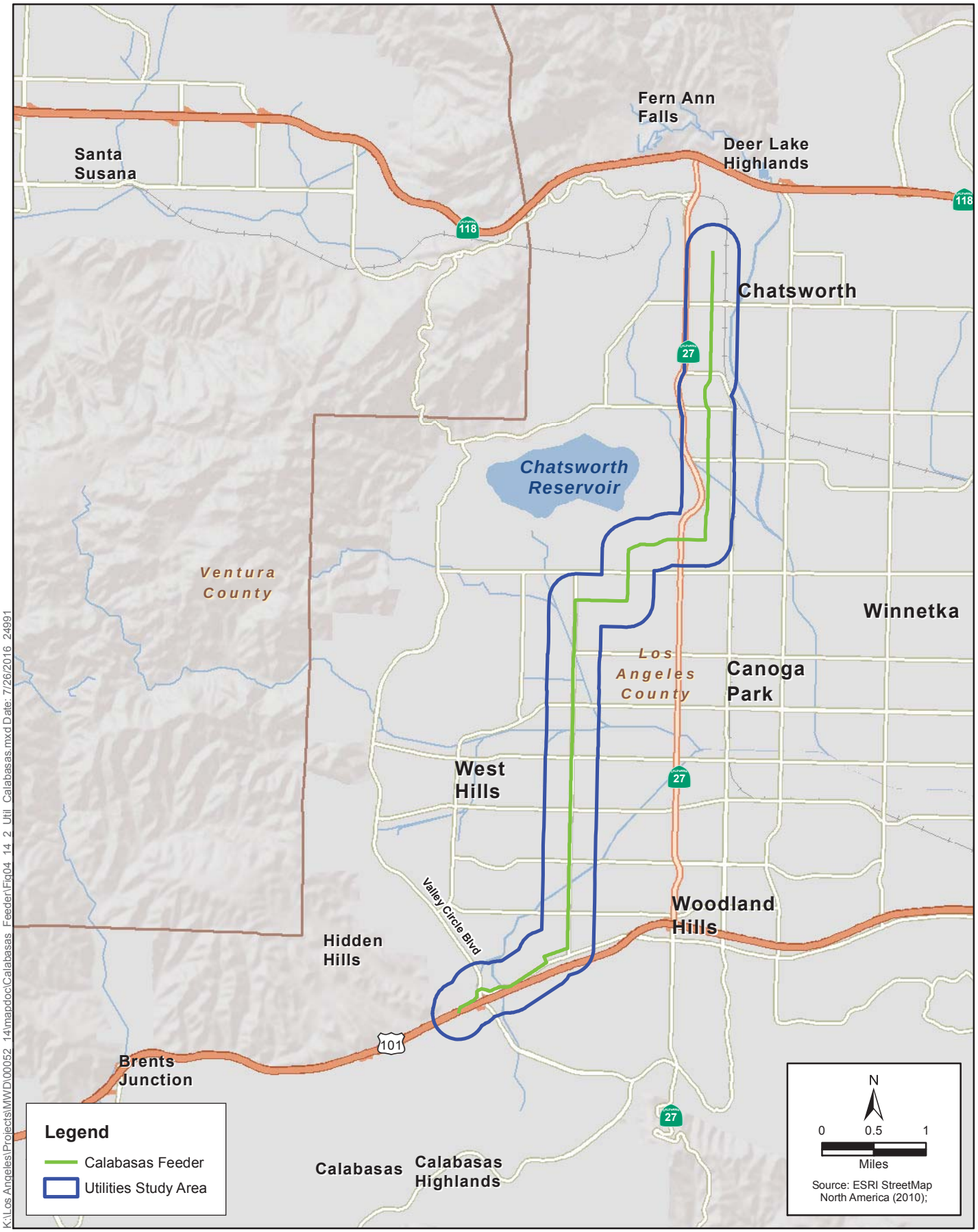

Figure 4.14-2
Calabasas Feeder Utilities Study Area
Metropolitan PCCP Program

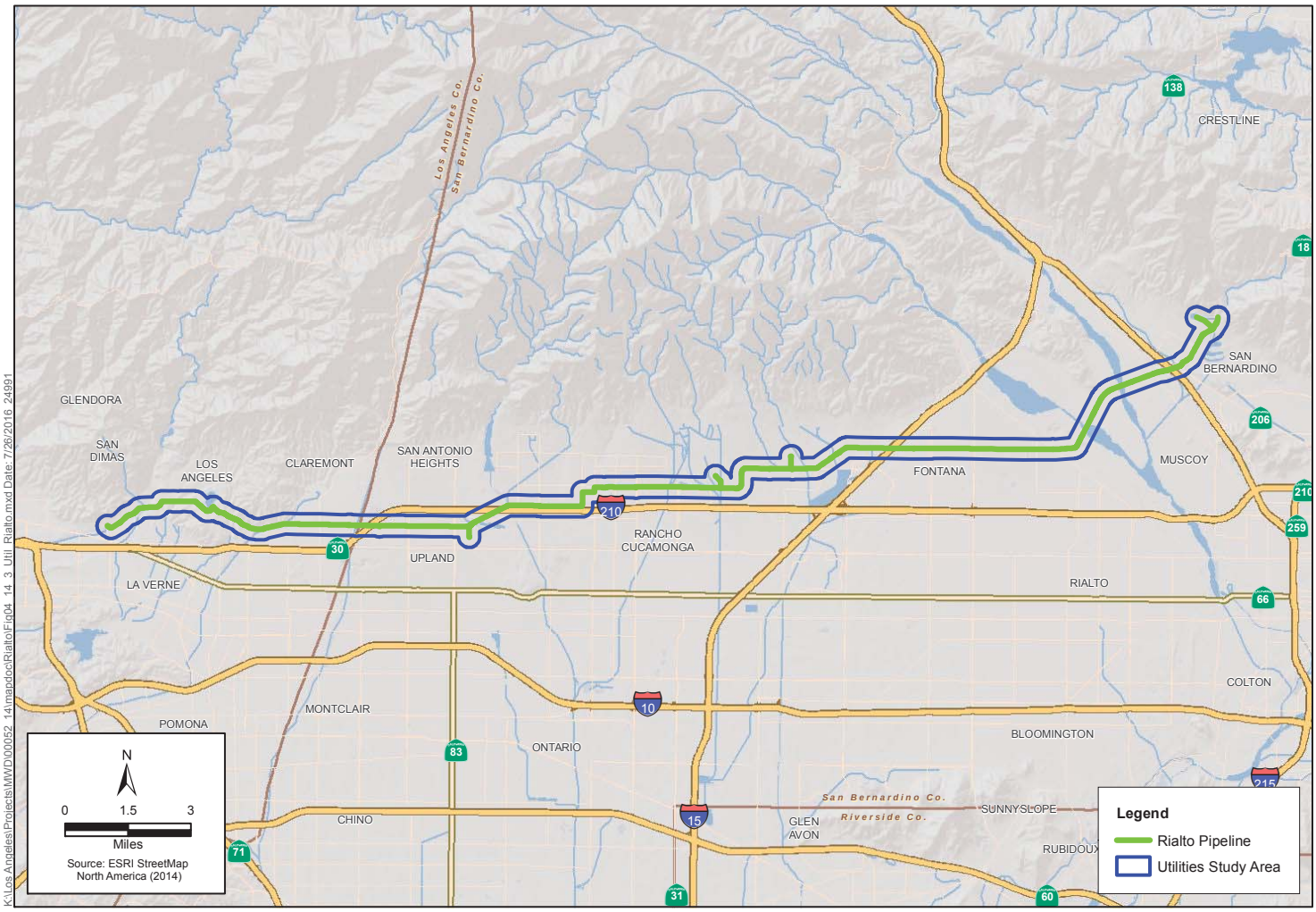

Figure 4.14-3
Rialto Pipeline Utilities Study Area
Metropolitan PCCP Program

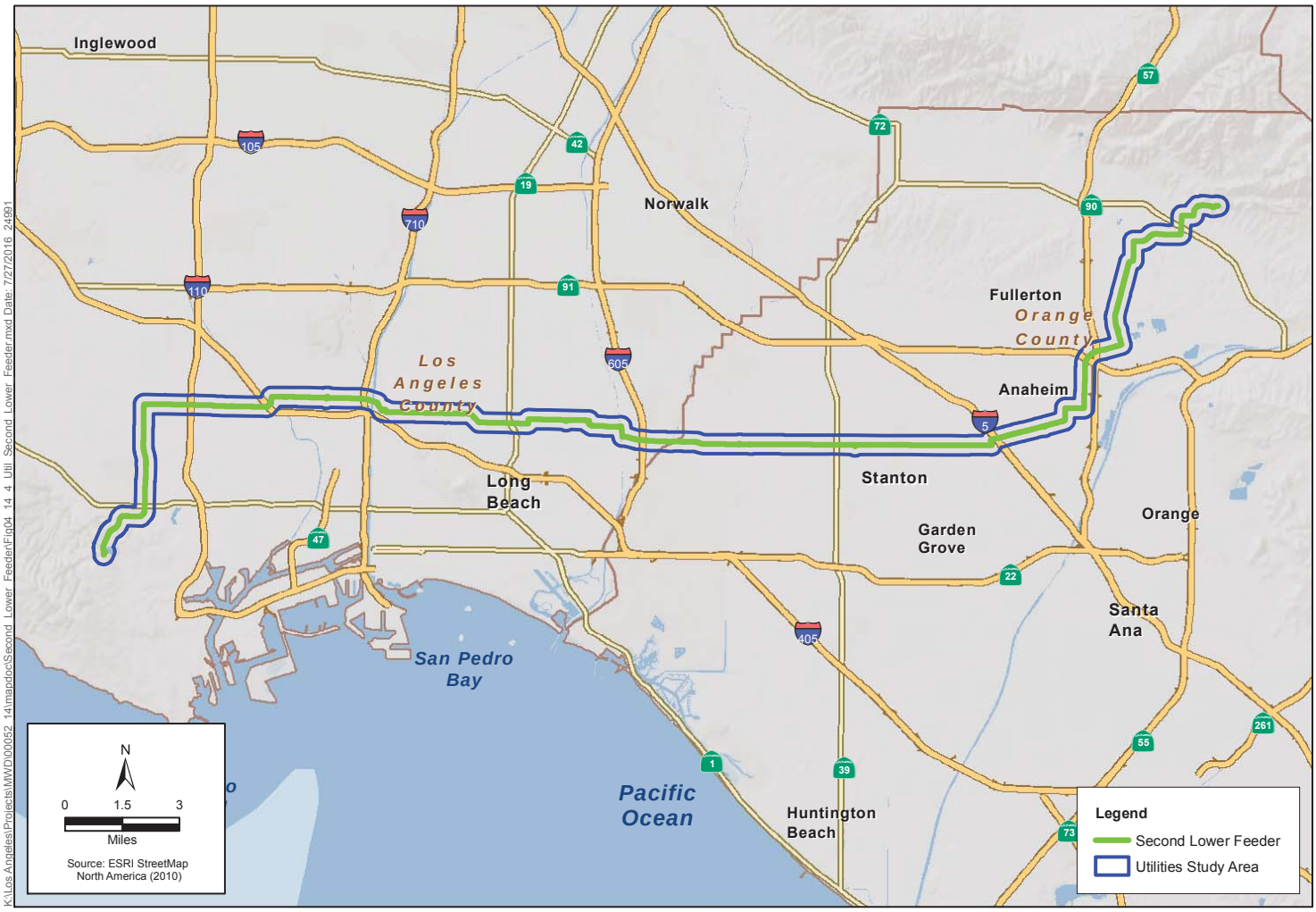

Figure 4.14-4
Second Lower Feeder Utilities Study Area
Metropolitan PCCP Program

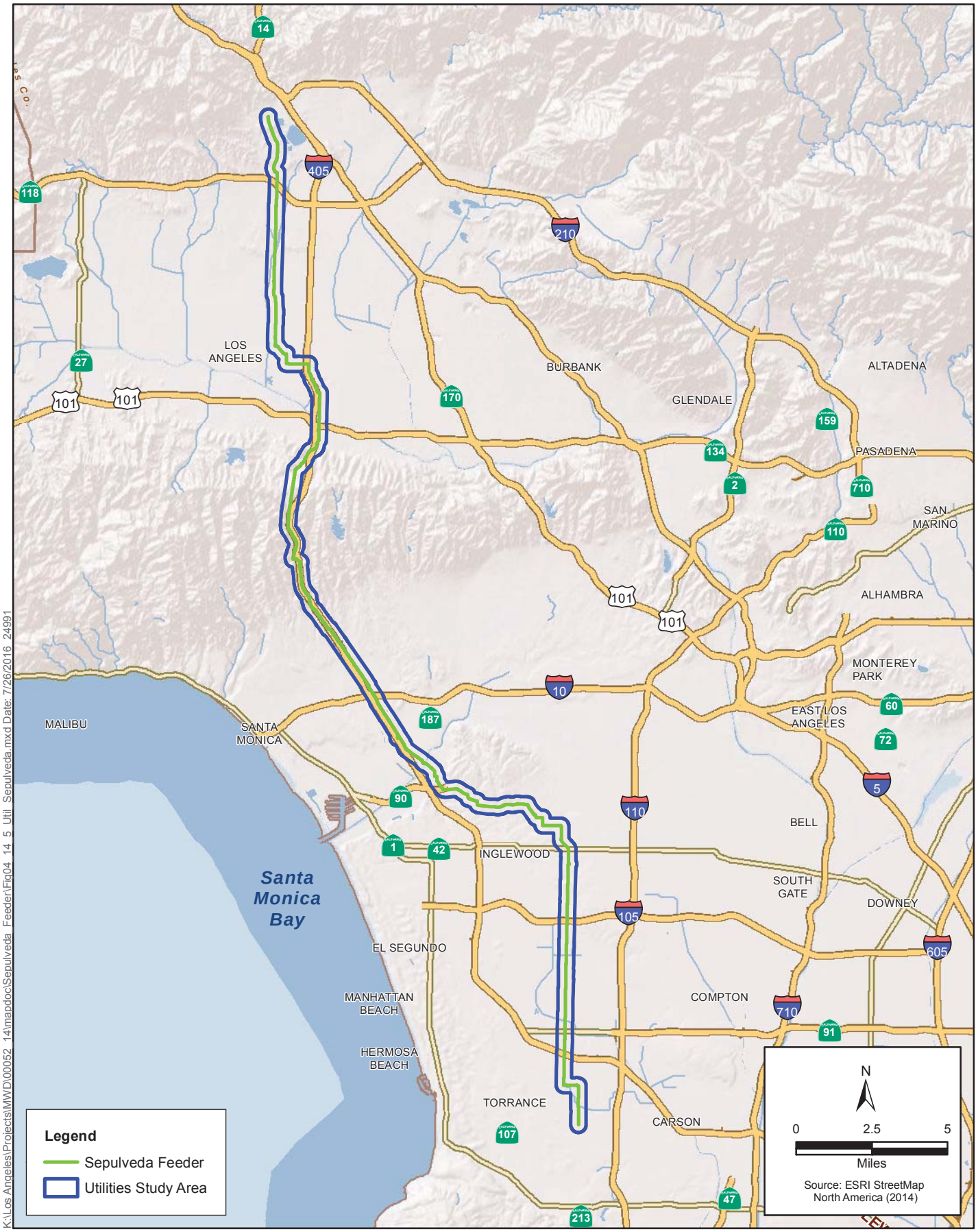

Figure 4.14-5
Sepulveda Feeder Utilities Study Area
Metropolitan PCCP Program

4.14.2.5 Sepulveda Feeder

In addition to the standard utilities within rights-of-way and easements identified above, the study area for the Sepulveda Feeder includes water reservoirs, electrical substations, major electrical transmission lines, a tank farm, and flood control channels.

Areas along the Sepulveda Feeder are served by the following landfills.

- Burbank, La Crescenta: anticipated closure date approximately 2053 (CalRecycle 2016b)
- Chiquita Canyon, Del Valle: anticipated closure date approximately 2019 (CalRecycle 2016c)
- Sunshine Canyon, Santa Clarita: anticipated closure date approximately 2037 (CalRecycle 2016d)

4.14.3 Regulatory Framework

This section describes the plans, policies, and regulations related to utilities and service systems that are applicable to the proposed program.

4.14.3.1 Federal

Resource Conservation and Recovery Act (42 U.S.C. § 6901 et seq.)

The Resource Conservation and Recovery Act was enacted in 1976 to ensure that solid and hazardous wastes are properly managed, from their generation to ultimate disposal or destruction. Implementation of the Resource Conservation and Recovery Act has largely been delegated to federally approved state waste management programs and, under Subtitle D, further promulgated to local governments for management of planning, regulation, and implementation of nonhazardous solid waste disposal (EPA 2016). The U.S. Environmental Protection Agency retains oversight of state actions under 40 Code of Federal Regulations (CFR) (Part 239–259). Where facilities are found to be inadequate, 40 CFR Part 256.42 requires that necessary facilities and practices be developed by the responsible state and local agencies or by the private sector (USGPO 2016). In California, that responsibility was created under the California Integrated Waste Management Act of 1989 (Californians Against Waste 2016).

4.14.3.2 State

Title 22, Chapter 16, Waterworks Standards

When buried water mains are close to non-potable pipelines (such as sanitary sewer mains, recycled water, or storm drains), they are vulnerable to contamination. The most effective protection against this type of drinking water contamination is adequate construction and separation of water mains and non-potable pipelines. The Waterworks Standards (Title 22, Chapter 16, Section 64572) provide separation criteria for new construction (California DHS 2003).

California Integrated Waste Management Act (AB 939)

In response to the Resource Conservation and Recovery Act, the California Integrated Waste Management Act of 1989 was enacted by Assembly Bill (AB) 939. It requires cities and counties to prepare an integrated waste management plan, including a countywide siting element, for each jurisdiction. Pursuant to Public Resources Code Sections 41700–41721.5, the countywide siting element provides an estimate of the total permitted disposal capacity needed for a 15-year period, or whenever additional capacity is necessary. Countywide siting elements in California must be updated by each operator and permitted by the Department of Resources Recycling, which is within the Natural Resources Agency, every 5 years. AB 939 mandated that local jurisdictions meet solid waste diversion goals of 50 percent by 2000. (Californians Against Waste 2016)

Protection of Underground Infrastructure (Cal. Gov. Code § 4216)

This code requires that an excavator must contact a regional notification center (i.e., underground service alert) at least 2 days before excavation of any subsurface installations. The underground service alert will then notify the utilities that may have buried lines within 1,000 feet of the excavation. Representatives of the utilities are required to mark the specific location of their facilities within the work area prior to the start of excavation. The construction contractor is required to probe and expose the underground facilities by hand prior to using power equipment. (DigAlert 2016)

4.14.3.3 Local

Local policies and regulations related to utilities and service systems generally relate to new construction and buildings. These policies and regulations are not applicable to the proposed program.

4.14.4 Thresholds and Methodology

4.14.4.1 Thresholds of Significance

Table 4.14-1 lists the thresholds from Appendix G of the State CEQA Guidelines that pertain to utilities and service systems. These thresholds are addressed in the PEIR.

Table 4.14-1. CEQA Thresholds for Utilities and Service Systems

Threshold *Would the proposed program:*
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?
b. Require or result in the construction of new water or wastewater treatment facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects?
c. Require or result in the construction of new stormwater drainage facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects?
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new and expanded entitlements needed?

Threshold *Would the proposed program:*
e. Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to its existing commitments?
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?
g. Comply with federal, state, and local statutes and regulations related to solid waste?

4.14.4.2 Methodology

The analysis of impacts on utilities and service systems includes evaluation of the proposed program's effects related to wastewater treatment, water and wastewater treatment facilities, stormwater drainage facilities, water supplies, wastewater treatment facilities capacity, landfill capacity, and solid waste regulations.

4.14.5 Impacts Analysis

4.14.5.1 Program Analysis

Threshold UTIL-A: Exceed Wastewater Treatment Requirements of the Applicable Regional Water Quality Control Board

The proposed program would not generate any long-term or substantial quantities of wastewater, and it would not involve permanent structures with the potential to generate wastewater. The proposed program would require dewatering of the pipelines prior to rehabilitation. The pipelines would be flushed with chlorinated water upon completion of rehabilitation activities. The flushed water would be dechlorinated and released into local flood control channels and sewer systems. Therefore, no additional treatment of water from dewatering or flushed water would be required. No wastewater treatment requirements would be violated or exceeded as a result of the proposed program. Impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold UTIL-B: Require or Result in the Construction of New Water or Wastewater Treatment Facilities or the Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects

The proposed program would rehabilitate existing PCCP along five existing pipelines. It would not involve the construction of new water facilities, and it would not increase the capacity of the Metropolitan water distribution system. The proposed program would not result in construction of new wastewater treatment facilities. No impacts would occur.

Mitigation Measures

There would be no impacts for the proposed program.

Residual Impacts

No impacts would result from the proposed program, and no mitigation is necessary. Therefore, there would be no residual impacts for the proposed program.

Threshold UTIL-C: Require or Result in the Construction of New Stormwater Drainage Facilities or the Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects

The construction of new stormwater drainage facilities or the expansion of existing facilities is typically required to maintain or increase the facilities' capacity to accommodate an increase in stormwater runoff in an area, such as when a project involves a substantial increase in the amount of impermeable surface. The five existing pipelines that would be rehabilitated under the proposed program would not involve paving previously unpaved areas and therefore would not result in an increase in impermeable surfaces that would necessitate the construction of new or expanded stormwater facilities or the provision of additional capacity. Therefore, no impacts would occur.

Mitigation Measures

There would be no impacts for the proposed program.

Residual Impacts

No impacts would result from the proposed program, and no mitigation is necessary. Therefore, there would be no residual impacts for the proposed program.

Threshold UTIL-D: Have Sufficient Water Supplies Available to Serve the Project from Existing Entitlements and Resources, or Are New and Expanded Entitlements Needed

The proposed program would rehabilitate existing water distribution pipelines. It would not entail uses that would result in long-term water consumption. Consequently, the proposed program would not affect existing water entitlements or require new entitlements. No impact would occur.

Mitigation Measures

There would be no impacts for the proposed program.

Residual Impacts

No impacts would result from the proposed program, and no mitigation is necessary. Therefore, there would be no residual impacts for the proposed program.

Threshold UTIL-E: Result in a Determination by the Wastewater Treatment Provider that Serves or May Serve the Project that it Has Adequate Capacity to Serve the Project's Projected Demand in Addition to its Existing Commitments

The proposed program consists of rehabilitating four existing water distribution pipelines. It would not include long-term uses that would require wastewater treatment. No new wastewater would be generated from operation of the four existing pipelines after rehabilitation. Upon completion of the rehabilitation work, the pipelines would operate as they currently do. Consequently, the proposed program would not affect existing wastewater treatment capabilities of the local provider. No impacts would occur.

Mitigation Measures

There would be no impacts for the proposed program.

Residual Impacts

No impacts would result from the proposed program, and no mitigation is necessary. Therefore, there would be no residual impacts for the proposed program.

Threshold UTIL-F: Be Served by a Landfill with Sufficient Permitted Capacity to Accommodate the Project's Solid Waste Disposal Needs

The proposed program would not generate substantial amounts of solid waste. Solid waste debris generated could include cutback asphalt, cut portions of PCCP, and excavated soil. This debris would be either reused on site, if feasible, or recycled off site. The selected contractor would use cost-effective means and methods to recycle or dispose of any solid waste debris generated during rehabilitation. Construction and demolition facilities accept these types of materials on a regular basis to process and dispose of them. Construction and demolition facilities used for current urgent repairs of other existing Metropolitan PCCP lines include Dan Copp Crushing, Arcadia Reclamation, and Standard Metals. The selected contractor would coordinate with these types of facilities prior to rehabilitation. Other solid waste debris that cannot be recycled and cannot go to a construction and demolition facility could be accommodated by one or more of the landfills identified in Section 4.14.2. The selected contractor could coordinate with one or more of these facilities. Given the intent to maximize the proposed program's use of excavated materials as backfill and the presence of multiple designated construction and demolition facilities and landfills with existing daily capacity to recycle or dispose of solid waste debris, impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

Threshold UTIL-G: Comply with Federal, State, and Local Statutes and Regulations Related to Solid Waste

The proposed program rehabilitation activities would generate small amounts of solid waste, including construction and demolition debris. All waste produced due to proposed program activities would be removed immediately following the activity and disposed of properly in accordance with federal, state, and local statutes and regulations. The proposed program is not anticipated to have a significant impact on solid waste disposal needs, and impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

4.14.5.2 Cumulative Analysis

The proposed program would be implemented over a long period of time; in many cases, implementation of the projects in the proposed program would occur past the planning horizons of local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

As discussed in Section 4.14.5, the proposed program would have no impacts related to new or expanded water or wastewater treatment facilities; new or expanded stormwater drainage facilities; water supply availability; and wastewater treatment capacity. Therefore, it would not contribute to cumulative impacts on these resources.

The proposed program would result in less-than-significant impacts related to wastewater treatment requirements. During dewatering of the pipelines, water would be dechlorinated and released into local flood control channels and sewer systems and no additional treatment would be required. No wastewater treatment requirements would be violated or exceeded. Because of the limited scale of this dewatering and the treatment of the water as part of the projects in the program, the program would not result in a considerable contribution to a cumulative impact related to wastewater treatment.

The proposed program would result in less-than-significant impacts related to solid waste disposal. Minimal waste would be generated by the rehabilitation projects in the proposed program. Most of this waste would be reused on site or recycled. The small amount of remaining waste would not result in a considerable contribution to impacts to landfill capacity.

Section 4.15
Energy Conservation

4.15.1 Introduction

This section describes the existing conditions for energy and energy conservation, the regulatory framework associated with energy conservation, the impacts related to energy conservation that would result from the proposed program, and the mitigation measures that would reduce these impacts. This section meets the requirements of Appendix F, Energy Conservation, of the State CEQA Guidelines.

In 2009, the State CEQA Guidelines were revised to include a new Appendix F, Energy Conservation. Appendix F states that, in order to ensure that energy implications are considered in project decisions, EIRs are required to discuss the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

4.15.2 Existing Conditions

The study area for energy conservation is the South Coast Air Basin, the area in which nearly all program construction activities and related energy consumption would occur, which is consistent with the study area used for the purposes of the air quality analysis. A map of the study area is included in Section 4.3, *Air Quality*. As stated in Metropolitan's *2015 Urban Water Management Plan*, California's water sector is responsible for 6.8 percent of statewide greenhouse gas (GHG) emissions, which serves as an indicator of the amount of energy consumed. However, only 0.6 percent of statewide GHG emissions are attributable to the activities of water utilities, as most of the energy use is associated with water end uses (i.e., businesses and residents) and wastewater and agricultural uses (Metropolitan 2016). Table 4.15-1 shows the amount of energy used by Metropolitan for water conveyance, treatment, and distribution for 2013 and 2014.

Table 4.15-1. Metropolitan's Existing Energy Use

	Conveyance (kWh)	Treatment (kWh)	Distribution (kWh)	Treated Energy Intensity (kWh/acre-foot)
2013	3,627,553,292	46,914,223	-239,069,895 [a]	1,786
2014	3,448,714,628	46,695,775	-118,895,649 [a]	1,938

[a] Represents a net generation of energy.
kWh = kilowatts per hour
kWh/acre-foot = kilowatts per hour per acre-foot
Source: Metropolitan 2016.

4.15.3 Regulatory Framework

This section describes the plans, policies, and regulations related to energy conservation that are applicable to the proposed program.

4.15.3.1 Federal

The following federal laws related to energy and energy use are applicable, as the federal government has primary responsibility for the regulation of the fuel economy of vehicles, including for vehicles that would be used during the construction period for the proposed program.

Energy Policy and Conservation Act of 1975

The Energy Policy and Conservation Act of 1975 was enacted to serve the nation's energy demands and calls for energy conservation when feasible. Among other provisions, the act directed the Secretary of the Department of Transportation to set and implement fuel economy standards for passenger cars and light trucks as part of the Corporate Average Fuel Economy program.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 was signed into law by President George W. Bush on December 19, 2007, with the aim of moving the United States toward greater energy independence and security; increasing the production of clean renewable fuels; protecting consumers; increasing the efficiency of products, buildings, and vehicles; promoting GHG research; improving the energy efficiency of the federal government; and improving vehicle fuel economy. The act expanded the Corporate Average Fuel Economy program to include standard-setting for medium- and heavy-duty vehicles.

4.15.3.2 State

California Energy Commission

Created by the Legislature in 1974, the California Energy Commission is the state's primary energy policy and planning agency and is responsible for, among other things, forecasting future energy needs for the state. Senate Bill 1389 (Chapter 568, Statutes of 2002) requires the California Energy Commission to prepare a biennial Integrated Energy Policy Report. This report contains an integrated assessment of major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors, and provides policy recommendations to conserve resources; protect the environment; ensure reliable, secure, and diverse energy supplies; enhance the state's economy; and protect public health and safety. The commission published the *2015 Integrated Energy Policy Report* in February 2016 and the *2016 Integrated Energy Policy Report Update* is currently being developed.

Executive Order S-3-05

Executive Order S-3-05, enacted in June 2005, sets specific GHG emission reduction targets for the state and gives the Transportation and Housing Agency responsibility to help meet the targets. The Executive Order sets 2050 GHG reduction targets at 80 percent below 1990 levels and envisions reduced vehicle miles traveled and increased vehicle fuel efficiency as major factors in achieving

GHG reductions. Because of the inextricable relationship between GHG emissions and energy use, Executive Order S-3-05 has implications for energy use.

AB 32: Global Warming Solutions Act

Governor Arnold Schwarzenegger signed Assembly Bill (AB) 32 (Global Warming Solutions Act) into law on September 27, 2006, requiring that the California Air Resources Board (ARB) reduce GHG emissions to 1990 levels by 2020 and maintain and continue reductions beyond 2020. The bill also provides the Governor the ability to invoke a safety valve and suspend the emissions caps for up to 1 year in the case of an emergency or significant economic harm. ARB prepared the AB 32 scoping plan that has been approved and contains a range of GHG reduction actions, which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 program implementation regulation to fund the program.

AB 2076, Reducing Dependence on Petroleum

The California Energy Commission and ARB are directed by AB 2076 (passed in 2000, Shelley, Chapter 936, Statutes of 2000) to develop and adopt recommendations for reducing dependence on petroleum. A performance-based goal is to reduce petroleum demand to 15 percent below 2003 demand levels by 2020.

4.15.3.3 Local

Local policies and regulations related to energy generally relate to new construction and buildings; these policies and regulations are not applicable to the proposed program. However, Metropolitan has adopted a set of Energy Management Policies.

Metropolitan Energy Management Policies

To further Metropolitan's mission to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way, the Metropolitan Board adopted a set of Energy Management Policies in August 2010. The Energy Management Policies guide the agency to (1) contain costs and reduce Metropolitan's exposure to energy price volatility; (2) increase operational reliability by implementing renewable energy projects; (3) provide a revenue stream to offset energy costs; and (4) move Metropolitan toward energy independence (i.e., maximize power production facilities and energy contracts for direct use by Metropolitan). These policies are consistent with Metropolitan's goal to balance long-term reliability with cost control, with the added benefit of reducing GHG emissions (Metropolitan 2010). Although the Energy Management Policies do not explicitly address construction-related energy consumption, the efforts to control costs on energy resources applies to the construction period as well.

4.15.4 Thresholds and Methodology

4.15.4.1 Thresholds of Significance

Table 4.15-2 lists the threshold that encompasses all of the potential impacts of the program identified in Appendix F of the State CEQA Guidelines that pertain to energy conservation. The threshold and the analysis below do not address the program's effects on electricity, as there would be negligible electricity consumption during construction and program operation would not increase energy use relative to existing conditions. The following threshold is addressed in the PEIR.

Table 4.15-2. CEQA Thresholds for Energy Conservation

Threshold *Would the proposed program:*
a. Use energy in an inefficient, wasteful, or unnecessary manner?

4.15.4.2 Methodology

The estimate of construction-related energy use was calculated by applying the conversion factors for GHG emissions per gallon of fuel to the total GHG emissions. As discussed in Section 4.7, GHG emissions were estimated using emissions factors for off-road construction equipment and on-road vehicle trips and idling derived from CalEEMod and EMFAC2011. Emissions for each of the individual sites were estimated and a full program construction scenario was developed to quantify impacts related to GHGs, which includes the following.

- An average of three relining excavation sites per mile of PCCP
- An average of one new valve/meter vault structure for every 5 miles of PCCP
- An average of one air-release/vacuum valve relocation per mile of PCCP
- 1,000 feet of parallel piping for every 10 miles of PCCP

Emissions were then converted to gallons of diesel fuel, as this would be the primary fuel source for vehicles and equipment during the construction period.

Because the proposed program would involve the rehabilitation and/or replacement of existing water distribution pipelines and would not enhance the capacity of the water distribution network, there would be no change in energy use associated with operation of the proposed program. Therefore, this analysis is limited to energy use that would occur during the construction period.

4.15.5 Impacts Analysis

4.15.5.1 Program Analysis

Threshold ENE-A: Use Energy in an Inefficient, Wasteful, or Unnecessary Manner

Under the proposed program, construction activities would require energy in the form of fuels for construction vehicles and equipment. As shown in Appendix G and Table 4.15-3, approximately 13.84 million gallons of diesel fuel would be consumed over the 25-year construction period. Although the estimated fuel use would be substantial, the construction would occur over a long time horizon. As such, the annual fuel consumption would represent a small portion of the total, a negligible increase in regional demand, and an insignificant amount relative to the greater than 18 billion gallons of on-road fuels used in the state in 2013 (California Energy Commission 2014). Given the extensive network of fueling stations throughout the program region and the fact that construction would be relatively short term in any given location along the pipeline alignments, no new or expanded sources of energy or infrastructure would be required to meet the energy demand of the proposed program.

The proposed program would not involve the construction of new water facilities, and it would not increase the capacity of the Metropolitan water distribution system. In addition, all construction equipment would be maintained in accordance with manufacturers' specifications so equipment performance would not be compromised such that the inefficient use of fuel would result. Therefore, impacts related to energy use would be less than significant.

Table 4.15-3. Construction Energy Consumption

	Energy Consumed
Buildout GHG emissions (MT CO_2)	140,608.5
Gallons of Diesel Fuel	13,838,767
Source: Calculations by ICF International 2016. See Appendix G. MT CO_2 = million tons of carbon dioxide	

Mitigation Measures

Impacts would be less than significant for the proposed program, and no mitigation is required. Program-related energy consumption would be reduced by 0.8 percent through the use of Tier 4 off-road construction equipment, as specified by MM AIR-1 in Section 4.3, *Air Quality*.

Residual Impacts

Impacts that would result from the proposed program would be less than significant, and no mitigation is necessary. Therefore, residual impacts would be less than significant.

4.15.5.2 Cumulative Analysis

The proposed program would be implemented over a long period of time; in many cases, implementation of the projects in the proposed program would occur past the planning horizons of

local jurisdictions and agencies. Therefore, the program-level cumulative impact analyses for the various resources are limited to the identification of the types of impacts that may occur.

As discussed in Section 4.15.4, the proposed program would have no impacts related to new or expanded water service, new or expanded stormwater drainage facilities, water supply availability, and water treatment capacity. Therefore, the operation of the proposed program would not contribute to cumulative impacts related to energy resources.

During the construction period, the proposed program would require the use of energy in the form of fuels needed to operate vehicles and equipment, as discussed in Section 4.15.5.1. Given the extensive network of fueling stations found throughout the region and that the pipelines would be relined over more than 25 years, the impact on fuel supply and demand would be negligible and impacts would not be cumulatively considerable.

Chapter 5
Alternatives

5.1 Introduction

During consideration of a project or program that could have a significant effect on the environment, the California Environmental Quality Act (CEQA) requires that alternatives that could avoid or lessen the project's significant effect(s) be considered. This chapter presents potential alternatives to the proposed program and evaluates them as required by CEQA. The State CEQA Guidelines also require environmental impact reports (EIRs) to identify the environmentally superior alternative from among the alternatives (including the proposed project). The environmentally superior alternative is identified in Section 5.5.2.

5.2 Summary of Program Objectives and Significant Impacts

5.2.1 Program Objectives

In September 2011, Metropolitan Water District of Southern California's (Metropolitan) Board authorized initiation of the Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program in order to develop a comprehensive, long-term plan for repair of Metropolitan's at-risk PCCP feeders. There were several drivers for the creation of this program: (1) the increasing number of failures of PCCP lines within the water industry, along with recognition of the risks associated with these failures; (2) trends of PCCP deterioration within Metropolitan's distribution system, based on monitoring data collected over a 14-year period; and (3) Metropolitan's experience with expensive, urgent repairs on PCCP lines. Based on this experience and on a risk assessment of Metropolitan's PCCP lines, staff concluded that approximately 100 miles of PCCP will have a reduced service life and need to be rehabilitated, especially in comparison with pipelines made of other materials.

The objectives of the proposed program are to:

- Reduce the risk of unplanned outages
- Extend the service life of the pipelines
- Perform the rehabilitation work in a cost-effective manner
- Minimize the effects of rehabilitation efforts on Member Agency deliveries
- Minimize the loss of hydraulic capacity due to rehabilitation
- Improve system operational and emergency flexibility

5.2.2 Significant Environmental Impacts

The PCCP Rehabilitation Program would potentially result in the following significant impacts (or potentially significant impacts) that could not be reduced to less-than-significant levels with mitigation.

- Conflict with or obstruct implementation of the applicable air quality plan (AQ-A)
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation (AQ-B)
- Result in a cumulatively considerable net increase in any criteria pollutant for which the region is in non-attainment under an applicable federal or state ambient air quality standard (AQ-C)
- Expose sensitive receptors to substantial pollutant concentrations (AQ-D)
- Have substantial adverse effect on special-status species (BIO-A) (potentially significant, to be determined at project level)
- Have substantial adverse effect on riparian habitat or other sensitive natural community (BIO-B) (potentially significant, to be determined at project level)
- Have a substantial adverse effect on federally protected wetlands (BIO-C) (potentially significant, to be determined at project level)
- Interfere substantially with the movement of native resident or migratory fish or wildlife species or established native resident or migratory wildlife corridors or impede use of native wildlife nursery sites (BIO-D) (potentially significant, to be determined at project level)
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan (BIO-F) (potentially significant, to be determined at project level)
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (GHG-A)
- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies (NOI-A) (potentially significant, to be determined at project level)
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity, above levels existing without the project (NOI-D) (potentially significant, to be determined at project level)
- Conflict with an applicable plan, ordinance, or policy that establishes measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel, and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, and pedestrian and bicycle paths (TRA-A) (potentially significant, to be determined at project level)

5.3 Alternatives Considered but Rejected

Section 15126.6(a) of the State CEQA Guidelines states that an EIR shall describe "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain

most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project," as well as provide an evaluation of "the comparative merits of the alternatives." Under Section 15126.6(a), an EIR does not need to consider alternatives that are not feasible, nor need it address every conceivable alternative to the project. The range of alternatives "is governed by the 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice." The focus is on informed decision-making and public participation rather than providing a set of alternatives simply to satisfy format.

As described below, two types of alternatives to the proposed program were considered—alternative locations and alternative methods—along with a No Program Alternative. Except for the No Program Alternative, all of these potential alternatives have been rejected, as described below.

5.3.1 Alternative Locations

Potential alternative pipeline locations are program feeder improvements, including the Allen-McColloch Pipeline, the Calabasas Feeder, the Rialto Pipeline, the Second Lower Feeder, and the Sepulveda Feeder, and are substantially constrained by the need to connect the existing pipelines at their origins and terminations and to the existing service connections. Any alternative location would also be constrained by the width of the existing Metropolitan rights-of-way. Such constraints mean that there is no reasonable way to achieve the objectives of the PCCP program by replacing the pipelines in other locations. Therefore, no alternative locations for the PCCP program were developed.

5.3.2 Alternative Methods

The program description includes various methods for rehabilitation of the pipelines, including steel cylinder relining, steel pipe sliplining, and new pipe replacement. All of these methods were considered in this Programmatic ~~program-level~~ EIR (PEIR) as variations within the program. There are no other feasible methods for rehabilitating the existing pipelines. Therefore, no alternative methods for the PCCP program were developed.

5.4 No Program Alternative

Under the No Program Alternative, repairs and improvements included in the proposed program would not be planned and scheduled. Because the pipelines and feeders would continue to age, there would be a continued risk for failure. Metropolitan would need to prevent failures through localized and as-needed improvements, but these activities would not occur as part of a planned program. Much of this rehabilitation would thus occur as "urgent repairs" because of the lack of a systematic planning offered by the proposed program.

5.4.1 Comparison of the Impacts of the No Program Alternative to the Proposed Program

The No Program Alternative would eventually require the same types of repairs and rehabilitation of the five pipelines within the proposed program, but this would occur without preplanning and scheduling and often as urgent repairs. The ability to locate excavations and other rehabilitation work in a manner that avoids impacts may be lessened due to the need to respond to urgent needs

of deteriorating pipelines. Therefore, impacts under the No Program Alternative would be the same as the proposed program, or may even be greater.

Table 5.4-1. Summary Table

Environmental Resource Area	Proposed Program	No Program
Aesthetics		
Threshold AES-A: Have a Substantial Adverse Effect on a Scenic Vista	Less than significant	Similar
Threshold AES-B: Substantially Damage Scenic Resources, Including, but not Limited to, Trees, Rock Outcroppings, and Historic Buildings within a State Scenic Highway	Less than significant	Similar
Threshold AES-C: Substantially Degrade the Existing Visual Character or Quality of the Site and Its Surroundings	Less than significant	Similar
Threshold AES-D: Create a New Source of Substantial Light or Glare that Would Adversely Affect Day or Nighttime Views in the Area	Less than significant with mitigation	Similar or worse, if urgent repairs required nighttime work with lighting
Agriculture & Forestry Resources		
Threshold AGR-A: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland) to Non-Agricultural Use	Less than significant	Similar
Threshold AGR-E: Involve Other Changes in the Existing Environment that, Because of Their Location or Nature, Could Result in the Conversion of Farmland to Non-Agricultural Use	Less than significant	Similar
Air Quality		
Threshold AQ-A: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan	Significant and unavoidable	Similar
Threshold AQ-B: Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation	Significant and unavoidable	Similar
Threshold AQ-C: Result in a Cumulatively Considerable Net Increase in Any Criteria Pollutant for Which the Region Is in Non-Attainment under an Applicable Federal or State Ambient Air Quality Standard	Significant and unavoidable	Similar
Threshold AQ-D: Expose Sensitive Receptors to Substantial Pollutant Concentrations	Significant and unavoidable	Similar
Biological Resources		
Threshold BIO-A: Have a Substantial Adverse Effect, either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service	Potentially significant and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts either by location or season

Environmental Resource Area	Proposed Program	No Program
Threshold BIO-B: Have a Substantial Adverse Effect on Any Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans, Policies, or Regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service	Potentially significant and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts by location
Threshold BIO-C: Have a Substantial Adverse Effect on Federally Protected Wetlands, as Defined by Section 404 of the Clean Water Act, through Direct Removal, Filling, Hydrological Interruption, or Other Means	Potentially significant and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts by location
Threshold BIO-D: Interfere Substantially with the Movement of Any Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors or Impede the Use of Native Wildlife Nursery Sites	Potentially significant and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts by location
Threshold BIO-E: Conflict with Any Local Policies or Ordinances Protecting Biological Resources, Such as a Tree Preservation Policy or Ordinance	Less than significant with mitigation	Similar or worse, if urgent repairs prevent ability to avoid impacts by location
Threshold BIO-F: Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan	Potentially significant and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts either by location or season
Cultural Resources		
Threshold CUL-A: Cause a Substantial Adverse Change in the Significance of a Historical Resource	Less than significant with mitigation	Similar or worse, if urgent repairs prevent ability to avoid impacts by location or to fully implement mitigation to protect resources
Threshold CUL-B: Cause a Substantial Adverse Change in the Significance of an Archaeological Resource	Less than significant with mitigation	Similar or worse, if urgent repairs prevent ability to avoid impacts by location or to fully implement mitigation to protect resources

Environmental Resource Area	Proposed Program	No Program
Threshold CUL-C: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geologic Feature	Less than significant with mitigation	Similar or worse, if urgent repairs prevent ability to avoid impacts by location or to fully implement mitigation to protect resources
Geology and Soils		
Threshold GEO-A.I: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Rupture of a Known Earthquake Fault	Less than significant	Similar
Threshold GEO-A.II: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Strong Seismic Groundshaking	Less than significant	Similar
Threshold GEO-A.III: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Seismically Related Ground Failure, Including Liquefaction	Less than significant	Similar
Threshold GEO-A.IV: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Landslides	Less than significant	Similar
Threshold GEO-B: Result in Substantial Soil Erosion or the Loss of Topsoil	Less than significant	Similar
Threshold GEO-C: Be Located on a Geologic Unit or Soil that Is Unstable, or that Would Become Unstable as a Result of the Project, and Potentially Result in On- or Off-Site Landslide, Lateral Spreading, Subsidence, Liquefaction, or Collapse	Less than significant	Similar
Threshold GEO-D: Be Located on Expansive Soil, Creating Substantial Risks to Life or Property	Less than significant	Similar
Greenhouse Gas Emissions		
Threshold GHG-A: Generate Greenhouse Gas Emissions, either Directly or Indirectly, that May Have a Significant Impact on the Environment	Significant and unavoidable	Similar
Threshold GHG-B: Conflict with Any Applicable Plan, Policy, or Regulation of an Agency Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases	Less than significant	Similar
Hazards and Hazardous Materials		
Threshold HAZ-A: Create a Significant Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials	Less than significant	Similar

Environmental Resource Area	Proposed Program	No Program
Threshold HAZ-B: Create a Significant Hazard to the Public or the Environment through Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment	Less than significant	Similar
Threshold HAZ-C: Emit Hazardous Emissions or Involve Handling Hazardous or Acutely Hazardous Materials, Substances, or Waste within 0.25 Mile of an Existing or Proposed School	Less than significant with mitigation	Similar
Threshold HAZ-D: Be Located on a Site That Is Included on a List of Hazardous Materials Sites and, as a Result, Create a Significant Hazard to the Public or the Environment	Less than significant with mitigation	Similar
Threshold HAZ-E: For a Project Located within an Airport Land Use Plan or, Where Such Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport, Result in a Safety Hazard for People Residing or Working in the Project Area	Less than significant with mitigation	Similar
Threshold HAZ-F: For a Project within the Vicinity of a Private Airstrip, Result in a Safety Hazard for People Residing or Working in the Project Area	No impacts	Similar
Threshold HAZ-G: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan	Less than significant with mitigation	Similar or worse if urgent repairs prevent implantation of mitigation to avoid or reroute emergency routes and make advance notifications
Threshold HAZ-H: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Wildland Fires, Including Areas where Wildlands Are Adjacent to Urbanized Areas or where Residences Are Intermixed with Wildlands	Less than significant	Similar
Hydrology and Water Quality		
Threshold WQ-A: Violate Any Water Quality Standards or Waste Discharge Requirements	Less than significant	Similar
Threshold WQ-C: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including through the Alteration of the Course of a Stream or River, in a Manner that Would Result in Substantial Erosion or Siltation On or Off Site	Less than significant	Similar
Threshold WQ-D: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including through the Alteration of the Course of a Stream or River, or Substantially Increase the Rate or Amount of Surface Runoff in a Manner That Would Result in Flooding On or Off Site	Less than significant with mitigation	Similar

Environmental Resource Area	Proposed Program	No Program
Threshold WQ-E: Create or Contribute Runoff Water that Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems or Provide Substantial Additional Sources of Polluted Runoff	Less than significant	Similar
Threshold WQ-J: Expose People or Structures to Inundation by Seiche, Tsunami, or Mudflow	Less than significant	Similar
Land Use		
Threshold LU-A: Physically Divide an Established Community	Less than significant	Similar
Threshold LU-B: Conflict with Applicable Land Use Plan, Policy, or Regulation of an Agency with Jurisdiction over the Project Adopted for the Purpose of Avoiding or Mitigating an Environmental Effect	Less than significant	Similar
Noise		
Threshold NOI-A: Expose Persons to or Generate Noise Levels in Excess of Standards Established in the Local General Plan or Noise Ordinance or Applicable Standards of Other Agencies	Significant ~~Potentially significant~~ and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts by location or require nighttime work
Threshold NOI-B: Expose Persons to or Generate Excessive Groundborne Vibration or Groundborne Noise Levels	Less than significant with mitigation	Similar or worse, if urgent repairs prevent ability to avoid impacts by location
Threshold NOI-C: Result in a Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity, Above Levels Existing without the Project	No impact	Similar
Threshold NOI-D: Result in a Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity, Above Levels Existing without the Project	Significant ~~Potentially significant~~ and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts by location or require nighttime work
Threshold NOI-E: For a Project Located within an Airport Land Use Plan or, Where Such a Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport, Expose People Residing or Working in the Project Area to Excessive Noise Levels	Less than significant	Similar
Threshold NOI-F: For a Project within the Vicinity of a Private Airstrip, Expose People Residing or Working in the Project Area to Excessive Noise Levels	No impact	Similar
Recreation		
Threshold REC-A: Increase the Use of Existing Neighborhood and Regional Parks or Other Recreational Facilities Such That Substantial Physical Deterioration of the Facilities Would Occur or Be Accelerated	Less than significant	Similar or worse, if urgent repairs prevent ability to avoid impacts by location

Environmental Resource Area	Proposed Program	No Program
Threshold REC-B: Include Recreational Facilities or Require the Construction or Expansion of Recreational Facilities, Which Might Have an Adverse Physical Effect on the Environment	No impact	Similar
Transportation and Traffic		
Threshold TRA-A: Conflict with an Applicable Plan, Ordinance, or Policy that Establishes Measures of Effectiveness for the Performance of the Circulation System, Taking into Account All Modes of Transportation, Including Mass Transit and Non-Motorized Travel, and Relevant Components of the Circulation System, Including, but not Limited to, Intersections, Streets, Highways and Freeways, and Pedestrian and Bicycle Paths	Significant ~~Potentially significant~~ and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts by location, planning and coordination with local jurisdictions, advance notifications, and provision of detours and adequate parking
Threshold TRA-B: Conflict with an Applicable Congestion Management Program, Including, but not Limited to, Level-of-Service Standards and Travel Demand Measures or Other Standards Established by the County Congestion Management Agency for Designated Roads or Highways	Less than significant	Similar
Threshold TRA-C: Result in a Change in Air Traffic Patterns, Including either an Increase in Traffic Levels or a Change in Location that Would Result in Substantial Safety Risks	Less than significant with mitigation	Similar or worse if urgent repairs occur in active runway areas
Threshold TRA-D: Substantially Increase Hazards Due to a Design Feature or Incompatible Uses	Less than significant with mitigation	Similar or worse if urgent repairs occur in locations resulting in hazardous condition
Threshold TRA-E: Result in Inadequate Emergency Access	Less than significant with mitigation	Similar or worse if urgent repairs affect emergency access
Threshold TRA-F: Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities or Otherwise Decrease the Performance or Safety of Such Facilities	Less than significant with mitigation	Similar or worse, if urgent repairs prevent ability to avoid impacts by location and provision of detours
Utilities and Service Systems		
Threshold UTIL-A: Exceed Wastewater Treatment Requirements of the Applicable Regional Water Quality Control Board	Less than significant	Similar

Environmental Resource Area	Proposed Program	No Program
Threshold UTIL-B: Require or Result in the Construction of New Water or Wastewater Treatment Facilities or the Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects	No impact	Similar
Threshold UTIL-C: Require or Result in the Construction of New Stormwater Drainage Facilities or the Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects	No impact	Similar
Threshold UTIL-D: Have Sufficient Water Supplies Available to Serve the Project from Existing Entitlements and Resources, or Are New and Expanded Entitlements Needed	No impact	Similar
Threshold UTIL-E: Result in a Determination by the Wastewater Treatment Provider that Serves or May Serve the Project that it Has Adequate Capacity to Serve the Project's Projected Demand in Addition to its Existing Commitments	No impact	Similar
Threshold UTIL-F: Be Served by a Landfill with Sufficient Permitted Capacity to Accommodate the Project's Solid Waste Disposal Needs	Less than significant	Similar
Threshold UTIL-G: Comply with Federal, State, and Local Statutes and Regulations Related to Solid Waste	Less than significant	Similar
Energy Conservation		
Threshold ENE-A: Use Energy in an Inefficient, Wasteful, or Unnecessary Manner	Less than significant	Similar

5.5 Summary of Alternatives Analysis and Identification of the Environmentally Superior Alternative

5.5.1 Resources with Significant and Unavoidable Impacts

The No Program Alternative would have similar or worse impacts for all significant and unavoidable impacts as described in Table 5.4-1.

Chapter 6
Other CEQA Considerations

6.1 Effects Found Not to Be Significant

The proposed program was initially evaluated through the Initial Study Checklist (Appendix A). The Initial Study Checklist identified that the following impacts would be less than significant (or there would be no impact) and would not be evaluated in the PEIR.

- Threshold AGR-B: Conflict with Existing Zoning for Agricultural Use or a Williamson Act Contract
- Threshold AGR-C: Conflict with Existing Zoning for, or Cause Rezoning of, Forest Land (as Defined by Public Resources Code Section 12220(g)), Timberland (as defined by Public Resources Code Section 4526), or Timberland Zoned Timberland Production (as defined by Government Code Section 551104(g))
- Threshold AGR-D: Result in the Loss of Forest Land or Conversion of Forest Land to Non-forest Use
- Threshold GEO-E: Have Soils Incapable of Adequately Supporting the Use of Septic Tanks or Alternative Wastewater Disposal Systems Where Sewers are not Available for the Disposal of Wastewater
- Threshold WQ-B: Substantially Deplete Groundwater Supplies or Interfere Substantially with Groundwater Recharge Such that There Would be a Net Deficit in Aquifer Volume or a Lowering of the Local Groundwater Table Level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)
- Threshold WQ-G: Place Housing Within a 100-Year Flood Hazard Area, as Mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or Other Flood Hazard Delineation Map
- Threshold WQ-H: Place Within a 100-Year Flood Hazard Area Structures that Would Impede or Redirect Floodflows
- Threshold WQ-I: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Flooding, Including Flooding as a Result of the Failure of a Levee or Dam

As discussed in Chapter 4, *Environmental Analysis*, the following impacts would be less than significant (or there would be no impacts).

- Threshold AES-A: Have a Substantial Adverse Effect on a Scenic Vista
- Threshold AES-B: Substantially Damage Scenic Resources, Including, but not Limited to, Trees, Rock Outcroppings, and Historic Buildings within a State Scenic Highway
- Threshold AES-C: Substantially Degrade the Existing Visual Character or Quality of the Site and Its Surroundings
- Threshold AGR-A: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland) to Non-Agricultural Use

- Threshold AGR-E: Involve Other Changes in the Existing Environment that, Because of Their Location or Nature, Could Result in the Conversion of Farmland to Non-Agricultural Use
- Threshold GEO-A.I: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Rupture of a Known Earthquake Fault
- Threshold GEO-A.II: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Strong Seismic Groundshaking
- Threshold GEO-A.III: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Seismically Related Ground Failure, Including Liquefaction
- Threshold GEO-A.IV: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Landslides
- Threshold GEO-B: Result in Substantial Soil Erosion or the Loss of Topsoil
- Threshold GEO-C: Be Located on a Geologic Unit or Soil that Is Unstable, or that Would Become Unstable as a Result of the Project, and Potentially Result in On- or Off-Site Landslide, Lateral Spreading, Subsidence, Liquefaction, or Collapse
- Threshold GEO-D: Be Located on Expansive Soil, Creating Substantial Risks to Life or Property
- Threshold GHG-B: Conflict with Any Applicable Plan, Policy, or Regulation of an Agency Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases
- Threshold HAZ-A: Create a Significant Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials
- Threshold HAZ-B: Create a Significant Hazard to the Public or the Environment through Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment
- Threshold HAZ-F: For a Project within the Vicinity of a Private Airstrip, Result in a Safety Hazard for People Residing or Working in the Project Area
- Threshold HAZ-H: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Wildland Fires, Including Areas where Wildlands Are Adjacent to Urbanized Areas or where Residences Are Intermixed with Wildlands
- Threshold WQ-A: Violate Any Water Quality Standards or Waste Discharge Requirements
- Threshold WQ-C: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including through the Alteration of the Course of a Stream or River, in a Manner that Would Result in Substantial Erosion or Siltation On or Off Site
- Threshold WQ-E: Create or Contribute Runoff Water that Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems or Provide Substantial Additional Sources of Polluted Runoff
- Threshold WQ-J: Expose People or Structures to Inundation by Seiche, Tsunami, or Mudflow
- Threshold LU-A: Physically Divide an Established Community

- Threshold LU-B: Conflict with Applicable Land Use Plan, Policy, or Regulation of an Agency with Jurisdiction over the Project Adopted for the Purpose of Avoiding or Mitigating an Environmental Effect
- Threshold NOI-C: Result in a Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity, Above Levels Existing without the Project
- Threshold NOI-E: For a Project Located within an Airport Land Use Plan or, Where Such a Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport, Expose People Residing or Working in the Project Area to Excessive Noise Levels
- Threshold NOI-F: For a Project within the Vicinity of a Private Airstrip, Expose People Residing or Working in the Project Area to Excessive Noise Levels
- Threshold REC-A: Increase the Use of Existing Neighborhood and Regional Parks or Other Recreational Facilities Such That Substantial Physical Deterioration of the Facilities Would Occur or Be Accelerated
- Threshold REC-B: Include Recreational Facilities or Require the Construction or Expansion of Recreational Facilities, Which Might Have an Adverse Physical Effect on the Environment
- Threshold TRA-B: Conflict with an Applicable Congestion Management Program, Including, but not Limited to, Level-of-Service Standards and Travel Demand Measures or Other Standards Established by the County Congestion Management Agency for Designated Roads or Highways
- Threshold UTIL-A: Exceed Wastewater Treatment Requirements of the Applicable Regional Water Quality Control Board
- Threshold UTIL-B: Require or Result in the Construction of New Water or Wastewater Treatment Facilities or the Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects
- Threshold UTIL-C: Require or Result in the Construction of New Stormwater Drainage Facilities or the Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects
- Threshold UTIL-D: Have Sufficient Water Supplies Available to Serve the Project from Existing Entitlements and Resources, or Are New and Expanded Entitlements Needed
- Threshold UTIL-E: Result in a Determination by the Wastewater Treatment Provider that Serves or May Serve the Project that it Has Adequate Capacity to Serve the Project's Projected Demand in Addition to its Existing Commitments
- Threshold UTIL-F: Be Served by a Landfill with Sufficient Permitted Capacity to Accommodate the Project's Solid Waste Disposal Needs
- Threshold UTIL-G: Comply with Federal, State, and Local Statutes and Regulations Related to Solid Waste
- Threshold ENE-A: Use Energy in an Inefficient, Wasteful, or Unnecessary Manner

As discussed in Chapter 4, *Environmental Analysis*, the following impacts would be less than significant with incorporation of mitigation.

- Threshold AES-D: Create a New Source of Substantial Light or Glare that Would Adversely Affect Day or Nighttime Views in the Area

- Threshold BIO-E: Conflict with Any Local Policies or Ordinances Protecting Biological Resources, Such as a Tree Preservation Policy or Ordinance
- Threshold CUL-A: Cause a Substantial Adverse Change in the Significance of a Historical Resource
- Threshold CUL-B: Cause a Substantial Adverse Change in the Significance of an Archaeological Resource
- Threshold CUL-C: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geologic Feature
- Threshold HAZ-C: Emit Hazardous Emissions or Involve Handling Hazardous or Acutely Hazardous Materials, Substances, or Waste within 0.25 Mile of an Existing or Proposed School
- Threshold HAZ-D: Be Located on a Site That Is Included on a List of Hazardous Materials Sites and, as a Result, Create a Significant Hazard to the Public or the Environment
- Threshold HAZ-E: For a Project Located within an Airport Land Use Plan or, Where Such Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport, Result in a Safety Hazard for People Residing or Working in the Project Area
- Threshold HAZ-G: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan
- Threshold WQ-D: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including through the Alteration of the Course of a Stream or River, or Substantially Increase the Rate or Amount of Surface Runoff in a Manner That Would Result in Flooding On or Off Site
- Threshold NOI-B: Expose Persons to or Generate Excessive Groundborne Vibration or Groundborne Noise Levels
- Threshold TRA-C: Result in a Change in Air Traffic Patterns, Including either an Increase in Traffic Levels or a Change in Location that Would Result in Substantial Safety Risks
- Threshold TRA-D: Substantially Increase Hazards Due to a Design Feature or Incompatible Uses
- Threshold TRA-E: Result in Inadequate Emergency Access
- Threshold TRA-F: Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities or Otherwise Decrease the Performance or Safety of Such Facilities

6.2 Unavoidable Adverse Effects

As discussed in Chapter 4, *Environmental Analysis*, the following impacts would be significant, even with the incorporation of mitigation (or potentially significant, requiring analysis at the project level).

- Threshold AQ-A: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan
- Threshold AQ-B: Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation

- Threshold AQ-C: Result in a Cumulatively Considerable Net Increase in Any Criteria Pollutant for Which the Region Is in Non-Attainment under an Applicable Federal or State Ambient Air Quality Standard
- Threshold AQ-D: Expose Sensitive Receptors to Substantial Pollutant Concentrations
- Threshold BIO-A: Have a Substantial Adverse Effect, either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Threshold BIO-B: Have a Substantial Adverse Effect on Any Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans, Policies, or Regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service
- Threshold BIO-C: Have a Substantial Adverse Effect on Federally Protected Wetlands, as Defined by Section 404 of the Clean Water Act, through Direct Removal, Filling, Hydrological Interruption, or Other Means
- Threshold BIO-D: Interfere Substantially with the Movement of Any Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors or Impede the Use of Native Wildlife Nursery Sites
- Threshold BIO-F/LU-C: Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan
- Threshold GHG-A: Generate Greenhouse Gas Emissions, either Directly or Indirectly, that May Have a Significant Impact on the Environment
- Threshold NOI-A: Expose Persons to or Generate Noise Levels in Excess of Standards Established in the Local General Plan or Noise Ordinance or Applicable Standards of Other Agencies
- Threshold NOI-D: Result in a Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity, Above Levels Existing without the Project
- Threshold TRA-A: Conflict with an Applicable Plan, Ordinance, or Policy that Establishes Measures of Effectiveness for the Performance of the Circulation System, Taking into Account All Modes of Transportation, Including Mass Transit and Non-Motorized Travel, and Relevant Components of the Circulation System, Including, but not Limited to, Intersections, Streets, Highways and Freeways, and Pedestrian and Bicycle Paths

6.3 CEQA Mandatory Findings of Significance

CEQA Guidelines Section 15065 requires that an EIR be prepared if there is substantial evidence, in light of the whole record, that any of the following conditions may occur:

- The project has the potential to: substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of major periods of California history or prehistory.

- The project has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
- The project has possible effects that are individually limited but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.
- The environmental effects of a project would cause substantial adverse effects on human beings, either directly or indirectly.

Because the proposed program has the potential to result in such significant effects, this PEIR was prepared. The following provides a summary of the conclusions in this PEIR regarding these mandatory findings of significance.

6.3.1 Substantially Degrade the Quality of the Environment

This PEIR identified significant or potentially significant environmental impacts that may not be reduced to less-than-significant levels by mitigation to air quality, biological resources, greenhouse gas emissions, noise, and traffic. Because these impacts may not be reduced to less-than-significant levels, there is the potential that projects within the proposed PCCP Rehabilitation Program could substantially degrade the environment. These impacts are as follows:

- *Conflict with or obstruct implementation of the applicable air quality plan* (see Section 4.3.5.1, Threshold AQ-A) because construction-period emissions from projects in the PCCP Rehabilitation Program would exceed regional mass emissions thresholds developed to aid the South Coast Air Basin in achieving attainment for those pollutants for which it is nonattainment.
- *Violate any air quality standard or contribute substantially to an existing or projected air quality violation* (see Section 4.3.5.1, Threshold AQ-B) because localized emissions from construction activities that would occur at a given rehabilitation site and in its immediate vicinity for projects in the PCCP Rehabilitation Program would exceed localized significance thresholds for nitrogen oxides and particulate matter 2.5 microns or less.
- *Result in cumulatively considerable net increase in any criteria pollutant for which the region is in non-attainment under an applicable federal or state ambient air quality standard* (see Section 4.3.5.1, Threshold AQ-C) because the projects in the PCCP Rehabilitation Program would exceed regional mass emissions thresholds for carbon monoxide and nitrogen oxides.
- *Expose sensitive receptors to substantial pollutant concentrations* (see Section 4.3.5.1, Threshold AQ-D) because localized emissions from construction activities that would occur at a given rehabilitation site and in its immediate vicinity for projects in the PCCP Rehabilitation Program would exceed localized significance thresholds for nitrogen oxides and particulate matter 2.5 microns or less.
- *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service* (see Section 4.4.5.1, Threshold BIO-A) because there is the potential for candidate, sensitive, or special-status species to occur in proximity to projects within the PCCP Rehabilitation Program and various rehabilitation activities could affect these species, and

because rehabilitation activities could affect bird nests or eggs protected under the Migratory Bird Treaty Act and Section 35.03 of the California Fish and Game Code.

- *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service* (see Section 4.4.5.1, Threshold BIO-B) because there is the potential for riparian habitat or other sensitive natural communities to occur in proximity to projects within the PCCP Rehabilitation Program and various rehabilitation activities could affect these communities.
- *Have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act, through direct removal, filling, hydrological interruption, or other means* (see Section 4.4.5.1, Threshold BIO-C) because there is the potential for wetlands to occur in proximity to projects within the PCCP Rehabilitation Program and various rehabilitation activities could affect these wetlands.
- *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites* (see Section 4.4.5.1, Threshold BIO-D) because there is the potential for migration corridors or nursery sites to occur in proximity to projects within the PCCP Rehabilitation Program and various rehabilitation activities could affect these resources.
- *Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan* (see Section 4.4.5.1, Threshold BIO-F) because projects within the PCCP Rehabilitation Program may conflict with the adopted Shell Western Energy and Petroleum and Metropolitan Habitat Conservation Plan, the Central and Coastal Natural Community Conservation Plan/Habitat Conservation Plan, and the proposed North Fontana Multispecies Habitat Conservation Plan.
- *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment* (See Section 4.7.5.1, Threshold GHG-A) because construction of the full PCCP Rehabilitation Program would result in amortized annual emissions of greenhouse gases that would exceed the South Coast Air Quality Management threshold.
- *Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies* (see Section 4.11.5.1, Threshold NOI-A) because noise levels during rehabilitation would be likely to exceed noise-level restrictions set by some local jurisdictions at some locations.
- *Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity, above levels existing without the project* (see Section 4.11.5.1, Threshold NOI-D) because noise levels in some locations would result in substantial temporary increases in ambient noise levels in the vicinity of construction, above existing levels.
- *Conflict with an applicable plan, ordinance, or policy that establishes measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel, and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, and pedestrian and bicycle paths* (see Section 4.13.5.1, Threshold TRA-1) because the disruption of local and regional traffic caused by the capacity reduction of streets in the proximity of projects in the PCCP Rehabilitation Program could be significant.

6.3.2 Substantially Reduce the Habitat of a Fish or Wildlife Species

This PEIR identified potentially significant environmental impacts on candidate, sensitive, or special-status species that may occur in proximity to projects within the PCCP Rehabilitation Program, and various rehabilitation activities could affect these species, including the reduction of habitat (see Section 4.4.5.1, Threshold BIO-A). Impacts on riparian habitat or other sensitive natural communities may also occur, affecting fish or wildlife species using this habitat (see Section 4.4.5.1, Threshold BIO-B). Adverse effects on wetlands may also occur, affecting fish or wildlife species using this habitat (see Section 4.4.5.1, Threshold BIO-C). Rehabilitation may also affect wildlife corridors or nursery sites (see Section 4.4.5.1, Threshold D). Projects in the proposed program may also conflict with provisions in adopted habitat conservation plans or natural community conservation plans (see Section 4.4.5.1, Threshold BIO-F). The level of the impacts identified above cannot be determined at the program level, and project-level analysis will determine if the impact is substantial.

6.3.3 Cause a Fish or Wildlife Population to Drop below Self-Sustaining Levels

This PEIR identified potentially significant environmental impacts on candidate, sensitive, or special-status species that may occur in proximity to projects within the PCCP Rehabilitation Program, and various rehabilitation activities could affect these species, including the reduction of habitat (see Section 4.4.5.1, Threshold BIO-A). Projects in the proposed program may also conflict with provisions in adopted habitat conservation plans or natural community conservation plans (see Section 4.4.5.1, Threshold BIO-F). Although these impacts would be unlikely to reduce fish or wildlife populations, causing them to drop below self-sustaining levels, the impacts of the projects in the PCCP Rehabilitation Program could contribute to cumulative impacts that could affect population levels. The level of the impacts identified above cannot be determined at the program level, and project-level analysis will determine whether the projects would result in population loss either individually or cumulatively.

6.3.4 Threaten to Eliminate a Plant or Animal Community

This PEIR identified potentially significant environmental impacts on candidate, sensitive, or special-status species that may occur in proximity to projects within the PCCP Rehabilitation Program, and various rehabilitation activities could affect these species (see Section 4.4.5.1, Threshold BIO-A). Impacts on riparian habitat or other sensitive natural communities may also occur (see Section 4.4.5.1, Threshold BIO-B). Adverse effects on wetlands may also occur (see Section 4.4.5.1, Threshold BIO-C). Rehabilitation may also affect wildlife corridors or nursery sites (see Section 4.4.5.1, Threshold D). Projects in the proposed program may also conflict with provisions in adopted habitat conservation plans or natural community conservation plans (see Section 4.4.5.1, Threshold BIO-F). Although these impacts would be unlikely to eliminate a plant or animal community, the impacts of the projects in the PCCP Rehabilitation Program could contribute to cumulative impacts that could threaten to eliminate a plant or animal community. The level of the impacts identified above cannot be determined at the program level, and project-level analysis will determine whether the projects would result in the elimination of a plant or animal community either individually or cumulatively.

6.3.5 Substantially Reduce the Number or Restrict the Range of an Endangered, Rare, or Threatened Species

This PEIR identified potentially significant environmental impacts on candidate, sensitive, or special-status species that may occur in proximity to projects within the PCCP Rehabilitation Program, and various rehabilitation activities could affect these species, including the reduction of habitat (see Section 4.4.5.1, Threshold BIO-A). Projects in the proposed program may also conflict with provisions in adopted habitat conservation plans or natural community conservation plans (see Section 4.4.5.1, Threshold BIO-F). The level of the impacts identified above cannot be determined at the program level, and project-level analysis will determine if the impacts would substantially reduce the number or restrict the range of endangered, rare, or threatened species, either individually or by contributing to a cumulative impact.

6.3.6 Eliminate Important Examples of Major Periods of California History or Prehistory

This PEIR identified potentially significant impacts on historical resources (built environment) from groundborne vibration from excavation and concrete cutting (see Section 4.5.5.1, Threshold CUL-A). Mitigation would protect historical resources (MM CUL-1). The PEIR also identified a low potential to encounter known or unknown buried archaeological resources (see Section 4.5.5.1, Threshold CUL-B). Mitigation would protect archaeological resources (MM CUL-2, MM CUL-3, MM CUL-4, and MM CUL-5). With implementation of the mitigation measures, projects in the proposed program would not eliminate important examples of major periods of California history or prehistory.

6.3.7 Achieve Short-Term Environmental Goals to the Disadvantage of Long-Term Environmental Goals

The PCCP Rehabilitation Program objectives are to reduce the risk of unplanned outages, extend the service life of pipelines, perform rehabilitation work in a cost-effective manner, minimize the effects of rehabilitation efforts on Member Agency deliveries, minimize the loss of hydraulic capacity caused by rehabilitation, and improve system operational and emergency flexibility. These objectives represent short-term goals as well as long-term environmental goals. Impacts of rehabilitation would generally be limited to the construction period. No changes in land use would occur. Once rehabilitation is complete, there would be no additional impacts and the system would be less likely to be at risk for unplanned outages. Therefore, the proposed program would not achieve short-term environmental goals to the disadvantage of long-term environmental goals.

6.3.8 Have Possible Effect That Are Individually Limited but Cumulatively Considerable

Although most of the impacts of the project in the PCCP Rehabilitation Program would be localized and short-term during the construction period, some impacts could contribute to cumulative impacts. These include the following:

- Conflict with or obstruct implementation of the applicable air quality plan (see Section 4.3.5.2)
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation (see Section 4.3.5.2)

- Result in cumulatively considerable net increase in any criteria pollutant for which the region is in non-attainment under an applicable federal or state ambient air quality standard (see Section 4.3.5.2)
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan (see Section 4.4.5.2)
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (See Section 4.7.5.2)
- Conflict with an applicable plan, ordinance, or policy that establishes measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel, and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, and pedestrian and bicycle paths (see Section 4.13.5.2)

6.3.9 Cause Substantial Adverse Effects on Human Beings, Either Directly or Indirectly

This PEIR identified potentially substantial adverse effects on human beings in the following ways:

- Conflict with or obstruct implementation of the applicable air quality plan (see Section 4.3.5.1, Threshold AQ-A)
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation (see Section 4.3.5.1, Threshold AQ-B)
- Result in cumulatively considerable net increase in any criteria pollutant for which the region is in non-attainment under an applicable federal or state ambient air quality standard (see Section 4.3.5.1, Threshold AQ-C)
- Expose sensitive receptors to substantial pollutant concentrations (see Section 4.3.5.1, Threshold AQ-D)
- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment (See Section 4.7.5.1, Threshold GHG-A)
- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies (see Section 4.11.5.1, Threshold NOI-A)
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity, above levels existing without the project (see Section 4.11.5.1, Threshold NOI-D)
- Conflict with an applicable plan, ordinance, or policy that establishes measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel, and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, and pedestrian and bicycle paths (see Section 4.13.5.1, Threshold TRA-1)

6.4 Growth Inducement

A proposed action can result in growth inducement if it would foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Growth inducement may include actions that would remove obstacles to population growth or encourage or facilitate growth.

The PCCP Rehabilitation Program would rehabilitate existing pipelines. It would not increase the capacity of the pipelines nor add additional pipelines. Therefore, it would not foster economic or population growth or result in the construction of additional housing. It would not remove obstacles to population growth or encourage or facilitate growth.

6.5 Significant Irreversible Changes

The State CEQA Guidelines mandate that an EIR address any significant irreversible environmental changes that would occur if the proposed action were implemented (State CEQA Guidelines Section 15126.2(s)). Such effects would occur if:

- The proposed action would involve a large commitment of nonrenewable resources;
- The primary or secondary impacts of the proposed action would generally commit future generations to similar uses;
- The proposed action could result in environmental accidents; or
- The proposed action would involve consumption of resources that are not justified.

The PCCP Rehabilitation Program would use nonrenewable resources in the form of construction materials and energy resources. Use of these resources, however, would not represent a large commitment of resources because rehabilitation would occur over a 25-year period and would not negatively affect their availability.

The proposed program would not change land uses because it would include rehabilitation of existing pipelines. In addition, the pipelines are located underground, primarily in street rights-of-way, allowing other uses of the land above the pipelines. Therefore, the proposed program would not commit future generations to similar uses.

The PCCP Rehabilitation Program, with mitigation discussed in Section 4.7, *Hazards and Hazardous Materials,* would not result in significant risks of environmental accidents.

Although the proposed program would involve the consumption of resources, this consumption is justified because rehabilitation of the pipelines would reduce risks of pipeline failures that could result in loss of water resources.

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Chapter 7
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Chapter 8
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Chapter 9
Responses to Comments

9.1 Comments Received on Draft PEIR

State Water Resources Control Board

November 7, 2016

Mr. Hans Vandenberg
The Metropolitan Water District of Southern California
Environmental Planning Team
P.O. Box 54143 Los Angeles, California 90054-0153

Dear Mr. Vandenberg

INFORMAL COMMENTS ON THE DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED PRESTRESSED CONCRETE CYLINDER PIPE REHABILITATION PROGRAM, STATE CLEARINGHOUSE NO. 2014121055

State Water Resources Control Board (State Water Board) staff received the Metropolitan Water District of Southern California (Metropolitan Water District) Draft Program Environmental Impact Report (DPEIR) for the Concrete Cylinder Pipe Rehabilitation Program (Project) on September 6, 2016. I recognize the DPEIR comment period closed but the Metropolitan Water District may find these comments useful while preparing any related WQC application materials.

The proposed Project entails rehabilitating approximately 100 miles of five existing subsurface water delivery pipelines by either relining existing pipe with steel or replacing existing pipe with new welded steel pipe. The size and scope of the DEIR does not allow a comprehensive review of all details in the time provided. Therefore, this review covers general topics of concern that need to be addressed in order for Water Board staff to evaluate project impacts to waters of the state.

1

The Water Boards expect that for any project subject to their permitting authority, every effort will be made to avoid and minimize impacts to all waters of the state to the maximum extent practicable, and to ensure no net loss of any waters or their beneficial uses. State Water Board staff will work with the project proponents and other regulatory agencies to ensure that this goal is met by ensuring project activities are protective of beneficial uses. Although we recognize the importance of this Project, it has the potential to adversely impact water quality and beneficial uses during construction as well as over the life of the Project.

California law protects all waters of the state. All surface waters and groundwater are considered waters of the state, which include, but are not limited to, aquifers, drainages, streams, washes, ponds, pools, wetlands, concrete-lined channels and flood control channels.

In order for Water Board staff to fully evaluate all potential project impacts to water quality and hydrology we request a full delineation of surface water resources be performed. Many small, ephemeral drainages that are not represented as blue-line features on topographic maps and

1 cont. lack riparian vegetation may still be considered waters of the State and thus can be subject to Water Board jurisdiction. Metropolitan Water District must clearly identify all surface water resources within the Project area and evaluate the Project's potential impacts on these resources, both on site and off site, upstream and downstream.

2 In the event that unavoidable impacts occur, mitigation for the loss of area or beneficial use function mitigation shall be provided. Project impacts may all be temporary, but it should be noted that the Water Board requires on-site in-kind mitigation for all temporary impacts. In addition, the DEIR does not discuss any compensatory mitigation options. Temporary impacts not restored to pre-project condition within a specified amount of time (most typically one-year) result in a temporal loss. Impacts resulting in a temporal loss and permanent impacts must be offset through compensatory mitigation. The Metropolitan Water District may want to prepare a description of on-site temporary impact mitigation activities, and, if anticipated, a description of mitigation for temporal loss or permanent impacts.

We encourage you describe how the project would affect beneficial uses. The Hydrology and Water Quality Section narrative description of Water Board beneficial uses is noted, but we ask the Metropolitan Water District list all beneficial uses impacted by Project activities and how those beneficial uses would be protected. Water Board Basin Plan Hydrologic Units are available online. You may also contact Water Board staff to request an ArcMap layer that geographically links beneficial uses to water features.

3 The Project falls within the jurisdiction of two Regional Water Boards, the Los Angeles Regional Water Board and the Santa Ana Regional Water Board. Since the Project spans more than one water quality control region, the State Water Board's Division of Water Quality is responsible for permitting activities that excavate or dredge in state waters or that add fill material to state waters. For those activities, the State Water Board issues a Clean Water Act 401 water quality certification, if the project proponent obtains a CWQS Section 404 permit from the United States Army Corps of Engineers; otherwise, a waste discharge requirement (WDR) would be issued. In addition, the State Water Board issues storm water construction permits for dischargers whose projects disturb more one or more acres of soil or whose projects disturbs less than one acre but are part of a larger common plan of development that in total disturbs one or more acres. Permits verify that project activities comply with water quality standards.

Efficient certification requires early coordination between all agencies and the Metropolitan Water District. We ask that the Metropolitan Water District contact us to schedule a pre-application consultation during which we will discuss project specific potential compensatory mitigation requirements and State Water Board certification procedures. Ideally, staff from the California Department of Fish and Wildlife and the United States Army Corps of Engineers will be present at this pre-application consultation.

4 Additionally, the State Water Board is proposing Procedures for Discharges of Dredged or Fill Material to Waters of the State (proposed Procedures), for inclusion in the Water Quality Control Plan for Inland Surface Waters and Enclosed Bays and Estuaries and Ocean Waters of California. The proposed Procedures consist of three major elements: 1) a statewide wetland area definition; 2) wetland delineation procedures; and 3) Procedures for the regulation of dredged or fill discharges to waters of the state. Future Project certifications or WDRs may be subject to requirements of the proposed Procedures depending on how certification application timing aligns with adoption of the proposed Procedures.

Thank you for your time. Water Board staff will work with the Metropolitan Water District to address these comments during our certification application process to ensure impacts to water quality and beneficial uses of water are avoided and minimized to the greatest practicable extent.

If you have any questions regarding this letter, please contact me at (916) 322-7789 (jean.bandura@waterboards.ca.gov) or Bill Orme, 401 Program Manager, at (916) 341-5464 (bill.orme@waterboards.ca.gov).

Sincerely,

Jean Bandura

9.2 Responses to Comments

9.2.1 Response to Comment 1

Comment noted. Metropolitan Water District of Southern California (Metropolitan) will work with State Water Board staff to avoid, minimize and/or mitigate impacts, as necessary if rehabilitation projects have the potential to adversely impact waters of the state.

The proposed Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program would include a series of rehabilitation projects, implemented incrementally over time. Construction may occur within or near impervious concrete channels, natural channels or streams, and natural land (hillsides and undeveloped areas), however most construction would generally take place in existing public rights-of-way, ensuring impacts on hydrology and water quality, including waters of the state, are minimized. Further analysis of future rehabilitation projects would include an evaluation of affected surface water resources. Additionally, as discussed in the Draft PEIR, Section 4.9.5.1, Threshold WQ-A, *Violate Any Water Quality Standards or Waste Discharge Requirements*, construction of each of the proposed projects will require individual construction discharge permits. In addition, as outlined in the hydrology and water quality analysis, Section 4.9.4.2, *Methodology,* Metropolitan would require all contractors to comply with all applicable regulations, including Municipal and Construction General Permits for all proposed projects in the PCCP Rehabilitation Program. Further, MM HYD-1, Implementation of a Grading and Drainage Plan, requires the implementation of grading and drainage plans developed in coordination with the city and/or county in which the project will be located. Because the work zone would be restored to existing conditions upon project completion, the Draft PEIR determined that impacts would be less than significant.

Water resources were also addressed in Section 4.2.5.1, Threshold BIO-C, *Have a Substantial Adverse Effect on Federally Protected Wetlands, as Defined by Section 404 of the Clean Water Act, through Direct Removal, Filling, Hydrological Interruptions, or Other Means.* The potential for the project to result in significant impacts to water resources was identified in the Draft PEIR, and mitigation was included to protect these resources (MM BIO-5, Adverse Impacts on Wetlands). This mitigation requires that pre-construction surveys be conducted at the project level, that any resource within 100 feet of ground disturbance be mapped and flagged for avoidance, and that other measures are taken to protect these surface water resources, including obtaining permits, if required. MM BIO-5, Adverse Impacts to Wetlands, has been revised to specifically include coordination with affected agencies and application for appropriate regulatory permits, if required.

9.2.2 Response to Comment 2

Comment noted. When the locations of ground-disturbing activities for future rehabilitation projects are known, Metropolitan will describe whether, and if so, how each project may affect beneficial uses and how such uses could be protected. Metropolitan will work with State Water Board staff, as necessary, if rehabilitation projects have the potential to adversely impact waters of the state to avoid, minimize and/or mitigate such impacts.

9.2.3 Response to Comment 3

Comment noted. The PCCP Rehabilitation Program falls within the jurisdiction of two Regional Water Boards, the Los Angeles Regional Water Board and the Santa Ana Regional Water Board. Where an individual rehabilitation project falls within the jurisdiction of two Regional Water Quality Control Boards and the project has the potential to adversely impact waters of the state, Metropolitan will coordinate with the State Water Board and other appropriate regulatory agencies to discuss any compensatory measures that may be applicable and necessary. It is anticipated, however, that individual projects would not span more than one Regional Water Board jurisdiction. Therefore, when a project has the potential to adversely affect waters of the state and falls within only one Regional Water Board jurisdiction, Metropolitan will work with the appropriate Regional Water Quality Board for that project.

9.2.4 Response to Comment 4

Comment noted. Metropolitan will comply with any new requirements that may be adopted during the course of implementing the PCCP Rehabilitation Program that may be applicable for individual project-level rehabilitation projects.

Appendix A
Notice of Preparation/Initial Study Checklist

Notice of Preparation/Initial Study Checklist

FOR THE

PRE-STRESSED CONCRETE CYLINDER PIPE REHABILITATION PROGRAM AND SECOND LOWER FEEDER REHABILITATION PROJECT

The Metropolitan Water District of Southern California
Environmental Planning Team
700 N. Alameda Street
Los Angeles, California 90012

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Metropolitan Report No. 1481
December 2014

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TABLE OF CONTENTS

LIST OF FIGURES

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LIST OF ACRONYMS

AMP	Allen-McColloch Pipeline
Basin	South Coast Air Basin
CEQA	California Environmental Quality Act
Cfs	cubic feet per second
CNDDB	California Natural Diversity Database
CO	carbon monoxide
EIR	environmental impact report
Farmland	Farmland of Statewide Importance
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
GHG	greenhouse gas
I-	Interstate
Metropolitan	Metropolitan Water District of Southern California
MS4	Municipal Separate Storm Sewer System
NCCP	Natural Community Conservation Plan
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
O_3	ozone
PCCP	Pre-Stressed Concrete Cylinder Pipe
PM10	particulate matter less than 10 microns in size
PM2.5	particulate matter less than 2.5 microns in size
proposed program	Pre-Stressed Concrete Cylinder Pipe Rehabilitation Program
proposed project	Second Lower Feeder Rehabilitation Project
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SEA	Significant Ecological Area
SLF	Second Lower Feeder
SR-	State Route
SWPPP	Stormwater Pollution Prevention Plan
USFWS	U.S. Fish and Wildlife Service

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ENVIRONMENTAL CHECKLIST FORM

PROGRAM AND PROJECT DESCRIPTION

1. Title

Pre-Stressed Concrete Cylinder Pipe Rehabilitation Program and Second Lower Feeder Rehabilitation Project

2. Lead Agency Name and Address

The Metropolitan Water District of Southern California
700 N. Alameda Street
Los Angeles, California 90012

Mailing Address:
P.O. Box 54153
Los Angeles, California 90054-0153

3. Contact Person and E-mail

Diane Doesserich, Environmental Specialist
EPT@mwdh2o.com

4. Location

Allen-McColloch Pipeline (AMP), Calabasas Feeder, Rialto Pipeline, and Sepulveda Feeder (proposed program)

The proposed Pre-Stressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program (proposed program) would rehabilitate subsurface water distribution pipelines (also known as feeders[1]), which are located primarily in Metropolitan Water District of Southern California (Metropolitan) owned rights-of-way and existing public roads. The pipelines that would be rehabilitated extend through the following cities and counties:

Allen-McColloch Pipeline (AMP)

- Anaheim
- Lake Forest
- Irvine
- Mission Viejo
- Orange
- Tustin
- Yorba Linda

Calabasas Feeder

- Calabasas
- Hidden Hills
- Los Angeles

[1] A feeder and a pipeline are equivalent. Unless referring to the formal name, pipeline will be used throughout this document.

Rialto Pipeline

- Claremont
- Fontana
- La Verne
- Rancho Cucamonga
- Rialto
- San Bernardino
- San Dimas
- Upland
- Unincorporated San Bernardino County

Sepulveda Feeder

- Culver City
- Gardena
- Hawthorne
- Inglewood
- Los Angeles
- Torrance

Second Lower Feeder (proposed project)

The proposed Second Lower Feeder (SLF) Rehabilitation Project (proposed project) would rehabilitate approximately 30 miles of PCCP within the existing 40 miles of the SLF. The SLF is located primarily in Metropolitan owned rights-of-way and public roads, and it extends through the following cities and counties:

Second Lower Feeder

- Anaheim
- Buena Park
- Carson
- Cypress
- Lakewood
- Lomita
- Long Beach
- Los Alamitos
- Los Angeles
- Placentia
- Rolling Hills Estates
- Torrance
- Yorba Linda
- Unincorporated Los Angeles County
- Unincorporated Orange County

Figures 1a through 1f shows the regional vicinity of the proposed program and the proposed project. Figures 2a through 2c and 3a through 3c show the local vicinity of the proposed project. Table 1 summarizes the locations of the various pipelines that would be rehabilitated under the proposed program and project.

5. Sponsor's Name and Address

The Metropolitan Water District of Southern California
700 N. Alameda Street
Los Angeles, California 90012

6. General Plan Land Use Designations

As noted in Section 4, the proposed program and proposed project extend through numerous cities and counties. Because these pipelines are located primarily within Metropolitan owned rights-of-way and public roads, the general plan land use designations are typically related to Public Services, Utilities, or Open Space. However, the general plan land use designations also include, but are not limited to, General Commercial, Residential, Limited Manufacturing, Business Park, Recreation, and Public Facilities. It should be noted that California Government Code Section 53091 exempts Metropolitan, as a regional public water purveyor and utility, from local zoning and building ordinances. Despite this exemption from local land use planning jurisdiction, for purposes of full disclosure of potential program and project impacts on the environment, this EIR evaluates the program and the project's compatibility with relevant general plan policies.

Table 1. Summary of Five Pipeline Characteristics and Their Locations

Feeder	Construction Year	Total Length (miles)	Length of PCCP (miles)	Starting Location	Terminus Location	Counties	Cities
Allen-McColloch Pipeline (AMP)	1970	26	9	Diemer Water Treatment Plant's Finished Water Reservoir, City of Yorba Linda	El Toro Water District's El Toro Reservoir, City of Mission Viejo	Orange	Anaheim, Irvine, Lake Forest, Mission Viejo, Orange, Tustin, and Yorba Linda
Calabasas Feeder	1975	9.3	9.3	West Valley Feeder No. 2, City of Los Angeles	Las Virgenes Municipal Water District's Service Connection, City of Calabasas	Los Angeles	Calabasas, Hidden Hills, and Los Angeles
Rialto Pipeline	1970	30	16	California Department of Water Resources' Devil Canyon Facility, City of San Bernardino	San Dimas Power Plant Control Structure, City of San Dimas	Los Angeles, San Bernardino	Claremont, Fontana, La Verne, Rancho Cucamonga, Rialto, San Bernardino, San Dimas, and Upland
Sepulveda Feeder	1970	42	37	Joseph Jensen Water Treatment Plant, City of Los Angeles	SLF Interconnection, City of Torrance	Los Angeles	Culver City, Gardena, Hawthorne, Inglewood, Los Angeles, and Torrance
Second Lower Feeder (SLF)	1966	39	30	Diemer Water Treatment Plant, City of Yorba Linda	Palos Verdes Reservoir, City of Rolling Hills Estates	Orange, Los Angeles	Anaheim, Buena Park, Carson, Cypress, Lakewood, Lomita, Long Beach, Los Alamitos, Los Angeles, Placentia, Rolling Hills Estates, Torrance, and Yorba Linda

7. Zoning

As noted in Section 4, the proposed program and project pipelines extend through numerous cities and counties. Because these pipelines are located primarily within Metropolitan owned rights-of-way and public roads, the zoning designations are typically related to Public Services, Utilities, or Open Space. However, the zoning designations also include, but are not limited to, Commercial Recreation, Residential (various densities), Light Manufacturing, Public Facilities, and Office.

8. Introduction of the Proposed Program and Project Descriptions

Metropolitan is proposing to rehabilitate the PCCP portions of the following five pipelines:

- AMP
- Calabasas Feeder
- Rialto Pipeline
- SLF
- Sepulveda Feeder

The first pipeline to be rehabilitated by Metropolitan would be the SLF under the proposed project, followed by the remaining four pipelines under the proposed program over a period of approximately 15 to 20 years. Metropolitan will prepare a joint program-level/project-level environmental impact report (EIR) for the proposed program and the proposed project to analyze environmental impacts resulting from rehabilitation activities. Section 9 describes proposed program components and rehabilitation activities applicable to all pipelines, and Section 10 provides information regarding proposed project components and rehabilitation activities for the SLF.

9. Description of Proposed Program

Proposed Program Background

Metropolitan was formed in 1928 under an enabling act of the California legislature. Metropolitan includes 26 cities and water districts (member agencies) that provide drinking water to approximately 18.4 million people in parts of Los Angeles, Orange, San Bernardino, Riverside, San Diego, and Ventura counties. Metropolitan's mission is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible manner.

Metropolitan has more than 830 miles of pipelines that distribute drinking water to its member agencies. The pipelines are made of various materials, including PCCP. Between 1962 and 1985, 163 miles of PCCP was installed throughout the service area. PCCP lines range from 42 to 201 inches in diameter; the majority of which are 78 inches in diameter or larger. Under certain subsurface conditions, PCCP lines have an elevated risk of failure compared with other types of pipe. PCCP failures can occur without warning. Such failures can be catastrophic, compromising system reliability and resulting in unplanned major repairs, significant costs from service interruptions and repair work, and potential third-party damages. In response to this risk, in 1999, Metropolitan developed a program to inspect and assess all 163 miles of PCCP within its distribution system. In 2011, Metropolitan initiated a comprehensive program of inspections to evaluate and rank PCCP lines with the highest risk of failure. The data indicate that the following five pipelines represent the

highest risk: AMP, Calabasas Feeder, Rialto Pipeline, Sepulveda Feeder, and the SLF. Under the proposed program, Metropolitan proposes to rehabilitate the PCCP portions of these five pipelines. Rehabilitation would occur along approximately 70 miles of the AMP, Calabasas Feeder, Rialto Pipeline, and Sepulveda Feeder and approximately 30 miles of the SLF (described further in Section 10, Description of Project, below). The first pipeline to be rehabilitated by Metropolitan would be the SLF, under the proposed project, followed by the remaining four pipelines (AMP, Calabasas Feeder, Rialto Pipeline, and Sepulveda Feeder), under the proposed program, over 15 to 20 years. The sequence of rehabilitation is subject change.

The characteristics and locations of the five pipelines are described above in Table 1.

Program Objectives

The proposed program is designed to maintain the reliability of Metropolitan's distribution system. The proposed program would minimize risks associated with failures by proactively rehabilitating each portion of PCCP, starting with the pipes that show the greatest risk of failure. This would help Metropolitan avoid possible unplanned system outages, thereby increasing service reliability for all customers within Metropolitan's service area.

The objectives of the proposed program are to:

- Improve system reliability by minimizing the likelihood of PCCP failure.
- Reduce the higher costs of emergency repairs.
- Reduce unplanned outages.

The following sections describe the various components, rehabilitation activities, construction equipment, and timing and phasing of the proposed program, including the proposed project, if applicable. Further details regarding the proposed project are provided in Section 10.

Program Components

The proposed program consists primarily of pipeline rehabilitation. For pipelines the term "rehabilitation" is used to describe either relining of the pipe or installation of supplemental or relocated lines. For valves and appurtenant structures, the term "rehabilitation" is used to describe either refurbishment or replacement. Rehabilitation of valves and appurtenances, such as isolation valves, blow-off valves, air-release and vacuum valves, manholes, and meters, may be required along with rehabilitation of the pipelines. All of these components, as they relate to the proposed program and the proposed project, are described below.

Rehabilitation of PCCP

The proposed program would consist primarily of rehabilitating the PCCP portions of the pipelines by lining them with steel. This is known as "slip line" construction. New liner segments, approximately 20 feet long, would be inserted into existing PCCP pipelines by cutting into the existing pipelines, moving the new liner segments into position to reline the PCCP sections, and welding together the new liner segments. The cut sections of the PCCP would be encased in concrete after the new liner segments are welded together.

In some cases, it may be necessary to relocate existing PCCP with welded steel pipe in lieu of using steel liners to rehabilitate the PCCP. Portions of the PCCP would be left in place and new steel

pipeline segments would be used. Relocation would involve excavating an open trench along the length of the existing pipeline or in an appropriate location in the vicinity of the existing pipeline, placing bedding for the new pipe to sit upon, and installing the new pipe. The dimensions of the open trench and the amount of soil that would be excavated would correspond to the depth and diameter of the new pipe, which would typically be between 54 and 96 inches (or approximately 6 and 8 feet), similar to the diameters of the existing pipelines. If shored, the open trench would generally be a few feet wider than the diameter of the pipe. If open-cut, the trench may be several times wider than the diameter of the pipeline, depending on the depth of the line and soil conditions. Metropolitan's lines are usually installed to a depth of at least 10 feet below existing grade. After installation the pipe trench is backfilled and the surface is restored.

Rehabilitation of Isolation Valves and Appurtenant Structures

Isolation valves are located subsurface and are used to divide the pipelines into more easily managed sections and separate one part of the pipeline from another. These valves allow Metropolitan to shut off water flow in various sections of the pipelines and drain the water from the section when needed so the pipeline can be accessed for interior work. Under the proposed program, Metropolitan would either refurbish or replace the existing isolation valves along the five pipelines. Refurbishing or replacing isolation valves would require excavation for removal and reinstallation of the valves. In some locations new isolation valves would be added to provide continued water supply to its member agencies. New valves would require construction of new subsurface vaults to house the valves.

Appurtenant structures installed along a pipeline, such as air-release and vacuum valves, blow-offs, meters, and access manholes, release pressure from the pipeline and allow the pipeline to be dewatered and accessed. Some of the appurtenant structures located along the five pipelines may need rehabilitation. Rehabilitation could occur during the slip-lining process or new pipe installation. However, when necessary, appurtenance rehabilitation could also be separate and independent in location and time from slip-line or new pipe installation.

Proposed Program Work Description

The proposed program would include planned rehabilitation of all PCCP sections and any necessary appurtenance rehabilitation along the five pipelines, including the SLF (described in Section 10, Description of Proposed Project). Rehabilitation would include site preparation and excavation, including staging; PCCP isolation, bulkhead construction (if needed), dewatering, and demolition; relining of the pipeline (in some areas, supplemental or replacement pipelines would be required) and replacement or refurbishment of isolation valves and appurtenant structures; and reactivation of the rehabilitated PCCP line and site restoration. Information regarding these activities is provided in subsections A through D below.

Most of the rehabilitation would be located in urban areas, within Metropolitan owned rights-of-way and public roads. Metropolitan would coordinate with local agencies and the surrounding communities prior to and during rehabilitation activities. As part of the proposed program, Metropolitan would also coordinate with member agencies prior to and during rehabilitation activities, thereby reducing the potential for a service interruption during rehabilitation activities. Minor protection and/or relocation work for existing utilities may be needed in some locations to provide an adequate work area for rehabilitation activities. Metropolitan would work with utility owners to coordinate such activity.

A. Site Preparation and Excavation

Site preparation and excavation would include preparing the excavation sites, work zones, and staging areas, as well as implementing traffic management plans for directing traffic during rehabilitation. Excavation sites along a pipeline would be approximately 1,500 to 2,000 feet apart. These sites would allow access to the pipeline and insertion of the new steel liner. An opening would be excavated and shored. The depth of the excavation site would be equal to the depth of the PCCP or appurtenant structure, with the top of the pipe or structure usually about 10 feet from the ground surface. Staging areas for storing and staging construction equipment and materials would be established either adjacent or close to the work zones. Traffic control measures would remain in place during the subsequent work activities until site restoration is complete.

B. PCCP Isolation and Dewatering

Each section of PCCP where work would be performed would be taken out of service through a dewatering process to provide access to the pipeline's interior and ensure safe working conditions. This process would be initiated by closing existing isolation or service connection valves. Once a pipeline section is isolated (i.e., all connection points are fully closed), dewatering would take place. If needed, temporary bulkheads may be installed within the existing pipe to allow certain portions of the line to be returned to service during the rehabilitation to allow deliveries to member agency service connections.

C. PCCP Relining

To reline an existing section of PCCP, a section of the pipe would first be cut out and removed to provide access to the remainder of the pipe where rehabilitation would occur. Next, equipment would be placed such that new collapsible steel liners could be lowered down into the excavation site and then inserted into the existing PCCP line. After all liner sections have been installed, pipe connections would be restored.

D. Pipeline Reactivation and Site Completion

Contractor materials and equipment would then be removed, and the pipe would be cleaned and disinfected. Upon confirmation that the pipe has passed pressure testing and disinfection testing, Metropolitan would restore service to customers. The excavation site would be backfilled and compacted, and the ground surface would be restored. Previously excavated materials would be used for backfill, where appropriate. Excess materials would be hauled off site. Work zones and staging areas would be restored to pre-existing conditions. Traffic control measures would be removed after site restoration activities are complete.

Proposed Program Construction Equipment

Rehabilitation would require a combination of different types and quantities of construction equipment. The expected types of construction equipment include, but are not limited to, welding trucks, water trucks, low-bed trailers, dump trucks, excavators, loaders, generators, tractors, cranes, concrete delivery trucks, graders, and construction workers' vehicles.

Proposed Program Phasing

Work on all five pipelines is anticipated to occur over a period of approximately 15 to 20 years, beginning with the SLF in 2016 and extending through the early 2030s. Construction on some sections of the five pipelines and between pipelines would most likely occur concurrently.

The phasing and duration of work at each pipeline would depend on the length of the individual PCCP line being rehabilitated. Each pipeline would be divided into sections that would be hydraulically isolated to allow for rehabilitation activities. The length of PCCP to be rehabilitated would vary and would depend on the distance between isolation valves and bulkheads along the pipeline. Actual pipeline rehabilitation sequencing would be based on factors such as system operations, water supply availability, and member agency demands. Rehabilitation of some sections may be performed concurrently. Construction work within each section would be expected to take a minimum of 2 to 3.5 months up to a maximum of 9 months.

Operation of Pipelines

There would be no change between baseline operation of the distribution system and operation of the distribution system under the proposed program. The proposed program would increase the reliability and service life of the various PCCP lines and appurtenant structures. The proposed program would not result in the installation or operation of new pipelines and thus would not expand the existing water supply distribution system.

10. Description of Proposed Project: Second Lower Feeder

All proposed program components, rehabilitation activities, equipment, and phasing described above under Section 9, Description of Proposed Program, are applicable to the proposed project. Additional information about the proposed project is provided below.

Proposed Project Background

As described in Table 1, the SLF, which was constructed in the late 1960s, is approximately 39 miles long, with approximately 30 miles of PCCP. The eastern end of SLF begins at the Diemer Water Treatment Plant in the city of Yorba Linda. The SLF traverses many local governmental jurisdictions and ends at the Palos Verdes Reservoir in the city of Rolling Hills Estates on the western end. It is located in both Los Angeles and Orange counties. The SLF crosses beneath the following major freeways and transportation corridors, from east to west: Imperial Highway, the Alameda Corridor rail lines, Burlington Northern Santa Fe Railway, Metrolink, Interstate (I-) 605, Long Beach Municipal Airport, the Los Angeles County Metropolitan Transportation Authority's Blue Line, I-710, I-405, I-110, the Union Pacific Railroad, and Western Avenue. The pipeline extends primarily through an urbanized area that includes flood control channels, numerous underground utility lines, natural gas lines, and oil lines. Figures 2a through 2c and 3a through 3c show the local vicinity of the SLF. Table 2 summarizes the general surrounding land uses and local jurisdictions through which the SLF traverses and expected locations of work areas along the pipeline.

Table 2. Summary of Proposed Project Locations

Section Number	Pipeline Station Numbers	Approximate Length (feet)	Surrounding Land Uses and Location(s)	Rehabilitation Locations[1]
1	1724+40 to 1859+80	13,540	• Predominately residential • Cities of Los Angeles and Carson	• 11 proposed work areas • 8 staging areas
2	1589+40 to 1724+40	13,500	• Predominately residential • City of Carson	• 9 proposed work areas • 3 staging areas
3	1417+27 to 1589+40	17,213	• Industrial, residential, and commercial uses • Cities of Long Beach and Carson	• 9 proposed work areas • 3 staging areas
4	1174+77 to 1269+65	10,800	• Predominately residential • Unincorporated Los Angeles County • City of Long Beach	• 7 proposed work areas • 2 staging areas
	1859+80 to 1865+41		• Predominately residential • Cities of Torrance and Los Angeles	• 2 proposed work areas • 1 staging area
5	1865+41 to 1902+95	11,378	• Predominantly residential • Cities of Los Angeles and Torrance	• 11 proposed work areas • 5 staging areas
	2040+60 to 2116+84		• Predominantly residential • Cities of Lomita and Rolling Hills Estates	
6	1902+95 to 2040+60	13,765	• Predominantly residential • Cities of Lomita, Torrance, and Los Angeles	• 11 proposed work areas • 4 staging areas

Section Number	Pipeline Station Numbers	Approximate Length (feet)	Surrounding Land Uses and Location(s)	Rehabilitation Locations[1]
7	1269+65 to 1409+45	13,980	• Predominately industrial, with some residential and commercial uses • City of Long Beach	• 8 proposed work areas • 1 staging area
8	1409+45 to 1475+25	782	• Predominately industrial, with some residential and commercial uses • Cities of Long Beach and Lakewood	• 2 proposed work areas • 1 staging area
9	824+75 to 975+19	15,044	• Residential, with some commercial uses • Cities of Anaheim, Buena Park, and Cypress	• 13 proposed work areas • 5 staging areas
10	1065+60 to 1174+77	10,917	• Predominately single-family residential, with a few commercial uses • Cities of Cypress, Los Alamitos and Long Beach	• 8 proposed work areas • 11 staging areas
11	975+19 to 1065+60	9,041	• Predominately single-family residential, with a few commercial uses • City of Cypress	• 4 proposed work areas • 3 staging areas
12	56+18 to 291+72	23,554	• Primarily residential • Unincorporated area of Orange County • Cities of Yorba Linda and Placentia	• 23 proposed work areas • 11 staging areas
13	291+72 to 342+40	5,068	• Primarily residential • Unincorporated area of Orange County • Cities of Placentia and Anaheim	• 6 proposed work areas • 4 staging areas

[1] This is a conservative estimate of the number of rehabilitation locations; some rehabilitation locations may be shared between or included in multiple sections.

The SLF pipeline has inside diameters ranging from 78 to 84 inches and operates at pressures of up to 340 pounds per square inch. The SLF, which has interconnections to six other Metropolitan pipelines, supplies water to the Central Pool portion of Metropolitan's distribution system as well as the cities of Long Beach, Los Angeles, and Torrance; the Central Basin Municipal Water District; and the Municipal Water District of Orange County. The SLF PCCP sections were identified by Metropolitan as having the highest risk of reduced service life expectancy and are therefore proposed for rehabilitation first. The objectives for the proposed project are the same as those described above for the proposed program (Section 9).

Proposed Project Rehabilitation Activities

The rehabilitation of the PCCP lines of the SLF is divided into 13 sections. Using this approach, Metropolitan would be able to ensure few and infrequent interruptions in the water supply to member agencies while it rehabilitates the pipeline. Table 2 summarizes the sections, pipeline station numbers within the sections, surrounding land uses and locations, and rehabilitation activities expected within each section. Figures 4a through 4f show the different pipeline sections and general locations of where rehabilitation activities would occur. The number of rehabilitation activities described in the table is conservative and most likely over-estimates the number of activities actually performed during rehabilitation. These activities are based on conceptual designs. The actual number of rehabilitation activities would be refined and most likely reduced during final design using the considerations described in the Proposed Project Phasing section, below. Some rehabilitation activities may be shared between sections.

In addition to rehabilitation of the PCCP and appurtenant structures along the PCCP portions of the SLF, Metropolitan would rehabilitate or replace some appurtenant equipment structures and vaults along existing steel-lined sections of the SLF.

Proposed Project Construction Equipment

The construction equipment for the proposed program described above in Section 9 would be the same as that needed for the proposed project.

Proposed Project Phasing

Phasing for the proposed project would be similar to the phasing for the proposed program (as described in Section 9). Design and rehabilitation of the SLF would generally occur first and the design and rehabilitation of the other pipelines in the proposed program occurring at later dates.

Metropolitan's phasing for the proposed project would involve numerous considerations, however, sections with significant lengths and without service connections would be prioritized over those that would require more involved efforts (i.e., installing temporary bulkheads or isolation points to maintain the water supply). Additionally, rehabilitation would be scheduled during months with low water demand (i.e., late fall, winter, early spring).

Final prioritization of phasing for rehabilitation activities would consider:

- Completing all work in an individual city or community within one section and within the shortest timeframe feasible.
- Coordinating with cities to avoid conflicts with other public improvement projects, moratoriums, community events, and seasonal events as well as local business disruptions.
- Coordinating with member agencies to determine the length of any required outage to their service connections.

Table 3 summarizes the sections of the pipeline and estimated rehabilitation start and end years. The start of rehabilitation includes procurement and prefabrication of the steel liners off site.

Table 3. Summary of Estimated Section Rehabilitation (Years)

Section(s)	Estimated Start*	Estimated End
1	2016	2017
2	2017	2018
3	2018	2019
4	2019	2020
5-12	2020	2033
*includes offsite pre-manufacturing		

Operation of Pipelines

Similar to the operation of the distribution system under the proposed program as described in Section 9 above, there would be no change between baseline operating conditions and conditions under the proposed project. The SLF would continue to provide water to member agency jurisdictions in the service area.

11. Proposed Program and Project Surrounding Land Uses and Setting

The proposed program is located in urban and rural settings within Orange, Los Angeles, and San Bernardino counties. The proposed project is located in a primarily urban setting in Orange and Los Angeles counties. The pipelines and appurtenant structures are primarily subsurface. Land uses include residential, commercial, and industrial uses (e.g., businesses, restaurants, manufacturing); institutional uses (e.g., schools, churches); public facilities and services (e.g., fire stations, police stations, airports, libraries); and recreational and open space areas (e.g., conservation areas, developed parks, undeveloped parks). A general description of the surrounding land uses relevant to the proposed project is provided in Table 2, above (Section 10).

12. Other Public Agencies Whose Approval Is Required (e.g., permits, financial approval, or participation agreement)

Permits or approvals that could be required include the following:

- California Air Resources Board portable equipment registration and/or South Coast Air Quality Management District permit to operate for construction equipment.
- California Department of Transportation, Districts 7 and 12 encroachment permits.
- California Division of Occupational Safety and Health Tunnel Safety Order compliance.

- Utility construction permits and traffic control plans from the Cities of Anaheim, Buena Park, Calabasas, Carson, Claremont, Culver City, Cypress, Fontana, Gardena, Hawthorne, Hidden Hills, Inglewood, Irvine, Lakewood, La Verne, Lomita, Long Beach, Los Alamitos, Los Angeles, Mission Viejo, Orange, Placentia, Rancho Cucamonga, Rialto, Rolling Hills Estates, San Bernardino, San Dimas, Torrance, Tustin, Upland, and Yorba Linda and the Counties of Los Angeles, Orange, and San Bernardino.
- Conformance with applicable State Water Resources Control Board National Pollutant Discharge Elimination System (NPDES) and/or Municipal Separate Storm Sewer System (MS4) requirements.
- Review and approval by Long Beach Airport and Federal Aviation Administration.
- Orange County Flood Control District and Los Angeles County Flood Control District permits.

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PURPOSE OF THE INITIAL STUDY

Metropolitan will prepare an EIR for the proposed program and project. Because the need for an EIR has already been determined, the purpose of this initial study checklist is to help focus the draft EIR and provide information that will allow a meaningful comment on the anticipated scope of the draft EIR. Specifically, this initial study is intended to (1) inform responsible agencies and the public of the nature of the proposed program and project, as well as the locations; (2) identify impacts that would clearly be less than significant or have "no impact" and therefore would not be discussed further in the draft EIR; and (3) provide a general description of the topics that are intended to be addressed in the draft EIR.

This initial study is separated into an evaluation of the proposed program (AMP, Calabasas, Rialto, and Sepulveda) and an evaluation of the proposed project (Second Lower Feeder). These evaluations determined that there would be "no impact" or "less than significant impact" on some of the environmental impact categories examined as a result of the rehabilitation of the proposed program and project; therefore, those impacts will not be further addressed in the draft EIR.

Proposed Program: AMP, Calabasas, Rialto, Sepulveda

Table 4 below identifies the environmental resources proposed to be addressed in the draft EIR for the proposed program. The checked box identifies which potentially significantly impacts were identified that will be addressed in the draft EIR.

Table 4. Program-Level Environmental Factors Potentially Affected

☒ Aesthetics	☒ Agriculture and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Geology and Soils
☒ Greenhouse Gas Emissions	☒ Hazards and Hazardous Materials	☒ Hydrology and Water Quality
☒ Land Use and Planning	☐ Mineral Resources	☒ Noise
☐ Population and Housing	☐ Public Services	☒ Recreation
☒ Transportation and Traffic	☒ Utilities and Service Systems	☒ Mandatory Findings of Significance

Proposed Project: Second Lower Feeder

Table 5 below identifies the environmental impacts to be addressed in the draft EIR for the proposed project. The checked boxes identify which potentially significant impacts were identified that will be addressed in the draft EIR.

Table 5. Project-Level Environmental Factors Potentially Affected

☒ Aesthetics	☐ Agriculture and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Geology and Soils
☒ Greenhouse Gas Emissions	☒ Hazards and Hazardous Materials	☒ Hydrology and Water Quality
☒ Land Use and Planning	☐ Mineral Resources	☒ Noise
☐ Population and Housing	☐ Public Services	☒ Recreation
☒ Transportation and Traffic	☐ Utilities and Service Systems	☒ Mandatory Findings of Significance

Organization of the Initial Study

This initial study uses a modified version of the checklist set forth in Appendix G of the California Environmental Quality Act (CEQA) Guidelines. It indicates whether an environmental impact category will be analyzed in the draft EIR or will not require further analysis. The "No Additional Analysis Required" box is checked for the environmental impact categories that would not have an environmental effect or would have a less-than-significant effect as a result of the proposed program. For these topics, no additional analysis beyond that provided in this initial study is warranted or required. The "Impact to be Analyzed in the EIR" box is checked for all categories that require further analysis or study.

The initial study first evaluates the proposed program and then the proposed project. For the proposed program analysis, analysis is presented for only the initial study checklist topics for which no additional analysis is required. All of the remaining topics will be analyzed in the draft EIR. For the proposed project analysis, all of the issues in the initial study checklist are analyzed and a determination is made as to whether additional analysis is required in the draft EIR.

DETERMINATION (To Be Completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed program and project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION would be prepared.

☐ I find that although the proposed program and project could have a significant effect on the environment, there would not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION would be prepared.

☒ I find that the proposed program and project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed program and project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis, as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed program and project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed program and project, nothing further is required.

	December 17, 2014
Signature	**Date**
Deirdre West, Manager, Environmental Planning Team	The Metropolitan Water District of Southern California
Printed Name	**For**

EVALUATION OF PROGRAM-RELATED ENVIRONMENTAL IMPACTS

INTRODUCTION

Under the proposed program, Metropolitan proposes to rehabilitate the PCCP portions of four pipelines. Rehabilitation would occur along approximately 70 miles of the AMP, Calabasas Feeder, Rialto Pipeline, and Sepulveda Feeder (see Section 9, Description of the Proposed Program, for additional details). This section of the initial study checklist evaluates the potential environmental impacts related to the proposed program.

Each impact category has several specific questions. This evaluation determined that the proposed program would have "no impact" or a "less-than-significant impact" on some categories or questions within the category. These categories and questions are evaluated in this section, therefore, further analysis of these topics is not required in the draft EIR. All other categories and questions will be analyzed in the draft EIR and are listed below. The categories identified below will be addressed in the draft EIR. Topics in parenthesis are the remaining impacts to be further analyzed.

I. Aesthetics

II. Agriculture (convert farmland, conflict with agricultural designations)

III. Air quality

IV. Biological resources

V. Cultural resources

VI. Geology and soils (exposure to earthquake faults, seismic ground shaking, seismically related ground failure/liquefaction, and landslides; soil erosion; unstable soils; expansive soils; landslides and mudflow)

VII. Greenhouse gas emissions

VIII. Hazards and hazardous materials

IX. Hydrology and water quality (water quality/wastewater discharge, drainage patterns and runoff,)

X. Land use and planning

XII. Noise

XV. Recreation

XVI. Transportation and traffic (including fire and police emergency response and access and parking)

XVII. Utilities and service systems

Operating conditions of the four pipelines following rehabilitation would be identical to baseline conditions. The pipelines are currently not visible or otherwise noticeable aboveground, except for some appurtenant structures. Vegetation and paving materials removed during rehabilitation would be replaced in kind prior to the completion of rehabilitation. Therefore, there would be no change between baseline conditions and conditions under operation of the four pipelines following rehabilitation. Impacts on resources resulting from operation of the pipelines would not occur and will not be further addressed in either this evaluation or the draft EIR.

II. AGRICULTURE AND FOREST RESOURCES

Would the proposed program:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
b. Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☒

No Impact. According to California Department of Conservation data, no portions of the proposed program alignments are within areas under Williamson Act contract (California Department of Conservation 2013). PCCP portions of AMP within the city of Irvine occur within areas that are currently used for agricultural purposes and are zoned Preservation, which allows for agricultural uses. Given that rehabilitation activities would not change existing zoning, the proposed program would not conflict with zoning for agricultural use (City of Irvine 2013). No further analysis is required in the draft EIR.

c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined by Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 551104(g))?	☐	☒

Less-than-Significant Impact. The proposed program would rehabilitate existing pipelines. These existing pipelines are located primarily in Metropolitan owned rights-of-way or public roads. There are no designated forest lands along the pipeline alignment (California Department of Conservation 2010; U.S. Forest Service 2014). Therefore, the proposed uses would not conflict with zoning. No further analysis is required in the draft EIR.

d. Result in the loss of forestland or conversion of forest land to non-forest use?	☐	☒

Less-than-Significant Impact. The proposed program would rehabilitate existing pipelines that are located primarily in Metropolitan owned rights-of-way and public roads. There are no designated forest lands along the pipeline alignment. No further analysis is required in the draft EIR.

VI. GEOLOGY AND SOILS

Would the proposed program:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☒

No Impact. The proposed program would not include septic systems. No further analysis is required in the draft EIR.

IX. HYDROLOGY AND WATER QUALITY

Would the proposed program:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☒

Less-than-Significant Impact. The proposed program involves the rehabilitation of existing water conveyance pipelines. No changes to water usage or supply would occur as a result of the proposed program as demand would remain unchanged. The proposed program would not result in increased use or extraction of groundwater, and there would be no associated impacts on groundwater supplies, aquifer volumes, or groundwater tables. In the unlikely event that shallow groundwater is encountered during rehabilitation activities, temporary dewatering efforts would be minimal and short-term. Based on the temporary nature and limited extent of such potential dewatering activities, no associated impacts related to the drawdown or depletion of local groundwater resources would occur. The proposed program would entail relining the existing pipelines and would not result in the construction of substantial new impervious surfaces such as pavement. Accordingly, the proposed program would not result in impacts related to the reduction of local or regional infiltration and associated groundwater recharge capacity. Therefore, impacts would be less than significant. No further analysis is required in the draft EIR.

g. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☒

No Impact. The proposed program does not include the construction of any housing, and no impacts related to the placement of housing in a floodplain would result. No further analysis is required in the draft EIR.

h. Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☒

Less-than-Significant Impact. The proposed program would rehabilitate an existing pipeline. The ground surface would be returned to its existing condition following the completion of rehabilitation. There would be no structures aboveground that would impede or redirect flood flows. No further analysis is required in the draft EIR.

i. Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☒

Less-than-Significant Impact. According to Figure 12.4 of the Los Angeles County Draft General Plan, the Sepulveda Feeder alignment coincides with the dam and reservoir inundation areas of the Van Norman, Encino, and Stone Canyon reservoirs (County of Los Angeles 2014a). The Rialto Pipeline coincides with the San Antonio and San Dimas dam inundation areas (County of Los

Would the proposed program:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*

Angeles 2014a). The PCCP portions of the Calabasas Feeder and the AMP do not coincide with any dam inundation areas. Although the Rialto Pipeline and Sepulveda Feeder coincide with inundation areas, pipeline rehabilitation associated with the proposed program would not increase the risks associated with dam failure because activities would be limited to the existing pipeline locations and would not come into contact with any dam infrastructure. In addition, construction activities would be temporary and short term in duration. Proposed program impacts would be less than significant. No further analysis is required in the draft EIR.

XI. MINERAL RESOURCES

Would the proposed program:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☒

Less-than-Significant Impact. According to Figure 9.6 of the Los Angeles County Draft General Plan, the alignment of the Rialto Pipeline within Los Angeles County coincides with designated mineral resource zones in the city of San Dimas (County of Los Angeles 2014a). Aggregate operations are located in the northwestern and northeastern portions of the city of Upland. The only area in which the PCCP portion of the Rialto Pipeline coincides with an active aggregate operation is in the northeastern portion of the city of Upland where the pipeline crosses a portion of the resource extraction area (City of Upland 1986). Rehabilitation work would be confined to a corner of the property adjacent to State Route (SR-) 210 where active resource extraction is not occurring. The general plans of Orange and Los Angeles counties indicate that no portion of the AMP or Calabasas and Sepulveda feeders coincide with state-designated mineral resource zones (County of Orange 2005; County of Los Angeles 2014a). No further analysis is required in the draft EIR.

b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☒

Less-than-Significant Impact. As indicated in Item XIa, portions of the Rialto Pipeline coincide with resource extraction areas designated by the Los Angeles County Draft General Plan. However, pipeline rehabilitation would not result in the loss of availability of these resources delineated on this local general plan because rehabilitation would not prevent extraction. No further analysis is required in the draft EIR.

XIII. POPULATION AND HOUSING

Would the proposed program:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through the extension of roads or other infrastructure)?	☐	☒

No Impact. The proposed program involves rehabilitating existing pipelines and does not include the construction of any new homes or businesses. In addition, it would not displace any existing population or housing units or businesses. Operating conditions of the four pipelines following rehabilitation would be identical to baseline conditions and would not expand the existing water distribution system. Therefore, no population growth would be induced and no further analysis is required in the draft EIR.

b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☒

No Impact. Implementation of the proposed program would not displace any existing housing units or necessitate the construction of replacement housing elsewhere. No further analysis is required in the draft EIR.

c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☒

No Impact. Implementation of the proposed program would not displace any people, necessitating the construction of replacement housing elsewhere. No further analysis is required in the draft EIR.

XIV. PUBLIC SERVICES

Would the proposed program result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
Fire protection?	☐	☒

No Impact. The proposed program would rehabilitate existing pipelines and would not require new fire protection services because the proposed program would not expand the service area or indirectly contribute to new development. It does not include the construction of new homes or businesses. The program would not add capacity to the pipeline, which could induce population growth. Therefore, direct population growth, which could result in the need for additional or expanded fire protection, would not occur with implementation of the program. The temporary

construction activities necessary to rehabilitate the existing pipelines would not have a significant effect on or result in a need for new or altered fire protection services. Metropolitan would ensure that appropriate fire safety procedures are followed during construction. The proposed program rehabilitation would not result in the provision of new or physically altered governmental facilities to maintain acceptable service ratios or other performance objectives for fire protection. Impacts would not occur, and no further analysis is required in the draft EIR.

Police protection? ☐ ☒

No Impact. The proposed program would rehabilitate existing water distribution pipelines and would not require new police protection services because the proposed program would not expand the service area or indirectly contribute to new development. It does not include the construction of new homes or businesses. The program would not add capacity to the pipeline, which could induce population growth. Therefore, direct population growth, which could result in the need for additional or expanded police protection, would not occur with implementation of the program. The temporary construction activities would not result in an increased demand for police protection. The proposed program rehabilitation would not result in the provision of new or physically altered governmental facilities to maintain acceptable service ratios or other performance objectives for police protection. Impacts would not occur, and no further analysis is required in the draft EIR.

Schools? ☐ ☒

No Impact. The proposed program would rehabilitate existing water distribution pipelines and would not require new school services because the proposed program would not expand the service area or indirectly contribute to new development. It does not include the construction of new homes or businesses. The program would not add capacity to the pipeline, which could induce population growth. Therefore, direct population growth, which could result in the need for additional or expanded school facilities, would not occur with implementation of the program. Rather, the program would repair and maintain existing infrastructure to ensure an adequate water supply to the existing water service area. As a result, the program would not increase school enrollment or result in the need for new or expanded school facilities. The proposed program rehabilitation would not result in the provision of new or physically altered governmental facilities to maintain acceptable performance objectives for schools. Impacts would not occur and no further analysis is required in the draft EIR.

Parks? ☐ ☒

No Impact. The proposed program would rehabilitate existing water distribution pipelines and would not require new parks because the proposed program would not expand the service area or indirectly contribute to new development. Therefore, direct population growth, which could result in the need for additional parks, would not occur with implementation of the program. Rather, the program would repair and maintain existing infrastructure to ensure an adequate water supply to the existing water service area. The proposed program would not result in an increase in water conveyance capacity or otherwise affect the location, distribution, density, or growth rate of the

population within the vicinity. Because growth would not occur, the proposed program would not result in an increase in the use of existing parks such that new parks would be needed or that physical deterioration of the parks would occur. Activities would be limited to construction along the existing underground pipeline. The proposed program rehabilitation would not result in the provision of new or physically altered governmental facilities to maintain acceptable objectives for parks. Impacts would not occur, and no further analysis is required in the draft EIR.

Other public facilities? ☐ ☒

No Impact. The proposed program would not require new public facilities because the proposed program would not expand the service area or indirectly contribute to development. Rehabilitation of the existing pipelines would provide for increased reliability of supplemental water deliveries to local water agencies. Impacts would not occur, and no further analysis is required in the draft EIR.

EVALUATION OF PROJECT-RELATED ENVIRONMENTAL IMPACTS

INTRODUCTION

Under the proposed project, Metropolitan proposes to rehabilitate the PCCP portions of the SLF (see Section 10, Description of Proposed Project, for additional details). This section of the initial study checklist evaluates the potential environmental impacts associated with the rehabilitation activities that would occur under the proposed project.

Each category analyzed has several specific questions. This evaluation determined that the proposed project would have "no impact" or a "less-than-significant impact" on some categories or questions within each category. These categories are evaluated in this section, therefore, further analysis of these topics is not required in the draft EIR.

The categories listed below will be analyzed further in the draft EIR. Topics in parenthesis are the remaining impacts to be further analyzed.

I. Aesthetics (scenic vistas, visual character or quality, new source of light or glare)

III. Air quality (applicable air quality plan, existing or projected air quality violation, net increase in any criteria pollutant, exposure to substantial pollutant concentrations)

IV. Biological resources (adverse effect on candidate, sensitive, or special-status species; adverse effect on riparian habitat or other sensitive natural community; adverse effect on federally protected wetlands; conflict with any local policies or ordinances)

V. Cultural resources

VI. Geology and soils (exposure to earthquake faults, seismic ground shaking, seismically related ground failure/liquefaction, and landslides; soil erosion; unstable soils; expansive soils)

VII. Greenhouse gas emissions

VIII. Hazards and hazardous materials (routine transport, use, or disposal of hazardous materials; reasonably foreseeable upset and accident conditions; hazardous materials within 0.25 mile of a school; hazardous materials site; airport land use plan; emergency response or evacuation plan)

IX. Hydrology and water quality (water quality/wastewater discharge, drainage patterns and runoff, mudflow)

X. Land use and planning (conflict with applicable land use plan, policy, or regulation)

XII. Noise (noise in excess of standards, groundborne vibration or noise, temporary increase in noise, airport land use plan)

XV. Recreation (increased use of recreational facilities)

XVI. Transportation and traffic (applicable plan, ordinance, or policy; congestion management program, design feature, emergency access; public transit, bicycle, or pedestrian facilities)

Operating conditions of the SLF following rehabilitation would be identical to baseline conditions. The SLF is a subsurface pipeline that is not visible or otherwise noticeable aboveground, except for some appurtenant structures. Vegetation and paving materials removed during rehabilitation would be replaced in kind prior to the completion of rehabilitation. Therefore, there would be no change between baseline

and operational conditions of the SLF following rehabilitation. Impacts on resources resulting from operation of the SLF would not occur and will not be further addressed in either this evaluation or the draft EIR. Only impacts related to rehabilitation will be evaluated in the draft EIR.

I. AESTHETICS

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Have a substantial adverse effect on a scenic vista?	☒	☐

Potentially Significant Impact. Scenic vistas discussed in the Draft Los Angeles County General Plan and the Orange County General Plan include views from hillsides and ridges as well as scenic highways. Some city general plans also identify scenic vistas. Construction equipment used would be of various sizes, the largest of which has the potential to temporarily obscure scenic vistas from surrounding properties. The potential for SLF rehabilitation to affect scenic vistas substantially will be further evaluated in the draft EIR.

b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☒

Less-than-Significant Impact. There are no state-designated scenic highways within the vicinity of the SLF. The closest designated scenic highway to the SLF alignment is a portion of SR-91 east of SR-55, the closest point of which is approximately 2.5 miles southeast of the SLF alignment (California Department of Transportation 2012). Construction activities associated with the proposed project would be concentrated around excavation points and would be temporary. Construction equipment would not be large enough to obscure views of the background mountain views. Therefore, the potential for any rehabilitation-related impacts from SLF implementation on scenic highways is very low. SLF rehabilitation would not substantially damage scenic resources within a state scenic highway, and impacts would be less than significant. No further analysis is required in the draft EIR.

c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐

Potentially Significant Impact. While SLF rehabilitation is underway, excavation sites, work zones, and staging areas would be required, which would entail grading, vegetation removal, and excavation of a shored pit. Such actions could make the areas in which they are located less visually appealing and temporarily alter the existing visual character and quality of the site(s) and the surrounding areas. The potential for the SLF rehabilitation activities to degrade the existing visual character or quality of sites and their surroundings substantially will be further evaluated in the draft EIR.

d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area? ☒ ☐

Potentially Significant Impact. SLF rehabilitation would generally occur during daytime hours, precluding the need for lighting that would be capable of creating new sources of substantial light or glare. However, under certain conditions, nighttime or around-the-clock rehabilitation activities may be necessary to minimize traffic impacts and shorten water shutdowns. Although these impacts would be temporary, nighttime rehabilitation activities would require the use of lighting to illuminate the work area. The potential for the SLF rehabilitation to create a new source of substantial light or glare that would affect day or nighttime views in the area will be further evaluated in the draft EIR.

II. AGRICULTURE AND FORESTRY RESOURCES

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☒

No Impact. According to the Farmland Mapping and Monitoring Program (FMMP) of the California Department of Conservation, Prime Farmland, Unique Farmland, or Farmland of Statewide Importance is not present in the segment of the SLF alignment in Los Angeles County (California Department of Conservation 2010). Two areas near the Orange County part of the SLF alignment are designated as Unique Farmland. One portion of the SLF intersects Unique Farmland within the city of Anaheim, and another portion of the SLF is approximately 0.10 mile south of Unique Farmland within the city of Yorba Linda. However, in both instances, the designated Unique Farmland is not within the public right-of-way in which SLF rehabilitation would occur, and staging areas are not planned in these two designated areas. Consequently, no conversion of state-designated Farmland to a non-agricultural use would occur, and there would be no impacts on Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. No further analysis is required in the draft EIR.

b. Conflict with existing zoning for agricultural use or a Williamson Act contract? ☐ ☒

No Impact. As described above, SLF rehabilitation would not conflict with existing zoning for agricultural use. Based on a review of the Williamson Act enrollment maps for Orange and Los Angeles counties, no parcels of land are under a Williamson Act contract within the vicinity of the SLF alignment; therefore, impacts involving a conflict with existing zoning for agricultural use or a Williamson Act contract would not occur. No further analysis is required in the draft EIR (California Department of Conservation 2013).

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☒

No Impact. The nearest forest land is the Cleveland National Forest, which is located 11 miles southeast of the SLF alignment at the Diemer Plant (U.S. Forest Service 2014). There are no areas of forest land, timberland, or timberland zoned for timberland production near the SLF alignment (California Department of Conservation 2010; U.S. Forest Service 2014). Therefore, no impacts on forestland or timberland would occur as a result of SLF rehabilitation. No further analysis is required in the draft EIR.

d. Result in the loss of forestland or conversion of forestland to non-forest use?	☐	☒

No Impact. As described above, there are no existing forestlands near the SLF alignment. The nearest forestland is 11 miles away. Therefore, no loss or conversion of forestland would occur, and no impacts would occur as a result of SLF rehabilitation. No further analysis is required in the draft EIR.

e. Involve other changes in the existing environment that, because of their location or nature, could result in the conversion of Farmland to non-agricultural use or the conversion of forestland to non-forest use?	☐	☒

Less-than-Significant Impact. One parcel within the city of Placentia, at 292–350 Yorba Linda Boulevard, identified as a potential staging area, is currently being used for agricultural purposes. The property is designated for office uses in the city of Placentia's zoning and land use maps (City of Placentia 2009a; City of Placentia 2009b). Temporary use of the property for staging purposes would not preclude the property owners from continuing the site's current agricultural use following the completion of SLF rehabilitation. Consequently, SLF rehabilitation would not result in the permanent conversion of farmland to non-agricultural uses, and impacts would be less than significant. There are no existing forestland, timberland, or timberland areas zoned for timberland production within the vicinity of the proposed project alignment. No further analysis is required in the draft EIR.

III. AIR QUALITY

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐

Potentially Significant Impact. The proposed project is located in the South Coast Air Basin (Basin), which is regulated by the South Coast Air Quality Management District (SCAQMD). During the course of rehabilitation, emissions would result from construction equipment, rehabilitation activities (e.g., excavation, cutting concrete), and the transport of workers and materials to and from work sites. Rehabilitation along the SLF alignment could occur consecutively or concurrently, thus influencing the timing, type, and amount of emissions. The potential for SLF rehabilitation to conflict with or obstruct implementation of the applicable air quality plan of the SCAQMD will be further evaluated in the draft EIR.

b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☒	☐

Potentially Significant Impact. As stated above for Item (a), SLF rehabilitation is expected to result in the emission of pollutants and emissions may exceed localized significance thresholds established in the *CEQA Air Quality Handbook* developed by SCAQMD for criteria pollutants. The potential for emissions resulting from SLF rehabilitation to violate any air quality standard or contribute substantially to an existing or projected air quality violation will be further evaluated in the draft EIR.

c. Result in a cumulatively considerable net increase in any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☒	☐

Potentially Significant Impact. As discussed in Items (a) and (b), SLF rehabilitation activities are anticipated to emit pollutants for which the Basin is not in attainment. The potential for the proposed project to result in a cumulatively considerable net increase in criteria pollutants in a non-attainment area will be further evaluated in the draft EIR.

d. Expose sensitive receptors to substantial pollutant concentrations?	☒	☐

Potentially Significant Impact. Sensitive receptors adjacent to the proposed project include numerous single-family and multi-family residences, schools, parks, and health care facilities. SLF rehabilitation would take place adjacent to such sensitive receptors. The potential for rehabilitation activities to expose sensitive receptors to substantial pollutant concentrations will be further evaluated in the draft EIR.

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
e. Create objectionable odors that would affect a substantial number of people?	☐	☒

Less-than-Significant Impact. According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment facilities, food processing plants, chemical plants, composting areas, refineries, landfills, dairies, and fiberglass molding facilities. Rehabilitation includes none of these land uses. During the rehabilitation process, some limited odor may result from asphalt paving activities, which may be detectable by people immediately adjacent to work sites. However, asphalt paving would occur for a limited time period at each excavation site (less than 1 week), and the locations of paving activities would be distributed over several excavation sites along the entire alignment. Furthermore, SCAQMD Rule 402 prohibits the discharge of air contaminants that cause nuisance or annoyance to the public, including odors. And SCAQMD maintains both a toll-free phone line (1-800-CUT-SMOG) and a web-based platform (http://www.aqmd.gov/contact/complaints) for reporting complaints related to air quality, including odors. Given the limited duration and location of asphalt paving, mandatory compliance with SCAQMD Rule 402, and ability for the public to report complaints to SCAQMD, SLF rehabilitation would not create a significant level of objectionable odors. No further analysis is required in the draft EIR.

IV. BIOLOGICAL RESOURCES

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☒	☐

Potentially Significant Impact. The proposed project is located primarily within Metropolitan-owned rights-of-way and public roads and in fully developed and urbanized areas of Los Angeles and Orange counties; however, sensitive species and critical habitat have been documented in proximity to the SLF alignment. A search of the California Natural Diversity Database (CNDDB) yielded 15 sensitive species that have the potential to be found within several hundred feet of the SLF alignment (California Natural Diversity Database 2014). Given the proximity of critical habitat and the potential for sensitive species to occur adjacent to the SLF alignment, sensitive species could be directly or indirectly affected by SLF rehabilitation. The potential for SLF rehabilitation to have a substantial direct or indirect adverse effect on sensitive species will be further evaluated in the draft EIR.

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☒	☐

Potentially Significant Impact. The proposed project is located primarily within Metropolitan-owned rights-of-way and public roads and in fully developed and urbanized areas of Los Angeles and Orange counties; however, there is the potential for riparian habitats or other sensitive communities to be located adjacent to the alignment. The potential for SLF rehabilitation to affect riparian habitat or other sensitive natural communities substantially and adversely will be further addressed in the draft EIR.

c. Have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal areas, etc.) through direct removal, filling, hydrological interruption, or other means?	☒	☐

Potentially Significant Impact. The SLF extends under concrete-lined flood control channels and other existing drainages (i.e., Dominguez Channel, the Los Angeles River, San Gabriel River, Coyote Creek) (USFWS 2014). In addition, the SLF intersects with unnamed and unlined water bodies, including a stream that connects freshwater ponds within El Dorado East Regional Park and a freshwater pond located on the west bank of the Los Angeles River (USFWS 2014). Given the proximity of the SLF to such water bodies, the potential for SLF rehabilitation to affect federally protected wetlands substantially and adversely will be further evaluated in the draft EIR.

d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites?	☐	☒

Less-than-Significant Impact. Proposed project rehabilitation would not affect the movement of fish or wildlife species because work areas would be located outside of the concrete-lined flood protection channels, and pipeline work would primarily occur below the surface. For the proposed project to interfere substantially with fish or wildlife movement, it would have to occur within or between habitat areas. The northern segment of the SLF is not within a habitat area designated by the Orange County Central and Coastal Subregion Natural Community Conservation Plan (NCCP) and Habitat Conservation Plan (HCP) (habitat areas are located approximately 6 miles to the southeast of the alignment) (GIS data based on Nature Reserve 1996). Furthermore, the SLF alignment is not located between wildlife habitat areas identified in the Orange County General Plan (Figures VI-4 and VI-5 County of Orange 2005). The southern terminus of the SLF is not located within a wildlife area, nor is it located in areas that could serve as wildlife corridors. The SLF alignment is 3 miles east of the Palos Verdes Peninsula NCCP/HCP (Palos Verdes Peninsula Land Conservancy 2004 [Figure 2-2]). In addition, there are no regional wildlife linkages near the SLF alignment (County of Los Angeles 2014a [Figure 6.3]). All other areas of the alignment are urbanized with no wildlife areas. Consequently, SLF rehabilitation would not impose physical

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*

barriers that would prevent fish and animal species from migrating, and impacts would be less than significant. No further analysis is required in the draft EIR.

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? ☒ ☐

Potentially Significant Impact. Some vegetation and trees adjacent to existing roadways may be removed or disturbed during the rehabilitation process. The potential for SLF rehabilitation to conflict with any local policies or ordinances protecting biological resources will be further evaluated in the draft EIR.

f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan? ☐ ☒

No Impact. As discussed above, the SLF alignment does not pass through the Orange County Central and Coastal Subregion NCCP/HCP; the NCCP/HCP area is located approximately 6 miles to the southeast (GIS data based on Nature Reserve 1996). The closest portion of the SLF alignment to the Palos Verdes Peninsula NCCP/HCP is 3 miles west of the NCCP/HCP (Palos Verdes Peninsula Land Conservancy 2004 [Figure 2-2]). Therefore, SLF rehabilitation would not conflict with the provisions of these plans. The Los Angeles County Department of Regional Planning identifies Significant Ecological Areas (SEAs), which are designated to preserve undisturbed or lightly disturbed habitat by placing additional conditions on development in areas within their boundaries (County of Los Angeles 2014b). The southern terminus of the SLF alignment is located 0.4 mile east of the Rolling Hills Canyons SEA and immediately adjacent to a portion of the proposed Palos Verdes Peninsula and Coastline SEA (GIS data based on County of Los Angeles 2014b). The work site at this location would not extend into the boundaries of the proposed Palos Verdes Peninsula and Coastline SEA. Because no portion of the SLF alignment or rehabilitation area coincides with an existing or proposed SEA, no SEA-related conditions would be imposed. SLF rehabilitation would not conflict with the provisions of an adopted HCP/NCCP/or other approved local, regional, or state HCP, and no impact would occur. No further analysis is required in the draft EIR.

V. CULTURAL RESOURCES

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Cause a substantial adverse change in the significance of a historical resource, as defined in Section 15064.5?	☒	☐

Potentially Significant Impact. SLF rehabilitation would require excavation and soil disturbance, which could affect unknown historical resources buried along the pipeline alignment. The potential for rehabilitation to cause a substantial adverse change in the significance of a historical resource will be further evaluated in the draft EIR.

b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☒	☐

Potentially Significant Impact. The SLF is subsurface and primarily within public rights-of-way. Areas surrounding the SLF alignment are previously disturbed. Unknown buried archaeological resources were most likely previously disturbed by the extensive development in the area; however, past development in Southern California has resulted in numerous buried archaeological resources being uncovered during excavation and soil-disturbing activities. The potential for SLF rehabilitation to affect archaeological resources substantially and adversely will be further evaluated in the draft EIR.

c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐

Potentially Significant Impact. The SLF alignment extends through different geologic formations, some of which could have high potential for sensitive paleontological resources. Because the exact locations and depths of potentially sensitive paleontological resources are unknown, disturbance of intact paleontological resources during the rehabilitation process could occur. The potential for SLF rehabilitation to destroy a unique paleontological resource directly or indirectly will be further evaluated in the draft EIR.

d. Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐

Potentially Significant Impact. SLF rehabilitation would occur primarily within previously disturbed public rights-of-way in previously disturbed areas. The probability of workers encountering human remains, including those interred outside of formal cemeteries is considered relatively low; however, the potential for SLF rehabilitation to disturb human remains will be further evaluated in the draft EIR.

VI. GEOLOGY AND SOILS

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:		
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42)?	☒	☐

Potentially Significant Impact. The proposed project lies within the Newport-Inglewood-Rose Canyon Earthquake Fault Zone, as defined by the California Geological Survey (GeoPentech 2014). In addition, the SLF passes through other fault zones that are not delineated as Alquist-Priolo Earthquake Fault Zones, including two Quaternary faults (the Los Alamitos fault and the Palos Verdes fault), as defined by the U.S. Geological Survey Quaternary Fault and Fold Database (GeoPentech 2014). The potential for fault-related impacts will be further evaluated in the draft EIR.

ii. Strong seismic ground shaking?	☒	☐

Potentially Significant Impact. The proposed project is in Southern California, which is a known seismically active region. The potential for impacts with respect to seismic ground shaking will be further evaluated in the draft EIR.

iii. Seismically related ground failure, including liquefaction?	☒	☐

Potentially Significant Impact. Liquefaction is the phenomenon whereby soils lose shear strength and exhibit fluid-like flow behavior, typically as a result of seismic ground acceleration in areas with sandy and saturated soils. According to the preliminary geotechnical/geologic evaluation, the central portion of the SLF alignment extends through several Liquefaction Hazard Zones, as defined by the California Geological Survey (GeoPentech 2014). The potential for seismically related ground failure impacts will be further evaluated in the draft EIR.

iv. Landslides?	☒	☐

Potentially Significant Impact. The SLF alignment passes within 0.25 mile of Earthquake-Induced Landslide Hazard Zones near the northeastern end of the alignment (Reach 1) as well as near the southwestern end of the alignment (Reach 10) (GeoPentech 2014). Given the proximity to landslide areas and the seismically active nature of Southern California, there is the potential for landslides to affect the pipeline and construction workers at excavation sites and work zones. The potential for impacts related to landslides will be further evaluated in the draft EIR.

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
b. Result in substantial soil erosion or the loss of topsoil?	☒	☐

Potentially Significant Impact. During the course of SLF rehabilitation, excavation activities would temporarily uncover areas that are currently paved, exposing such areas to erosive forces. As a result, some erosion and a temporary reduction in soil stability may occur, particularly on steeper grades. The potential for impacts related to erosion and the loss of topsoil will be further evaluated in the draft EIR.

c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☒	☐

Potentially Significant Impact. As discussed in Item VIa, iii and iv, above, the SLF alignment would extend through areas that are susceptible to liquefaction and seismically induced landslides. The potential for impacts related to unstable soils will be further evaluated in the draft EIR.

d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☒	☐

Potentially Significant Impact. Expansive soils generally owe their characteristics to the presence of swelling clay minerals, which expand as they take on water and reduce as water drains from them. The resulting swelling and shrinking can exert strong pressures on structures and are capable of causing property damage. According to the preliminary geotechnical/geologic evaluation, clays are likely to be found in soils through which the SLF alignment extends (GeoPentech 2014). The potential for impacts related to expansive soils will be further evaluated in the draft EIR.

e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☒

No Impact. SLF rehabilitation would not include the installation or use of septic tanks or alternative wastewater disposal systems. No impacts would occur. No further analysis is required in the draft EIR.

VII. GREENHOUSE GAS EMISSIONS

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☒	☐

Potentially Significant Impact. Greenhouse gas (GHG) emissions would be generated as a result of on-site construction equipment usage, off-site vehicle trips by construction workers, and travel to and from the proposed project site by haul/delivery trucks. The increase in GHG emissions from SLF rehabilitation would be a small fraction of the regional, statewide, and worldwide total inventory. The potential for impacts related to GHG emissions will be further evaluated in the draft EIR.

b. Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☒	☐

Potentially Significant Impact. As discussed in Item VIIa, above, GHG emissions would be emitted as a result of SLF rehabilitation. The potential for GHG emissions to conflict with applicable plans, policies, or regulations will be further evaluated in the draft EIR.

VIII. HAZARDS AND HAZARDOUS MATERIALS

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☒	☐

Potentially Significant Impact. During the course of the SLF rehabilitation, some hazardous material would be used, such as fuel, oils, lubricants, and disinfection solutions that use chlorine. These hazardous materials would be used, transported to and from, and possibly stored at work sites. Therefore, the potential for impacts associated with use, transport, and handling of hazardous materials during rehabilitation will be further evaluated in the draft EIR.

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☒	☐

Potentially Significant Impact. Rehabilitation work and equipment used for the proposed project would require the use of hazardous substances (e.g., fuel and lubricants). Therefore, SLF rehabilitation has the potential to release oils, greases, solvents, and other finishing materials through accidental spills or upsets of these materials, which would have the potential to affect surrounding land uses, although the amount of hazardous substances that would be used for the project is relatively small. The potential for impacts related to reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment will be further evaluated in the draft EIR.

c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	☒	☐

Potentially Significant Impact. There are several schools within 0.25 mile of the SLF alignment. With the exception of the fuels, lubricants, disinfectants containing chlorine, other substances used during the rehabilitation process, and contaminated soil that the crews could uncover, no other hazardous or acutely hazardous materials are anticipated to be encountered. However, the potential for impacts related to hazardous emissions within 0.25 mile of schools will be further evaluated in the draft EIR.

d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?	☒	☐

Potentially Significant Impact. According to the preliminary findings of the hazardous materials analysis, 3,399 federal and state regulatory case files were identified by Environmental Data Resources (a data retrieval service), where hazardous substances or petroleum products were used, transported, stored, disposed of, or released within 0.25 mile of the PCCP sections of the SLF alignment (UltraSystems 2014). Of the 3,399 cases, 152 case files reported unauthorized releases to the subsurface that could affect soil and/or groundwater. In addition, the SLF alignment traverses the Gaffey, Torrance, and Long Beach oil and gas fields in Los Angeles County and the Richfield, Coyote East, and Yorba Linda oil and gas fields in Orange County. Therefore, the SLF alignment could be located on a site that has been included on a list of hazardous materials sites. The potential for impacts related to hazardous materials sites will be further evaluated in the draft EIR.

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
e. For a project located within an airport land use plan or, where such plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☒	☐

Potentially Significant Impact. The SLF alignment crosses within the northern boundary of Long Beach Airport. Construction activities would take place within several hundred feet of a runway and within the airport boundary. The potential for impacts related to SLF rehabilitation within an airport setting will be further evaluated in the draft EIR.

f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☒

Less-than-Significant Impact. Los Alamitos Joint Forces Training Base is 1.2 miles south of the SLF alignment. In addition, Torrance Airport is 1.2 miles west of the SLF alignment, near its southern terminus. Rehabilitation work would generally be located outside of this area and therefore would not be close enough to the airports to create a safety hazard for construction workers or people at the airports. No further analysis is required in the draft EIR.

g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☒	☐

Potentially Significant Impact. During the course of SLF rehabilitation, portions of existing roadways would be shut down to accommodate excavation sites, work zones, or staging areas. In addition, cranes may need to temporarily disrupt traffic. The potential for the SLF rehabilitation to impair implementation of or physically interfere with adopted emergency response plans or evacuation plans will be further evaluated in the draft EIR.

h. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including areas where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☒

No Impact. The SLF alignment is located primarily within a fully developed, urbanized environment and not immediately adjacent to wildlands. The only undeveloped area near the SLF alignment is an undeveloped hillside area adjacent to the Diemer Water Treatment Plant, just outside of Yorba Linda. However, this undeveloped hillside is on the northern side of the treatment plant, and SLF rehabilitation activities would begin on the southern side of the treatment plant adjacent to a golf course. Given that the SLF alignment is not located in wildland areas, SLF rehabilitation would not expose people or structures to the risk of loss, injury, or death as a result of wildland fires. No impact would occur. No further analysis is required in the draft EIR.

IX. HYDROLOGY AND WATER QUALITY

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Violate any water quality standards or waste discharge requirements?	☒	☐

Potentially Significant Impact. SLF rehabilitation tasks that may result in adverse effects on water quality include grading and cleanup as well as short-term, localized excavation and grading activities. Because of the proximity to watercourses (preliminarily identified in Items IVb and IVc), SLF rehabilitation activities could result in releases of excess sediment or other pollutants into these and other waterways. The potential for SLF rehabilitation to violate water quality standards and waste discharge requirements will be further evaluated in the draft EIR.

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☒

Less-than-Significant Impact. The proposed project involves the rehabilitation of an existing water conveyance pipeline. No changes to water usage or supply would occur as a result of the proposed project as demand would remain unchanged. The proposed project would not result in increased use or extraction of groundwater, and there would be no associated impacts on groundwater supplies, aquifer volumes, or groundwater tables. In the unlikely event that shallow groundwater is encountered during SLF rehabilitation activities, temporary dewatering efforts would be minimal and short-term. Based on the temporary nature and limited extent of such potential dewatering activities, no associated impacts related to the drawdown or depletion of local groundwater resources would occur. The proposed project would entail relining the existing SLF and would not result in the construction of substantial new impervious surfaces such as pavement. Accordingly, the proposed project would not result in impacts related to the reduction of local or regional infiltration and associated groundwater recharge capacity. Therefore, impacts would be less than significant. No further analysis is required in the draft EIR.

c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on or off site?	☒	☐

Potentially Significant Impact. Some staging areas or excavation sites would be close to receiving waters. These areas and sites may experience grading or other ground-disturbing activities that could result in altering the existing drainage patterns such that a substantial erosion or siltation could occur in the receiving waters. The potential for SLF rehabilitation to result in substantial erosion or siltation on or off site will be further evaluated in the draft EIR.

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site?	☒	☐

Potentially Significant Impact. Some staging areas and excavation sites would be close to receiving waters. Staging areas and excavation sites would experience grading or other ground-disturbing activities. These ground-disturbing activities have the potential to alter the existing drainage pattern of a site such that the amount of surface water runoff could be affected. The potential for SLF rehabilitation to increase the rate or amount of surface water runoff substantially as a result of alterations to the existing drainage area such that flooding would occur will be further evaluated in the draft EIR.

e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? (Note: Refer to Item XVIIc regarding capacity of stormwater systems.)	☒	☐

Potentially Significant Impact. As identified in Items IXc and IXd, above, siltation or runoff could occur as a result of the effects ground-disturbing activities during SLF rehabilitation. The potential for SLF rehabilitation to provide substantial additional sources of polluted runoff will be further evaluated in the draft EIR.

f. Otherwise substantially degrade water quality?	☐	☒

Less-Than-Significant Impact. Proposed project rehabilitation would not result in other substantial degradations of water quality beyond those previously discussed under Items IXa through IXg above. Impacts would be less than significant. No further analysis is required in the draft EIR.

g. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☒

No Impact. The proposed project does not include the construction of any housing, and no impacts related to the placement of housing in a floodplain would occur. Therefore, impacts would not occur. No further analysis is required in the draft EIR.

h. Place within a 100-year flood hazard area structures that would impede or redirect floodflows?	☐	☒

Less-than-Significant Impact. According to the Federal Emergency Management Agency's (FEMA's) National Flood Hazard Layer mapping tool, several portions of the SLF alignment occur within a 100-year flood hazard area but are located within actual concrete-lined flood control channels. These concrete-lined channels are designed to protect surrounding areas from flooding, and inundation of the surrounding areas would not occur during typical flooding events (FEMA 2013). Structures related to the SLF alignment within these areas would primarily be

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*

underground and are not expected to impede or redirect flows that would be contained by the concrete-lined channels. A portion of the SLF alignment east of Coyote Creek, within the cities of Long Beach, Los Alamitos, and Cypress, is within an area that has been designated as a Future Conditions 1% Annual Chance Flood Hazard (Zone X), which differs from existing conditions 100-year flood hazard areas. This designation is made only to support floodplain management decision-making (FEMA 2013). This area is currently developed, and structures related to the SLF alignment within the area would primarily be underground. Consequently, proposed project structures would not impede or redirect floodflows, and impacts would be less than significant. No further analysis is required in the draft EIR.

i. Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam? ☐ ☒

Less-than-Significant Impact. As discussed in Item IXh, above, portions of the SLF alignment are located within a 100-year flood hazard area. In addition, according to Figure 12.4 of the Los Angeles County Draft General Plan, the SLF alignment is located within the dam and reservoir inundation areas of San Gabriel, Morris, and Big Dalton reservoirs (County of Los Angeles 2014a). A small portion of the SLF rehabilitation would be performed adjacent to Metropolitan's existing Palos Verdes Reservoir. Excavations for the SLF rehabilitation would occur in areas outside of the dam and above the reservoir's water surface elevation and would not result in any additional risk. Given the 25-mile distance that flood flows would have to travel before reaching the project area and given that the location of the SLF rehabilitation would not contribute to dam vulnerabilities, impacts would be less than significant. No further analysis is required in the draft EIR.

j. Expose people or structures to inundation by seiche, tsunami, or mudflow? ☒ ☐

Potentially Significant Impact. As discussed in Item IXi, above, portions of the SLF alignment are located within a dam and reservoir inundation area, but the risk of a seiche emanating from San Gabriel, Morris, and Big Dalton reservoirs that would affect the project area 25 miles to the south is very low. Figure 12.3 of the Los Angeles County Draft General Plan (and the Orange County General Plan) indicates that the proposed project is not located within a tsunami inundation area (County of Los Angeles 2014a; County of Orange 2005). Excavations to perform SLF rehabilitation adjacent to Metropolitan's existing Palos Verdes Reservoir are at elevations above the reservoir such that inundation by seiche is not expected to occur. Therefore, SLF rehabilitation would not result in inundation by seiche or tsunami. No further analysis regarding seiches and tsunamis is required in the draft EIR.

As discussed in Item VIa, iv, there are Earthquake-Induced Landslide Hazard Zones near the northeastern end of the alignment, as well as near the southwestern end of the alignment. The potential for mudflows in connection with landslides will be discussed in the draft EIR.

X. LAND USE AND PLANNING

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Physically divide an established community?	☐	☒

No Impact. Rehabilitation work would involve excavation sites, work zones, and staging areas. Barriers would be used to confine construction for safety purposes. The proposed project consists of improvements to an existing subsurface water distribution pipeline and would not involve the construction or operation of any permanent structures or alterations that would physically divide an established community. No impacts would occur. No further analysis is required in the draft EIR.

b. Conflict with applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☒	☐

Potentially Significant Impact. The SLF alignment traverses multiple local and regional jurisdictions. The proposed project's consistency with applicable land use plans, policies, and regulations will be further evaluated in the draft EIR. It should be noted that California Government Code Section 53091 exempts Metropolitan, as a regional public water purveyor and utility, from local zoning and building ordinances. This exemption applies to the SLF as a water transmission pipeline and a direct component of Metropolitan's treatment, storage, and transmission system. Despite this exemption from local land use planning jurisdiction, for purposes of full disclosure of potential project impacts on the environment, this EIR evaluates project compatibility with relevant general plan policies.

c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☒

No Impact. As discussed in Item IVf, the SLF alignment does not pass through the Orange County Central and Coastal Subregion NCCP/HCP; the NCCP/HCP area is approximately 6 miles to the southeast. The closest portion of the SLF alignment to the Palos Verdes Peninsula NCCP/HCP is 3 miles west of the NCCP/HCP. Given the distance of the SLF rehabilitation from the NCCP/HCP areas, conflicts with these plans are not anticipated, and no impact would occur. No further analysis is required in the draft EIR.

XI. MINERAL RESOURCES

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☒

Less-than-Significant Impact. The proposed project would occur within rights-of-way that have been previously disturbed by both installation of the SLF and other development (e.g., roads, sidewalks, surrounding buildings). According to the Conservation Element of the Rolling Hills Estates General Plan, land in and around the Chandler Quarry, a source of aggregate materials, has been designated a Mineral Resource Zone (MRZ-2) by the State of California (City of Rolling Hills Estates 1992). Although the SLF alignment intersects the Mineral Resource Zone, it is fully within the transportation right-of-way where it coincides with the zone. SLF rehabilitation would not preclude continued use of the quarry and the collection of aggregate materials, nor would it result in the loss of availability of aggregate in the surrounding area. Impacts would be less than significant. No further analysis is required in the draft EIR.

b. Result in the loss of availability of a locally important mineral resource recovery site, as delineated on a local general plan, specific plan, or other land use plan?	☐	☒

Less-than-Significant Impact. According to Figure 9.6 of the Los Angeles County Draft General Plan, the SLF alignment extends through areas that are known to contain oil and gas resources (County of Los Angeles 2014a). Because the SLF alignment occurs within a transportation right-of-way that overlaps oil and gas resources, the oil and gas resources are not currently accessible within those areas. Furthermore, SLF rehabilitation would not contribute to the loss of availability of such resources because they could continue to be accessed and used at other locations within the area known to contain oil and gas. Impacts would be less than significant. No further analysis is required in the draft EIR.

XII. NOISE

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies?	☒	☐

Potentially Significant Impact. SLF Rehabilitation would generally occur during daytime hours, in accordance with the local jurisdiction's ordinances. Nighttime, Saturday, or 24-hour rehabilitation work may be necessary for an operational response or to minimize traffic impacts or shorten water shutdown and refill periods. Noise related to rehabilitation work would be generated by the use of various pieces of equipment, including, but not limited to, tunnel/pipe ventilation fans, excavators, concrete saws, and generators. This equipment could generate noise in excess of standards established in the local general plans or noise ordinances of the various jurisdictions the SLF alignment traverses. The potential for the SLF rehabilitation activities to expose persons to or generate noise in excess of standards will be further evaluated in the draft EIR.

b. Expose persons to or generate excessive groundborne vibration or groundborne noise levels?	☒	☐

Potentially Significant Impact. Rehabilitation work could result in ground vibration or noise because it would take place below grade. Construction would not involve high-impact activities such as pile-driving or blasting; however, given the proximity of excavation sites to residences and other sensitive receivers, use of equipment in the excavation and compaction phases of the rehabilitation process could result in excessive groundborne vibration or noise. The potential for the SLF rehabilitation to expose persons to or generate excessive groundborne vibrations or noise will be further evaluated in the draft EIR.

c. Result in a substantial permanent increase in ambient noise levels in the project vicinity, above levels existing without the project?	☐	☒

No Impact. The proposed project would not result in a permanent increase in ambient noise levels in the project vicinity because of the temporary nature of the rehabilitation work. Once SLF rehabilitation is complete, operation of the SLF alignment would continue below grade. Therefore, a substantial permanent increase in ambient noise levels would not occur and there would be no impact. No further analysis related to operational noise is required in the draft EIR.

d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity, above levels existing without the project?	☒	☐

Potentially Significant Impact. As discussed in Item XIIa, noise related to SLF rehabilitation activities would be generated by the use of various pieces of equipment, including, but not limited to, tunnel/pipe ventilation fans, excavators, concrete saws, and generators. The potential for SLF rehabilitation to substantially increase ambient noise levels temporarily or periodically will be further evaluated in the draft EIR.

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels?	☒	☐

Potentially Significant Impact. The SLF alignment crosses the northern boundary of Long Beach Airport, and SLF rehabilitation activities would occur within the airport boundary. The potential for impacts related to noise created by the proposed project in the vicinity of Long Beach Airport will be further evaluated in the draft EIR.

f. For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels?	☐	☒

Less-than-Significant Impact. Los Alamitos Joint Forces Training Base is approximately 1.2 miles south of the SLF alignment. In addition, Torrance Airport is approximately 1.2 miles west of the SLF alignment. Because of the distance of these airports from the SLF rehabilitation areas, equipment at the excavation sites and work zones would not be louder than noise generated by aircraft at these airports. SLF rehabilitation would not expose construction workers to excessive noise generated by a private airstrip. Impacts would be less than significant. No further analysis is required in the draft EIR.

XIII. POPULATION AND HOUSING

Would the project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through the extension of roads or other infrastructure)?	☐	☒

No Impact. The proposed project does not include construction or operation of housing that would result in a direct increase in population, nor would it displace any existing population or housing. The proposed project would only rehabilitate segments of an existing subsurface water distribution pipeline. It would not expand the existing water distribution system, thereby providing an indirect catalyst for population growth. Impacts would not occur, and further analysis is not required in the draft EIR.

b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☒

No Impact. SLF rehabilitation would not displace any existing housing units, thereby necessitating the construction of replacement housing elsewhere. Rehabilitation activities would take place along an existing pipeline alignment, within existing rights-of-way or easements where homes do not currently exist. Impacts would not occur. Further analysis is not required in the draft EIR.

Would the project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☒

No Impact. SLF rehabilitation would not displace people, thereby necessitating the construction of replacement housing elsewhere. Rehabilitation activities are temporary and would take place along an existing pipeline alignment, within rights-of-way or easements. Therefore, people living in homes in the area would not be displaced. Impacts would not occur. Further analysis is not required in the draft EIR.

XIV. PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
Fire protection?	☐	☒

No Impact. The SLF rehabilitation project would rehabilitate an existing water distribution pipeline and would not require new fire protection services because the proposed project would not expand the service area or indirectly contribute to new development. It does not include the construction of new homes or businesses. The project would not add capacity to the pipeline, which could induce population growth. Therefore, direct population growth, which could result in the need for additional or expanded fire protection, would not occur with implementation of the project. The temporary construction activities necessary to rehabilitate the existing pipelines would not have a significant effect on or result in a need for new or altered fire protection services. Metropolitan would ensure that appropriate fire safety procedures are followed during construction. The proposed project would not result in the provision of new or physically altered governmental facilities to maintain acceptable service ratios or other performance objectives for fire protection. No impact would occur, and no further analysis is required in the draft EIR. Potential impacts on emergency responders, including fire protection, access, and response times, are discussed in Section XVI, Transportation/Traffic.

Police protection?	☐	☒

No Impact. The SLF rehabilitation project would rehabilitate an existing water distribution pipeline and would not require new police protection services because the proposed project would not expand the service area or indirectly contribute to new development. It does not include the construction of new homes or businesses. The project would not add capacity to the pipeline, which could induce population growth. Therefore, direct population growth, which could result in the need for additional or expanded police protection, would not occur with implementation of the project. The temporary construction activities would not result in an increased demand for police

protection. The proposed project would not result in the provision of new or physically altered governmental facilities to maintain acceptable service ratios or other performance objectives for police protection. Impacts would not occur, and no further analysis is required in the draft EIR. Potential impacts on emergency responders, including police, access, and response times, are discussed in Section XVI, Transportation/Traffic.

Schools? ☐ ☒

No Impact. The SLF rehabilitation project would rehabilitate an existing water distribution pipeline and would not require new school services because the proposed project would not expand the service area or indirectly contribute to new development. It does not include the construction of new homes or businesses. The project would not add capacity to the pipeline, which could induce population growth. Therefore, direct population growth, which could result in the need for additional or expanded school facilities, would not occur with implementation of the project. Rather, the project would repair and maintain existing infrastructure to ensure an adequate water supply to the existing water service area. As a result, the project would not increase school enrollment or result in the need for new or expanded school facilities. The proposed project would not result in the provision of new or physically altered governmental facilities to maintain acceptable performance objectives for schools. Impacts would not occur, and no further analysis is required in the draft EIR. Potential temporary impacts on school athletic fields or other school-related recreational facilities are discussed in Section XV, Recreation. Potential impacts on school parking are discussed in Section XVI, Transportation/Traffic.

Parks? ☐ ☒

No Impact. The SLF rehabilitation project would rehabilitate existing water distribution pipelines and would not require new parks because the proposed project would not expand the service area or indirectly contribute to new development. The project would repair and maintain existing infrastructure to ensure an adequate water supply to the existing water service area and does not include the expansion or construction of park facilities. As described previously, the project would not result in an increase in water conveyance capacity or otherwise affect the location, distribution, density, or growth rate of the population within the vicinity of the project area. Because growth would not occur, the proposed project would not result in an increase in the use of existing parks such that new parks would be needed or that physical deterioration of the parks would occur. Activities would be limited to construction along the existing underground pipeline. The proposed project would not result in the provision of new or physically altered governmental facilities to maintain acceptable objectives for parks. Impacts would not occur, and no further analysis is required in the draft EIR. Potential temporary impacts on recreational facilities are discussed in Section XV, Recreation.

Other public facilities? ☐ ☒

No Impact. The proposed project would not require new public facilities because the proposed project would not expand the service area or indirectly contribute to development. Rehabilitation of the existing pipeline would provide for increased reliability of water deliveries to member agencies. Impacts would not occur, and no further analysis is required in the draft EIR.

XV. RECREATION

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?	☒	☐

Potentially Significant Impact. The proposed project would rehabilitate an existing water distribution pipeline. It would not result in or contribute to population growth such that increased use of existing parks would occur. However, SLF rehabilitation could occur within and adjacent to parks and other recreational areas (e.g., open spaces or school athletic fields) and could result in short-term, indirect effects on recreational facilities (e.g., access restrictions, construction noise, or pollutant emissions) or short-term, direct effects (e.g., eliminate the use of the recreation facility for a period of time). Although SLF rehabilitation is unlikely to lead to permanent deterioration of such facilities, impacts could be significant and will be further evaluated in the draft EIR.

b. Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☒

No Impact. The proposed project does not include recreational facilities, nor would it require the construction or expansion of existing facilities. No impact would occur. Further analysis is not required in the draft EIR.

XVI. TRANSPORTATION/TRAFFIC

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Conflict with an applicable plan, ordinance, or policy that establishes measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel, and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, and pedestrian and bicycle paths?	☒	☐

Potentially Significant Impact. During the course of the SLF rehabilitation, work zones would be established within existing roadways, requiring lane closures for extended periods of time (e.g., potentially several months). Temporary signage, traffic cones, fencing, and barriers would be placed where needed during rehabilitation as part of the proposed project. In addition, staging areas and work zones could displace existing parking at various locations (e.g., schools and roadways). The potential for the proposed project to conflict with applicable plans, ordinances, or policies related to the circulation system will be further evaluated in the draft EIR.

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
b. Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways?	☒	☐

Potentially Significant Impact. As described in Item XVIa, SLF rehabilitation would disrupt traffic and conflict with congestion management plans or existing level-of-service standards during the different construction phases of the proposed project. The potential for SLF rehabilitation activities to conflict with congestion management plans or level-of-service standards related to the circulation system will be further evaluated in the draft EIR.

c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks?	☐	☒

Less-than-Significant Impact. The proposed project would rehabilitate existing subsurface water distribution pipelines and therefore would not result in an increase in air traffic levels such that air traffic patterns would be influenced. Rehabilitation activities may occur in areas adjacent to existing runways at Long Beach Airport, but the work sites would not be located on the runways. Consequently, SLF rehabilitation would not alter air traffic patterns at Long Beach Airport. Impacts would be less than significant. No further analysis is required in the draft EIR.

d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☒	☐

Potentially Significant Impact. During the rehabilitation activities, work zones would be established within roadways and would include heavy machinery, handheld equipment, and excavation pits. Lane closures would be required for some work zones. The potential for the SLF rehabilitation to result in transportation hazards will be further evaluated in the draft EIR.

e. Result in inadequate emergency access?	☒	☐

Potentially Significant Impact. During the course of SLF rehabilitation, lane closures would be required to accommodate SLF rehabilitation activities within the work zones and the use of equipment. In some areas with narrow roadways, full road closures would be necessary. Both lane closures and full road closures could affect access to roadways that are used by emergency providers. SLF rehabilitation would result in the temporary disruption or shutdown of existing roads, as described in Item VIIIg. Disruption of traffic has the potential to delay fire personnel, police, or first responders and possibly to increase response times. The potential for SLF rehabilitation to result in inadequate emergency access will be further evaluated in the draft EIR.

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities or otherwise decrease the performance or safety of such facilities?	☒	☐

Potentially Significant Impact. SLF rehabilitation would take place along several roadways that are designated as bus corridors. Buses could be delayed if lanes are needed to provide space for work zones. Bus stops may be temporarily relocated in consideration of the locations of the work zones. In addition, Bixby Road in the city of Long Beach has Class II bicycle lanes that could be temporarily disrupted during rehabilitation activities. The potential for SLF rehabilitation activities to conflict with the performance of existing public transit, bicycle, or pedestrian facilities will be further evaluated in the draft EIR.

XVII. UTILITIES AND SERVICE SYSTEMS

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board (RWQCB)?	☐	☒

Less-than-Significant Impact. The proposed project would not generate any long-term or substantial quantities of wastewater, and it would not involve permanent structures with the potential to generate wastewater. The proposed project would require dewatering of the pipe prior to rehabilitation. The pipe would be flushed with chlorinated water upon completion of rehabilitation activities. The flushed water would be dechlorinated and released into local flood control channels and sewer systems. Therefore, no additional treatment of water from dewatering or flushed water would be required. No wastewater treatment requirements would be violated or exceeded as a result of the proposed project. Further analysis is not required in the draft EIR.

b. Require or result in the construction of new water or wastewater treatment facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☒

No Impact. The proposed project would rehabilitate existing PCCP along the SLF alignment. It would not involve the construction of new water facilities, and it would not increase the capacity of the system. The proposed project would not result in construction of new wastewater treatment facilities. No impacts would occur, and further analysis is not required in the draft EIR.

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
c. Require or result in the construction of new stormwater drainage facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☒

No Impact. The construction of new stormwater drainage facilities or the expansion of existing facilities is typically required to maintain or increase the facilities' capacity to accommodate an increase in stormwater runoff in an area, such as when a project involves a substantial increase in the amount of impermeable surface. SLF rehabilitation would not involve paving previously unpaved areas and therefore would not result in an increase in impermeable surfaces that would necessitate the construction of new or expanded stormwater facilities or the provision of additional capacity. Impacts would not occur, and further analysis is not required in the draft EIR.

d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new and expanded entitlements needed?	☐	☒

No Impact. The proposed project would rehabilitate an existing water distribution pipeline. It would not entail uses that would result in long-term water consumption. Consequently, the proposed project would not affect existing water entitlements or require new entitlements. No impact would occur, and further analysis is not required in the draft EIR.

e. Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to its existing commitments?	☐	☒

No Impact. The proposed project consists of rehabilitating an existing pipeline. It would not include long-term uses that would require wastewater treatment. No new wastewater would be generated from operation of the SLF. Upon completion of SLF rehabilitation work, the pipeline would operate as it currently does. Consequently, the proposed project would not affect existing wastewater treatment capabilities of the local provider. No impacts would occur, and further analysis is not required in the draft EIR.

f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☒

Less-than-Significant Impact. The proposed project would not generate substantial amounts of solid waste. Solid waste debris generated could include cutback asphalt, cut portions of PCCP, and excavated soil that could not be reused on site. This debris would either be reused on site, if feasible, or be recycled off site. The selected contractor would use cost-effective means and methods to recycle or dispose of any solid waste debris generated during rehabilitation. Construction and demolition facilities accept these types of materials on a regular basis to process and dispose of them. Construction and demolition facilities used for current emergency repairs of the SLF include: Dan Copp Crushing, Arcadia Reclamation, and Standard Metals. The selected contractor would coordinate with these types of facilities prior to rehabilitation. Other solid waste debris that cannot be recycled and cannot go to a construction and demolition facility could be

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*

accommodated by one or more of the six solid waste facilities in Los Angeles County. The selected contractor could coordinate with one or more of these facilities. These facilities accepted, on average, more than 500 tons of solid waste per day as of 2012 (Los Angeles County Department of Public Works 2013 [Appendix E-2, Table 1]). These facilities include Antelope Valley (accepts 822 tons per day), Calabasas (accepts 633 tons per day), Chiquita Canyon (accepts 2,971 tons per day), Lancaster (accepts 682 tons per day), Scholl Canyon (accepts 675 tons per day), and Sunshine Canyon (accepts 7,107 tons per day). Given the intent to maximize the proposed project's use of excavated materials as backfill and the presence of multiple designated construction and demolition facilities and landfills with existing daily capacity to recycle or dispose of solid waste debris, impacts would be less than significant. Further analysis is not required in the draft EIR.

g.	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☒

Less-than-Significant Impact. As discussed above, SLF rehabilitation activities would generate small amounts of solid waste including construction and demolition debris. All waste produced due to proposed project activities would be removed immediately following the activity and disposed of properly in accordance with federal, state, and local statutes and regulations. The proposed project is not anticipated to have a significant impact on solid waste disposal needs, and no further analysis is required. Impacts would be less than significant. Further analysis is not required in the draft EIR.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a Rare or Endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☒	☐

Potentially Significant Impact. As discussed in Section IV above, the potential for SLF rehabilitation to reduce the quality of the environment and affect wildlife species and associated habitat will be addressed further in the draft EIR. As discussed in Section V above, the potential for SLF rehabilitation to eliminate important examples of major periods of California history or prehistory will be addressed further in the draft EIR.

Would the proposed project:	*Impact to Be Analyzed in EIR*	*No Additional Analysis Required*
b. Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☒	☐

Potentially Significant Impact. The potential for SLF rehabilitation to contribute to cumulative impacts will be addressed further in the draft EIR.

c. Does the project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐

Potentially Significant Impact. The potential for SLF rehabilitation to result in direct and/or indirect adverse impacts on human beings will be addressed further in the draft EIR.

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PREPARERS OF INITIAL STUDY

The following individuals participated in the preparation of the initial study:

The Metropolitan Water District of Southern California (CEQA lead agency)

- Diane Doesserich
- Malinda Stalvey

ICF International, Inc.

- Donna McCormick
- Nicole Williams
- Rusty Whisman
- Tanya Jones
- Elizabeth Irvin
- John Mathias
- Jenelle Mountain-Castro

Appendix B
Comment Letters on the Notice of Preparation

CITY OF ORANGE

DEPARTMENT OF COMMUNITY DEVELOPMENT www.cityoforange.org

ADMINISTRATION	PLANNING DIVISION	BUILDING DIVISION	CODE ENFORCEMENT DIVISION
(714) 744-7240	(714) 744-7220	(714) 744-7200	(714) 744-7244
fax: (714) 744-7222	fax: (714) 744-7222	fax: (714) 744-7245	fax: (714) 744-7245

January 20, 2015 #35-14

Ms. Diane Doesserich via email: EPT@mwdh2o.com
Environmental Planning Team
The Metropolitan Water District of Southern California
PO Box 54153
Los Angeles, CA 90054-0153

Subject: Pre-Stressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program and Second Lower Feeder (SLF) Rehabilitation Project

Dear Ms. Doesserich:

The City of Orange (City) has received a Notice of Preparation (NOP) for an Environmental Impact Report (EIR) for the PCCP Rehabilitation Program and the SLF Rehabilitation Project. The project includes rehabilitation of the Allen McColloch , Calabasas, Rialto, Sepulveda Feeder and Second Lower Feeder water distribution pipelines. The pipelines are located within MWD-owned rights of way and existing roads. Work includes trenching, relining existing pipes, installation of supplemental or relocated pipes, and refurbishment or replacement of valves and other appurtenant structures. We understand that work would start on the SLF in 2016 and move to the other four pipelines over the next 15 to 20 years.

The Allen McCullough Pipeline is located within the City of Orange. Therefore, we have an interest in ensuring that the EIR evaluate and mitigate any potential impacts to our infrastructure or operations. As such, we request consideration of the following comments:

1. The City requests that the EIR describe the general sequencing and timing for the Allen McColloch Pipeline work and identify any potential for disruption of water service to Orange's connections. We also request substantial advance notification (at least 12 to 24 months) of any work on the AMP that would disrupt water service to Orange's connections, so that there is sufficient time to coordinate any necessary operational changes.

2. The City requests the EIR identify City streets that would be affected by project construction and describe the nature and extent of the disruption. The City requests the EIR describe any street or lane closures or detours and evaluate the impact of redistribution of traffic on adjacent local streets during construction. Any haul routes or detour routes should avoid residential neighborhoods and other sensitive use areas.

3. The City requests the EIR acknowledge that MWD will obtain encroachment permits, haul permits, transportation permits and/or traffic control plan approvals from the City of Orange prior to construction. Depending on the volume of materials hauled, issuance of the haul permit may be a discretionary action approved at the City Council level.

   In addition, please note that conditions may be applied to City-issued permits as a means of minimizing impacts and inconvenience to local roadway users. Conditions may include but are not limited to restricted work or haul hours and implementation of certain traffic safety measures such as use of flagmen at sensitive locations. Also, please note that as a condition of our encroachment and haul permit, the City will require MWD to perform a pavement survey and replace any pavement damaged or disturbed by project equipment, work, or hauling. Depending on project design, this may result in MWD repaving the entire width of the roadway where pipeline work is located.

Thank you for the opportunity to comment on the NOP. We look forward to reviewing the Draft EIR upon completion and coordinating on any future work. If you have any questions, please feel free to contact Mr. Frank Sun, City Engineer at (714) 744 – 5544 or at fsun@cityoforange.org.

Sincerely,

Joe DeFrancesco
Public Works Director
City of Orange

DEPARTMENT OF TRANSPORTATION
DISTRICT 12
3347 MICHELSON DRIVE, SUITE 100
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Flex your power!
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Jan. 16, 2014

Diane Doesserich
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, , CA 90054-0153

File: IGR/CEQA
SCH#: 2014121055
IGR Log #: 4158

Dear Ms. Doesserich,

Thank you for the opportunity to review and comment on the **Notice of Preparation (NOP) for the Draft Environmental Impact Report(EIR) for the Pre-Stressed Concrete Cylinder Pipe Rehabilitation Program and Second Lower Feeder Rehabilitation Project.** Metropolitan Water District of Southern California has more than 830 miles of pipelines that distribute drinking water to its member agencies within its service area. The pipelines are made of various materials, including PCCP. Between 1962 and 1985, 163 miles of PCCP was installed throughout the service area. Under certain subsurface conditions, PCCP lines have an elevated risk of failure compared with other types of pipe. PCCP failures can occur without warning. Such failures can be catastrophic, compromising system reliability and resulting in unplanned major repairs, significant costs from service interruptions and repair work, and potential third-party damages. In response to this risk, in 1999, Metropolitan developed a program to inspect and asses all 163 miles of PCCP within its distribution system. In 2011, Metropolitan initiated a comprehensive program to evaluate and rank PCCP lines with the highest risk of failure. The inspections and data indicate that the following five feeders represent the highest risk: the Sepulveda Feeder, Rialto Pipeline, Allen McColloch Pipeline (AMP), Calabasas Feeder, and the SLF. Metropolitan proposes to rehabilitate the PCCP portions of these five pipelines under the proposed program and proposed project. Rehabilitation would occur along approximately 70 miles of the AMP, Calabasas Feeder, Rialto Pipeline, and Sepulveda Feeder under the proposed program and approximately 30 miles of the SLF under the proposed project. The first pipeline to be rehabilitated by Metropolitan would be the SLF, followed by the remaining four pipelines (Sepulveda Feeder, Rialto Pipeline, and Calabasas Feeder, AMP) over a period of approximately 15 to 20 years. Rehabilitation would include relining PCCP lines or installing supplemental or relocated lines. Rehabilitation or replacement of isolation valves or appurtenances such as blow-off valves, air-release and vacuum valves, manholes, and meters would also occur within or adjacent to the pipelines.

Caltrans is a commenting agency on this project and has the following comments:

1. If the cost of work within the State R/W is below one Million Dollars the Encroachment Permit process will be handled by Caltrans Permits Branch, otherwise the permit should be authorized through Caltrans Project Development.

2. Allow 2 to 4 weeks for a complete submittal to be reviewed and for a permit to be issued. When applying for Encroachment Permit, please incorporate Environmental Documentation, SWPPP/ WPCP, Hydraulic Calculations, Traffic Control Plans, Geotechnical Analysis, Materials specifications, and all relevant design details including design exception approvals. Maintenance Agreement shall be required between State and the City.

3. If MWD's contractor has not been exempt from permit fees in the Cooperative Agreement, a deposit of $820 will be needed at the time of Double Permit Application submittal.

4. For specific details on Caltrans Encroachment Permits procedure, please refer to Caltrans Encroachment Permits Manual. The latest edition of the Manual is available on the web site: http://www.dot.ca.gov/hq/traffops/developserv/permits/

5. A Traffic Management Plan (TMP) for construction vehicles should be submitted to Caltrans in order to minimize the impacts on the State highway facilities. Coordination of this project with other construction activities may be needed. Any hauling of materials should not occur during A.M and P.M peak periods of travel on State highway facilities during demolition and/or construction of the proposed project. All vehicle loads should be covered so that materials do not blow over or onto the Caltrans Right-of-Way.

Please continue to keep us informed of this project and any future developments that could potentially impact State transportation facilities. If you have any questions or need to contact us, please do not hesitate to call Maryam Molavi at (949) 724-2241.

Sincerely,

MAUREEN EL HARAKE
Branch Chief, Regional-Community-Transit Planning
District 12

City of Anaheim

PUBLIC UTILITIES DEPARTMENT

Environmental Services

January 27, 2015

Ms. Diane Doesserich
Environmental Planning Team
The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

RE: NOTICE OF PREPRARATION OF DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE PRE-STRESSED CONCRETE CYLINDER PIPE REHABILITATION PROGRAM (PCCP) AND SECOND LOWER FEEDER REHABILITATION PROJECT (SLF)

Dear Ms. Doesserich:

Thank you for the opportunity to review and comment on the above-referenced document.

Public Utilities Department – Water Planning and Resources staff offer the following comments:

1. The City of Anaheim has existing aboveground and subsurface infrastructure within the Project Area. During design and before Project construction, all appropriate measures shall be taken to minimize or avoid any potential disturbances to any existing City of Anaheim infrastructure improvements within the Project Area.

2. MWD shall coordinate their maintenance/construction activities with Anaheim when those activities occur in Anaheim's water service area.

Should you have any questions regarding these comments, please contact Al Shaikh, Principal Civil Engineer, at (714)765-5268.

The Public Utilities Department, Environmental Services Division, offers the following comments:

1. Recommend adding the name of the street, Ball Road, to the map on page 32 in order to offer more identification of the location of the Second Lower Feeder.

2. Page 41, Section IX – Hydrology and Water Quality, of the Initial Study indicates that the Allen McColloch Pipeline (AMP) is not within an area of potential dam failure or inundation. Please refer to the "Dam Inundation Map" of the Safety Element of the Anaheim General Plan which indicates areas of the AMP are within an area subject to inundation due to failure of Prado Dam.

Should you have any questions regarding these comments from the Utilities Department, please contact Marie Newland, Environmental Services Specialist, at (714)765-4166.

The Public Works Department, Traffic Engineering staff offers the following comments:

1. Traffic studies should be included to address construction related impacts. Project construction will most likely impact traffic circulation, including transit service, particularly within The Anaheim Resort Area. Any significant traffic impacts will require mitigation in order to avoid increases to existing traffic congestion conditions.

2. Traffic Control Plans will need to be submitted to the City of Anaheim Public Works Department for approval for any work to be done within Anaheim's city limits. The traffic control plans will assist in providing a safe, uniform flow of traffic. The proposed construction activities and public travel, whether by vehicle, bicycle, or by pedestrians walking, must be given equal consideration when developing traffic control plans.

For comments related to Traffic Engineering, please contact Rafael Cobian, Associate Engineer, at (714) 765-4991.

We would again like to thank you for the opportunity to comment on the above-referenced project. Please forward any subsequent public notices and/or environmental documents regarding this project to my attention at the address listed at the bottom of the first page of this letter.

Sincerely,

Marie Newland
Environmental Services Specialist

cc:

Sara Mathis, Public Utilities Department
Al Shaikh, Public Utilities
Rafael Cobian, Public Works Department
Raul Garcia, Public Works Department
Rod Yong, Public Utilities Department
Nam Nguyen, Public Utilities Department

201 S. Anaheim Boulevard, Suite 1101
Anaheim, California 92805

TEL (714) 765-4166 – mnewland@anaheim.net

City of Anaheim
PUBLIC UTILITIES DEPARTMENT
Environmental Services

January 27, 2015

Ms. Diane Doesserich
Environmental Planning Team
The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

RE: NOTICE OF PREPRARATION OF DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE PRE-STRESSED CONCRETE CYLINDER PIPE REHABILITATION PROGRAM (PCCP) AND SECOND LOWER FEEDER REHABILITATION PROJECT (SLF)

Dear Ms. Doesserich:

Thank you for the opportunity to review and comment on the above-referenced document.

Public Utilities Department – Water Planning and Resources staff offer the following comments:

1. The City of Anaheim has existing aboveground and subsurface infrastructure within the Project Area. During design and before Project construction, all appropriate measures shall be taken to minimize or avoid any potential disturbances to any existing City of Anaheim infrastructure improvements within the Project Area.

2. MWD shall coordinate their maintenance/construction activities with Anaheim when those activities occur in Anaheim's water service area.

Should you have any questions regarding these comments, please contact Al Shaikh, Principal Civil Engineer, at (714)765-5268.

Public Utilities Department, Environmental Services Division, offers the following comments:

1. Recommend adding the name of the street, Ball Road, to the map on page 32 in order to offer more identification of the location of the Second Lower Feeder.

2. Page 41, Section IX – Hydrology and Water Quality, of the Initial Study indicates that the Allen McColloch Pipeline (AMP) is not within an area of potential dam failure or inundation. Please refer to the "Dam Inundation Map" of the Safety Element of the Anaheim General Plan which indicates areas of the AMP are within an area subject to inundation due to failure of Prado Dam.

Should you have any questions regarding these comments from the Utilities Department, please contact Marie Newland, Environmental Services Specialist, at (714)765-4166.

We would again like to thank you for the opportunity to comment on the above-referenced

Public Works Department, Traffic Engineering staff offers the following comments:

1. Traffic studies should be included to address construction related impacts. Project construction will most likely impact traffic circulation, including transit service, particularly within The Anaheim Resort Area. Any significant traffic impacts will require mitigation in order to avoid increases to existing traffic congestion conditions.

2. Traffic Control Plans will need to be submitted to the City of Anaheim Public Works Department for approval for any work to be done within Anaheim's city limits. The traffic control plans will assist in providing a safe, uniform flow of traffic. The proposed construction activities and public travel, whether by vehicle, bicycle, or by pedestrians walking, must be given equal consideration when developing traffic control plans.

For comments related to Traffic Engineering, please contact Rafael Cobian, Associate Engineer, at (714) 765-4991.

Public Works Department, Development staff offers the following comments:

1. The contractor shall obtain a right of way construction permit for all work with City of Anaheim right-of-ways.
2. During the duration of the project within Anaheim, the contractor needs to schedule regular Traffic Coordination meetings.
3. The Contractor shall include Emergency Services (Fire, Police, etc) in the Traffic Control coordination meetings.
4. Any work outside of the City right-of-way, but within Anaheim's jurisdiction may require a grading permit.
5. Pavement restoration plans shall be submitted to the City of Anaheim
6. No storage of materials on the street will be allowed.
7. Welding ventilation system outlets need to be located away from residential areas.
8. The Contractor shall avoid any conflicts with City projects in the area.
9. The Contractor shall be prepared to address any possibility of street flooding at the Ball Road/Knott Avenue intersection general area.
10. The project shall be coordinated with CALTRANS for the crossing at Beach Avenue.
11. The project shall be coordinated with OCTA for any impacts to bus services.
12. Street closures are not allowed unless approved by City of Anaheim.

For comments related to Development, please contact Raul Garcia, Principal Engineer, at (714) 765-5255.

We would again like to thank you for the opportunity to comment on the above-referenced project. Please forward any subsequent public notices and/or environmental documents regarding this project to my attention at the address listed at the bottom of the first page of this letter.

201 S. Anaheim Boulevard, Suite 1101
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TEL (714) 765-4166 – mnewland@anaheim.net

Sincerely,

Marie Newland
Environmental Services Specialist

cc:

Sara Mathis, Public Utilities Department
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EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

January 16, 2015

Ms. Diane Doesserich
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153
Email: EPT@mwdh2o.com

Subject: Comments on the Notice of Preparation of a Joint Project Level and Program Level Draft Environmental Impact Report for the Pre-Stressed Concrete Cylinder Pipe Rehabilitation Program and Second Lower Feeder Rehabilitation Project; Los Angeles, Orange, and San Bernardino Counties, SCH#2014121055.

Dear Ms. Doesserich:

The California Department of Fish and Wildlife (Department) has reviewed the Pre-Stressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program (PCCP Program) and Second Lower Feeder (SLF) Rehabilitation Project (SLF Project) Notice of Preparation (NOP) and Initial Study (IS) for a joint project level and program level Draft Environmental Impact Report (DEIR). The PCCP Program, if approved by the Metropolitan Water District of Southern California (Metropolitan), will consist of rehabilitation along approximately 100 miles of drinking water distribution PCCP identified to have a higher risk of failure. The PCCP Program would include relining PCCP lines or installing supplemental or relocated lines. Rehabilitation or replacement of isolation valves or appurtenances such as blow - off valves, air - release and vacuum valves, manholes, and meters would also occur within or adjacent to the pipelines.

The PCCP Program would occur primarily in Metropolitan-owned rights-of-way and public roads and extends through unincorporated Los Angeles, Orange and San Bernardino County and numerous cities within these counties.

The first pipeline to be rehabilitated in the PCCP Program would be the SLF Project which will include: Anaheim, Buena Park, Carson, Cypress, Lakewood, Lomita, Long Beach, Los Alamitos, Los Angeles, Placentia, Rolling Hills Estates, Torrance, Yorba Linda, unincorporated Los Angeles County, and unincorporated Orange County. The SLF Project will be followed by the remaining pipelines included in the PCCP Program over a period of approximately 15 to 20 years.

The following comments and recommendations have been prepared pursuant to the Department's authority as Trustee Agency with jurisdiction over natural resources affected by the Project (California Environmental Quality Act [CEQA] Guidelines § 15386) and pursuant to our authority as a Responsible Agency under CEQA Guidelines section 15381 over those aspects of the proposed Project that come under the purview of the California Endangered Species Act ([CESA] Fish and Game Code § 2050 *et seq.*) and Fish and Game Code section 1600 *et seq*. to assist the City in avoiding and minimizing impacts to biological resources.

1. The Department has responsibility for wetland and riparian habitats. It is the policy of the Department to strongly discourage development in wetlands or conversion of wetlands to uplands. We oppose any development or conversion, which would result in a reduction of wetland acreage or wetland habitat, values, unless, at a minimum, Project mitigation assures there will be "no net loss" of either wetland habitat values or acreage. Development and conversion include but are not limited to conversion to subsurface drains, placement of fill or building of structures within the wetland, and channelization or removal of materials from the streambed. All wetlands and watercourses, whether intermittent or perennial, should be retained and provided with substantial setbacks, which preserve the riparian and aquatic values and maintain their value to on-site and off-site wildlife populations. Mitigation measures to compensate for impacts to mature riparian corridors must be included in the DEIR and must compensate for the loss of function and value of a wildlife corridor.

   a) The Project area supports riparian habitat and may support other wetland habitat types; therefore, a jurisdictional delineation of any creeks and their associated riparian habitats should be included in the DEIR. The delineation should be conducted pursuant to the U.S. Fish and Wildlife Service wetland definition adopted by the Department.[1] Please note that some wetland and riparian habitats subject to the Department's authority may extend beyond the jurisdictional limits of the U.S. Army Corps of Engineers.

   b) The Department also has regulatory authority over activities in streams and/or lakes that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) of a river or stream, or use material from a streambed. For any such activities, the Project applicant (or "entity") must provide written notification to the Department pursuant to section 1600 et seq. of the Fish and Game Code. Based on this notification and other information, the Department determines whether a Lake and Streambed Alteration (LSA) Agreement with the applicant is required prior to conducting the proposed activities. The Department's issuance of a LSA Agreement for a Project that is subject to CEQA will require CEQA compliance actions by the Department as a Responsible Agency. The Department as a Responsible Agency under CEQA may consider the local jurisdiction's (lead agency) Negative Declaration or Environmental Impact Report for the Project. To minimize additional requirements by the Department pursuant to section 1600 *et seq.* and/or under CEQA, the document should fully identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for issuance of the LSA Agreement.[2]

2. The Department considers adverse impacts to a species protected by the CESA, for the purposes of CEQA, to be significant without mitigation. As to CESA, take of any endangered, threatened, or candidate species that results from the Project is prohibited, except as authorized by state law (Fish and Game Code, §§ 2080, 2085.) Consequently, if the Project, Project construction, or any Project-related activity during the life of the Project will result in take of a species designated as endangered or threatened, or a candidate for listing under CESA, the Department recommends that the Project proponent seek appropriate take authorization under CESA prior to implementing the Project. Appropriate authorization from the Department may include an incidental take permit (ITP) or a

[1] Cowardin, Lewis M., et al. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service.
[2] A notification package for a LSA may be obtained by accessing the Department's website at www.wildlife.ca.gov/habcon/1600.

consistency determination in certain circumstances, among other options (Fish and Game Code §§ 2080.1, 2081, subds. (b),(c)). Early consultation is encouraged, as significant modification to a Project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, may require that the Department issue a separate CEQA document for the issuance of an ITP unless the Project CEQA document addresses all Project impacts to CESA-listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of an ITP. For these reasons, biological mitigation monitoring and reporting proposals should be of sufficient detail and resolution to satisfy the requirements for a CESA ITP.

3. To enable the Department to adequately review and comment on the proposed Project from the standpoint of the protection of plants, fish and wildlife, we recommend the following information be included in the DEIR.

   a) A complete discussion of the purpose and need for, and description of, the proposed Project, including all staging areas and access routes to the construction and staging areas.

   b) A range of feasible alternatives to ensure that alternatives to the proposed Project are fully considered and evaluated; the alternatives should avoid or otherwise minimize impacts to sensitive biological resources particularly wetland/riparian habitat. Specific alternative locations should be evaluated in areas with lower resource sensitivity where appropriate.

Biological Resources within the Project's Area of Potential Effect

4. To provide a complete assessment of the flora and fauna within and adjacent to the Project area, with particular emphasis upon identifying endangered, threatened, sensitive, and locally unique species and sensitive habitats, the DEIR should include the following information.

   a) Per CEQA Guidelines, section 15125(c), information on the regional setting that is critical to an assessment of environmental impacts, with special emphasis should be placed on resources that are rare or unique to the region.

   b) A thorough, recent floristic-based assessment of special status plants and natural communities, following the Department's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (see http://www.dfg.ca.gov/habcon/plant/). The Department recommends that floristic, alliance- and/or association-based mapping and vegetation impact assessments be conducted at the Project site and neighboring vicinity. The Manual of California Vegetation, second edition, should also be used to inform this mapping and assessment (Sawyer et al. 2008)[3]. Adjoining habitat areas should be included in this assessment where site activities could lead to direct or indirect impacts offsite. Habitat mapping at

[3] Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2008. A Manual of California Vegetation. Second edition. California Native Plant Society, Sacramento, California, USA.

the alliance level will help establish baseline vegetation conditions.

c) A current inventory of the biological resources associated with each habitat type on site and within the area of potential effect. The Department's California Natural Diversity Data Base in Sacramento should be contacted at www.wildlife.ca.gov/biogeodata/ to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code.

d) An inventory of rare, threatened, endangered, and other sensitive species on site and within the area of potential effect. Species to be addressed should include all those which meet the CEQA definition (see CEQA Guidelines, § 15380). This should include sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use of the Project area should also be addressed. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and the U.S. Fish and Wildlife Service.

Analyses of the Potential Project-Related Impacts on the Biological Resources

5. To provide a thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts, the following should be addressed in the DEIR.

a) A discussion of potential adverse impacts from lighting, noise, human activity, exotic species, and drainage should also be included. The latter subject should address: Project-related changes on drainage patterns on and downstream of the Project site; the volume, velocity, and frequency of existing and post-Project surface flows; polluted runoff; soil erosion and/or sedimentation in streams and water bodies; and post-Project fate of runoff from the Project site. The discussions should also address the proximity of the extraction activities to the water table, whether dewatering would be necessary, and the potential resulting impacts on the habitat, if any, supported by the groundwater. Mitigation measures proposed to alleviate such impacts should be included.

b) Discussions regarding indirect Project impacts on biological resources, including resources in nearby public lands, open space, adjacent natural habitats, riparian ecosystems, and any designated and/or proposed or existing reserve lands (e.g., preserve lands associated with a NCCP). Impacts on, and maintenance of, wildlife corridor/movement areas, including access to undisturbed habitats in adjacent areas, should be fully evaluated in the DEIR.

c) The zoning of areas for development Projects or other uses that are nearby or adjacent to natural areas may inadvertently contribute to wildlife-human interactions. A discussion of possible conflicts and mitigation measures to reduce these conflicts should be included in the environmental document.

d) A cumulative effects analysis should be developed as described under CEQA Guidelines, section 15130. General and specific plans, as well as past, present, and anticipated future Projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

Mitigation for the Project-related Biological Impacts

6. The DEIR should include measures to fully avoid and otherwise protect Rare Natural Communities from Project-related impacts. The Department considers these communities as threatened habitats having both regional and local significance.

7. The DEIR should include mitigation measures for adverse Project-related impacts to sensitive plants, animals, and habitats. Mitigation measures should emphasize avoidance and reduction of Project impacts. For unavoidable impacts, on-site habitat restoration or enhancement should be discussed in detail. If on-site mitigation is not feasible or would not be biologically viable and therefore not adequately mitigate the loss of biological functions and values, off-site mitigation through habitat creation and/or acquisition and preservation in perpetuity should be addressed.

8. For proposed preservation and/or restoration, the DEIR should include measures to perpetually protect the targeted habitat values from direct and indirect negative impacts. The objective should be to offset the Project-induced qualitative and quantitative losses of wildlife habitat values. Issues that should be addressed include restrictions on access, proposed land dedications, monitoring and management programs, control of illegal dumping, water pollution, increased human intrusion, etc.

9. In order to avoid impacts to nesting birds, the DEIR should require that clearing of vegetation, and when biologically warranted construction, occur outside of the peak avian breeding season which generally runs from February 1 through September 1 (as early as January for some raptors). If Project construction is necessary during the bird breeding season a qualified biologist with experience in conducting bird breeding surveys should conduct weekly bird surveys for nesting birds, within three days prior to the work in the area, and ensure no nesting birds in the Project area would be impacted by the Project. If an active nest is identified, a buffer shall be established between the construction activities and the nest so that nesting activities are not interrupted. The buffer should be a minimum width of 300 feet (500 feet for raptors), be delineated by temporary fencing, and remain in effect as long as construction is occurring or until the nest is no longer active. No Project construction shall occur within the fenced nest zone until the young have fledged, are no longer being fed by the parents, have left the nest, and will no longer be impacted by the Project. Reductions in the nest buffer distance may be appropriate depending on the avian species involved, ambient levels of human activity, screening vegetation, or possibly other factors.

10. The Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Studies have shown that these efforts are experimental in nature and largely unsuccessful.

11. Plans for restoration and revegetation should be prepared by persons with expertise in southern California ecosystems and native plant revegetation techniques. Each plan should include, at a minimum: (a) the location of the mitigation site; (b) the plant species to be used, container sizes, and seeding rates; (c) a schematic depicting the mitigation area; (d) planting schedule; (e) a description of the irrigation methodology; (f) measures to control exotic vegetation on site; (g) specific success criteria; (h) a detailed monitoring program; (i) contingency measures should the success criteria not be met; and (j) identification of the party responsible for meeting the success criteria and providing for conservation of the mitigation site in perpetuity.

We appreciate the opportunity to comment on the referenced NOP. Questions regarding this letter and further coordination on these issues should be directed to Scott Harris, Environmental Scientist at (626) 797-3170 or scott.p.harris@wildlife.ca.gov.

Sincerely,

Betty J. Courtney
Environmental Program Manager I

ec: Erinn Wilson, CDFW, Los Alamitos
Marilyn Fluharty, CDFW, San Diego
Jeff Brandt, CDFW, Ontario
Kelly Schmoker, CDFW, Mission Viejo
Scott Harris, CDFW, Pasadena
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State Clearing House

From: Mark McAvoy [mailto:m.mcavoy@lomitacity.com]
Sent: Tuesday, January 20, 2015 5:43 PM
To: Environmental Planning Team - EPT
Cc: Mark Andersen; Tom Shahbazi; Ulises Escalona; Paul.Williams@waterboards.ca.gov; Ric.Roda@waterboards.ca.gov
Subject: PCCP Rehabilitation Program and SLF Rehabilitation Project

Date: January 20, 2015

To: Ms. Diane Doesserich, Environmental Planning Team
The Metropolitan Water District of Southern California
P.O. Box 54153 Los Angeles, CA 90054-0153

From: Mark McAvoy, City of Lomita, Director of Public Works/City Engineer
P.O. Box 339, Lomita CA 90717 – 310.325.7110 x124

Subject: PCCP Rehabilitation Program and SLF Rehabilitation Project

The City of Lomita has received the Notice of Preparation (NOP) of an EIR, for the PCCP Rehabilitation Program and SLF Rehabilitation Project, prepared by The Metropolitan Water District of Southern California (MWD). MWD proposes to rehabilitate (5) pipelines, the Sepulveda Feeder, Rialto Pipeline, Allen McColloch Pipeline, Calabasas Feeder and the Second Lower Feeder over a period of approximately 15 to 20 years, beginning with the Second Lower Feeder. The City is concerned regarding this project's potential impacts to the operations of the City's water system, and how those potential impacts are going to be mitigated.

Background

The City of Lomita was incorporated in 1964, and is located 26 miles south of downtown Los Angeles and is bounded by the City of Torrance to the north and west; the City of Los Angeles to the east; the City of Rolling Hills Estates on the southwest; the City of Rancho Palos Verdes on the southeast and unincorporated County area to the northeast. The City's total area is 1.97 square miles.

The City is a retail water agency within West Basin Municipal Water District's (WBMWD) service area. The City's Water Division currently serves a population of approximately 21,515 and handles operations, maintenance, water treatment and upgrading of the (41) miles of distribution pipes within the water system which has more than 4200 service connections.

Pressure Zones

The City of Lomita's topography varies widely in elevation (225 ft. to 430 ft.) requiring (4) different pressure zones to deliver water at adequate pressures to the City's customers.

MWD Connections

The table below provides a summary of the imported MWD water connections that supply the City.

Site Name	Location	Inlet PSI	Outlet PSI	Flow Capacity (gpm)
WB-7	Walnut Ave & Turrell St.	120	72	1,800
WB-8	Appian Way	165	110	3,350

WB-7 can only supplement supply within water pressure Zone I (that portion of the City of Lomita north of Pacific Coast Highway (SR-1)) which serves 75% of the City's population. WB-8 can supply all (4) pressures Zones.

Emergency Connections

The table below provides a summary of emergency connections.

Location	2 way/1 way	Size	Discharge (gpm)
Palos Verdes Drive	2 way	8"	1,800
239th and Narbonne	1 way	8"	1,350
Pennsylvania Ave and 240th St.	1 way	8"	1,350

These (3) connections can allow water to flow to the City's water distribution system during emergencies, but cannot supply the entire City (water pressure Zone II has no emergency connection).

Storage Facilities

There are (2) operating reservoirs in the City's system; the Cypress reservoir at 5.3 MG and the Harbor Hills reservoir at 100,000 gallons, with a combined storage capacity of 5.4 MG. Harbor Hills supplies Zone III and IV and Cypress supplies Zone I. Zone II is a closed zone with no storage capacity and is solely dependent upon imported water supplied through WB-8.

Pump Stations

There are (2) pump stations. One is located at the Cypress Water Production Facility (CWPF) and the other is adjacent to WB-8. The booster pump at Appian Way can supply all (4) pressure zones.

Cypress Water Production Facility (CWPF)

CWPF was successfully placed into service in April of 2013. This facility includes a well capable of 1,500 gpm, a chemical disinfection system, iron and manganese filter and a 5.3 MG reservoir. Secondary water quality issues prohibit the sole distribution of well water. Current operations include blending 50% MWD water

supplied through WB-8 with 50% well water which is then treated, stored and distribution through gravity to Zone I. There are no back up wells within the City's water system.

Water Demands

The table below provides a (2) year summary of historical water demand.

Fiscal Year	CWPF	MWD
2013 - 2014	592.3 AF	1,787.7 AF
2012 - 2013	161.7 AF	2,275.0 AF

This equates to an approximate daily average of 2.3 MGD, which is consistent with the City's (10) year historical water usage data.

Potential Impacts to Water Resources

The City of Lomita is greatly dependent upon MWD's supply from the Second Lower Feeder (SLF) which directly supplies WB-8. While the City understands MWD's need to rehabilitate the SLF, the City is concerned about potential direct and cumulative impacts of this project on water supplies to the City.

The City respectfully requests that prior to implementation of the SLF project, MWD work with the City to identify adequate backup water supplies for the City's population so that water can continue to be delivered to the City's customers. In addition, assistance is requested to help prepare a written contingency plan to be practiced between MWD operational staff and the City's Water Division staff to ensure these planned emergency operations can functionally supply water to each of the (4) water pressure zones within the City's water distribution system. At no point can the City sustain a shutdown of WB-8 before an adequate backup for water pressure Zone II is identified and constructed. The City also understands that the WB-8 connection is referred to by two (2) separate names, WB-8A and WB-8B; we would like confirmation whether that implies two separate connections and whether or not both of these connections would be affected by the SLF project.

We appreciate the opportunity to provide input to your planning process and look forward to receiving future correspondence on this project.

Mark A. McAvoy
Public Works Director

City of Lomita
24300 Narbonne Avenue
Lomita, CA 90717
(310) 325-7110, x124

STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

January 8, 2015

Diane Doesserich
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

RE: SCH # 2014121055 Pre-Stressed Concrete Cylinder Pipe Rehabilitation Program and Second Lower Feeder Rehabilitation, Los Angeles County.

Dear Ms. Doesserich,

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check. **USGS 7.5-minute quadrangle name, township, range, and section required**
  - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached.**
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) Guidelines §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered cultural items that are not burial associated, which are addressed in Public Resources Code (PRC) §5097.98, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, PRC §5097.98, and CEQA Guidelines §15064.5(e), address the process to be followed in the event of an accidental discovery of any human remains and associated grave goods in a location other than a dedicated cemetery.

Sincerely,

Katy Sanchez

Katy Sanchez
Associate Government Program Analyst

CC: State Clearinghouse

Native American Contacts
Los Angeles County
January 7, 2015

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Tataviam
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LA City/County Native American Indian Comm
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This list is current only as of the date of this document.

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This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed SCH #2014121055 Pre-Stressed Concrete Cylinder Pipe-Rehabilitation Program and Second Level Feeder Rehab, Los Angeles County.

Native American Contacts
Los Angeles County
January 7, 2015

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Gabrielino Tongva

Tongva Ancestral Territorial Tribal Nation
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Native American Contacts
Los Angeles County
January 7, 2015

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Kawaiisu
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Gabrielino-Tongva Tribe
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1999 Avenue of the Stars, Suite 1100
Los Angeles , CA 90067

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Gabrielino

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Native American Contacts
Los Angeles County
January 7, 2015

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Coastal Band of the Chumash Nation
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Gabrieleno Band of Mission Indians
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Los Angeles , CA 90027

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Native American Contacts
Los Angeles County
January 7, 2015

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STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

Notice of Preparation

December 18, 2014

To: Reviewing Agencies

Re: Pre-Stressed Concrete Cylinder Pipe Rehabilitation Program and Second Lower Feeder Rehabilitation Project
SCH# 2014121055

Attached for your review and comment is the Notice of Preparation (NOP) for the Pre-Stressed Concrete Cylinder Pipe Rehabilitation Program and Second Lower Feeder Rehabilitation Project draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Diane Doesserich
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

Document Details Report
State Clearinghouse Data Base

SCH#	**2014121055**
Project Title	Pre-Stressed Concrete Cylinder Pipe Rehabilitation Program and Second Lower Feeder Rehabilitation Project
Lead Agency	Metropolitan Water District of Southern California

Type **NOP** Notice of Preparation

Description

Metropolitan has more than 830 miles of pipelines that distribute drinking water to its member agencies within its service area. The pipelines are made of various materials, including PCCP. Between 1962 and 1985, 163 miles of PCCP was installed throughout the service area. Under certain subsurface conditions, PCCP lines have an elevated risk of failure compared with other types of pipe. PCCP failures can occur without warning. Such failures can be catastrophic, compromising system reliability and resulting in unplanned major repairs, significant costs from service interruptions and repair work, and potential third-party damages. In response to this risk, in 1999, Metropolitan developed a program to inspect and asses all 163 miles of PCCP within its distribution system. In 2011, Metropolitan initiated a comprehensive program to evaluate and rank PCCP lines with the highest risk of failure. The inspections and data indicate that the following five feeders represent the highest risk: the Sepulveda Feeder, Rialto Pipeline, Allen McColloch Pipeline (AMP), Calabasas Feeder, and the SLF. Metropolitan proposes to rehabilitate the PCCP portions of these five pipelines under the proposed program and proposed project. Rehabilitation would occur along approximately 70 miles of the AMP, Calabasas Feeder, Rialto Pipeline, and Sepulveda Feeder under the proposed program and approximately 30 miles of the SLF under the proposed project. The first pipeline to be rehabilitated by Metropolitan would be the SLF, followed by the remaining four pipelines (Sepulveda Feeder, Rialto Pipeline, and Calabasas Feeder, AMP) over a period of approximately 15 to 20 years. Rehabilitation would include relining PCCP lines or installing supplemental or relocated lines. Rehabilitation or replacement of isolation valves or appurtenances such as blow-off valves, air-release and vacuum valves, manholes, and meters would also occur within or adjacent to the pipelines.

Document Details Report
State Clearinghouse Data Base

Lead Agency Contact

Name	Diane Doesserich
Agency	Metropolitan Water District of Southern California
Phone	(213) 217-6899 **Fax**
email	
Address	P.O. Box 54153
City	Los Angeles **State** CA **Zip** 90054-0153

Project Location

County	Los Angeles
City	
Region	
Cross Streets	
Lat / Long	
Parcel No.	
Township	**Range** **Section** **Base**

Proximity to:

Highways	
Airports	
Railways	
Waterways	
Schools	
Land Use	

Project Issues

Reviewing Agencies	Resources Agency; Coachella Valley Mountains Conservancy; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Wildlife, Region 5; Native American Heritage Commission; California Highway Patrol; Caltrans, District 7; Caltrans, District 12; Air Resources Board; State Water Resources Control Board, Divison of Financial Assistance; State Water Resources Control Board, Division of Drinking Water; Regional Water Quality Control Board, Region 4

Date Received 12/18/2014 **Start of Review** 12/18/2014 **End of Review** 01/16/2015

NOP Distribution List

VC

County: Los Angeles

SCH# 2014121055

esources Agency

- Resources Agency
  Nadell Gayou
- Dept. of Boating & Waterways
  Nicole Wong
- California Coastal Commission
  Elizabeth A. Fuchs
- Colorado River Board
  Lisa Johansen
- Dept. of Conservation
  Elizabeth Carpenter
- California Energy Commission
  Eric Knight
- Cal Fire
  Dan Foster
- Central Valley Flood Protection Board
  James Herota
- Office of Historic Preservation
  Ron Parsons
- Dept of Parks & Recreation
  Environmental Stewardship Section
- California Department of Resources, Recycling & Recovery
  Sue O'Leary
- S.F. Bay Conservation & Dev't. Comm.
  Steve McAdam
- Dept. of Water Resources
  Resources Agency
  Nadell Gayou

Fish and Game

- Depart. of Fish & Wildlife
  Scott Flint
  Environmental Services Division
- Fish & Wildlife Region 1
  Donald Koch
- Fish & Wildlife Region 1E
  Laurie Harnsberger
- Fish & Wildlife Region 2
  Jeff Drongesen
- Fish & Wildlife Region 3
  Charles Armor
- Fish & Wildlife Region 4
  Julie Vance
- Fish & Wildlife Region 5
  Leslie Newton-Reed
  Habitat Conservation Program
- Fish & Wildlife Region 6
  Tiffany Ellis
  Habitat Conservation Program
- Fish & Wildlife Region 6 I/M
  Heidi Sickler
  Inyo/Mono, Habitat Conservation Program
- Dept. of Fish & Wildlife M
  George Isaac
  Marine Region

Other Departments

- Food & Agriculture
  Sandra Schubert
  Dept. of Food and Agriculture
- Depart. of General Services
  Public School Construction
- Dept. of General Services
  Anna Garbeff
  Environmental Services Section
- Delta Stewardship Council
  Kevan Samsam
- Housing & Comm. Dev.
  CEQA Coordinator
  Housing Policy Division

Independent Commissions,Boards

- Delta Protection Commission
  Michael Machado
- OES (Office of Emergency Services)
  Dennis Castrillo
- Native American Heritage Comm.
  Debbie Treadway
- Public Utilities Commission
  Leo Wong
- Santa Monica Bay Restoration
  Guangyu Wang
- State Lands Commission
  Jennifer Deleong
- Tahoe Regional Planning Agency (TRPA)
  Cherry Jacques

Cal State Transportation Agency CalSTA

- Caltrans - Division of Aeronautics
  Philip Crimmins
- Caltrans – Planning HQ LD-IGR
  Terri Pencovic
- California Highway Patrol
  Suzann Ikeuchi
  Office of Special Projects

Dept. of Transportation

- Caltrans, District 1
  Rex Jackman
- Caltrans, District 2
  Marcelino Gonzalez
- Caltrans, District 3
  Eric Federicks – South
  Susan Zanchi - North
- Caltrans, District 4
  Erik Alm
- Caltrans, District 5
  Larry Newland
- Caltrans, District 6
  Michael Navarro
- Caltrans, District 7
  Dianna Watson
- Caltrans, District 8
  Mark Roberts
- Caltrans, District 9
  Gayle Rosander
- Caltrans, District 10
  Tom Dumas
- Caltrans, District 11
  Jacob Armstrong
- Caltrans, District 12
  Maureen El Harake

Cal EPA

Air Resources Board

- All Other Projects
  Cathi Slaminski
- Transportation Projects
  Nesamani Kalandiyur
- Industrial/Energy Projects
  Mike Tollstrup
- State Water Resources Control Board
  Regional Programs Unit
  Division of Financial Assistance
- State Water Resources Control Board
  Jeffery Werth
  Division of Drinking Water
- State Water Resources Control Board
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- State Water Resouces Control Board
  Phil Crader
  Division of Water Rights
- Dept. of Toxic Substances Control
  CEQA Tracking Center
- Department of Pesticide Regulation
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- RWQCB 1
  Cathleen Hudson
  North Coast Region (1)
- RWQCB 2
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- RWQCB 3
  Central Coast Region (3)
- RWQCB 4
  Teresa Rodgers
  Los Angeles Region (4)
- RWQCB 5S
  Central Valley Region (5)
- RWQCB 5F
  Central Valley Region (5)
  Fresno Branch Office
- RWQCB 5R
  Central Valley Region (5)
  Redding Branch Office
- RWQCB 6
  Lahontan Region (6)
- RWQCB 6V
  Lahontan Region (6)
  Victorville Branch Office
- RWQCB 7
  Colorado River Basin Region (7)
- RWQCB 8
  Santa Ana Region (8)
- RWQCB 9
  San Diego Region (9)

- Other _____
- _____
- _____
- _____
  Conservancy

Last Updated 10/13/2014

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

December 23, 2014

Ms. Diane Doesserich
The Metropolitan Water District of Southern California
700 N. Alameda Street
Los Angeles, CA 90012

Notice of Preparation of a CEQA Document for the Pre-Stressed Concrete Cylinder Pipe Rehabilitation Program and Second Lower Feeder Rehabilitation Project

The South Coast Air Quality Management District (SCAQMD) staff appreciates the opportunity to comment on the above-mentioned document. The SCAQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the draft CEQA document. Please send the SCAQMD a copy of the CEQA document upon its completion. Note that copies of the Draft EIR that are submitted to the State Clearinghouse are not forwarded to the SCAQMD. Please forward a copy of the Draft EIR directly to SCAQMD at the address in our letterhead. **In addition, please send with the draft EIR all appendices or technical documents related to the air quality and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files. These include original emission calculation spreadsheets and modeling files (not Adobe PDF files). Without all files and supporting air quality documentation, the SCAQMD will be unable to complete its review of the air quality analysis in a timely manner. Any delays in providing all supporting air quality documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. More recent guidance developed since this Handbook was published is also available on SCAQMD's website here: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993). SCAQMD staff also recommends that the lead agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: www.caleemod.com.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Additionally, construction impacts from hauling should be analyzed. Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the analysis.

The SCAQMD has also developed both regional and localized significance thresholds. The SCAQMD staff requests that the lead agency quantify criteria pollutant emissions and compare the results to the recommended regional significance thresholds found here: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2. In addition to analyzing regional air quality impacts, the SCAQMD staff recommends

calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LST's can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the proposed project, it is recommended that the lead agency perform a localized analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

In the event that the proposed project generates or attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the lead agency perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("*Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*") can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included.

In addition, guidance on siting incompatible land uses (such as placing homes near freeways) can be found in the California Air Resources Board's *Air Quality and Land Use Handbook: A Community Perspective*, which can be found at the following internet address: http://www.arb.ca.gov/ch/handbook.pdf. CARB's Land Use Handbook is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process.

Mitigation Measures

In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate these impacts. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Several resources are available to assist the Lead Agency with identifying possible mitigation measures for the project, including:

- Chapter 11 of the SCAQMD *CEQA Air Quality Handbook*
- SCAQMD's CEQA web pages at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies.
- CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures* available here: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf.
- SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook for controlling construction-related emissions
- Other measures to reduce air quality impacts from land use projects can be found in the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. This document can be found at the following internet address: http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf?sfvrsn=4.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's webpage (http://www.aqmd.gov).

The SCAQMD staff is available to work with the Lead Agency to ensure that project emissions are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at jbaker@aqmd.gov or call me at (909) 396-3176.

Sincerely,

Jillian Baker

Jillian Baker, Ph.D.
Program Supervisor
Planning, Rule Development & Area Sources

ALL141219-04
Control Number

CALIFORNIA Water Boards

EDMUND G. BROWN JR. GOVERNOR

MATTHEW RODRIQUEZ SECRETARY FOR ENVIRONMENTAL PROTECTION

State Water Resources Control Board

JAN 14 2015

Diane Doesserich
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

Dear Ms. Doesserich:

NOTICE OF PREPARATION (NOP) FOR METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA (DISTRICT); PRE-STRESSED CONCRETE CLINDER PIPE REHABILITATION PROGRAM AND SECOND LOWER FEEDER REHABILITATION PROJECT (PROJECT);LOS ANGELES COUNTY; STATE CLEARINGHOUSE NO: 2014121055

We understand that the District maybe pursuing Clean Water State Revolving Fund (CWSRF) financing for this Project. As a funding agency and a state agency with jurisdiction by law to preserve, enhance, and restore the quality of California's water resources, the State Water Resources Control Board (State Water Board) is providing the following information on the preparation of the California Environmental Quality Act (CEQA) documents for the Project.

The State Water Board, Division of Financial Assistance, is responsible for administering the CWSRF Program. The primary purpose for the CWSRF Program is to implement the Clean Water Act and various state laws by providing financial assistance for wastewater treatment facilities necessary to prevent water pollution, recycle water, correct nonpoint source and storm drainage pollution problems, provide for estuary enhancement, and thereby protect and promote health, safety and welfare of the inhabitants of the state. The CWSRF Program provides low-interest funding equal to one-half of the most recent State General Obligation Bond Rates with a 30-year term. Applications are accepted and processed continuously. Please refer to the State Water Board's CWSRF website at:
www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/index.shtml.

The CWSRF Program is partially funded by the United States Environmental Protection Agency and requires additional "CEQA-Plus" environmental documentation and review. Three enclosures are included that further explain the CWSRF Program environmental review process and the additional federal requirements. For the complete environmental application package please visit:
http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/srf_forms.shtml. The State Water Board is required to consult directly with agencies responsible for implementing federal environmental laws and regulations. Any environmental issues raised by federal agencies or their representatives will need to be resolved prior to State Water Board approval of a CWSRF financing commitment for the proposed Project. For further information on the CWSRF Program, please contact Mr. Ahmad Kashkoli, at (916) 341-5855.

It is important to note that prior to a CWSRF financing commitment, projects are subject to provisions of the Federal Endangered Species Act (ESA), and must obtain Section 7 clearance from the United States Department of the Interior, Fish and Wildlife Service (USFWS), and/or the United States Department of Commerce National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) for any potential effects to special-status species.

Please be advised that the State Water Board will consult with the USFWS, and/or the NMFS regarding all federal special-status species that the Project has the potential to impact if the Project is to be financed by the CWSRF Program. The District will need to identify whether the Project will involve any direct effects from construction activities, or indirect effects such as growth inducement, that may affect federally listed threatened, endangered, or candidate species that are known, or have a potential to occur in the Project site, in the surrounding areas, or in the service area, and to identify applicable conservation measures to reduce such effects.

In addition, CWSRF projects must comply with federal laws pertaining to cultural resources, specifically Section 106 of the National Historic Preservation Act (Section 106). The State Water Board has responsibility for ensuring compliance with Section 106 and the State Water Board must consult directly with the California State Historic Preservation Officer (SHPO). SHPO consultation is initiated when sufficient information is provided by the CWSRF applicant. The District must retain a consultant that meets the Secretary of the Interior's Professional Qualifications Standards (http://www.nps.gov/history/local-law/arch_stnds_9.htm) to prepare a Section 106 compliance report.

Note that the District will need to identify the Area of Potential Effects (APE), including construction and staging areas, and the depth of any excavation. The APE is three-dimensional and includes all areas that may be affected by the Project. The APE includes the surface area and extends below ground to the depth of any Project excavations. The records search request should extend to a ½-mile beyond project APE. The appropriate area varies for different projects but should be drawn large enough to provide information on what types of sites may exist in the vicinity.

Other federal environmental requirements pertinent to the Project under the CWSRF Program include the following (for a complete list of all environmental requirements please visit: http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/docs/forms/application_environmental_package.pdf):

A. Compliance with the Federal Clean Air Act: (a) Provide air quality studies that may have been done for the Project; and (b) if the Project is in a nonattainment area or attainment area subject to a maintenance plan; (i) provide a summary of the estimated emissions (in tons per year) that are expected from both the construction and operation of the Project for each federal criteria pollutant in a nonattainment or maintenance area, and indicate if the nonattainment designation is moderate, serious, or severe (if applicable); (ii) if emissions are above the federal de minimis levels, but the Project is sized to meet only the needs of current population projections that are used in the approved State Implementation Plan for air quality, quantitatively indicate how the proposed capacity increase was calculated using population projections.

B. Compliance with the Coastal Zone Management Act: Identify whether the Project is within a coastal zone and the status of any coordination with the California Coastal Commission.

C. Protection of Wetlands: Identify any portion of the proposed Project area that should be evaluated for wetlands or United States waters delineation by the United States Army Corps of Engineers (USACE), or requires a permit from the USACE, and identify the status of coordination with the USACE.

D. Compliance with the Farmland Protection Policy Act: Identify whether the Project will result in the conversion of farmland. State the status of farmland (Prime, Unique, or Local and Statewide Importance) in the Project area and determine if this area is under a Williamson Act Contract.

E. Compliance with the Migratory Bird Treaty Act: List any birds protected under this act that may be impacted by the Project and identify conservation measures to minimize impacts.

F. Compliance with the Flood Plain Management Act: Identify whether or not the Project is in a Flood Management Zone and include a copy of the Federal Emergency Management Agency flood zone maps for the area.

G. Compliance with the Wild and Scenic Rivers Act: Identify whether or not any Wild and Scenic Rivers would be potentially impacted by the Project and include conservation measures to minimize such impacts.

Following the preparation of the draft CEQA document for the Project, please provide us a copy of the document to review if the District's is considering CWSRF financing. In addition, we would appreciate notices of any hearings or meetings held regarding environmental review for the Project.

Thank you for the providing us a copy of your NOP, and the consideration of the CWSRF for the financing of the District's Project. If you have any questions or concerns, please feel free to contact me at (916) 341-5855, or by email at Ahmad.Kashkoli@waterboards.ca.gov or contact Amanda Dwyer at (916) 341-5739, or by email at Amanda.Dwyer@waterboards.ca.gov.

Sincerely,

Ahmad Kashkoli
Senior Environmental Scientist

cc: State Clearinghouse
(Re: SCH#2014121055)
P.O. Box 3044
Sacramento, CA 95812-3044

CLEAN WATER STATE REVOLVING FUND

California Environmental Quality Act Requirements

State Water Resources Control Board
Division of Financial Assistance

The State Water Resources Control Board (State Water Board), Division of Financial Assistance, administers the Clean Water State Revolving Fund (CWSRF) Program. The CWSRF Program is partially funded by grants from the United States Environmental Protection Agency. All applicants seeking CWSRF financing must comply with the California Environmental Quality Act (CEQA), and provide sufficient information so that the State Water Board can document compliance with federal environmental laws. The "Environmental Package" provides the forms and instructions needed to complete the environmental review requirements for CWSRF Program financing. It is available at: ***http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/srf_forms.shtml***

LEAD AGENCY

The applicant is usually the "Lead Agency" and must prepare and circulate an environmental document before approving a project. Only a public agency, such as a local, regional or state government, may be the "Lead Agency" under CEQA. If a project will be completed by a non-governmental organization, "Lead Agency" responsibility goes to the first public agency providing discretionary approval for the project.

RESPONSIBLE AGENCY

The State Water Board is generally a "Responsible Agency" under CEQA. As a "Responsible Agency," the State Water Board must make findings based on information provided by the "Lead Agency" before financing a project.

ENVIRONMENTAL REVIEW

The State Water Board's environmental review of the project's compliance with both CEQA and federal cross-cutting regulations must be completed before a project can be financed by the CWSRF Program.

DOCUMENT REVIEW

Applicants are encouraged to consult with State Water Board staff early during preparation of CEQA document if considering CWSRF financing. Applicants shall also send their environmental documents to the State Water Board, Environmental Review Unit during the CEQA public review period. This way, any environmental concerns can be addressed early in the process.

REQUIRED DOCUMENTS

The Environmental Review Unit requires the documents listed below to make findings and complete its environmental review. Once the State Water Board receives all the required documents and makes its own findings, the environmental review for the project will be complete.

- ✓ Draft and Final Environmental Documents: Environmental Impact Report, Negative Declaration, and Mitigated Negative Declaration as appropriate to the project
- ✓ Resolution adopting/certifying the environmental document, making CEQA findings, and approving the project
- ✓ All comments received during the public review period and the "Lead Agency's" responses to those comments
- ✓ Adopted Mitigation Monitoring and Reporting Plan, if applicable
- ✓ Date-stamped copy of the Notice of Determination or Notice of Exemption filed with the County Clerk(s) and the Governor's Office of Planning and Research
- ✓ CWSRF Evaluation Form for Environmental Review and Federal Coordination with supporting documents

We've got the **green**...
to keep California's **water clean**.
CLEAN WATER STATE REVOLVING FUND

Contact Information: For more information related to the CWSRF Program environmental review process and requirements, please contact your State Water Board Project Manager or Mr. Ahmad Kashkoli at 916-341-5855 or Ahmad.Kashkoli@waterboards.ca.gov

Water Boards
waterboards.ca.gov

REVISED FEB 2014

CLEAN WATER STATE REVOLVING FUND

Basic Criteria for Cultural Resources Report Preparation

State Water Resources Control Board
Division of Financial Assistance

For Section 106 Consultation with the State Historic Preservation Officer (SHPO) under the National Historic Preservation Act

CULTURAL RESOURCES REPORT

The Cultural Resources Report must be prepared by a qualified researcher that meets the Secretary of the Interior's Professional Qualifications Standards. Please see the Professional Qualifications Standards at the following website at: *http://www.cr.nps.gov/local-law/arch_stnds_9.htm*

The Cultural Resources Report should include one of the four "findings" listed in Section 106. These include:

"No historic properties affected"
(no properties are within the area of potential effect (APE; including below the ground).

"No effect to historic properties"
(properties may be near the APE, but the project will not have any adverse effects).

"No adverse effect to historic properties"
(the project may affect "historic properties", but the effects will not be adverse).

"Adverse effect to historic properties"
Note: Consultation with the SHPO will be required if a "no adverse effect to historic properties" or an "adverse effect to historic properties" determination is made, to develop and evaluate alternatives or modifications to the proposed project that could avoid, minimize or mitigate adverse effects on "historic properties."

RECORDS SEARCH

- A records search (less than one year old) extending to a half-mile beyond the project APE from a geographically appropriate Information Center is required. The records search should include maps that show all recorded sites and surveys in relation to the APE for the proposed project, and copies of the confidential site records included as an appendix to the Cultural Resources Report.
- The APE is three-dimensional (depth, length and width) and all areas (e.g., new construction, easements, staging areas, and access roads) directly affected by the proposed project.

NATIVE AMERICAN and INTERESTED PARTY CONSULTATION

- Native American and interested party consultation should be initiated at the planning phase of the proposed project to gather information to assist with the preparation of an adequate Cultural Resources Report.
- The Native American Heritage Commission (NAHC) must be contacted to obtain documentation of a search of the Sacred Lands Files for or near the project APE.
- All local Native American tribal organizations or individuals identified by the NAHC must be contacted by certified mail, and the letter should include a map and a description of the proposed project.
- Follow-up contact should be made by telephone and a phone log maintained to document the contacts and responses.
- Letters of inquiry seeking historical information on the project area and local vicinity should be sent to local historical societies, preservation organizations, or individual members of the public with a demonstrated interest in the proposed project.

Copies of all documents mentioned above (project description, map, phone log and letters sent to the NAHC and Native American tribal organizations or individuals and interested parties) must be included in the Cultural Resources Report.

Contact Information: For more information related to the CWSRF Program Cultural Resources and Requirments, please contact Mr. Ahmad Kashkoli at 916-341-5855 or Ahmad.Kashkoli@waterboards.ca.gov

PRECAUTIONS

A finding of ***"no known resources"*** without supporting evidence is unacceptable. The Cultural Resources Report must identify resources within the APE or demonstrate with sufficient evidence that none are present.

"The area is sensitive for buried archaeological resources," followed by a statement that ***"monitoring is recommended."*** Monitoring is not an acceptable option without good-faith effort to demonstrate that no known resource is present.

If ***"the area is already disturbed by previous construction"*** documentation is still required to demonstrate that the proposed project will not affect "historic properties." An existing road can be protecting a buried archaeological deposit or may itself be a "historic property." Additionally, previous construction may have impacted an archaeological site that has not been previously documented.

SHPO CONSULTATION LETTER

Submit a draft consultation letter prepared by the qualified researcher with the Cultural Resources Report to the State Water Resources Control Board. A draft consultation letter template is available for download on the State Water Board webpage at: *http://www.waterboards.ca.gov/water_issues/programs/grants_loans/cwsrf_requirements.shtml*

California Water Boards
State Water Resources Control Board
Regional Water Quality Control Boards
waterboards.ca.gov

REVISED JAN 2014

Appendix C
Air Quality Calculations

Air Quality Assumptions

General

Phasing and Overlap

Typical Excavation Site Based on discussions with MWD staff, it was assumed that no more than 10 typical excavation sites in which slip-lining would occur would be utilized at any given time. This analysis assumes that the subphase for a typical excavation site with the greatest criteria/precursor pollutant emissions would occur concurrently with 9 other typical excavation sites.

Typical New Valve/ Meter Vault Structure Two new valve/meter vaults were assumed to be constructed concurrently with the other program elements and maximum dimensions of the vault size were assumed.

Typical Below Grade AV/VV Relocation Three relocations of below-grade air release/vacuum valves were assumed to be constructed concurrently with the other program elements. Dimensions are based on those given in the program description chapter of the EIR.

Pipeline Replacement/ Parallel Piping A single 1,000-ft parallel piping segment was also assumed to be under construction concurrently with the other program elements

Idle Emissions	5	minutes per trip
Miles/Trip	14.7	commute average for South Coast Air Basin
	6.9	vendor trip average for South Coast Air Basin

Typical Excavation Site

1.1 Mobilize and Site Setup

Import	200	m of K-rail	6.1	m/seg	4	tons/seg	1.35	tons/cy	**97.14633 cy**
Import Trips	97.1463267	cy	16	cy/truck	6.071645	round trips			
	6.07164542	round trips	5	day phase duratic	2	round trips/day (rounded)			

1.2 Excavation, Shoring, Dewatering

Export	30	ft long	25	ft wide	25	ft deep	**694.4444 cy**		
Export Trips	694.444444	cy	16	cy/truck	43.40278	round trips			
	43.4027778	round trips	20	day phase duratic	3	round trips/day (rounded)			

1.3 Pipe Removal/Pipe Relining

Deliveries	2	round trips of liner deliveries/day

1.4 Backfill and Asphalt Replacement

Import (Paving Materials)	150	ft length	80	ft wide	0.5	ft deep	**222.2222 cy**		
Import (Backfill)	30	ft long	25	ft wide	25	ft deep	**694.4444 cy**		
Import Trips	916.666667	cy	16	cy/truck	57.29167	round trips			
	57.2916667	round trips	15	day phase duratic	4	round trips/day (rounded)			

1.5 Site Restoration and Clean Up

Export	200	m of K-rail	6.1	m/seg	4	tons/seg	1.35	tons/cy	**97.14633 cy**
Export Trips	97.1463267	cy	20	tons/truck	4.857316	round trips			
	4.85731633	round trips	5	day phase duratic	1	round trips/day (rounded)			

Typical New Valve/Meter Vault Structure

2.1 Mobilize and Site Setup

Import	200	m of K-rail	6.1	m/seg	4	tons/seg	1.35	tons/cy	**97.14633 cy**
Import Trips	97.1463267	cy	16	cy/truck	6.071645	round trips			
	6.07164542	round trips	5	day phase duratic	2	round trips/day (rounded)			

2.2 Excavation, Shoring, Dewatering

Export	66	ft long	22	ft wide	21	feet deep	**1129.333 cy**		
Export Trips	1129.33333	cy	16	cy/truck	70.58333	round trips			
	70.5833333	round trips	20	day phase duratic	4	round trips/day (rounded)			

2.3 Construct New Valve Structure

Import (Concrete)	3-feet walls assumed		**331.3333**	cy					
Import Trips	331.333333	cy	16	cy/truck	20.70833	round trips			
	20.7083333	round trips	30	day phase duratic	1	round trips/day (rounded)			

2.4 Install New Equipment

Deliveries	2	round trips of equipment deliveries/day

2.5 Backfill and Asphalt Replacement

Import (Paving Materials)	150	ft length	80	ft wide	0.5	ft deep	**222.2222**		
Import Trips	222.222222	cy	16	cy/truck	13.88889	round trips			
	13.8888889	round trips	15	day phase duratic	1	round trips/day (rounded)			

2.6 Demolition of Old Vault Structure,Backfill and Asphalt Replacement

Import	66	ft long	22	ft wide	21	ft deep	**1129.333**		
Import Trips	1129.33333	cy	16	cy/truck	70.58333	round trips			
	70.5833333	round trips	20	day phase duratic	4	round trips/day (rounded)			

2.7 Site Restoration and Clean Up

Export	200	m of K-rail	6.1	m/seg	4	tons/seg	1.35	tons/cy	**97.14633 cy**
Export Trips	97.1463267	cy	20	tons/truck	4.857316	round trips			
	4.85731633	round trips	5	day phase duratic	1	round trips/day (rounded)			

Typical Below Grade AV/VV Relocation 1,000-foot segment assumed

3.1 Mobilize and Site Setup

Deliveries	1	round trip of equipment deliveries/day

3.2 Remove Existing AV and Appurtenances

3.3 Trench Excavation

Export	30	ft long	2	ft wide	4	ft deep	**8.888889**	cy
Export Trips	8.88888889	cy	16	cy/truck	0.555556	round trips		
	0.55555556	round trips	2	day phase duratic	1	round trips/day (rounded)		

3.4 Install New AV and Equipment

Deliveries	1	round trip of equipment deliveries/day

3.5 Backfill and Asphalt Replacement

Import (Backfill)	30	ft long	2	ft wide	4	ft deep	**8.888889**	cy
Import (Paving)	30	ft long	30	ft wide	0.5	ft deep	**16.66667**	cy
Import Trips	25.5555556	cy	16	cy/truck	1.597222	round trips		
	1.59722222	round trips	1	day phase duratic	2	round trips/day (rounded)		

3.6 Site Restoration and Clean Up

Deliveries	1	round trip of equipment deliveries/day

Pipeline Replacement/Parallel Piping

4.1 Mobilize and Site Setup

Import	600	m of K-rail	6.1	m/seg	4	tons/seg	1.35	tons/cy	**291.439**	cy
Import Trips	291.43898	cy	16	cy/truck	18.21494	round trips				
	18.2149362	round trips	5	day phase duratic	4	round trips/day (rounded)				

4.2 Trench Excavation, Shoring

Export	1000	ft long	16	ft wide	30	ft deep	**17777.78**	cy
Export Trips	17777.7778	cy	16	cy/truck	1111.111	round trips		
	1111.11111	round trips	30	day phase duratic	38	round trips/day (rounded)		

4.3 Install Pipe

Deliveries	3	round trips of pipeline deliveries/day

4.4 Backfill and Asphalt Replacement

Import (Backfill)	1000	ft long	16	ft wide	20	ft deep	**11851.85**	cy
Import (Paving)	1200	ft long	60	ft wide	0.5	ft deep	**1333.333**	cy
Import Trips	13185.1852	cy	16	cy/truck	824.0741	round trips		
	824.074074	round trips	30	day phase duratic	28	round trips/day (rounded)		

4.5 Site Restoration and Clean Up

Export	600	m of K-rail	6.1	m/seg	4	tons/seg	1.35	tons/cy	**291.439**	cy
Export Trips	291.43898	cy	16	cy/truck	18.21494	round trips				
	18.2149362	round trips	5	day phase duratic	4	round trips/day (rounded)				

Off-Road Equipment

Project Element/Phase/(Total Number)	Working Days	Excavator			Crane			Frontend Loader			Slip Lining Cart			Soil/Asphalt Compactor		
		Qty	Hr/Day	Total	Qty	Hr/Day	Total	Qty	Hr/Day	Total	Qty	Hr/Day	Total	Qty	Hr/Day	Total
1.0 Typical Excavation Site																
1.1 Mobilize and Site Setup	5.0	-	-	-	1.0	6.0	6.0	-	-	-	-	-	-	-	-	-
1.2 Excavation, Shoring, Dewatering	20.0	1.0	8.0	8.0	1.0	6.0	6.0	-	-	-	-	-	-	-	-	-
1.3 Pipe Removal/Pipe Relining	80.0	-	-	-	1.0	6.0	6.0	-	-	-	1.0	8.0	8.0	-	-	-
1.4 Backfill and Asphalt Replacement	15.0	-	-	-	-	-	-	1.0	8.0	8.0	-	-	-	1.0	8.0	8.0
1.5 Site Restoration and Clean Up	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.0 Typical New Valve/Meter Vault Structure																
2.1 Mobilize and Site Setup	5.0	-	-	-	1.0	6.0	6.0	-	-	-	-	-	-	-	-	-
2.2 Excavation, Shoring, Dewatering	20.0	1.0	8.0	8.0	1.0	6.0	6.0	-	-	-	-	-	-	-	-	-
2.3 Construct New Valve Structure	30.0	-	-	-	1.0	6.0	6.0	-	-	-	-	-	-	-	-	-
2.4 Install New Equipment	25.0	-	-	-	1.0	6.0	6.0	-	-	-	-	-	-	-	-	-
2.5 Backfill and Asphalt Replacement	15.0	-	-	-	-	-	-	1.0	8.0	8.0	-	-	-	1.0	8.0	8.0
2.6 Demolition of Old Vault Structure, Backfill and Asphalt Replacement	20.0	-	-	-	-	-	-	-	-	-	-	-	-	1.0	8.0	8.0
2.7 Site Restoration and Clean Up	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.0 Typical Below Grade AV/VV Relocation																
3.1 Mobilize and Site Setup	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.2 Remove Existing AV and Appurtenances	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.3 Trench Excavation	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.4 Install New AV and Equipment	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.5 Backfill and Asphalt Replacement	1.0	-	-	-	-	-	-	-	-	-	-	-	-	1.0	8.0	8.0
3.6 Site Restoration and Clean Up	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.0 Pipeline Replacement/Parallel Piping																
4.1 Mobilize and Site Setup	5.0	-	-	-	1.0	6.0	6.0	-	-	-	-	-	-	-	-	-
4.2 Trench Excavation, Shoring	30.0	1.0	8.0	8.0	1.0	6.0	6.0	-	-	-	-	-	-	-	-	-
4.3 Install Pipe	30.0	-	-	-	1.0	6.0	6.0	-	-	-	-	-	-	-	-	-
4.4 Backfill and Asphalt Replacement	30.0	-	-	-	-	-	-	1.0	8.0	8.0	-	-	-	1.0	8.0	8.0
4.5 Site Restoration and Clean Up	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project Element/Phase/(Total Number)	Soil/Asphalt Drum Compactor			Asphalt Paver			Backhoe Loader			Confined Space Blower/Fan			Welding, Grouting, and Lining Machines		
	Qty	Hr/Day	Total	Qty	Hr/Day	Total	Qty	Hr/Day	Total	Qty	Hr/Day	Total	Qty	Hr/Day	Total
1.0 Typical Excavation Site															
1.1 Mobilize and Site Setup	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.2 Excavation, Shoring, Dewatering	-	-	-	-	-	-	1.0	8.0	8.0	-	-	-	-	-	-
1.3 Pipe Removal/Pipe Relining	-	-	-	-	-	-	-	-	-	-	-	-	2.0	8.0	16.0
1.4 Backfill and Asphalt Replacement	1.0	8.0	8.0	1.0	8.0	8.0	-	-	-	-	-	-	-	-	-
1.5 Site Restoration and Clean Up	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.0 Typical New Valve/Meter Vault Structure															
2.1 Mobilize and Site Setup	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.2 Excavation, Shoring, Dewatering	-	-	-	-	-	-	1.0	8.0	8.0	-	-	-	-	-	-
2.3 Construct New Valve Structure	-	-	-	-	-	-	-	-	-	-	-	-	2.0	8.0	16.0
2.4 Install New Equipment	-	-	-	-	-	-	-	-	-	-	-	-	2.0	8.0	16.0
2.5 Backfill and Asphalt Replacement	1.0	8.0	8.0	1.0	12.0	12.0	-	-	-	-	-	-	-	-	-
2.6 Demolition of Old Vault Structure, Backfill and Asphalt Replacement	1.0	8.0	8.0	1.0	12.0	12.0	1.0	8.0	8.0	-	-	-	-	-	-
2.7 Site Restoration and Clean Up	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.0 Typical Below Grade AV/VV Relocation															
3.1 Mobilize and Site Setup	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.2 Remove Existing AV and Appurtenances	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.3 Trench Excavation	-	-	-	-	-	-	1.0	8.0	8.0	1.0	8.0	8.0	-	-	-
3.4 Install New AV and Equipment	-	-	-	-	-	-	-	-	-	-	-	-	2.0	8.0	16.0
3.5 Backfill and Asphalt Replacement	-	-	-	1.0	8.0	8.0	1.0	8.0	8.0	-	-	-	-	-	-
3.6 Site Restoration and Clean Up	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.0 Pipeline Replacement/Parallel Piping															
4.1 Mobilize and Site Setup	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.2 Trench Excavation, Shoring	-	-	-	-	-	-	1.0	8.0	8.0	-	-	-	-	-	-
4.3 Install Pipe	-	-	-	-	-	-	-	-	-	-	-	-	2.0	8.0	16.0
4.4 Backfill and Asphalt Replacement	1.0	8.0	8.0	1.0	8.0	8.0	-	-	-	-	-	-	-	-	-
4.5 Site Restoration and Clean Up	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Project Element/Phase/(Total Number)	Pneumatic Tools			Forklift			Concrete Coring Machine			Pump		
	Qty	Hr/Day	Total	Qty	Hr/Day	Total	Qty	Hr/Day	Total	Qty	Hr/Day	Total
1.0 Typical Excavation Site												
1.1 Mobilize and Site Setup	2.0	8.0	16.0	1.0	8.0	8.0			-			-
1.2 Excavation, Shoring, Dewatering	2.0	8.0	16.0	1.0	8.0	8.0			-	1.0	12.0	12.0
1.3 Pipe Removal/Pipe Relining	2.0	8.0	16.0	-	-	-	1.0	4.0	4.0	1.0	4.0	4.0
1.4 Backfill and Asphalt Replacement	-	-	-	-	-	-	-	-	-	-	-	-
1.5 Site Restoration and Clean Up	-	-	-	1.0	8.0	8.0	-	-	-	-	-	-
2.0 Typical New Valve/Meter Vault Structure												
2.1 Mobilize and Site Setup	1.0	8.0	8.0	1.0	8.0	8.0	-	-	-	-	-	-
2.2 Excavation, Shoring, Dewatering	1.0	8.0	8.0	1.0	8.0	8.0	-	-	-	1.0	12.0	12.0
2.3 Construct New Valve Structure	2.0	8.0	16.0	-	-	-	-	-	-	1.0	12.0	12.0
2.4 Install New Equipment	2.0	8.0	16.0	-	-	-	1.0	8.0	8.0	-	-	-
2.5 Backfill and Asphalt Replacement	-	-	-	-	-	-	-	-	-	-	-	-
2.6 Demolition of Old Vault Structure, Backfill and Asphalt Replacement	2.0	8.0	16.0	-	-	-	-	-	-	-	-	-
2.7 Site Restoration and Clean Up	-	-	-	1.0	8.0	8.0	-	-	-	-	-	-
3.0 Typical Below Grade AV/VV Relocation												
3.1 Mobilize and Site Setup	-	-	-	-	-	-	-	-	-	-	-	-
3.2 Remove Existing AV and Appurtenances	1.0	8.0	8.0	-	-	-	-	-	-	-	-	-
3.3 Trench Excavation	1.0	8.0	8.0	-	-	-	-	-	-	-	-	-
3.4 Install New AV and Equipment	-	-	-	-	-	-	-	-	-	-	-	-
3.5 Backfill and Asphalt Replacement	-	-	-	-	-	-	-	-	-	1.0	12.0	12.0
3.6 Site Restoration and Clean Up	-	-	-	-	-	-	-	-	-	-	-	-
4.0 Pipeline Replacement/Parallel Piping												
4.1 Mobilize and Site Setup	1.0	8.0	8.0	1.0	8.0	8.0			-			-
4.2 Trench Excavation, Shoring	1.0	8.0	8.0	1.0	8.0	8.0			-	-	-	-
4.3 Install Pipe	1.0	8.0	8.0	-	-	-	-	-	-	1.0	12.0	12.0
4.4 Backfill and Asphalt Replacement	-	-	-	-	-	-	-	-	-	-	-	-
4.5 Site Restoration and Clean Up	-	-	-	1.0	8.0	8.0	-	-	-	-	-	-

Project Element/Phase/(Total Number)	Generator			Compressor			Concrete Saw			Maintenance Truck w/ Crane		
	Qty	Hr/Day	Total	Qty	Hr/Day	Total	Qty	Hr/Day	Total	Qty	Hr/Day	Total
1.0 Typical Excavation Site												
1.1 Mobilize and Site Setup			-			-			-	-	-	-
1.2 Excavation, Shoring, Dewatering			-			-	1.0	8.0	8.0	-	-	-
1.3 Pipe Removal/Pipe Relining	1.0	12.0	12.0	1.0	12.0	12.0	-	-	-	-	-	-
1.4 Backfill and Asphalt Replacement	-	-	-	-	-	-	-	-	-	-	-	-
1.5 Site Restoration and Clean Up	-	-	-	-	-	-	-	-	-	-	-	-
2.0 Typical New Valve/Meter Vault Structure												
2.1 Mobilize and Site Setup	-	-	-	-	-	-	-	-	-	-	-	-
2.2 Excavation, Shoring, Dewatering	-	-	-	-	-	-	1.0	8.0	8.0	-	-	-
2.3 Construct New Valve Structure	1.0	12.0	12.0	1.0	12.0	12.0	-	-	-	-	-	-
2.4 Install New Equipment	1.0	12.0	12.0	1.0	12.0	12.0	-	-	-	-	-	-
2.5 Backfill and Asphalt Replacement	-	-	-	-	-	-	-	-	-	-	-	-
2.6 Demolition of Old Vault Structure, Backfill and Asphalt Replacement	1.0	12.0	12.0	1.0	12.0	12.0	1.0	8.0	8.0	-	-	-
2.7 Site Restoration and Clean Up	-	-	-	-	-	-	-	-	-	-	-	-
3.0 Typical Below Grade AV/VV Relocation												
3.1 Mobilize and Site Setup	-	-	-	-	-	-	-	-	-	-	-	-
3.2 Remove Existing AV and Appurtenances	-	-	-	-	-	-	-	-	-	1.0	8.0	8.0
3.3 Trench Excavation	1.0	12.0	12.0	1.0	12.0	12.0	-	-	-	-	-	-
3.4 Install New AV and Equipment	-	-	-	-	-	-	-	-	-	1.0	8.0	8.0
3.5 Backfill and Asphalt Replacement	-	-	-	-	-	-	-	-	-	-	-	-
3.6 Site Restoration and Clean Up	-	-	-	-	-	-	-	-	-	-	-	-
4.0 Pipeline Replacement/Parallel Piping												
4.1 Mobilize and Site Setup			-	-	-	-			-	-	-	-
4.2 Trench Excavation, Shoring	-	-	-	-	-	-	-	-	-	-	-	-
4.3 Install Pipe	1.0	12.0	12.0	1.0	12.0	12.0	-	-	-	-	-	-
4.4 Backfill and Asphalt Replacement	-	-	-	-	-	-	-	-	-	-	-	-
4.5 Site Restoration and Clean Up	-	-	-	-	-	-	-	-	-	-	-	-

Project Element/Phase/(Total Number)	Working Days	On-Road															Excavation (CY)[2]	
		Dump Truck			Water Truck			Street Sweeper			Worker Commute Trips			Delivery Trucks (pipe, mortar,				
		Qty	Miles/Trip	Total	Qty	Mi/Trip	Total	Qty	Mi/Trip	Total	Qty	Mi/Trip	Total	Qty	Mi/Trip	Total	Import	Export
1.0 Typical Excavation Site																		
1.1 Mobilize and Site Setup	5.0	-	-	-	-	-	-	-	-	-	24.0	14.7	352.8	2.00	6.9	13.8	97.1	-
1.2 Excavation, Shoring, Dewatering	20.0	6.00	20.0	120.0	1.0	20.0	20.0	-	-	-	24.0	14.7	352.8	-	-	-	-	694.4
1.3 Pipe Removal/Pipe Relining	80.0	-	-	-	-	-	-	-	-	-	24.0	14.7	352.8	4.0	6.9	27.6	-	-
1.4 Backfill and Asphalt Replacement	15.0	8.00	20.0	160.0	1.0	20.0	20.0	1.0	5.0	5.0	24.0	14.7	352.8	-	-	-	916.7	-
1.5 Site Restoration and Clean Up	5.0	-	-	-	-	-	-	1.0	5.0	5.0	12.0	14.7	176.4	2.0	6.9	13.8	-	97.1
2.0 Typical New Valve/Meter Vault Structure																		
2.1 Mobilize and Site Setup	5.0	-	-	-	-	-	-	-	-	-	24.0	14.7	352.8	2.00	6.9	13.8	97.1	-
2.2 Excavation, Shoring, Dewatering	20.0	8.0	20.0	160.0	1.0	20.0	20.0	-	-	-	24.0	14.7	352.8	-	-	-	-	1,129.3
2.3 Construct New Valve Structure	30.0	-	-	-	-	-	-	-	-	-	24.0	14.7	352.8	2.0	6.9	13.8	331.3	-
2.4 Install New Equipment	25.0	-	-	-	-	-	-	-	-	-	24.0	14.7	352.8	4.0	6.9	27.6	-	-
2.5 Backfill and Asphalt Replacement	15.0	-	-	-	1.0	20.0	20.0	-	-	-	24.0	14.7	352.8	2.0	6.9	13.8	222.2	-
2.6 Demolition of Old Vault Structure, Backfill and Asphalt Replacement	20.0	8.0	20.0	160.0	-	-	-	1.0	5.0	5.0	24.0	14.7	352.8	-	-	-	1,129.3	-
2.7 Site Restoration and Clean Up	5.0	-	-	-	-	-	-	1.0	5.0	5.0	12.0	14.7	176.4	2.0	6.9	13.8	-	97.1
3.0 Typical Below Grade AV/VV Relocation																		
3.1 Mobilize and Site Setup	1.0	-	-	-	-	-	-	-	-	-	12.0	14.7	176.4	2.0	6.9	13.8	-	-
3.2 Remove Existing AV and Appurtenances	1.0	-	-	-	-	-	-	-	-	-	12.0	14.7	176.4	1.0	2.0	2.0	-	-
3.3 Trench Excavation	2.0	2.0	20.0	40.0	1.0	20.0	20.0	-	-	-	12.0	14.7	176.4	-	-	-	-	8.9
3.4 Install New AV and Equipment	1.0	-	-	-	-	-	-	-	-	-	12.0	14.7	176.4	1.0	2.0	2.0	-	-
3.5 Backfill and Asphalt Replacement	1.0	4.0	20.0	80.0	1.0	20.0	20.0	1.0	5.0	5.0	12.0	14.7	176.4	-	-	-	25.6	-
3.6 Site Restoration and Clean Up	1.0	-	-	-	-	-	-	1.0	5.0	5.0	12.0	14.7	176.4	1.0	6.9	6.9	-	-
4.0 Pipeline Replacement/Parallel Piping																		
4.1 Mobilize and Site Setup	5.0	-	-	-	-	-	-	-	-	-	24.0	14.7	352.8	8.00	6.9	55.2	291.4	-
4.2 Trench Excavation, Shoring	30.0	76.0	20.0	1,520.0	1.0	20.0	20.0	-	-	-	24.0	14.7	352.8	-	-	-	-	17,777.8
4.3 Install Pipe	30.0	-	-	-	-	-	-	-	-	-	24.0	14.7	352.8	6.0	6.9	41.4	-	-
4.4 Backfill and Asphalt Replacement	30.0	56.0	20.0	1,120.0	1.0	20.0	20.0	1.0	5.0	5.0	24.0	14.7	352.8	-	-	-	13,185.2	-
4.5 Site Restoration and Clean Up	5.0	-	-	-	-	-	-	1.0	5.0	5.0	12.0	14.7	176.4	8.0	6.9	55.2	-	291.4

Emissions - Unmitigated

2018

SINGLE SITE EMISSIONS

2018 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	7	37	60	0	3	3
2.0 Typical New Valve/Meter Vault Structure						
	8	42	63	0	3	3
3.0 Typical Below Grade AV/VV Relocation						
	7	32	58	0	3	2
4.0 Pipeline Replacement/Parallel Piping						
	8	40	77	0	3	3
Single-Site Max	**8**	**42**	**77**	**0**	**3**	**3**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Single Site Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

2018 ON-SITE EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	7	37	58	0	3	3
2.0 Typical New Valve/Meter Vault Structure						
	8	42	61	0	3	3
3.0 Typical Below Grade AV/VV Relocation						
	7	32	57	0	2	2
4.0 Pipeline Replacement/Parallel Piping						
	7	36	57	0	3	3
Single-Site Max	**8**	**42**	**61**	**0**	**3**	**3**
*Localized Significance Thresholds**	N/A	231	46	N/A	4	3
Single Site Exceeds LST?	***No***	***No***	***Yes***	***No***	***No***	***Yes***

* 1-acre site and 25-meter receptor distances in SRA No.12 South Central LA County, which has the most stringent LSTs; no LSTs have been established for ROG and SOX

FULL CONSTRUCTION SCENARIO

2018 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site (10 sites concurrently)						
	74	372	604	1	31	30
2.0 Typical New Valve/Meter Vault Structure (2 sites concurrently)						
	16	85	127	0	7	6
3.0 Typical Below Grade AV/VV Relocation (3 sites concurrently)						
	21	96	175	0	8	7
4.0 Pipeline Replacement/Parallel Piping (1,000-ft segment)						
	8	40	77	0	3	3
Total	**118**	**593**	**983**	**1**	**48**	**47**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Exceeds Threshold?	***Yes***	***Yes***	***Yes***	***No***	***No***	***No***

2019

SINGLE SITE EMISSIONS

2019 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	7	37	55	0	3	3
2.0 Typical New Valve/Meter Vault Structure						
	7	42	57	0	3	3
3.0 Typical Below Grade AV/VV Relocation						
	6	32	52	0	2	2
4.0 Pipeline Replacement/Parallel Piping						
	7	39	70	0	3	3
Single-Site Max	**7**	**42**	**70**	**0**	**3**	**3**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Single Site Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

2019 ON-SITE EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	7	36	53	0	3	3
2.0 Typical New Valve/Meter Vault Structure						
	7	41	55	0	3	3
3.0 Typical Below Grade AV/VV Relocation						
	6	31	51	0	2	2
4.0 Pipeline Replacement/Parallel Piping						
	7	36	52	0	2	2
Single-Site Max	**7**	**41**	**55**	**0**	**3**	**3**
*Localized Significance Thresholds**	N/A	231	46	N/A	4	3
Single Site Exceeds LST?	***No***	***No***	***Yes***	***No***	***No***	***No***

* 1-acre site and 25-meter receptor distances in SRA No.12 South Central LA County, which has the most stringent LSTs; no LSTs have been established for ROG and SOX

FULL CONSTRUCTION SCENARIO

2019 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site (10 sites concurrently)						
	68	366	548	1	27	26
2.0 Typical New Valve/Meter Vault Structure (2 sites concurrently)						
	14	84	115	0	6	6
3.0 Typical Below Grade AV/VV Relocation (3 sites concurrently)						
	19	95	157	0	7	7
4.0 Pipeline Replacement/Parallel Piping (1,000-ft segment)						
	7	39	70	0	3	3
Total	**109**	**584**	**889**	**1**	**43**	**41**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Exceeds Threshold?	***Yes***	***Yes***	***Yes***	***No***	***No***	***No***

2020

SINGLE SITE EMISSIONS

2020 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	6	36	50	0	2	2
2.0 Typical New Valve/Meter Vault Structure						
	7	42	52	0	3	3
3.0 Typical Below Grade AV/VV Relocation						
	6	31	47	0	2	2
4.0 Pipeline Replacement/Parallel Piping						
	7	39	61	0	3	2
Single-Site Max	**7**	**42**	**61**	**0**	**3**	**3**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Single Site Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

2020 ON-SITE EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	6	36	48	0	2	2
2.0 Typical New Valve/Meter Vault Structure						
	6	41	50	0	3	2
3.0 Typical Below Grade AV/VV Relocation						
	6	31	46	0	2	2
4.0 Pipeline Replacement/Parallel Piping						
	6	35	47	0	2	2
Single-Site Max	**6**	**41**	**50**	**0**	**3**	**2**
*Localized Significance Thresholds**	N/A	231	46	N/A	4	3
Single Site Exceeds LST?	***No***	***No***	***Yes***	***No***	***No***	***No***

* 1-acre site and 25-meter receptor distances in SRA No.12 South Central LA County, which has the most stringent LSTs; no LSTs have been established for ROG and SOX

FULL CONSTRUCTION SCENARIO

2020 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site (10 sites concurrently)						
	63	361	497	1	24	24
2.0 Typical New Valve/Meter Vault Structure (2 sites concurrently)						
	13	83	104	0	5	5
3.0 Typical Below Grade AV/VV Relocation (3 sites concurrently)						
	18	94	140	0	6	6
4.0 Pipeline Replacement/Parallel Piping (1,000-ft segment)						
	7	39	61	0	3	2
Total	**101**	**578**	**802**	**1**	**38**	**37**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Exceeds Threshold?	***Yes***	***Yes***	***Yes***	***No***	***No***	***No***

2021

SINGLE SITE EMISSIONS

2021 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	6	36	44	0	2	2
2.0 Typical New Valve/Meter Vault Structure						
	6	41	46	0	2	2
3.0 Typical Below Grade AV/VV Relocation						
	6	31	41	0	2	2
4.0 Pipeline Replacement/Parallel Piping						
	6	39	52	0	2	2
Single-Site Max	**6**	**41**	**52**	**0**	**2**	**2**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Single Site Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

2021 ON-SITE EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	6	35	43	0	2	2
2.0 Typical New Valve/Meter Vault Structure						
	6	41	45	0	2	2
3.0 Typical Below Grade AV/VV Relocation						
	6	31	40	0	2	2
4.0 Pipeline Replacement/Parallel Piping						
	6	35	42	0	2	2
Single-Site Max	**6**	**41**	**45**	**0**	**2**	**2**
*Localized Significance Thresholds**	N/A	231	46	N/A	4	3
Single Site Exceeds LST?	***No***	***No***	***No***	***No***	***No***	***No***

* 1-acre site and 25-meter receptor distances in SRA No.12 South Central LA County, which has the most stringent LSTs; no LSTs have been established for ROG and SOX

FULL CONSTRUCTION SCENARIO

2021 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site (10 sites concurrently)						
	58	357	444	1	22	21
2.0 Typical New Valve/Meter Vault Structure (2 sites concurrently)						
	12	83	93	0	5	4
3.0 Typical Below Grade AV/VV Relocation (3 sites concurrently)						
	17	93	122	0	5	5
4.0 Pipeline Replacement/Parallel Piping (1,000-ft segment)						
	6	39	52	0	2	2
Total	**93**	**572**	**711**	**1**	**34**	**32**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Exceeds Threshold?	***Yes***	***Yes***	***Yes***	***No***	***No***	***No***

2022

SINGLE SITE EMISSIONS

2022 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	5	35	40	0	2	2
2.0 Typical New Valve/Meter Vault Structure						
	6	41	42	0	2	2
3.0 Typical Below Grade AV/VV Relocation						
	5	31	36	0	2	1
4.0 Pipeline Replacement/Parallel Piping						
	6	39	46	0	2	2
Single-Site Max	**6**	**41**	**46**	**0**	**2**	**2**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Single Site Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

2022 ON-SITE EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	5	35	39	0	2	2
2.0 Typical New Valve/Meter Vault Structure						
	6	41	41	0	2	2
3.0 Typical Below Grade AV/VV Relocation						
	5	31	36	0	1	1
4.0 Pipeline Replacement/Parallel Piping						
	5	35	38	0	2	2
Single-Site Max	**6**	**41**	**41**	**0**	**2**	**2**
*Localized Significance Thresholds**	N/A	231	46	N/A	4	3
Single Site Exceeds LST?	***No***	***No***	***No***	***No***	***No***	***No***

* 1-acre site and 25-meter receptor distances in SRA No.12 South Central LA County, which has the most stringent LSTs; no LSTs have been established for ROG and SOX

FULL CONSTRUCTION SCENARIO

2022 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site (10 sites concurrently)						
	54	354	401	1	19	18
2.0 Typical New Valve/Meter Vault Structure (2 sites concurrently)						
	11	83	84	0	4	4
3.0 Typical Below Grade AV/VV Relocation (3 sites concurrently)						
	16	93	109	0	5	4
4.0 Pipeline Replacement/Parallel Piping (1,000-ft segment)						
	6	39	46	0	2	2
Total	**88**	**568**	**639**	**1**	**30**	**28**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Exceeds Threshold?	***Yes***	***Yes***	***Yes***	***No***	***No***	***No***

Emissions - Mitigated with Tier 4 Engines for Off-Road Equipment

2018

SINGLE SITE EMISSIONS

2018 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	4	37	13	0	1	1
2.0 Typical New Valve/Meter Vault Structure						
	4	42	13	0	1	1
3.0 Typical Below Grade AV/VV Relocation						
	3	32	7	0	0	0
4.0 Pipeline Replacement/Parallel Piping						
	5	40	30	0	1	1
Single-Site Max	**5**	**42**	**30**	**0**	**1**	**1**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Single Site Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

2018 ON-SITE EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	4	37	10	0	0	0
2.0 Typical New Valve/Meter Vault Structure						
	4	42	11	0	1	1
3.0 Typical Below Grade AV/VV Relocation						
	3	32	6	0	0	0
4.0 Pipeline Replacement/Parallel Piping						
	4	36	10	0	1	0
Single-Site Max	**4**	**42**	**11**	**0**	**1**	**1**
*Localized Significance Thresholds**	N/A	231	46	N/A	4	3
Single Site Exceeds LST?	***No***	***No***	***No***	***No***	***No***	***No***

* 1-acre site and 25-meter receptor distances in SRA No.12 South Central LA County, which has the most stringent LSTs; no LSTs have been established for ROG and SOX

FULL CONSTRUCTION SCENARIO

2018 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site (10 sites concurrently)						
	43	372	129	1	5	5
2.0 Typical New Valve/Meter Vault Structure (2 sites concurrently)						
	9	85	27	0	1	1
3.0 Typical Below Grade AV/VV Relocation (3 sites concurrently)						
	10	96	22	0	1	1
4.0 Pipeline Replacement/Parallel Piping (1,000-ft segment)						
	5	40	30	0	1	1
Total	**68**	**593**	**208**	**1**	**9**	**8**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Exceeds Threshold?	***No***	***Yes***	***Yes***	***No***	***No***	***No***

2019

SINGLE SITE EMISSIONS

2019 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	4	37	12	0	0	0
2.0 Typical New Valve/Meter Vault Structure						
	4	42	13	0	1	1
3.0 Typical Below Grade AV/VV Relocation						
	3	32	7	0	0	0
4.0 Pipeline Replacement/Parallel Piping						
	5	39	28	0	1	1
Single-Site Max	**5**	**42**	**28**	**0**	**1**	**1**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Single Site Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

2019 ON-SITE EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	4	36	10	0	0	0
2.0 Typical New Valve/Meter Vault Structure						
	4	41	10	0	0	0
3.0 Typical Below Grade AV/VV Relocation						
	3	31	6	0	0	0
4.0 Pipeline Replacement/Parallel Piping						
	4	36	10	0	1	0
Single-Site Max	**4**	**41**	**10**	**0**	**1**	**0**
*Localized Significance Thresholds**	N/A	231	46	N/A	4	3
Single Site Exceeds LST?	***No***	***No***	***No***	***No***	***No***	***No***

* 1-acre site and 25-meter receptor distances in SRA No.12 South Central LA County, which has the most stringent LSTs; no LSTs have been established for ROG and SOX

FULL CONSTRUCTION SCENARIO

2019 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site (10 sites concurrently)						
	40	366	120	1	5	5
2.0 Typical New Valve/Meter Vault Structure (2 sites concurrently)						
	8	84	25	0	1	1
3.0 Typical Below Grade AV/VV Relocation (3 sites concurrently)						
	10	95	20	0	1	1
4.0 Pipeline Replacement/Parallel Piping (1,000-ft segment)						
	5	39	28	0	1	1
Total	**62**	**584**	**193**	**1**	**8**	**7**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Exceeds Threshold?	***No***	***Yes***	***Yes***	***No***	***No***	***No***

2020

SINGLE SITE EMISSIONS

2020 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	4	36	11	0	0	0
2.0 Typical New Valve/Meter Vault Structure						
	4	42	12	0	1	0
3.0 Typical Below Grade AV/VV Relocation						
	3	31	6	0	0	0
4.0 Pipeline Replacement/Parallel Piping						
	4	39	23	0	1	1
Single-Site Max	**4**	**42**	**23**	**0**	**1**	**1**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Single Site Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

2020 ON-SITE EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	4	36	9	0	0	0
2.0 Typical New Valve/Meter Vault Structure						
	4	41	10	0	0	0
3.0 Typical Below Grade AV/VV Relocation						
	3	31	6	0	0	0
4.0 Pipeline Replacement/Parallel Piping						
	4	35	9	0	1	0
Single-Site Max	**4**	**41**	**10**	**0**	**1**	**0**
*Localized Significance Thresholds**	N/A	231	46	N/A	4	3
Single Site Exceeds LST?	***No***	***No***	***No***	***No***	***No***	***No***

* 1-acre site and 25-meter receptor distances in SRA No.12 South Central LA County, which has the most stringent LSTs; no LSTs have been established for ROG and SOX

FULL CONSTRUCTION SCENARIO

2020 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site (10 sites concurrently)						
	37	361	112	1	5	4
2.0 Typical New Valve/Meter Vault Structure (2 sites concurrently)						
	7	83	24	0	1	1
3.0 Typical Below Grade AV/VV Relocation (3 sites concurrently)						
	9	94	19	0	1	1
4.0 Pipeline Replacement/Parallel Piping (1,000-ft segment)						
	4	39	23	0	1	1
Total	**57**	**578**	**179**	**1**	**7**	**6**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Exceeds Threshold?	***No***	***Yes***	***Yes***	***No***	***No***	***No***

2021

SINGLE SITE EMISSIONS

2021 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	3	36	10	0	0	0
2.0 Typical New Valve/Meter Vault Structure						
	3	41	11	0	0	0
3.0 Typical Below Grade AV/VV Relocation						
	3	31	6	0	0	0
4.0 Pipeline Replacement/Parallel Piping						
	4	39	19	0	1	1
Single-Site Max	**4**	**41**	**19**	**0**	**1**	**1**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Single Site Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

2021 ON-SITE EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	3	35	9	0	0	0
2.0 Typical New Valve/Meter Vault Structure						
	3	41	10	0	0	0
3.0 Typical Below Grade AV/VV Relocation						
	3	31	5	0	0	0
4.0 Pipeline Replacement/Parallel Piping						
	3	35	9	0	1	0
Single-Site Max	**3**	**41**	**10**	**0**	**1**	**0**
*Localized Significance Thresholds**	N/A	231	46	N/A	4	3
Single Site Exceeds LST?	***No***	***No***	***No***	***No***	***No***	***No***

* 1-acre site and 25-meter receptor distances in SRA No.12 South Central LA County, which has the most stringent LSTs; no LSTs have been established for ROG and SOX

FULL CONSTRUCTION SCENARIO

2021 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site (10 sites concurrently)						
	34	357	105	1	4	4
2.0 Typical New Valve/Meter Vault Structure (2 sites concurrently)						
	7	83	22	0	1	1
3.0 Typical Below Grade AV/VV Relocation (3 sites concurrently)						
	9	93	18	0	1	1
4.0 Pipeline Replacement/Parallel Piping (1,000-ft segment)						
	4	39	19	0	1	1
Total	**53**	**572**	**164**	**1**	**7**	**6**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Exceeds Threshold?	***No***	***Yes***	***Yes***	***No***	***No***	***No***

2022

SINGLE SITE EMISSIONS

2022 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	3	35	10	0	0	0
2.0 Typical New Valve/Meter Vault Structure						
	3	41	10	0	0	0
3.0 Typical Below Grade AV/VV Relocation						
	3	31	6	0	0	0
4.0 Pipeline Replacement/Parallel Piping						
	4	39	16	0	1	1
Single-Site Max	**4**	**41**	**16**	**0**	**1**	**1**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Single Site Exceeds Threshold?	***No***	***No***	***No***	***No***	***No***	***No***

2022 ON-SITE EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site						
	3	35	9	0	0	0
2.0 Typical New Valve/Meter Vault Structure						
	3	41	9	0	0	0
3.0 Typical Below Grade AV/VV Relocation						
	3	31	5	0	0	0
4.0 Pipeline Replacement/Parallel Piping						
	3	35	8	0	1	0
Single-Site Max	**3**	**41**	**9**	**0**	**1**	**0**
*Localized Significance Thresholds**	N/A	231	46	N/A	4	3
Single Site Exceeds LST?	***No***	***No***	***No***	***No***	***No***	***No***

* 1-acre site and 25-meter receptor distances in SRA No.12 South Central LA County, which has the most stringent LSTs; no LSTs have been established for ROG and SOX

FULL CONSTRUCTION SCENARIO

2022 TOTAL REGIONAL MASS EMISSIONS (LBS/DAY)

	ROG	CO	NOX	SO2	PM10	PM2_5
1.0 Typical Excavation Site (10 sites concurrently)						
	31	354	98	1	4	3
2.0 Typical New Valve/Meter Vault Structure (2 sites concurrently)						
	6	83	21	0	1	1
3.0 Typical Below Grade AV/VV Relocation (3 sites concurrently)						
	8	93	18	0	1	1
4.0 Pipeline Replacement/Parallel Piping (1,000-ft segment)						
	4	39	16	0	1	1
Total	**50**	**568**	**153**	**1**	**6**	**5**
Regional Mass Emissions Threshold	75	550	100	150	150	55
Exceeds Threshold?	***No***	***Yes***	***Yes***	***No***	***No***	***No***

Appendix D
California Natural Diversity Database Species for Los Angeles County

California Natural Diversity Database Species for Los Angeles County

Available http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp
Accessed June 1, 2016

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Amphibians					
Anaxyrus californicus	arroyo toad	Endangered	None	SSC	-
Anaxyrus canorus	Yosemite toad	Threatened	None	SSC	-
Batrachoseps gabrieli	San Gabriel slender salamander	None	None	-	-
Ensatina eschscholtzii croceator	yellow-blotched salamander	None	None	SSC	-
Ensatina klauberi	large-blotched salamander	None	None	SSC	-
Rana boylii	foothill yellow-legged frog	None	None	SSC	-
Rana draytonii	California red-legged frog	Threatened	None	SSC	-
Rana muscosa	southern mountain yellow-legged frog	Endangered	Endangered	SSC	-
Taricha torosa	Coast Range newt	None	None	SSC	-
Spea hammondii	western spadefoot	None	None	SSC	-
Birds					
Accipiter cooperii	Cooper's hawk	None	None	WL	-
Accipiter gentilis	northern goshawk	None	None	SSC	-
Accipiter striatus	sharp-shinned hawk	None	None	WL	-
Aquila chrysaetos	golden eagle	None	None	FP ; WL	-
Buteo regalis	ferruginous hawk	None	None	WL	-
Buteo swainsoni	Swainson's hawk	None	Threatened	-	-
Circus cyaneus	northern harrier	None	None	SSC	-
Elanus leucurus	white-tailed kite	None	None	FP	-
Haliaeetus leucocephalus	bald eagle	Delisted	Endangered	FP	-
Pandion haliaetus	osprey	None	None	WL	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Eremophila alpestris actia	California horned lark	None	None	WL	-
Cerorhinca monocerata	rhinoceros auklet	None	None	WL	-
Fratercula cirrhata	tufted puffin	None	None	SSC	-
Synthliboramphus scrippsi	Scripps's murrelet	Candidate	Threatened	-	-
Aythya americana	redhead	None	None	SSC	-
Branta bernicla	brant	None	None	SSC	-
Dendrocygna bicolor	fulvous whistling-duck	None	None	SSC	-
Chaetura vauxi	Vaux's swift	None	None	SSC	-
Cypseloides niger	black swift	None	None	SSC	-
Ardea alba	great egret	None	None	-	-
Ardea herodias	great blue heron	None	None	-	-
Botaurus lentiginosus	American bittern	None	None	-	-
Egretta thula	snowy egret	None	None	-	-
Ixobrychus exilis	least bittern	None	None	SSC	-
Nycticorax nycticorax	black-crowned night heron	None	None	-	-
Cardinalis cardinalis	northern cardinal	None	None	WL	-
Gymnogyps californianus	California condor	Endangered	Endangered	FP	-
Charadrius alexandrinus nivosus	western snowy plover	Threatened	None	SSC	-
Charadrius montanus	mountain plover	None	None	SSC	-
Mycteria americana	wood stork	None	None	SSC	-
Pica nuttalli	yellow-billed magpie	None	None	-	-
Coccyzus americanus occidentalis	western yellow-billed cuckoo	Threatened	Endangered	-	-
Phoebastria albatrus	short-tailed albatross	Endangered	None	SSC	-
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	None	None	WL	-
Aimophila ruficeps obscura	Santa Cruz Island rufous-crowned sparrow	None	None	SSC	-
Ammodramus savannarum	grasshopper sparrow	None	None	SSC	-
Artemisiospiza belli belli	Bell's sage sparrow	None	None	WL	-
Artemisiospiza belli clementeae	San Clemente sage sparrow	Threatened	None	SSC	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Chondestes grammacus	lark sparrow	None	None	-	-
Junco hyemalis caniceps	gray-headed junco	None	None	WL	-
Melospiza melodia graminea	Channel Island song sparrow	None	None	SSC	-
Passerculus sandwichensis alaudinus	Bryant's savannah sparrow	None	None	SSC	-
Passerculus sandwichensis beldingi	Belding's savannah sparrow	None	Endangered	-	-
Passerculus sandwichensis rostratus	large-billed savannah sparrow	None	None	SSC	-
Pipilo maculatus clementae	San Clemente spotted towhee	None	None	SSC	-
Pooecetes gramineus affinis	Oregon vesper sparrow	None	None	SSC	-
Spizella atrogularis	black-chinned sparrow	None	None	-	-
Spizella breweri	Brewer's sparrow	None	None	-	-
Spizella passerina	chipping sparrow	None	None	-	-
Falco columbarius	merlin	None	None	WL	-
Falco mexicanus	prairie falcon	None	None	WL	-
Falco peregrinus anatum	American peregrine falcon	Delisted	Delisted	FP	-
Spinus lawrencei	Lawrence's goldfinch	None	None	-	-
Gavia immer	common loon	None	None	SSC	-
Grus canadensis canadensis	lesser sandhill crane	None	None	SSC	-
Grus canadensis tabida	greater sandhill crane	None	Threatened	FP	-
Haematopus bachmani	black oystercatcher	None	None	-	-
Progne subis	purple martin	None	None	SSC	-
Riparia riparia	bank swallow	None	Threatened	-	-
Oceanodroma furcata	fork-tailed storm-petrel	None	None	SSC	-
Oceanodroma homochroa	ashy storm-petrel	None	None	SSC	-
Oceanodroma melania	black storm-petrel	None	None	SSC	-
Agelaius tricolor	tricolored blackbird	None	None	SSC	-
Xanthocephalus xanthocephalus	yellow-headed blackbird	None	None	SSC	-
Lanius ludovicianus	loggerhead shrike	None	None	SSC	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Lanius ludovicianus anthonyi	Island loggerhead shrike	None	None	SSC	-
Lanius ludovicianus mearnsi	San Clemente loggerhead shrike	Endangered	None	SSC	-
Chlidonias niger	black tern	None	None	SSC	-
Hydroprogne caspia	Caspian tern	None	None	-	-
Larus californicus	California gull	None	None	WL	-
Sterna forsteri	Forster's tern	None	None	-	-
Sternula antillarum browni	California least tern	Endangered	Endangered	FP	-
Thalasseus elegans	elegant tern	None	None	WL	-
Toxostoma bendirei	Bendire's thrasher	None	None	SSC	-
Toxostoma lecontei	Le Conte's thrasher	None	None	SSC	-
Callipepla californica catalinensis	Catalina California quail	None	None	SSC	-
Baeolophus inornatus	oak titmouse	None	None	-	-
Icteria virens	yellow-breasted chat	None	None	SSC	-
Setophaga occidentalis	hermit warbler	None	None	-	-
Setophaga petechia	yellow warbler	None	None	SSC	-
Pelecanus erythrorhynchos	American white pelican	None	None	SSC	-
Pelecanus occidentalis californicus	California brown pelican	Delisted	Delisted	FP	-
Phalacrocorax auritus	double-crested cormorant	None	None	WL	-
Picoides albolarvatus	White-headed woodpecker	None	None	-	-
Picoides nuttallii	Nuttall's woodpecker	None	None	-	-
Sphyrapicus ruber	red-breasted sapsucker	None	None	-	-
Coturnicops noveboracensis	yellow rail	None	None	SSC	-
Laterallus jamaicensis coturniculus	California black rail	None	Threatened	FP	-
Rallus longirostris levipes	light-footed clapper rail	Endangered	Endangered	FP	-
Rallus longirostris obsoletus	California clapper rail	Endangered	Endangered	FP	-
Numenius americanus	long-billed curlew	None	None	WL	-
Asio flammeus	short-eared owl	None	None	SSC	-
Asio otus	long-eared owl	None	None	SSC	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Athene cunicularia	burrowing owl	None	None	SSC	-
Psiloscops flammeolus	flammulated owl	None	None	-	-
Strix occidentalis occidentalis	California spotted owl	None	None	SSC	-
Polioptila californica californica	coastal California gnatcatcher	Threatened	None	SSC	-
Polioptila melanura	black-tailed gnatcatcher	None	None	WL	-
Piranga rubra	summer tanager	None	None	SSC	-
Plegadis chihi	white-faced ibis	None	None	WL	-
Calypte costae	Costa's hummingbird	None	None	-	-
Selasphorus rufus	rufous hummingbird	None	None	-	-
Selasphorus sasin	Allen's hummingbird	None	None	-	-
Campylorhynchus brunneicapillus sandiegensis	coastal cactus wren	None	None	SSC	-
Cistothorus palustris clarkae	Clark's marsh wren	None	None	SSC	-
Thryomanes bewickii leucophrys	San Clemente Bewick's wren	None	None	SSC	-
Contopus cooperi	olive-sided flycatcher	None	None	SSC	-
Empidonax traillii	willow flycatcher	None	Endangered	-	-
Empidonax traillii extimus	southwestern willow flycatcher	Endangered	Endangered	-	-
Pyrocephalus rubinus	vermilion flycatcher	None	None	SSC	-
Vireo bellii pusillus	least Bell's vireo	Endangered	Endangered	-	-
Vireo huttoni unitti	Catalina Hutton's vireo	None	None	SSC	-
Vireo vicinior	gray vireo	None	None	SSC	-
Fish					
Catostomus santaanae	Santa Ana sucker	Threatened	None	-	-
Gila orcuttii	arroyo chub	None	None	SSC	-
Rhinichthys osculus ssp. 3	Santa Ana speckled dace	None	None	SSC	-
Siphateles bicolor mohavensis	Mohave tui chub	Endangered	Endangered	FP	-
Gasterosteus aculeatus microcephalus	resident threespine stickleback	None	None	-	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Gasterosteus aculeatus williamsoni	unarmored threespine stickleback	Endangered	Endangered	FP	-
Eucyclogobius newberryi	tidewater goby	Endangered	None	SSC	-
Stereolepis gigas	giant sea bass	None	None	-	-
Oncorhynchus mykiss irideus	steelhead - southern California DPS	Endangered	None	-	-
Invertebrates					
Branchinecta lynchi	vernal pool fairy shrimp	Threatened	None	-	-
Streptocephalus woottoni	Riverside fairy shrimp	Endangered	None	-	-
Socalchemmis gertschi	Gertsch's socalchemmis spider	None	None	-	-
Haliotis corrugata	pink abalone	None	None	-	-
Haplotrema catalinense	Santa Catalina lancetooth	None	None	-	-
Micrarionta gabbi	San Clemente islandsnail	None	None	-	-
Xerarionta intercisa	horseshoe snail	None	None	-	-
Xerarionta redimita	wreathed cactussnail	None	None	-	-
Tryonia imitator	mimic tryonia (=California brackishwater snail)	None	None	-	-
Radiocentrum avalonense	Catalina mountainsnail	None	None	-	-
Sterkia clementina	San Clemente Island blunt-top snail	None	None	-	-
Gonidea angulata	western ridged mussel	None	None	-	-
Pristiloma shepardae	Shepard's snail	None	None	-	-
Trimerotropis occidentiloides	Santa Monica grasshopper	None	None	-	-
Bombus crotchii	Crotch bumble bee	None	None	-	-
Bombus morrisoni	Morrison bumble bee	None	None	-	-
Cicindela gabbii	western tidal-flat tiger beetle	None	None	-	-
Cicindela hirticollis gravida	sandy beach tiger beetle	None	None	-	-
Cicindela latesignata latesignata	western beach tiger beetle	None	None	-	-
Cicindela senilis frosti	senile tiger beetle	None	None	-	-
Ceratochrysis longimala	Desert cuckoo wasp	None	None	-	-
Carolella busckana	Busck's gallmoth	None	None	-	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Onychobaris langei	Lange's El Segundo Dune weevil	None	None	-	-
Trigonoscuta dorothea dorothea	Dorothy's El Segundo Dune weevil	None	None	-	-
Panoquina errans	wandering (=saltmarsh) skipper	None	None	-	-
Diplectrona californica	California diplectronan caddisfly	None	None	-	-
Callophrys mossii hidakupa	San Gabriel Mountains elfin butterfly	None	None	-	-
Euphilotes battoides allyni	El Segundo blue butterfly	Endangered	None	-	-
Glaucopsyche lygdamus palosverdesensis	Palos Verdes blue butterfly	Endangered	None	-	-
Plebejus saepiolus aureolus	San Gabriel Mountains blue butterfly	None	None	-	-
Plebulina emigdionis	San Emigdio blue butterfly	None	None	-	-
Rhaphiomidas terminatus terminatus	El Segundo flower-loving fly	None	None	-	-
Danaus plexippus pop. 1	monarch - California overwintering population	None	None	-	-
Euphydryas editha quino	quino checkerspot butterfly	Endangered	None	-	-
Coenonycha clementina	San Clemente Island coenonycha beetle	None	None	-	-
Brennania belkini	Belkin's dune tabanid fly	None	None	-	-
Coelus globosus	globose dune beetle	None	None	-	-
Aglaothorax longipennis	Santa Monica shieldback katydid	None	None	-	-
Eucosma hennei	Henne's eucosman moth	None	None	-	-
Mammals					
Ovis canadensis nelsoni	desert bighorn sheep	None	None	FP	-
Urocyon littoralis catalinae	Santa Catalina Island fox	Endangered	Threatened	-	-
Urocyon littoralis clementae	San Clemente Island fox	None	Threatened	-	-
Chaetodipus californicus femoralis	Dulzura pocket mouse	None	None	SSC	-
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	None	None	SSC	-
Chaetodipus fallax pallidus	pallid San Diego pocket mouse	None	None	SSC	-
Dipodomys merriami parvus	San Bernardino kangaroo rat	Endangered	None	SSC	-
Perognathus alticolus inexpectatus	Tehachapi pocket mouse	None	None	SSC	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Perognathus inornatus	San Joaquin Pocket Mouse	None	None	-	-
Perognathus longimembris brevinasus	Los Angeles pocket mouse	None	None	SSC	-
Perognathus longimembris pacificus	Pacific pocket mouse	Endangered	None	SSC	-
Lepus californicus bennettii	San Diego black-tailed jackrabbit	None	None	SSC	-
Eumops perotis californicus	western mastiff bat	None	None	SSC	-
Nyctinomops femorosaccus	pocketed free-tailed bat	None	None	SSC	-
Nyctinomops macrotis	big free-tailed bat	None	None	SSC	-
Microtus californicus stephensi	south coast marsh vole	None	None	SSC	-
Neotoma lepida intermedia	San Diego desert woodrat	None	None	SSC	-
Onychomys torridus ramona	southern grasshopper mouse	None	None	SSC	-
Taxidea taxus	American badger	None	None	SSC	-
Macrotus californicus	California leaf-nosed bat	None	None	SSC	-
Ammospermophilus nelsoni	Nelson's antelope squirrel	None	Threatened	-	-
Neotamias speciosus speciosus	lodgepole chipmunk	None	None	-	-
Xerospermophilus mohavensis	Mohave ground squirrel	None	Threatened	-	-
Sorex ornatus salicornicus	southern California saltmarsh shrew	None	None	SSC	-
Sorex ornatus willetti	Santa Catalina shrew	None	None	SSC	-
Antrozous pallidus	pallid bat	None	None	SSC	-
Corynorhinus townsendii	Townsend's big-eared bat	None	Candidate Threatened	SSC	-
Euderma maculatum	spotted bat	None	None	SSC	-
Lasionycteris noctivagans	silver-haired bat	None	None	-	-
Lasiurus blossevillii	western red bat	None	None	SSC	-
Lasiurus cinereus	hoary bat	None	None	-	-
Lasiurus xanthinus	western yellow bat	None	None	SSC	-
Myotis ciliolabrum	western small-footed myotis	None	None	-	-
Myotis evotis	long-eared myotis	None	None	-	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Myotis lucifugus	little brown bat	None	None	-	-
Myotis thysanodes	fringed myotis	None	None	-	-
Myotis velifer	cave myotis	None	None	SSC	-
Myotis volans	long-legged myotis	None	None	-	-
Myotis yumanensis	Yuma myotis	None	None	-	-
Reptiles					
Anniella pulchra pulchra	silvery legless lizard	None	None	SSC	-
Charina trivirgata	rosy boa	None	None	-	-
Charina umbratica	southern rubber boa	None	Threatened	-	-
Chelonia mydas	green turtle	Threatened	None	-	-
Arizona elegans occidentalis	California glossy snake	None	None	-	-
Diadophis punctatus modestus	San Bernardino ringneck snake	None	None	-	-
Lampropeltis zonata (parvirubra)	California mountain kingsnake (San Bernardino population)	None	None	SSC	-
Lampropeltis zonata (pulchra)	California mountain kingsnake (San Diego population)	None	None	SSC	-
Salvadora hexalepis virgultea	coast patch-nosed snake	None	None	SSC	-
Gambelia sila	blunt-nosed leopard lizard	Endangered	Endangered	FP	-
Emys marmorata	western pond turtle	None	None	SSC	-
Thamnophis hammondii	two-striped garter snake	None	None	SSC	-
Thamnophis sirtalis ssp.	south coast garter snake	None	None	SSC	-
Phrynosoma blainvillii	coast horned lizard	None	None	SSC	-
Aspidoscelis hyperythra	orangethroat whiptail	None	None	SSC	-
Aspidoscelis tigris stejnegeri	coastal whiptail	None	None	-	-
Gopherus agassizii	desert tortoise	Threatened	Threatened	-	-
Crotalus ruber	red-diamond rattlesnake	None	None	SSC	-
Xantusia riversiana	island night lizard	Delisted	None	-	-
Plants					

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Anomobryum julaceum	slender silver moss	None	None	-	4.2
Tortula californica	California screw moss	None	None	-	1B.2
Texosporium sancti-jacobi	woven-spored lichen	None	None	-	3
Graphis saxorum	Baja rock lichen	None	None	-	3
Amaranthus watsonii	Watson's amaranth	None	None	-	4.3
Cymopterus deserticola	desert cymopterus	None	None	-	1B.2
Eryngium aristulatum var. parishii	San Diego button-celery	Endangered	Endangered	-	1B.1
Lomatium insulare	San Nicolas Island lomatium	None	None	-	1B.2
Oreonana vestita	woolly mountain-parsley	None	None	-	1B.3
Perideridia pringlei	adobe yampah	None	None	-	4.3
Spermolepis lateriflora	western bristly scaleseed	None	None	-	2A
Asplenium vespertinum	western spleenwort	None	None	-	4.2
Artemisia nesiotica	island sagebrush	None	None	-	4.3
Baccharis malibuensis	Malibu baccharis	None	None	-	1B.1
Centromadia parryi ssp. australis	southern tarplant	None	None	-	1B.1
Chaenactis glabriuscula var. orcuttiana	Orcutt's pincushion	None	None	-	1B.1
Constancea nevinii	Nevin's woolly sunflower	None	None	-	1B.3
Deinandra clementina	island tarplant	None	None	-	4.3
Deinandra minthornii	Santa Susana tarplant	None	Rare	-	1B.2
Deinandra paniculata	paniculate tarplant	None	None	-	4.2
Erigeron breweri var. jacinteus	San Jacinto Mountains daisy	None	None	-	4.3
Eriophyllum mohavense	Barstow woolly sunflower	None	None	-	1B.2
Hazardia cana	San Clemente Island hazardia	None	None	-	1B.2
Helianthus inexpectatus	Newhall sunflower	None	None	-	1B.1
Helianthus nuttallii ssp. parishii	Los Angeles sunflower	None	None	-	1A
Hulsea vestita ssp. gabrielensis	San Gabriel Mountains hulsea	None	None	-	4.3
Hulsea vestita ssp. parryi	Parry's hulsea	None	None	-	4.3

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Isocoma menziesii var. decumbens	decumbent goldenbush	None	None	-	1B.2
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	None	None	-	1B.1
Layia heterotricha	pale-yellow layia	None	None	-	1B.1
Malacothrix foliosa ssp. foliosa	leafy malacothrix	None	None	-	4.2
Microseris douglasii ssp. platycarpha	small-flowered microseris	None	None	-	4.2
Munzothamnus blairii	Blair's munzothamnus	None	None	-	1B.2
Packera ionophylla	Tehachapi ragwort	None	None	-	4.3
Pentachaeta lyonii	Lyon's pentachaeta	Endangered	Endangered	-	1B.1
Pseudognaphalium leucocephalum	white rabbit-tobacco	None	None	-	2B.2
Senecio aphanactis	chaparral ragwort	None	None	-	2B.2
Senecio astephanus	San Gabriel ragwort	None	None	-	4.3
Stylocline masonii	Mason's neststraw	None	None	-	1B.1
Symphyotrichum defoliatum	San Bernardino aster	None	None	-	1B.2
Symphyotrichum greatae	Greata's aster	None	None	-	1B.3
Syntrichopappus lemmonii	Lemmon's syntrichopappus	None	None	-	4.3
Berberis nevinii	Nevin's barberry	Endangered	Endangered	-	1B.1
Cryptantha clokeyi	Clokey's cryptantha	None	None	-	1B.2
Cryptantha traskiae	Trask's cryptantha	None	None	-	1B.1
Cryptantha wigginsii	Wiggins' cryptantha	None	None	-	1B.2
Harpagonella palmeri	Palmer's grapplinghook	None	None	-	4.2
Nama stenocarpa	mud nama	None	None	-	2B.2
Phacelia floribunda	many-flowered phacelia	None	None	-	1B.2
Phacelia hubbyi	Hubby's phacelia	None	None	-	4.2
Phacelia mohavensis	Mojave phacelia	None	None	-	4.3
Phacelia ramosissima var. austrolitoralis	south coast branching phacelia	None	None	-	3.2
Phacelia stellaris	Brand's star phacelia	None	None	-	1B.1

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Plagiobothrys parishii	Parish's popcornflower	None	None	-	1B.1
Dithyrea maritima	beach spectaclepod	None	Threatened	-	1B.1
Erysimum insulare	island wallflower	None	None	-	1B.3
Erysimum suffrutescens	suffrutescent wallflower	None	None	-	4.2
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	None	None	-	4.3
Nasturtium gambelii	Gambel's water cress	Endangered	Threatened	-	1B.1
Sibara filifolia	Santa Cruz Island winged-rockcress	Endangered	None	-	1B.1
Thysanocarpus rigidus	rigid fringepod	None	None	-	1B.2
Bergerocactus emoryi	golden-spined cereus	None	None	-	2B.2
Opuntia basilaris var. brachyclada	short-joint beavertail	None	None	-	1B.2
Nemacladus secundiflorus var. robbinsii	Robbins' nemacladus	None	None	-	1B.2
Lonicera subspicata var. subspicata	Santa Barbara honeysuckle	None	None	-	1B.2
Arenaria paludicola	marsh sandwort	Endangered	Endangered	-	1B.1
Loeflingia squarrosa var. artemisiarum	sagebrush loeflingia	None	None	-	2B.2
Aphanisma blitoides	aphanisma	None	None	-	1B.2
Atriplex coulteri	Coulter's saltbush	None	None	-	1B.2
Atriplex pacifica	south coast saltscale	None	None	-	1B.2
Atriplex parishii	Parish's brittlescale	None	None	-	1B.1
Atriplex serenana var. davidsonii	Davidson's saltscale	None	None	-	1B.2
Chenopodium littoreum	coastal goosefoot	None	None	-	1B.2
Suaeda esteroa	estuary seablite	None	None	-	1B.2
Suaeda taxifolia	woolly seablite	None	None	-	4.2
Crocanthemum greenei	island rush-rose	Threatened	None	-	1B.2
Calystegia felix	lucky morning-glory	None	None	-	3.1
Calystegia macrostegia ssp. amplissima	island morning-glory	None	None	-	4.3
Calystegia peirsonii	Peirson's morning-glory	None	None	-	4.2

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Convolvulus simulans	small-flowered morning-glory	None	None	-	4.2
Dichondra occidentalis	western dichondra	None	None	-	4.2
Dudleya blochmaniae ssp. blochmaniae	Blochman's dudleya	None	None	-	1B.1
Dudleya cymosa ssp. agourensis	Agoura Hills dudleya	Threatened	None	-	1B.2
Dudleya cymosa ssp. crebrifolia	San Gabriel River dudleya	None	None	-	1B.2
Dudleya cymosa ssp. marcescens	marcescent dudleya	Threatened	Rare	-	1B.2
Dudleya cymosa ssp. ovatifolia	Santa Monica dudleya	Threatened	None	-	1B.1
Dudleya densiflora	San Gabriel Mountains dudleya	None	None	-	1B.1
Dudleya multicaulis	many-stemmed dudleya	None	None	-	1B.2
Dudleya virens ssp. hassei	Catalina Island dudleya	None	None	-	1B.2
Dudleya virens ssp. insularis	island green dudleya	None	None	-	1B.2
Dudleya virens ssp. virens	bright green dudleya	None	None	-	1B.2
Crossosoma californicum	Catalina crossosoma	None	None	-	1B.2
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	None	None	-	2B.2
Carex occidentalis	western sedge	None	None	-	2B.3
Cladium californicum	California saw-grass	None	None	-	2B.2
Fimbristylis thermalis	hot springs fimbristylis	None	None	-	2B.2
Arctostaphylos catalinae	Santa Catalina Island manzanita	None	None	-	1B.2
Arctostaphylos crustacea ssp. subcordata	Santa Cruz Island manzanita	None	None	-	4.2
Arctostaphylos glandulosa ssp. gabrielensis	San Gabriel manzanita	None	None	-	1B.2
Arctostaphylos parryana ssp. tumescens	interior manzanita	None	None	-	4.3
Euphorbia misera	cliff spurge	None	None	-	2B.2
Acmispon argophyllus var. adsurgens	San Clemente Island bird's-foot trefoil	None	Endangered	-	1B.1
Acmispon dendroideus var.	island broom	None	None	-	4.2

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
dendroideus					
Acmispon dendroideus var. traskiae	San Clemente Island lotus	Threatened	Endangered	-	1B.3
Astragalus bicristatus	crested milk-vetch	None	None	-	4.3
Astragalus brauntonii	Braunton's milk-vetch	Endangered	None	-	1B.1
Astragalus lentiginosus var. antonius	San Antonio milk-vetch	None	None	-	1B.3
Astragalus leucolobus	Big Bear Valley woollypod	None	None	-	1B.2
Astragalus miguelensis	San Miguel Island milk-vetch	None	None	-	4.3
Astragalus nevinii	San Clemente Island milk-vetch	None	None	-	1B.2
Astragalus preussii var. laxiflorus	Lancaster milk-vetch	None	None	-	1B.1
Astragalus pycnostachyus var. lanosissimus	Ventura Marsh milk-vetch	Endangered	Endangered	-	1B.1
Astragalus tener var. titi	coastal dunes milk-vetch	Endangered	Endangered	-	1B.1
Lupinus elatus	silky lupine	None	None	-	4.3
Lupinus excubitus var. johnstonii	interior bush lupine	None	None	-	4.3
Lupinus guadalupensis	Guadalupe Island lupine	None	None	-	1B.2
Lupinus peirsonii	Peirson's lupine	None	None	-	1B.3
Oxytropis oreophila var. oreophila	rock-loving oxytrope	None	None	-	2B.3
Rupertia rigida	Parish's rupertia	None	None	-	4.3
Trifolium palmeri	southern island clover	None	None	-	4.2
Quercus dumosa	Nuttall's scrub oak	None	None	-	1B.1
Quercus durata var. gabrielensis	San Gabriel oak	None	None	-	4.2
Quercus engelmannii	Engelmann oak	None	None	-	4.2
Quercus pacifica	island scrub oak	None	None	-	4.2
Quercus tomentella	island oak	None	None	-	4.2
Frasera neglecta	pine green-gentian	None	None	-	4.3
California macrophylla	round-leaved filaree	None	None	-	1B.2
Ribes divaricatum var. parishii	Parish's gooseberry	None	None	-	1A

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Ribes viburnifolium	Santa Catalina Island currant	None	None	-	1B.2
Juglans californica	southern California black walnut	None	None	-	4.2
Juncus acutus ssp. leopoldii	southwestern spiny rush	None	None	-	4.2
Juncus duranii	Duran's rush	None	None	-	4.3
Clinopodium mimuloides	monkey-flower savory	None	None	-	4.2
Lepechinia fragrans	fragrant pitcher sage	None	None	-	4.2
Lepechinia rossii	Ross' pitcher sage	None	None	-	1B.2
Monardella australis ssp. cinerea	gray monardella	None	None	-	4.3
Monardella hypoleuca ssp. hypoleuca	white-veined monardella	None	None	-	1B.3
Monardella linoides ssp. oblonga	Tehachapi monardella	None	None	-	1B.3
Monardella macrantha ssp. hallii	Hall's monardella	None	None	-	1B.3
Monardella saxicola	rock monardella	None	None	-	4.2
Scutellaria bolanderi ssp. austromontana	southern mountains skullcap	None	None	-	1B.2
Calochortus catalinae	Catalina mariposa-lily	None	None	-	4.2
Calochortus clavatus var. clavatus	club-haired mariposa-lily	None	None	-	4.3
Calochortus clavatus var. gracilis	slender mariposa-lily	None	None	-	1B.2
Calochortus fimbriatus	late-flowered mariposa-lily	None	None	-	1B.2
Calochortus palmeri var. palmeri	Palmer's mariposa-lily	None	None	-	1B.2
Calochortus plummerae	Plummer's mariposa-lily	None	None	-	4.2
Calochortus striatus	alkali mariposa-lily	None	None	-	1B.2
Calochortus weedii var. intermedius	intermediate mariposa-lily	None	None	-	1B.2
Fritillaria pinetorum	pine fritillary	None	None	-	4.3
Lilium humboldtii ssp. ocellatum	ocellated humboldt lily	None	None	-	4.2
Lilium parryi	lemon lily	None	None	-	1B.2
Lavatera assurgentiflora ssp. glabra	southern island mallow	None	None	-	1B.1
Malacothamnus clementinus	San Clemente Island bush-mallow	Endangered	Endangered	-	1B.1

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Malacothamnus davidsonii	Davidson's bush-mallow	None	None	-	1B.2
Malacothamnus fasciculatus var. catalinensis	Santa Catalina Island bush-mallow	None	None	-	4.2
Sidalcea neomexicana	Salt Spring checkerbloom	None	None	-	2B.2
Calandrinia breweri	Brewer's calandrinia	None	None	-	4.2
Cistanthe maritima	seaside cistanthe	None	None	-	4.2
Claytonia lanceolata var. peirsonii	Peirson's spring beauty	None	None	-	3.1
Lewisia brachycalyx	short-sepaled lewisia	None	None	-	2B.2
Abronia maritima	red sand-verbena	None	None	-	4.2
Camissoniopsis guadalupensis ssp. clementina	San Clemente Island evening-primrose	None	None	-	1B.2
Camissoniopsis lewisii	Lewis' evening-primrose	None	None	-	3
Clarkia xantiana ssp. parviflora	Kern Canyon clarkia	None	None	-	4.2
Botrychium crenulatum	scalloped moonwort	None	None	-	2B.2
Piperia cooperi	chaparral rein orchid	None	None	-	4.2
Castilleja gleasoni	Mt. Gleason paintbrush	None	Rare	-	1B.2
Castilleja grisea	San Clemente Island paintbrush	Threatened	Endangered	-	1B.3
Castilleja plagiotoma	Mojave paintbrush	None	None	-	4.3
Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	Endangered	Endangered	-	1B.2
Orobanche parishii ssp. brachyloba	short-lobed broomrape	None	None	-	4.2
Orobanche valida ssp. valida	Rock Creek broomrape	None	None	-	1B.2
Canbya candida	white pygmy-poppy	None	None	-	4.2
Dendromecon harfordii var. rhamnoides	south island bush-poppy	None	None	-	3.1
Eschscholzia ramosa	island poppy	None	None	-	4.3
Romneya coulteri	Coulter's matilija poppy	None	None	-	4.2
Parnassia cirrata var. cirrata	San Bernardino grass-of-Parnassus	None	None	-	1B.3
Mimulus diffusus	Palomar monkeyflower	None	None	-	4.3

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Mimulus flemingii	island bush monkeyflower	None	None	-	4.3
Mimulus johnstonii	Johnston's monkeyflower	None	None	-	4.3
Mimulus traskiae	Santa Catalina Island monkeyflower	None	None	-	1A
Gambelia speciosa	showy island snapdragon	None	None	-	1B.2
Dissanthelium californicum	California dissanthelium	None	None	-	1B.2
Hordeum intercedens	vernal barley	None	None	-	3.2
Imperata brevifolia	California satintail	None	None	-	2B.1
Muhlenbergia appressa	appressed muhly	None	None	-	2B.2
Muhlenbergia californica	California muhly	None	None	-	4.3
Orcuttia californica	California Orcutt grass	Endangered	Endangered	-	1B.1
Puccinellia simplex	California alkali grass	None	None	-	1B.2
Eriastrum rosamondense	Rosamond eriastrum	None	None	-	1B.1
Gilia interior	inland gilia	None	None	-	4.3
Gilia latiflora ssp. cuyamensis	Cuyama gilia	None	None	-	4.3
Gilia nevinii	Nevin's gilia	None	None	-	4.3
Leptosiphon pygmaeus ssp. pygmaeus	pygmy leptosiphon	None	None	-	1B.2
Linanthus concinnus	San Gabriel linanthus	None	None	-	1B.2
Navarretia fossalis	spreading navarretia	Threatened	None	-	1B.1
Navarretia ojaiensis	Ojai navarretia	None	None	-	1B.1
Navarretia peninsularis	Baja navarretia	None	None	-	1B.2
Navarretia prostrata	prostrate vernal pool navarretia	None	None	-	1B.1
Navarretia setiloba	Piute Mountains navarretia	None	None	-	1B.1
Acanthoscyphus parishii var. parishii	Parish's oxytheca	None	None	-	4.2
Chorizanthe leptotheca	Peninsular spineflower	None	None	-	4.2
Chorizanthe parryi var. fernandina	San Fernando Valley spineflower	Candidate	Endangered	-	1B.1
Chorizanthe parryi var. parryi	Parry's spineflower	None	None	-	1B.1

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Chorizanthe spinosa	Mojave spineflower	None	None	-	4.2
Dodecahema leptoceras	slender-horned spineflower	Endangered	Endangered	-	1B.1
Eriogonum giganteum var. formosum	San Clemente Island buckwheat	None	None	-	1B.2
Eriogonum giganteum var. giganteum	Santa Catalina Island buckwheat	None	None	-	4.3
Eriogonum grande var. grande	island buckwheat	None	None	-	4.2
Eriogonum kennedyi var. alpigenum	southern alpine buckwheat	None	None	-	1B.3
Eriogonum microthecum var. johnstonii	Johnston's buckwheat	None	None	-	1B.3
Eriogonum umbellatum var. minus	alpine sulphur-flowered buckwheat	None	None	-	4.3
Goodmania luteola	golden goodmania	None	None	-	4.2
Nemacaulis denudata var. denudata	coast woolly-heads	None	None	-	1B.2
Sidotheca caryophylloides	chickweed oxytheca	None	None	-	4.3
Androsace elongata ssp. acuta	California androsace	None	None	-	4.2
Delphinium parishii ssp. subglobosum	Colorado Desert larkspur	None	None	-	4.3
Delphinium parryi ssp. purpureum	Mt. Pinos larkspur	None	None	-	4.3
Delphinium variegatum ssp. kinkiense	San Clemente Island larkspur	Endangered	Endangered	-	1B.1
Delphinium variegatum ssp. thornei	Thorne's royal larkspur	None	None	-	1B.1
Ceanothus megacarpus var. insularis	island ceanothus	None	None	-	4.3
Rhamnus pirifolia	island redberry	None	None	-	4.2
Cercocarpus betuloides var. blancheae	island mountain-mahogany	None	None	-	4.3
Cercocarpus traskiae	Catalina Island mountain-mahogany	Endangered	Endangered	-	1B.1
Drymocallis cuneifolia var. ewanii	Ewan's cinquefoil	None	None	-	1B.3
Horkelia cuneata var. puberula	mesa horkelia	None	None	-	1B.1
Lyonothamnus floribundus ssp.	Santa Cruz Island ironwood	None	None	-	1B.2

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
aspleniifolius					
Lyonothamnus floribundus ssp. floribundus	Santa Catalina Island ironwood	None	None	-	1B.2
Potentilla multijuga	Ballona cinquefoil	None	None	-	1A
Galium angustifolium ssp. gabrielense	San Antonio Canyon bedstraw	None	None	-	4.3
Galium catalinense ssp. acrispum	San Clemente Island bedstraw	None	Endangered	-	1B.3
Galium catalinense ssp. catalinense	Santa Catalina Island bedstraw	None	None	-	1B.3
Galium cliftonsmithii	Santa Barbara bedstraw	None	None	-	4.3
Galium grande	San Gabriel bedstraw	None	None	-	1B.2
Galium jepsonii	Jepson's bedstraw	None	None	-	4.3
Galium johnstonii	Johnston's bedstraw	None	None	-	4.3
Galium nuttallii ssp. insulare	Nuttall's island bedstraw	None	None	-	4.3
Nolina cismontana	chaparral nolina	None	None	-	1B.2
Heuchera abramsii	Abrams' alumroot	None	None	-	4.3
Heuchera caespitosa	urn-flowered alumroot	None	None	-	4.3
Jepsonia malvifolia	island jepsonia	None	None	-	4.2
Lithophragma maximum	San Clemente Island woodland star	Endangered	Endangered	-	1B.1
Scrophularia villosa	Santa Catalina figwort	None	None	-	1B.2
Selaginella asprella	bluish spike-moss	None	None	-	4.3
Lycium brevipes var. hassei	Santa Catalina Island desert-thorn	None	None	-	3.1
Lycium californicum	California box-thorn	None	None	-	4.2
Lycium torreyi	Torrey's box-thorn	None	None	-	4.2
Solanum wallacei	Wallace's nightshade	None	None	-	1B.1
Thelypteris puberula var. sonorensis	Sonoran maiden fern	None	None	-	2B.2
Brodiaea filifolia	thread-leaved brodiaea	Threatened	Endangered	-	1B.1
Brodiaea kinkiensis	San Clemente Island brodiaea	None	None	-	1B.2
Muilla coronata	crowned muilla	None	None	-	4.2

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Triteleia clementina	San Clemente Island triteleia	None	None	-	1B.2
Viola pinetorum var. grisea	grey-leaved violet	None	None	-	1B.3

Notes: CDFW = California Department of Fish and Wildlife
[1] Status abbreviations: FP = fully protected; SSC = species of special concern; WL = watch list
[2] Rare plant rank:
1A: Presumed extirpated in California and either rare or extinct elsewhere
1B: Rare, threatened, or endangered in California and elsewhere
2A: Presumed extirpated in California, but common elsewhere
2B: Rare, threatened, or endangered in California, but more common elsewhere
3: More information is needed (review list)
4: Limited distribution (watch list)
Threat rank:
.1: Seriously threatened in California
.2: Moderately threatened in California
.3: Not very threatened in California

California Natural Diversity Database Species for Orange County

Available http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp
Accessed June 1, 2016

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Amphibians					
Anaxyrus californicus	arroyo toad	Endangered	None	SSC	-
Lithobates pipiens	northern leopard frog	None	None	SSC	-
Rana draytonii	California red-legged frog	Threatened	None	SSC	-
Taricha torosa	Coast Range newt	None	None	SSC	-
Spea hammondii	western spadefoot	None	None	SSC	-
Birds					
Accipiter cooperii	Cooper's hawk	None	None	WL	-
Accipiter striatus	sharp-shinned hawk	None	None	WL	-
Aquila chrysaetos	golden eagle	None	None	FP ; WL	-
Buteo regalis	ferruginous hawk	None	None	WL	-
Buteo swainsoni	Swainson's hawk	None	Threatened	-	-
Circus cyaneus	northern harrier	None	None	SSC	-
Elanus leucurus	white-tailed kite	None	None	FP	-
Haliaeetus leucocephalus	bald eagle	Delisted	Endangered	FP	-
Pandion haliaetus	osprey	None	None	WL	-
Eremophila alpestris actia	California horned lark	None	None	WL	-
Synthliboramphus scrippsi	Scripps's murrelet	Candidate	Threatened	-	-
Bucephala islandica	Barrow's goldeneye	None	None	SSC	-
Chaetura vauxi	Vaux's swift	None	None	SSC	-
Cypseloides niger	black swift	None	None	SSC	-
Ardea alba	great egret	None	None	-	-

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Ardea herodias	great blue heron	None	None	-	-
Botaurus lentiginosus	American bittern	None	None	-	-
Egretta thula	snowy egret	None	None	-	-
Ixobrychus exilis	least bittern	None	None	SSC	-
Nycticorax nycticorax	black-crowned night heron	None	None	-	-
Charadrius alexandrinus nivosus	western snowy plover	Threatened	None	SSC	-
Charadrius montanus	mountain plover	None	None	SSC	-
Coccyzus americanus occidentalis	western yellow-billed cuckoo	Threatened	Endangered	-	-
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	None	None	WL	-
Ammodramus savannarum	grasshopper sparrow	None	None	SSC	-
Artemisiospiza belli belli	Bell's sage sparrow	None	None	WL	-
Chondestes grammacus	lark sparrow	None	None	-	-
Passerculus sandwichensis beldingi	Belding's savannah sparrow	None	Endangered	-	-
Passerculus sandwichensis rostratus	large-billed savannah sparrow	None	None	SSC	-
Spizella atrogularis	black-chinned sparrow	None	None	-	-
Falco columbarius	merlin	None	None	WL	-
Falco mexicanus	prairie falcon	None	None	WL	-
Falco peregrinus anatum	American peregrine falcon	Delisted	Delisted	FP	-
Spinus lawrencei	Lawrence's goldfinch	None	None	-	-
Grus canadensis canadensis	lesser sandhill crane	None	None	SSC	-
Progne subis	purple martin	None	None	SSC	-
Riparia riparia	bank swallow	None	Threatened	-	-
Agelaius tricolor	tricolored blackbird	None	None	SSC	-
Xanthocephalus xanthocephalus	yellow-headed blackbird	None	None	SSC	-
Lanius ludovicianus	loggerhead shrike	None	None	SSC	-
Hydroprogne caspia	Caspian tern	None	None	-	-
Larus californicus	California gull	None	None	WL	-
Rynchops niger	black skimmer	None	None	SSC	-

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Sterna forsteri	Forster's tern	None	None	-	-
Sternula antillarum browni	California least tern	Endangered	Endangered	FP	-
Thalasseus elegans	elegant tern	None	None	WL	-
Baeolophus inornatus	oak titmouse	None	None	-	-
Icteria virens	yellow-breasted chat	None	None	SSC	-
Setophaga petechia	yellow warbler	None	None	SSC	-
Pelecanus erythrorhynchos	American white pelican	None	None	SSC	-
Pelecanus occidentalis californicus	California brown pelican	Delisted	Delisted	FP	-
Phalacrocorax auritus	double-crested cormorant	None	None	WL	-
Picoides nuttallii	Nuttall's woodpecker	None	None	-	-
Coturnicops noveboracensis	yellow rail	None	None	SSC	-
Laterallus jamaicensis coturniculus	California black rail	None	Threatened	FP	-
Rallus longirostris levipes	light-footed clapper rail	Endangered	Endangered	FP	-
Numenius americanus	long-billed curlew	None	None	WL	-
Asio flammeus	short-eared owl	None	None	SSC	-
Asio otus	long-eared owl	None	None	SSC	-
Athene cunicularia	burrowing owl	None	None	SSC	-
Strix occidentalis occidentalis	California spotted owl	None	None	SSC	-
Polioptila californica californica	coastal California gnatcatcher	Threatened	None	SSC	-
Polioptila melanura	black-tailed gnatcatcher	None	None	WL	-
Plegadis chihi	white-faced ibis	None	None	WL	-
Calypte costae	Costa's hummingbird	None	None	-	-
Selasphorus sasin	Allen's hummingbird	None	None	-	-
Campylorhynchus brunneicapillus sandiegensis	coastal cactus wren	None	None	SSC	-
Cistothorus palustris clarkae	Clark's marsh wren	None	None	SSC	-
Contopus cooperi	olive-sided flycatcher	None	None	SSC	-
Empidonax traillii	willow flycatcher	None	Endangered	-	-

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Empidonax traillii extimus	southwestern willow flycatcher	Endangered	Endangered	-	-
Pyrocephalus rubinus	vermilion flycatcher	None	None	SSC	-
Vireo bellii pusillus	least Bell's vireo	Endangered	Endangered	-	-
Vireo huttoni unitti	Catalina Hutton's vireo	None	None	SSC	-
Fish					
Catostomus santaanae	Santa Ana sucker	Threatened	None	-	-
Gila orcuttii	arroyo chub	None	None	SSC	-
Rhinichthys osculus ssp.	Santa Ana speckled dace	None	None	SSC	-
Eucyclogobius newberryi	tidewater goby	Endangered	None	SSC	-
Oncorhynchus mykiss irideus	steelhead - southern California DPS	Endangered	None	-	-
Invertebrates					
Branchinecta sandiegonensis	San Diego fairy shrimp	Endangered	None	-	-
Streptocephalus woottoni	Riverside fairy shrimp	Endangered	None	-	-
Tryonia imitator	mimic tryonia (=California brackishwater snail)	None	None	-	-
Bombus crotchii	Crotch bumble bee	None	None	-	-
Cicindela gabbii	western tidal-flat tiger beetle	None	None	-	-
Cicindela hirticollis gravida	sandy beach tiger beetle	None	None	-	-
Cicindela latesignata latesignata	western beach tiger beetle	None	None	-	-
Cicindela senilis frosti	senile tiger beetle	None	None	-	-
Cicindela tranquebarica viridissima	greenest tiger beetle	None	None	-	-
Trigonoscuta dorothea dorothea	Dorothy's El Segundo Dune weevil	None	None	-	-
Euphyes vestris harbisoni	dun skipper	None	None	-	-
Panoquina errans	wandering (=saltmarsh) skipper	None	None	-	-
Danaus plexippus pop.	monarch - California overwintering population	None	None	-	-
Euphydryas editha quino	quino checkerspot butterfly	Endangered	None	-	-
Coelus globosus	globose dune beetle	None	None	-	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Mammals					
Chaetodipus californicus femoralis	Dulzura pocket mouse	None	None	SSC	-
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	None	None	SSC	-
Perognathus longimembris brevinasus	Los Angeles pocket mouse	None	None	SSC	-
Perognathus longimembris pacificus	Pacific pocket mouse	Endangered	None	SSC	-
Lepus californicus bennettii	San Diego black-tailed jackrabbit	None	None	SSC	-
Eumops perotis californicus	western mastiff bat	None	None	SSC	-
Nyctinomops femorosaccus	pocketed free-tailed bat	None	None	SSC	-
Nyctinomops macrotis	big free-tailed bat	None	None	SSC	-
Microtus californicus stephensi	south coast marsh vole	None	None	SSC	-
Neotoma lepida intermedia	San Diego desert woodrat	None	None	SSC	-
Taxidea taxus	American badger	None	None	SSC	-
Choeronycteris mexicana	Mexican long-tongued bat	None	None	SSC	-
Sorex ornatus salicornicus	southern California saltmarsh shrew	None	None	SSC	-
Antrozous pallidus	pallid bat	None	None	SSC	-
Lasiurus blossevillii	western red bat	None	None	SSC	-
Lasiurus cinereus	hoary bat	None	None	-	-
Lasiurus xanthinus	western yellow bat	None	None	SSC	-
Myotis ciliolabrum	western small-footed myotis	None	None	-	-
Myotis yumanensis	Yuma myotis	None	None	-	-
Reptiles					
Anniella pulchra pulchra	silvery legless lizard	None	None	SSC	-
Charina trivirgata	rosy boa	None	None	-	-
Chelonia mydas	green turtle	Threatened	None	-	-
Arizona elegans occidentalis	California glossy snake	None	None	-	-
Diadophis punctatus modestus	San Bernardino ringneck snake	None	None	-	-
Diadophis punctatus similis	San Diego ringneck snake	None	None	-	-
Lampropeltis zonata (pulchra)	California mountain kingsnake (San Diego	None	None	SSC	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
	population)				
Salvadora hexalepis virgultea	coast patch-nosed snake	None	None	SSC	-
Emys marmorata	western pond turtle	None	None	SSC	-
Coleonyx variegatus abbotti	San Diego banded gecko	None	None	-	-
Thamnophis hammondii	two-striped garter snake	None	None	SSC	-
Phrynosoma blainvillii	coast horned lizard	None	None	SSC	-
Plestiodon skiltonianus interparietalis	Coronado Island skink	None	None	SSC	-
Aspidoscelis hyperythra	orangethroat whiptail	None	None	SSC	-
Aspidoscelis tigris stejnegeri	coastal whiptail	None	None	-	-
Crotalus ruber	red-diamond rattlesnake	None	None	SSC	-
Plants					
Eryngium aristulatum var. parishii	San Diego button-celery	Endangered	Endangered	-	1B.1
Asplenium vespertinum	western spleenwort	None	None	-	4.2
Baccharis malibuensis	Malibu baccharis	None	None	-	1B.1
Centromadia parryi ssp. australis	southern tarplant	None	None	-	1B.1
Chaenactis glabriuscula var. orcuttiana	Orcutt's pincushion	None	None	-	1B.1
Deinandra paniculata	paniculate tarplant	None	None	-	4.2
Helianthus nuttallii ssp. parishii	Los Angeles sunflower	None	None	-	1A
Holocarpha virgata ssp. elongata	curving tarplant	None	None	-	4.2
Isocoma menziesii var. decumbens	decumbent goldenbush	None	None	-	1B.2
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	None	None	-	1B.1
Malacothrix saxatilis var. saxatilis	cliff malacothrix	None	None	-	4.2
Microseris douglasii ssp. platycarpha	small-flowered microseris	None	None	-	4.2
Pentachaeta aurea ssp. allenii	Allen's pentachaeta	None	None	-	1B.1
Pentachaeta aurea ssp. aurea	golden-rayed pentachaeta	None	None	-	4.2
Pseudognaphalium leucocephalum	white rabbit-tobacco	None	None	-	2B.2
Senecio aphanactis	chaparral ragwort	None	None	-	2B.2
Symphyotrichum defoliatum	San Bernardino aster	None	None	-	1B.2

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Verbesina dissita	big-leaved crownbeard	Threatened	Threatened	-	1B.1
Harpagonella palmeri	Palmer's grapplinghook	None	None	-	4.2
Nama stenocarpa	mud nama	None	None	-	2B.2
Phacelia hubbyi	Hubby's phacelia	None	None	-	4.2
Phacelia keckii	Santiago Peak phacelia	None	None	-	1B.3
Phacelia ramosissima var. austrolitoralis	south coast branching phacelia	None	None	-	3.2
Phacelia stellaris	Brand's star phacelia	None	None	-	1B.1
Caulanthus simulans	Payson's jewelflower	None	None	-	4.2
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	None	None	-	4.3
Nasturtium gambelii	Gambel's water cress	Endangered	Threatened	-	1B.1
Aphanisma blitoides	aphanisma	None	None	-	1B.2
Atriplex coulteri	Coulter's saltbush	None	None	-	1B.2
Atriplex pacifica	south coast saltscale	None	None	-	1B.2
Atriplex parishii	Parish's brittlescale	None	None	-	1B.1
Atriplex serenana var. davidsonii	Davidson's saltscale	None	None	-	1B.2
Suaeda esteroa	estuary seablite	None	None	-	1B.2
Suaeda taxifolia	woolly seablite	None	None	-	4.2
Convolvulus simulans	small-flowered morning-glory	None	None	-	4.2
Dichondra occidentalis	western dichondra	None	None	-	4.2
Dudleya blochmaniae ssp. blochmaniae	Blochman's dudleya	None	None	-	1B.1
Dudleya cymosa ssp. ovatifolia	Santa Monica dudleya	Threatened	None	-	1B.1
Dudleya multicaulis	many-stemmed dudleya	None	None	-	1B.2
Dudleya stolonifera	Laguna Beach dudleya	Threatened	Threatened	-	1B.1
Dudleya viscida	sticky dudleya	None	None	-	1B.2
Hesperocyparis forbesii	Tecate cypress	None	None	-	1B.1
Hesperocyparis goveniana	Gowen cypress	Threatened	None	-	1B.2
Eleocharis parvula	small spikerush	None	None	-	4.3
Comarostaphylis diversifolia ssp.	summer holly	None	None	-	1B.2

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
diversifolia					
Euphorbia misera	cliff spurge	None	None	-	2B.2
Tetracoccus dioicus	Parry's tetracoccus	None	None	-	1B.2
Astragalus brauntonii	Braunton's milk-vetch	Endangered	None	-	1B.1
Astragalus pycnostachyus var. lanosissimus	Ventura Marsh milk-vetch	Endangered	Endangered	-	1B.1
Quercus dumosa	Nuttall's scrub oak	None	None	-	1B.1
Juglans californica	southern California black walnut	None	None	-	4.2
Juncus acutus ssp. leopoldii	southwestern spiny rush	None	None	-	4.2
Clinopodium chandleri	San Miguel savory	None	None	-	1B.2
Lepechinia cardiophylla	heart-leaved pitcher sage	None	None	-	1B.2
Lepechinia ganderi	Gander's pitcher sage	None	None	-	1B.3
Monardella hypoleuca ssp. intermedia	intermediate monardella	None	None	-	1B.3
Monardella macrantha ssp. hallii	Hall's monardella	None	None	-	1B.3
Calochortus catalinae	Catalina mariposa-lily	None	None	-	4.2
Calochortus plummerae	Plummer's mariposa-lily	None	None	-	4.2
Calochortus weedii var. intermedius	intermediate mariposa-lily	None	None	-	1B.2
Lilium humboldtii ssp. ocellatum	ocellated humboldt lily	None	None	-	4.2
Sidalcea neomexicana	Salt Spring checkerbloom	None	None	-	2B.2
Calandrinia breweri	Brewer's calandrinia	None	None	-	4.2
Cistanthe maritima	seaside cistanthe	None	None	-	4.2
Abronia maritima	red sand-verbena	None	None	-	4.2
Abronia villosa var. aurita	chaparral sand-verbena	None	None	-	1B.1
Camissoniopsis lewisii	Lewis' evening-primrose	None	None	-	3
Piperia cooperi	chaparral rein orchid	None	None	-	4.2
Piperia leptopetala	narrow-petaled rein orchid	None	None	-	4.3
Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	Endangered	Endangered	-	1B.2
Romneya coulteri	Coulter's matilija poppy	None	None	-	4.2

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Mimulus clevelandii	Cleveland's bush monkeyflower	None	None	-	4.2
Mimulus diffusus	Palomar monkeyflower	None	None	-	4.3
Penstemon californicus	California beardtongue	None	None	-	1B.2
Hordeum intercedens	vernal barley	None	None	-	3.2
Imperata brevifolia	California satintail	None	None	-	2B.1
Orcuttia californica	California Orcutt grass	Endangered	Endangered	-	1B.1
Collomia diversifolia	serpentine collomia	None	None	-	4.3
Eriastrum densifolium ssp. sanctorum	Santa Ana River woollystar	Endangered	Endangered	-	1B.1
Navarretia prostrata	prostrate vernal pool navarretia	None	None	-	1B.1
Polygala cornuta var. fishiae	Fish's milkwort	None	None	-	4.3
Chorizanthe parryi var. fernandina	San Fernando Valley spineflower	Candidate	Endangered	-	1B.1
Chorizanthe polygonoides var. longispina	long-spined spineflower	None	None	-	1B.2
Nemacaulis denudata var. denudata	coast woolly-heads	None	None	-	1B.2
Horkelia cuneata var. puberula	mesa horkelia	None	None	-	1B.1
Nolina cismontana	chaparral nolina	None	None	-	1B.2
Lycium californicum	California box-thorn	None	None	-	4.2
Brodiaea filifolia	thread-leaved brodiaea	Threatened	Endangered	-	1B.1

Notes: CDFW = California Department of Fish and Wildlife

[1] Status abbreviations: FP = fully protected; SSC = species of special concern; WL = watch list

[2] Rare plant rank:

1A: Presumed extirpated in California and either rare or extinct elsewhere
1B: Rare, threatened, or endangered in California and elsewhere
2A: Presumed extirpated in California, but common elsewhere
2B: Rare, threatened, or endangered in California, but more common elsewhere
3: More information is needed (review list)
4: Limited distribution (watch list)

Threat rank:

.1: Seriously threatened in California
.2: Moderately threatened in California
.3: Not very threatened in California

California Natural Diversity Database Species for San Bernardino County

Available http://www.dfg.ca.gov/biogeodata/cnddb/mapsanddata.asp
Accessed June 1, 2016

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Amphibians					
Anaxyrus californicus	arroyo toad	Endangered	None	SSC	-
Incilius alvarius	Sonoran desert toad	None	None	SSC	-
Batrachoseps gabrieli	San Gabriel slender salamander	None	None	-	-
Ensatina klauberi	large-blotched salamander	None	None	SSC	-
Rana draytonii	California red-legged frog	Threatened	None	SSC	-
Rana muscosa	southern mountain yellow-legged frog	Endangered	Endangered	SSC	-
Spea hammondii	western spadefoot	None	None	SSC	-
Birds					
Accipiter cooperii	Cooper's hawk	None	None	WL	-
Accipiter gentilis	northern goshawk	None	None	SSC	-
Accipiter striatus	sharp-shinned hawk	None	None	WL	-
Aquila chrysaetos	golden eagle	None	None	FP ; WL	-
Buteo regalis	ferruginous hawk	None	None	WL	-
Buteo swainsoni	Swainson's hawk	None	Threatened	-	-
Circus cyaneus	northern harrier	None	None	SSC	-
Elanus leucurus	white-tailed kite	None	None	FP	-
Haliaeetus leucocephalus	bald eagle	Delisted	Endangered	FP	-
Pandion haliaetus	osprey	None	None	WL	-
Parabuteo unicinctus	Harris' hawk	None	None	WL	-
Eremophila alpestris actia	California horned lark	None	None	WL	-
Chaetura vauxi	Vaux's swift	None	None	SSC	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Cypseloides niger	black swift	None	None	SSC	-
Ardea alba	great egret	None	None	-	-
Ardea herodias	great blue heron	None	None	-	-
Botaurus lentiginosus	American bittern	None	None	-	-
Egretta thula	snowy egret	None	None	-	-
Ixobrychus exilis	least bittern	None	None	SSC	-
Nycticorax nycticorax	black-crowned night heron	None	None	-	-
Cardinalis cardinalis	northern cardinal	None	None	WL	-
Gymnogyps californianus	California condor	Endangered	Endangered	FP	-
Charadrius alexandrinus nivosus	western snowy plover	Threatened	None	SSC	-
Charadrius montanus	mountain plover	None	None	SSC	-
Coccyzus americanus occidentalis	western yellow-billed cuckoo	Threatened	Endangered	-	-
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	None	None	WL	-
Ammodramus savannarum	grasshopper sparrow	None	None	SSC	-
Artemisiospiza belli belli	Bell's sage sparrow	None	None	WL	-
Chondestes grammacus	lark sparrow	None	None	-	-
Junco hyemalis caniceps	gray-headed junco	None	None	WL	-
Melozone aberti	Abert's towhee	None	None	-	-
Passerculus sandwichensis alaudinus	Bryant's savannah sparrow	None	None	SSC	-
Passerculus sandwichensis beldingi	Belding's savannah sparrow	None	Endangered	-	-
Passerculus sandwichensis rostratus	large-billed savannah sparrow	None	None	SSC	-
Spizella atrogularis	black-chinned sparrow	None	None	-	-
Spizella breweri	Brewer's sparrow	None	None	-	-
Spizella passerina	chipping sparrow	None	None	-	-
Falco columbarius	merlin	None	None	WL	-
Falco mexicanus	prairie falcon	None	None	WL	-
Falco peregrinus anatum	American peregrine falcon	Delisted	Delisted	FP	-
Spinus lawrencei	Lawrence's goldfinch	None	None	-	-

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Gavia immer	common loon	None	None	SSC	-
Grus canadensis canadensis	lesser sandhill crane	None	None	SSC	-
Progne subis	purple martin	None	None	SSC	-
Riparia riparia	bank swallow	None	Threatened	-	-
Agelaius tricolor	tricolored blackbird	None	None	SSC	-
Xanthocephalus xanthocephalus	yellow-headed blackbird	None	None	SSC	-
Lanius ludovicianus	loggerhead shrike	None	None	SSC	-
Chlidonias niger	black tern	None	None	SSC	-
Larus californicus	California gull	None	None	WL	-
Sterna forsteri	Forster's tern	None	None	-	-
Toxostoma bendirei	Bendire's thrasher	None	None	SSC	-
Toxostoma crissale	Crissal thrasher	None	None	SSC	-
Toxostoma lecontei	Le Conte's thrasher	None	None	SSC	-
Baeolophus inornatus	oak titmouse	None	None	-	-
Icteria virens	yellow-breasted chat	None	None	SSC	-
Oreothlypis luciae	Lucy's warbler	None	None	SSC	-
Oreothlypis virginiae	Virginia's warbler	None	None	WL	-
Setophaga occidentalis	hermit warbler	None	None	-	-
Setophaga petechia	yellow warbler	None	None	SSC	-
Setophaga petechia sonorana	Sonoran yellow warbler	None	None	SSC	-
Pelecanus erythrorhynchos	American white pelican	None	None	SSC	-
Phalacrocorax auritus	double-crested cormorant	None	None	WL	-
Colaptes chrysoides	gilded flicker	None	Endangered	-	-
Melanerpes lewis	Lewis' woodpecker	None	None	-	-
Melanerpes uropygialis	Gila woodpecker	None	Endangered	-	-
Picoides albolarvatus	White-headed woodpecker	None	None	-	-
Picoides nuttallii	Nuttall's woodpecker	None	None	-	-
Sphyrapicus ruber	red-breasted sapsucker	None	None	-	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Laterallus jamaicensis coturniculus	California black rail	None	Threatened	FP	-
Rallus longirostris yumanensis	Yuma clapper rail	Endangered	Threatened	FP	-
Asio flammeus	short-eared owl	None	None	SSC	-
Asio otus	long-eared owl	None	None	SSC	-
Athene cunicularia	burrowing owl	None	None	SSC	-
Micrathene whitneyi	elf owl	None	Endangered	-	-
Psiloscops flammeolus	flammulated owl	None	None	-	-
Strix occidentalis occidentalis	California spotted owl	None	None	SSC	-
Polioptila californica californica	coastal California gnatcatcher	Threatened	None	SSC	-
Polioptila melanura	black-tailed gnatcatcher	None	None	WL	-
Piranga flava	hepatic tanager	None	None	WL	-
Piranga rubra	summer tanager	None	None	SSC	-
Plegadis chihi	white-faced ibis	None	None	WL	-
Calypte costae	Costa's hummingbird	None	None	-	-
Selasphorus rufus	rufous hummingbird	None	None	-	-
Selasphorus sasin	Allen's hummingbird	None	None	-	-
Campylorhynchus brunneicapillus sandiegensis	coastal cactus wren	None	None	SSC	-
Contopus cooperi	olive-sided flycatcher	None	None	SSC	-
Empidonax traillii	willow flycatcher	None	Endangered	-	-
Empidonax traillii brewsteri	little willow flycatcher	None	Endangered	-	-
Empidonax traillii extimus	southwestern willow flycatcher	Endangered	Endangered	-	-
Myiarchus tyrannulus	brown-crested flycatcher	None	None	WL	-
Pyrocephalus rubinus	vermilion flycatcher	None	None	SSC	-
Vireo bellii arizonae	Arizona bell's vireo	None	Endangered	-	-
Vireo bellii pusillus	least Bell's vireo	Endangered	Endangered	-	-
Vireo vicinior	gray vireo	None	None	SSC	-
Fish					

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Catostomus latipinnis	flannelmouth sucker	None	None	-	-
Catostomus santaanae	Santa Ana sucker	Threatened	None	-	-
Xyrauchen texanus	razorback sucker	Endangered	Endangered	FP	-
Gila elegans	bonytail	Endangered	Endangered	-	-
Gila orcuttii	arroyo chub	None	None	SSC	-
Ptychocheilus lucius	Colorado pikeminnow	Endangered	Endangered	FP	-
Rhinichthys osculus ssp.	Amargosa Canyon speckled dace	None	None	SSC	-
Rhinichthys osculus ssp.	Santa Ana speckled dace	None	None	SSC	-
Siphateles bicolor mohavensis	Mohave tui chub	Endangered	Endangered	FP	-
Cyprinodon nevadensis amargosae	Amargosa pupfish	None	None	SSC	-
Cyprinodon nevadensis nevadensis	Saratoga Springs pupfish	None	None	SSC	-
Gasterosteus aculeatus williamsoni	unarmored threespine stickleback	Endangered	Endangered	FP	-
Oncorhynchus mykiss irideus	steelhead - southern California DPS	Endangered	None	-	-
Invertebrates					
Texella kokoweef	Kokoweef Crystal Cave harvestman	None	None	-	-
Assiminea infima	Badwater snail	None	None	-	-
Eremarionta morongoana	Morongo (=Colorado) desertsnail	None	None	-	-
Eremarionta rowelli bakerensis	Baker's desertsnail	None	None	-	-
Helminthoglypta mohaveana	Victorville shoulderband	None	None	-	-
Helminthoglypta taylori	westfork shoulderband	None	None	-	-
Anodonta californiensis	California floater	None	None	-	-
Gonidea angulata	western ridged mussel	None	None	-	-
Paranomada californica	California cuckoo bee	None	None	-	-
Bombus caliginosus	obscure bumble bee	None	None	-	-
Bombus crotchii	Crotch bumble bee	None	None	-	-
Bombus morrisoni	Morrison bumble bee	None	None	-	-
Bombus occidentalis	western bumble bee	None	None	-	-
Rhopalolemma robertsi	Roberts' rhopalolemma bee	None	None	-	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Belostoma saratogae	Saratoga Springs belostoman bug	None	None	-	-
Parnopes borregoensis	Borrego parnopes cuckoo wasp	None	None	-	-
Carolella busckana	Busck's gallmoth	None	None	-	-
Miloderes nelsoni	Nelson's miloderes weevil	None	None	-	-
Trigonoscuta brunnotesselata	brown tassel trigonoscuta weevil	None	None	-	-
Hydroporus simplex	simple hydroporus diving beetle	None	None	-	-
Psychomastax deserticola	desert monkey grasshopper	None	None	-	-
Halictus harmonius	haromonius halictid bee	None	None	-	-
Diplectrona californica	California diplectronan caddisfly	None	None	-	-
Oliarces clara	cheeseweed owlfly (cheeseweed moth lacewing)	None	None	-	-
Callophrys mossii hidakupa	San Gabriel Mountains elfin butterfly	None	None	-	-
Plebejus saepiolus aureolus	San Gabriel Mountains blue butterfly	None	None	-	-
Plebulina emigdionis	San Emigdio blue butterfly	None	None	-	-
Rhaphiomidas terminatus abdominalis	Delhi Sands flower-loving fly	Endangered	None	-	-
Pelocoris shoshone	Amargosa naucorid bug	None	None	-	-
Euphydryas editha quino	quino checkerspot butterfly	Endangered	None	-	-
Euchloe hyantis andrewsi	Andrew's marble butterfly	None	None	-	-
Macrobaenetes kelsoensis	Kelso giant sand treader cricket	None	None	-	-
Glaresis arenata	Kelso Dunes scarab glaresis beetle	None	None	-	-
Polyphylla erratica	Death Valley June beetle	None	None	-	-
Ammopelmatus kelsoensis	Kelso jerusalem cricket	None	None	-	-
Mammals					
Ovis canadensis nelsoni	desert bighorn sheep	None	None	FP	-
Canis lupus	gray wolf	Endangered	Endangered	-	-
Vulpes macrotis mutica	San Joaquin kit fox	Endangered	Threatened	-	-
Chaetodipus californicus femoralis	Dulzura pocket mouse	None	None	SSC	-
Chaetodipus fallax fallax	northwestern San Diego pocket mouse	None	None	SSC	-

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Chaetodipus fallax pallidus	pallid San Diego pocket mouse	None	None	SSC	-
Dipodomys merriami parvus	San Bernardino kangaroo rat	Endangered	None	SSC	-
Dipodomys stephensi	Stephens' kangaroo rat	Endangered	Threatened	-	-
Perognathus alticolus alticolus	white-eared pocket mouse	None	None	SSC	-
Perognathus longimembris bangsi	Palm Springs pocket mouse	None	None	SSC	-
Perognathus longimembris brevinasus	Los Angeles pocket mouse	None	None	SSC	-
Perognathus longimembris pacificus	Pacific pocket mouse	Endangered	None	SSC	-
Lepus californicus bennettii	San Diego black-tailed jackrabbit	None	None	SSC	-
Eumops perotis californicus	western mastiff bat	None	None	SSC	-
Nyctinomops femorosaccus	pocketed free-tailed bat	None	None	SSC	-
Microtus californicus mohavensis	Mohave river vole	None	None	SSC	-
Microtus californicus scirpensis	Amargosa vole	Endangered	Endangered	-	-
Neotoma albigula venusta	Colorado Valley woodrat	None	None	-	-
Neotoma lepida intermedia	San Diego desert woodrat	None	None	SSC	-
Onychomys torridus ramona	southern grasshopper mouse	None	None	SSC	-
Sigmodon arizonae plenus	Colorado River cotton rat	None	None	SSC	-
Lontra canadensis sonora	southwestern river otter	None	None	SSC	-
Taxidea taxus	American badger	None	None	SSC	-
Leptonycteris yerbabuenae	lesser long-nosed bat	Endangered	None	-	-
Macrotus californicus	California leaf-nosed bat	None	None	SSC	-
Glaucomys sabrinus californicus	San Bernardino flying squirrel	None	None	SSC	-
Neotamias panamintinus acrus	Kingston Mountain chipmunk	None	None	-	-
Neotamias speciosus speciosus	lodgepole chipmunk	None	None	-	-
Xerospermophilus mohavensis	Mohave ground squirrel	None	Threatened	-	-
Xerospermophilus tereticaudus chlorus	Palm Springs round-tailed ground squirrel	None	None	SSC	-
Antrozous pallidus	pallid bat	None	None	SSC	-
Corynorhinus townsendii	Townsend's big-eared bat	None	Candidate Threatened	SSC	-

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Euderma maculatum	spotted bat	None	None	SSC	-
Lasionycteris noctivagans	silver-haired bat	None	None	-	-
Lasiurus blossevillii	western red bat	None	None	SSC	-
Lasiurus cinereus	hoary bat	None	None	-	-
Lasiurus xanthinus	western yellow bat	None	None	SSC	-
Myotis ciliolabrum	western small-footed myotis	None	None	-	-
Myotis evotis	long-eared myotis	None	None	-	-
Myotis lucifugus	little brown bat	None	None	-	-
Myotis thysanodes	fringed myotis	None	None	-	-
Myotis velifer	cave myotis	None	None	SSC	-
Myotis volans	long-legged myotis	None	None	-	-
Myotis yumanensis	Yuma myotis	None	None	-	-
Reptiles					
Anniella pulchra pulchra	silvery legless lizard	None	None	SSC	-
Charina trivirgata	rosy boa	None	None	-	-
Charina umbratica	southern rubber boa	None	Threatened	-	-
Arizona elegans occidentalis	California glossy snake	None	None	-	-
Diadophis punctatus modestus	San Bernardino ringneck snake	None	None	-	-
Lampropeltis zonata (parvirubra)	California mountain kingsnake (San Bernardino population)	None	None	SSC	-
Salvadora hexalepis virgultea	coast patch-nosed snake	None	None	SSC	-
Emys marmorata	western pond turtle	None	None	SSC	-
Coleonyx variegatus abbotti	San Diego banded gecko	None	None	-	-
Heloderma suspectum cinctum	banded gila monster	None	None	SSC	-
Thamnophis hammondii	two-striped garter snake	None	None	SSC	-
Thamnophis sirtalis ssp.	south coast garter snake	None	None	SSC	-
Phrynosoma blainvillii	coast horned lizard	None	None	SSC	-
Uma scoparia	Mojave fringe-toed lizard	None	None	SSC	-

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Aspidoscelis hyperythra	orangethroat whiptail	None	None	SSC	-
Aspidoscelis tigris stejnegeri	coastal whiptail	None	None	-	-
Gopherus agassizii	desert tortoise	Threatened	Threatened	-	-
Crotalus ruber	red-diamond rattlesnake	None	None	SSC	-
Plants					
Plagiobryoides vinosula	wine-colored tufa moss	None	None	-	4.2
Grimmia vaginulata	vaginulate grimmia	None	None	-	1B.1
Jaffueliobryum raui	Rau's jaffueliobryum moss	None	None	-	2B.3
Jaffueliobryum wrightii	Wright's jaffueliobryum moss	None	None	-	2B.3
Tortella alpicola	alpine crisp moss	None	None	-	2B.3
Solorina spongiosa	fringed chocolate chip lichen	None	None	-	2B.2
Agave utahensis var. nevadensis	Clark Mountain agave	None	None	-	4.2
Sagittaria sanfordii	Sanford's arrowhead	None	None	-	1B.2
Allium atrorubens var. atrorubens	Great Basin onion	None	None	-	2B.3
Allium atrorubens var. cristatum	Inyo onion	None	None	-	4.3
Allium marvinii	Yucaipa onion	None	None	-	1B.2
Allium nevadense	Nevada onion	None	None	-	2B.3
Allium parishii	Parish's onion	None	None	-	4.3
Amaranthus watsonii	Watson's amaranth	None	None	-	4.3
Cymopterus deserticola	desert cymopterus	None	None	-	1B.2
Cymopterus gilmanii	Gilman's cymopterus	None	None	-	2B.3
Cymopterus multinervatus	purple-nerve cymopterus	None	None	-	2B.2
Oreonana vestita	woolly mountain-parsley	None	None	-	1B.3
Perideridia parishii ssp. parishii	Parish's yampah	None	None	-	2B.2
Podistera nevadensis	Sierra podistera	None	None	-	4.3
Asclepias asperula ssp. asperula	antelope-horns	None	None	-	4.3
Asclepias nyctaginifolia	Mojave milkweed	None	None	-	2B.1
Funastrum utahense	Utah vine milkweed	None	None	-	4.2

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Matelea parvifolia	spear-leaf matelea	None	None	-	2B.3
Asplenium vespertinum	western spleenwort	None	None	-	4.2
Ageratina herbacea	desert ageratina	None	None	-	2B.3
Ambrosia monogyra	singlewhorl burrobrush	None	None	-	2B.2
Antennaria marginata	white-margined everlasting	None	None	-	2B.3
Artemisia palmeri	San Diego sagewort	None	None	-	4.2
Bahia neomexicana	many-flowered bahia	None	None	-	2B.3
Centromadia pungens ssp. laevis	smooth tarplant	None	None	-	1B.1
Cirsium arizonicum var. tenuisectum	desert mountain thistle	None	None	-	1B.2
Deinandra mohavensis	Mojave tarplant	None	Endangered	-	1B.3
Deinandra paniculata	paniculate tarplant	None	None	-	4.2
Enceliopsis nudicaulis var. nudicaulis	naked-stemmed daisy	None	None	-	4.3
Ericameria albida	white-flowered rabbitbrush	None	None	-	4.2
Ericameria nana	dwarf goldenbush	None	None	-	4.3
Erigeron breweri var. jacinteus	San Jacinto Mountains daisy	None	None	-	4.3
Erigeron oxyphyllus	wand-like fleabane daisy	None	None	-	2B.3
Erigeron parishii	Parish's daisy	Threatened	None	-	1B.1
Erigeron uncialis var. uncialis	limestone daisy	None	None	-	1B.2
Erigeron utahensis	Utah daisy	None	None	-	2B.3
Eriophyllum lanatum var. obovatum	southern Sierra woolly sunflower	None	None	-	4.3
Eriophyllum mohavense	Barstow woolly sunflower	None	None	-	1B.2
Helianthus nuttallii ssp. parishii	Los Angeles sunflower	None	None	-	1A
Hulsea vestita ssp. gabrielensis	San Gabriel Mountains hulsea	None	None	-	4.3
Hulsea vestita ssp. parryi	Parry's hulsea	None	None	-	4.3
Hulsea vestita ssp. pygmaea	pygmy hulsea	None	None	-	1B.3
Hymenopappus filifolius var. eriopodus	hairy-podded fine-leaf hymenopappus	None	None	-	2B.3
Hymenoxys odorata	bitter hymenoxys	None	None	-	2B.1
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	None	None	-	1B.1

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Packera bernardina	San Bernardino ragwort	None	None	-	1B.2
Packera ionophylla	Tehachapi ragwort	None	None	-	4.3
Petradoria pumila ssp. pumila	rock goldenrod	None	None	-	4.3
Pyrrocoma uniflora var. gossypina	Bear Valley pyrrocoma	None	None	-	1B.2
Sanvitalia abertii	Abert's sanvitalia	None	None	-	2B.2
Senecio aphanactis	chaparral ragwort	None	None	-	2B.2
Senecio astephanus	San Gabriel ragwort	None	None	-	4.3
Symphyotrichum defoliatum	San Bernardino aster	None	None	-	1B.2
Symphyotrichum greatae	Greata's aster	None	None	-	1B.3
Syntrichopappus lemmonii	Lemmon's syntrichopappus	None	None	-	4.3
Taraxacum californicum	California dandelion	Endangered	None	-	1B.1
Tetradymia argyraea	striped horsebrush	None	None	-	4.3
Xanthisma gracile	annual bristleweed	None	None	-	4.3
Azolla microphylla	Mexican mosquito fern	None	None	-	4.2
Berberis fremontii	Fremont barberry	None	None	-	2B.3
Berberis harrisoniana	Kofa barberry	None	None	-	1B.2
Berberis nevinii	Nevin's barberry	Endangered	Endangered	-	1B.1
Cryptantha clokeyi	Clokey's cryptantha	None	None	-	1B.2
Cryptantha costata	ribbed cryptantha	None	None	-	4.3
Cryptantha holoptera	winged cryptantha	None	None	-	4.3
Cryptantha tumulosa	New York Mountains cryptantha	None	None	-	4.3
Eriodictyon angustifolium	narrow-leaved yerba santa	None	None	-	2B.3
Lithospermum incisum	plains stoneseed	None	None	-	2B.3
Nama dichotoma var. dichotoma	forked purple mat	None	None	-	2B.3
Phacelia anelsonii	Aven Nelson's phacelia	None	None	-	2B.3
Phacelia barnebyana	Barneby's phacelia	None	None	-	2B.3
Phacelia coerulea	sky-blue phacelia	None	None	-	2B.3
Phacelia exilis	Transverse Range phacelia	None	None	-	4.3

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Phacelia mohavensis	Mojave phacelia	None	None	-	4.3
Phacelia mustelina	Death Valley round-leaved phacelia	None	None	-	1B.3
Phacelia parishii	Parish's phacelia	None	None	-	1B.1
Phacelia perityloides var. jaegeri	Jaeger's phacelia	None	None	-	1B.3
Phacelia pulchella var. gooddingii	Goodding's phacelia	None	None	-	2B.3
Phacelia stellaris	Brand's star phacelia	None	None	-	1B.1
Pholistoma auritum var. arizonicum	Arizona pholistoma	None	None	-	2B.3
Plagiobothrys parishii	Parish's popcornflower	None	None	-	1B.1
Tiquilia canescens var. pulchella	Chocolate Mountains tiquilia	None	None	-	3.2
Boechera dispar	pinyon rockcress	None	None	-	2B.3
Boechera lincolnensis	Lincoln rockcress	None	None	-	2B.3
Boechera parishii	Parish's rockcress	None	None	-	1B.2
Boechera peirsonii	San Bernardino rockcress	None	None	-	1B.2
Boechera shockleyi	Shockley's rockcress	None	None	-	2B.2
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	None	None	-	4.3
Nasturtium gambelii	Gambel's water cress	Endangered	Threatened	-	1B.1
Physaria chambersii	Chambers' physaria	None	None	-	2B.3
Physaria kingii ssp. bernardina	San Bernardino Mountains bladderpod	Endangered	None	-	1B.1
Sibara deserti	desert winged-rockcress	None	None	-	4.3
Streptanthus bernardinus	Laguna Mountains jewelflower	None	None	-	4.3
Streptanthus campestris	southern jewelflower	None	None	-	1B.3
Thelypodium stenopetalum	slender-petaled thelypodium	Endangered	Endangered	-	1B.1
Thysanocarpus rigidus	rigid fringepod	None	None	-	1B.2
Carnegiea gigantea	saguaro	None	None	-	2B.2
Coryphantha alversonii	Alverson's foxtail cactus	None	None	-	4.3
Coryphantha chlorantha	desert pincushion	None	None	-	2B.1
Coryphantha vivipara var. rosea	viviparous foxtail cactus	None	None	-	2B.2
Echinocereus engelmannii var. howei	Howe's hedgehog cactus	None	None	-	1B.1

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Grusonia parishii	Parish's club-cholla	None	None	-	2B.2
Mammillaria grahamii var. grahamii	Graham fishhook cactus	None	None	-	2B.2
Opuntia basilaris var. brachyclada	short-joint beavertail	None	None	-	1B.2
Opuntia wigginsii	Wiggins' cholla	None	None	-	3.3
Opuntia xcurvispina	curved-spine beavertail	None	None	-	2B.2
Sclerocactus johnsonii	Johnson's bee-hive cactus	None	None	-	2B.2
Sclerocactus polyancistrus	Mojave fish-hook cactus	None	None	-	4.2
Nemacladus gracilis	graceful nemacladus	None	None	-	4.3
Wislizenia refracta ssp. refracta	jackass-clover	None	None	-	2B.2
Arenaria lanuginosa var. saxosa	rock sandwort	None	None	-	2B.3
Arenaria paludicola	marsh sandwort	Endangered	Endangered	-	1B.1
Eremogone congesta var. charlestonensis	Charleston sandwort	None	None	-	1B.3
Eremogone ursina	Big Bear Valley sandwort	Threatened	None	-	1B.2
Loeflingia squarrosa var. artemisiarum	sagebrush loeflingia	None	None	-	2B.2
Minuartia obtusiloba	alpine sandwort	None	None	-	4.3
Mortonia utahensis	Utah mortonia	None	None	-	4.3
Atriplex coulteri	Coulter's saltbush	None	None	-	1B.2
Atriplex parishii	Parish's brittlescale	None	None	-	1B.1
Cleomella brevipes	short-pedicelled cleomella	None	None	-	4.2
Calystegia felix	lucky morning-glory	None	None	-	3.1
Convolvulus simulans	small-flowered morning-glory	None	None	-	4.2
Dudleya abramsii ssp. affinis	San Bernardino Mountains dudleya	None	None	-	1B.2
Dudleya multicaulis	many-stemmed dudleya	None	None	-	1B.2
Sedum niveum	Davidson's stonecrop	None	None	-	4.2
Glossopetalon pungens	pungent glossopetalon	None	None	-	1B.2
Cuscuta californica var. apiculata	pointed dodder	None	None	-	3
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	None	None	-	2B.2

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Carex comosa	bristly sedge	None	None	-	2B.1
Carex occidentalis	western sedge	None	None	-	2B.3
Carex scirpoidea ssp. pseudoscirpoidea	western single-spiked sedge	None	None	-	2B.2
Cladium californicum	California saw-grass	None	None	-	2B.2
Fimbristylis thermalis	hot springs fimbristylis	None	None	-	2B.2
Schoenus nigricans	black bog-rush	None	None	-	2B.2
Dryopteris filix-mas	male fern	None	None	-	2B.3
Polystichum kruckebergii	Kruckeberg's sword fern	None	None	-	4.3
Woodsia plummerae	Plummer's woodsia	None	None	-	2B.3
Arctostaphylos glandulosa ssp. gabrielensis	San Gabriel manzanita	None	None	-	1B.2
Arctostaphylos parryana ssp. tumescens	interior manzanita	None	None	-	4.3
Arctostaphylos refugioensis	Refugio manzanita	None	None	-	1B.2
Ditaxis claryana	glandular ditaxis	None	None	-	2B.2
Euphorbia abramsiana	Abrams' spurge	None	None	-	2B.2
Euphorbia exstipulata var. exstipulata	Clark Mountain spurge	None	None	-	2B.1
Euphorbia jaegeri	Orocopia Mountains spurge	None	None	-	1B.1
Euphorbia parryi	Parry's spurge	None	None	-	2B.3
Euphorbia platysperma	flat-seeded spurge	None	None	-	1B.2
Euphorbia revoluta	revolute spurge	None	None	-	4.3
Euphorbia vallis-mortae	Death Valley sandmat	None	None	-	4.2
Tetracoccus hallii	Hall's tetracoccus	None	None	-	4.3
Tragia ramosa	desert tragia	None	None	-	4.3
Acmispon argyraeus var. multicaulis	scrub lotus	None	None	-	1B.3
Acmispon argyraeus var. notitius	Providence Mountains lotus	None	None	-	1B.3
Astragalus albens	Cushenbury milk-vetch	Endangered	None	-	1B.1
Astragalus allochrous var. playanus	playa milk-vetch	None	None	-	2B.2
Astragalus bernardinus	San Bernardino milk-vetch	None	None	-	1B.2

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Astragalus bicristatus	crested milk-vetch	None	None	-	4.3
Astragalus cimae var. cimae	Cima milk-vetch	None	None	-	1B.2
Astragalus hornii var. hornii	Horn's milk-vetch	None	None	-	1B.1
Astragalus insularis var. harwoodii	Harwood's milk-vetch	None	None	-	2B.2
Astragalus jaegerianus	Lane Mountain milk-vetch	Endangered	None	-	1B.1
Astragalus lentiginosus var. antonius	San Antonio milk-vetch	None	None	-	1B.3
Astragalus lentiginosus var. borreganus	Borrego milk-vetch	None	None	-	4.3
Astragalus lentiginosus var. sierrae	Big Bear Valley milk-vetch	None	None	-	1B.2
Astragalus leucolobus	Big Bear Valley woollypod	None	None	-	1B.2
Astragalus nutans	Providence Mountains milk-vetch	None	None	-	4.3
Astragalus preussii var. preussii	Preuss' milk-vetch	None	None	-	2B.3
Astragalus tidestromii	Tidestrom's milk-vetch	None	None	-	2B.2
Astragalus tricarinatus	triple-ribbed milk-vetch	Endangered	None	-	1B.2
Lupinus elatus	silky lupine	None	None	-	4.3
Oxytropis oreophila var. oreophila	rock-loving oxytrope	None	None	-	2B.3
Parkinsonia microphylla	little-leaved palo verde	None	None	-	4.3
Pediomelum castoreum	Beaver Dam breadroot	None	None	-	1B.2
Psorothamnus arborescens var. arborescens	Mojave indigo-bush	None	None	-	4.3
Psorothamnus fremontii var. attenuatus	narrow-leaved psorothamnus	None	None	-	2B.3
Robinia neomexicana	New Mexico locust	None	None	-	2B.3
Rupertia rigida	Parish's rupertia	None	None	-	4.3
Senna covesii	Cove's cassia	None	None	-	2B.2
Quercus turbinella	shrub live oak	None	None	-	4.3
Frasera albomarginata var. albomarginata	desert green-gentian	None	None	-	2B.2
Frasera albomarginata var. induta	Clark Mountain green-gentian	None	None	-	1B.2
Frasera neglecta	pine green-gentian	None	None	-	4.3

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Gentiana fremontii	Fremont's gentian	None	None	-	2B.3
Ribes divaricatum var. parishii	Parish's gooseberry	None	None	-	1A
Fendlerella utahensis	yerba desierto	None	None	-	4.3
Sisyrinchium longipes	timberland blue-eyed grass	None	None	-	2B.2
Juglans californica	southern California black walnut	None	None	-	4.2
Juncus cooperi	Cooper's rush	None	None	-	4.3
Juncus duranii	Duran's rush	None	None	-	4.3
Juncus interior	inland rush	None	None	-	2B.2
Juncus nodosus	knotted rush	None	None	-	2B.3
Hedeoma drummondii	Drummond's false pennyroyal	None	None	-	2B.2
Hedeoma nana ssp. californica	California mock pennyroyal	None	None	-	4.3
Lepechinia fragrans	fragrant pitcher sage	None	None	-	4.2
Monarda pectinata	plains bee balm	None	None	-	2B.3
Monardella australis ssp. cinerea	gray monardella	None	None	-	4.3
Monardella australis ssp. jokerstii	Jokerst's monardella	None	None	-	1B.1
Monardella boydii	Boyd's monardella	None	None	-	1B.2
Monardella eremicola	Clark Mountain monardella	None	None	-	1B.3
Monardella macrantha ssp. hallii	Hall's monardella	None	None	-	1B.3
Monardella pringlei	Pringle's monardella	None	None	-	1A
Monardella robisonii	Robison's monardella	None	None	-	1B.3
Monardella saxicola	rock monardella	None	None	-	4.2
Poliomintha incana	frosted mint	None	None	-	2A
Salvia funerea	Death Valley sage	None	None	-	4.3
Scutellaria bolanderi ssp. austromontana	southern mountains skullcap	None	None	-	1B.2
Teucrium glandulosum	desert germander	None	None	-	2B.3
Trichostema micranthum	small-flowered bluecurls	None	None	-	4.3
Calochortus catalinae	Catalina mariposa-lily	None	None	-	4.2

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Calochortus palmeri var. palmeri	Palmer's mariposa-lily	None	None	-	1B.2
Calochortus plummerae	Plummer's mariposa-lily	None	None	-	4.2
Calochortus striatus	alkali mariposa-lily	None	None	-	1B.2
Calochortus weedii var. intermedius	intermediate mariposa-lily	None	None	-	1B.2
Fritillaria pinetorum	pine fritillary	None	None	-	4.3
Lilium humboldtii ssp. ocellatum	ocellated humboldt lily	None	None	-	4.2
Lilium parryi	lemon lily	None	None	-	1B.2
Linum puberulum	plains flax	None	None	-	2B.3
Mentzelia eremophila	solitary blazing star	None	None	-	4.2
Mentzelia polita	polished blazing star	None	None	-	1B.2
Mentzelia pterosperma	wing-seed blazing star	None	None	-	2B.2
Mentzelia puberula	Darlington's blazing star	None	None	-	2B.2
Mentzelia tricuspis	spiny-hair blazing star	None	None	-	2B.1
Mentzelia tridentata	creamy blazing star	None	None	-	1B.3
Petalonyx thurberi ssp. gilmanii	Death Valley sandpaper-plant	None	None	-	1B.3
Abutilon parvulum	dwarf abutilon	None	None	-	2B.3
Ayenia compacta	California ayenia	None	None	-	2B.3
Malacothamnus parishii	Parish's bush-mallow	None	None	-	1A
Sidalcea hickmanii ssp. parishii	Parish's checkerbloom	None	Rare	-	1B.2
Sidalcea malviflora ssp. dolosa	Bear Valley checkerbloom	None	None	-	1B.2
Sidalcea neomexicana	Salt Spring checkerbloom	None	None	-	2B.2
Sidalcea pedata	bird-foot checkerbloom	Endangered	Endangered	-	1B.1
Sphaeralcea rusbyi var. eremicola	Rusby's desert-mallow	None	None	-	1B.2
Calyptridium pygmaeum	pygmy pussypaws	None	None	-	1B.2
Claytonia lanceolata var. peirsonii	Peirson's spring beauty	None	None	-	3.1
Lewisia brachycalyx	short-sepaled lewisia	None	None	-	2B.2
Abronia nana var. covillei	Coville's dwarf abronia	None	None	-	4.2
Abronia villosa var. aurita	chaparral sand-verbena	None	None	-	1B.1

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Acleisanthes nevadensis	desert wing-fruit	None	None	-	2B.3
Mirabilis coccinea	red four o'clock	None	None	-	2B.3
Mirabilis tenuiloba	slender-lobed four o'clock	None	None	-	4.3
Tripterocalyx micranthus	small-flowered sand-verbena	None	None	-	2B.3
Menodora scabra var. scabra	rough menodora	None	None	-	2B.3
Menodora spinescens var. mohavensis	Mojave menodora	None	None	-	1B.2
Chylismia arenaria	sand evening-primrose	None	None	-	2B.2
Eremothera boothii ssp. boothii	Booth's evening-primrose	None	None	-	2B.3
Eremothera boothii ssp. intermedia	Booth's hairy evening-primrose	None	None	-	2B.3
Oenothera cavernae	cave evening-primrose	None	None	-	2B.1
Oenothera cespitosa ssp. crinita	caespitose evening-primrose	None	None	-	4.2
Oenothera longissima	long-stem evening-primrose	None	None	-	2B.2
Botrychium crenulatum	scalloped moonwort	None	None	-	2B.2
Botrychium minganense	Mingan moonwort	None	None	-	2B.2
Malaxis monophyllos var. brachypoda	white bog adder's-mouth	None	None	-	2B.1
Piperia leptopetala	narrow-petaled rein orchid	None	None	-	4.3
Castilleja cinerea	ash-gray paintbrush	Threatened	None	-	1B.2
Castilleja lasiorhyncha	San Bernardino Mountains owl's-clover	None	None	-	1B.2
Castilleja montigena	Heckard's paintbrush	None	None	-	4.3
Castilleja plagiotoma	Mojave paintbrush	None	None	-	4.3
Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	Endangered	Endangered	-	1B.2
Chloropyron tecopense	Tecopa bird's-beak	None	None	-	1B.2
Cordylanthus eremicus ssp. eremicus	desert bird's-beak	None	None	-	4.3
Cordylanthus parviflorus	small-flowered bird's-beak	None	None	-	2B.3
Orobanche valida ssp. valida	Rock Creek broomrape	None	None	-	1B.2
Arctomecon merriamii	white bear poppy	None	None	-	2B.2
Canbya candida	white pygmy-poppy	None	None	-	4.2
Eschscholzia androuxii	Joshua Tree poppy	None	None	-	4.3

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Eschscholzia minutiflora ssp. twisselmannii	Red Rock poppy	None	None	-	1B.2
Parnassia cirrata var. cirrata	San Bernardino grass-of-Parnassus	None	None	-	1B.3
Proboscidea althaeifolia	desert unicorn-plant	None	None	-	4.3
Mimulus exiguus	San Bernardino Mountains monkeyflower	None	None	-	1B.2
Mimulus johnstonii	Johnston's monkeyflower	None	None	-	4.3
Mimulus mohavensis	Mojave monkeyflower	None	None	-	1B.2
Mimulus purpureus	little purple monkeyflower	None	None	-	1B.2
Pinus edulis	two-needle pinyon pine	None	None	-	3.3
Penstemon albomarginatus	white-margined beardtongue	None	None	-	1B.1
Penstemon bicolor ssp. roseus	rosy two-toned beardtongue	None	None	-	1B.1
Penstemon calcareus	limestone beardtongue	None	None	-	1B.3
Penstemon fruticiformis var. amargosae	Amargosa beardtongue	None	None	-	1B.3
Penstemon stephensii	Stephens' beardtongue	None	None	-	1B.3
Penstemon thompsoniae	Thompson's beardtongue	None	None	-	2B.3
Penstemon thurberi	Thurber's beardtongue	None	None	-	4.2
Penstemon utahensis	Utah beardtongue	None	None	-	2B.3
Blepharidachne kingii	King's eyelash grass	None	None	-	2B.3
Bouteloua eriopoda	black grama	None	None	-	4.2
Bouteloua trifida	three-awned grama	None	None	-	2B.3
Digitaria californica var. californica	Arizona cottontop	None	None	-	2B.3
Elymus salina	Salina Pass wild-rye	None	None	-	2B.3
Enneapogon desvauxii	nine-awned pappus grass	None	None	-	2B.2
Erioneuron pilosum	hairy erioneuron	None	None	-	2B.3
Imperata brevifolia	California satintail	None	None	-	2B.1
Muhlenbergia alopecuroides	wolftail	None	None	-	2B.2
Muhlenbergia appressa	appressed muhly	None	None	-	2B.2
Muhlenbergia arsenei	tough muhly	None	None	-	2B.3

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Muhlenbergia californica	California muhly	None	None	-	4.3
Muhlenbergia fragilis	delicate muhly	None	None	-	2B.3
Muhlenbergia pauciflora	few-flowered muhly	None	None	-	2B.3
Munroa squarrosa	false buffalo-grass	None	None	-	2B.2
Panicum hirticaule ssp. hirticaule	roughstalk witch grass	None	None	-	2B.1
Poa atropurpurea	San Bernardino blue grass	Endangered	None	-	1B.2
Puccinellia parishii	Parish's alkali grass	None	None	-	1B.1
Puccinellia simplex	California alkali grass	None	None	-	1B.2
Scleropogon brevifolius	burro grass	None	None	-	2B.3
Sphenopholis obtusata	prairie wedge grass	None	None	-	2B.2
Stipa arida	Mormon needle grass	None	None	-	2B.3
Stipa divaricata	small-flowered rice grass	None	None	-	2B.3
Aliciella ripleyi	Ripley's aliciella	None	None	-	2B.3
Aliciella triodon	coyote gilia	None	None	-	2B.2
Eriastrum densifolium ssp. sanctorum	Santa Ana River woollystar	Endangered	Endangered	-	1B.1
Eriastrum harwoodii	Harwood's eriastrum	None	None	-	1B.2
Eriastrum sparsiflorum	few-flowered eriastrum	None	None	-	4.3
Gilia interior	inland gilia	None	None	-	4.3
Gilia leptantha ssp. leptantha	San Bernardino gilia	None	None	-	1B.3
Gilia leptantha ssp. pinetorum	pine gilia	None	None	-	4.3
Linanthus bernardinus	Pioneertown linanthus	None	None	-	1B.2
Linanthus concinnus	San Gabriel linanthus	None	None	-	1B.2
Linanthus killipii	Baldwin Lake linanthus	None	None	-	1B.2
Linanthus maculatus ssp. maculatus	Little San Bernardino Mtns. linanthus	None	None	-	1B.2
Linanthus orcuttii	Orcutt's linanthus	None	None	-	1B.3
Navarretia peninsularis	Baja navarretia	None	None	-	1B.2
Navarretia prostrata	prostrate vernal pool navarretia	None	None	-	1B.1
Phlox dolichantha	Big Bear Valley phlox	None	None	-	1B.2

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Saltugilia latimeri	Latimer's woodland-gilia	None	None	-	1B.2
Polygala acanthoclada	thorny milkwort	None	None	-	2B.3
Polygala intermontana	intermountain milkwort	None	None	-	2B.1
Acanthoscyphus parishii var. cienegensis	Cienega Seca oxytheca	None	None	-	1B.3
Acanthoscyphus parishii var. goodmaniana	Cushenbury oxytheca	Endangered	None	-	1B.1
Acanthoscyphus parishii var. parishii	Parish's oxytheca	None	None	-	4.2
Chorizanthe leptotheca	Peninsular spineflower	None	None	-	4.2
Chorizanthe parryi var. parryi	Parry's spineflower	None	None	-	1B.1
Chorizanthe spinosa	Mojave spineflower	None	None	-	4.2
Chorizanthe xanti var. leucotheca	white-bracted spineflower	None	None	-	1B.2
Dodecahema leptoceras	slender-horned spineflower	Endangered	Endangered	-	1B.1
Eriogonum bifurcatum	forked buckwheat	None	None	-	1B.2
Eriogonum contiguum	Reveal's buckwheat	None	None	-	2B.3
Eriogonum evanidum	vanishing wild buckwheat	None	None	-	1B.1
Eriogonum heermannii var. floccosum	Clark Mountain buckwheat	None	None	-	4.3
Eriogonum kennedyi var. alpigenum	southern alpine buckwheat	None	None	-	1B.3
Eriogonum kennedyi var. austromontanum	southern mountain buckwheat	Threatened	None	-	1B.2
Eriogonum microthecum var. alpinum	northern limestone buckwheat	None	None	-	4.3
Eriogonum microthecum var. johnstonii	Johnston's buckwheat	None	None	-	1B.3
Eriogonum microthecum var. lacus-ursi	Bear Lake buckwheat	None	None	-	1B.1
Eriogonum microthecum var. lapidicola	Inyo Mountains buckwheat	None	None	-	4.3
Eriogonum ovalifolium var. vineum	Cushenbury buckwheat	Endangered	None	-	1B.1
Eriogonum thornei	Thorne's buckwheat	None	Endangered	-	1B.2
Eriogonum umbellatum var. juniporinum	juniper sulphur-flowered buckwheat	None	None	-	2B.3
Eriogonum umbellatum var. minus	alpine sulphur-flowered buckwheat	None	None	-	4.3
Nemacaulis denudata var. gracilis	slender cottonheads	None	None	-	2B.2

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Sidotheca caryophylloides	chickweed oxytheca	None	None	-	4.3
Portulaca halimoides	desert portulaca	None	None	-	4.2
Androsace elongata ssp. acuta	California androsace	None	None	-	4.2
Argyrochosma limitanea ssp. limitanea	southwestern false cloak-fern	None	None	-	2B.1
Astrolepis cochisensis ssp. cochisensis	scaly cloak fern	None	None	-	2B.3
Myriopteris wootonii	Wooton's lace fern	None	None	-	2B.3
Pellaea truncata	spiny cliff-brake	None	None	-	2B.3
Delphinium parishii ssp. subglobosum	Colorado Desert larkspur	None	None	-	4.3
Delphinium parryi ssp. purpureum	Mt. Pinos larkspur	None	None	-	4.3
Delphinium scaposum	bare-stem larkspur	None	None	-	2B.3
Myosurus minimus ssp. apus	little mousetail	None	None	-	3.1
Drymocallis cuneifolia var. cuneifolia	wedgeleaf woodbeauty	None	None	-	1B.1
Horkelia cuneata var. puberula	mesa horkelia	None	None	-	1B.1
Horkelia wilderae	Barton Flats horkelia	None	None	-	1B.1
Ivesia argyrocoma var. argyrocoma	silver-haired ivesia	None	None	-	1B.2
Ivesia jaegeri	Jaeger's ivesia	None	None	-	1B.3
Ivesia patellifera	Kingston Mountains ivesia	None	None	-	1B.3
Prunus eremophila	Mojave Desert plum	None	None	-	1B.2
Galium angustifolium ssp. gabrielense	San Antonio Canyon bedstraw	None	None	-	4.3
Galium angustifolium ssp. gracillimum	slender bedstraw	None	None	-	4.2
Galium californicum ssp. primum	Alvin Meadow bedstraw	None	None	-	1B.2
Galium hilendiae ssp. kingstonense	Kingston Mountains bedstraw	None	None	-	1B.3
Galium jepsonii	Jepson's bedstraw	None	None	-	4.3
Galium johnstonii	Johnston's bedstraw	None	None	-	4.3
Galium munzii	Munz's bedstraw	None	None	-	4.3
Galium proliferum	desert bedstraw	None	None	-	2B.2
Galium wrightii	Wright's bedstraw	None	None	-	2B.3
Heuchera abramsii	Abrams' alumroot	None	None	-	4.3

Scientific Name	Common Name	Federal Status	State Status	CDFW Status[1]	CA Rare Plant Rank[2]
Heuchera caespitosa	urn-flowered alumroot	None	None	-	4.3
Heuchera parishii	Parish's alumroot	None	None	-	1B.3
Maurandella antirrhiniflora	violet twining snapdragon	None	None	-	2B.3
Penstemon pseudospectabilis ssp. pseudospectabilis	desert beardtongue	None	None	-	2B.2
Selaginella asprella	bluish spike-moss	None	None	-	4.3
Selaginella leucobryoides	Mojave spike-moss	None	None	-	4.3
Castela emoryi	Emory's crucifixion-thorn	None	None	-	2B.2
Lycium parishii	Parish's desert-thorn	None	None	-	2B.3
Lycium torreyi	Torrey's box-thorn	None	None	-	4.2
Physalis lobata	lobed ground-cherry	None	None	-	2B.3
Thelypteris puberula var. sonorensis	Sonoran maiden fern	None	None	-	2B.2
Androstephium breviflorum	small-flowered androstephium	None	None	-	2B.2
Brodiaea filifolia	thread-leaved brodiaea	Threatened	Endangered	-	1B.1
Muilla coronata	crowned muilla	None	None	-	4.2
Aloysia wrightii	Wright's beebrush	None	None	-	4.3
Viola pinetorum var. grisea	grey-leaved violet	None	None	-	1B.3
Kallstroemia parviflora	warty caltrop	None	None	-	4.2

Notes: CDFW = California Department of Fish and Wildlife

[1] Status abbreviations: FP = fully protected; SSC = species of special concern; WL = watch list

[2] Rare plant rank:

1A: Presumed extirpated in California and either rare or extinct elsewhere
1B: Rare, threatened, or endangered in California and elsewhere
2A: Presumed extirpated in California, but common elsewhere
2B: Rare, threatened, or endangered in California, but more common elsewhere
3: More information is needed (review list)
4: Limited distribution (watch list)

Threat rank:

.1: Seriously threatened in California
.2: Moderately threatened in California
.3: Not very threatened in California

Appendix E
California Register Eligibility of PCCP Segments of Program Pipelines

California Register Eligibility of PCCP Segments of Program Pipelines

None of the PCCP portions of the Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, Second Lower Feeder, or Sepulveda Feeder appear to be eligible for listing on the California Register of Historical Resources (CRHR). Consequently, none of these water conveyance resources appear to qualify as historical resources for the purposes of CEQA.

Water conveyance systems and features that clearly demonstrable historic significance are apt to be found eligible for CRHR listing under Criterion 1, for association with important events that have made a significant contribution to the broad patterns of our history, and/or Criterion 3, as resources that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master. When water conveyance systems or features represent the work of a master, it typically means that a historically significant engineer or builder designed them and managed their construction. It is extremely rare for a historic-period water conveyance system or feature to be found eligible for listing under Criterion 2, for association with the lives of persons important to our past other than individuals who designed and/or built those systems or features. Individual features of a water conveyance system determined not to possess sufficient historical significance to qualify for individual CRHR listing can be found eligible for CRHR listing if they contribute to a larger historically significant system that qualifies for CRHR listing as a historic district.

It is sometimes argued that water conveyance systems have historical significance as a result of contributing to the growth of a city. However, the construction of new water facilities to increase or otherwise improve a city's water supply is too commonplace an event to meet the significance threshold under Criterion 1. All historic-period water conveyance systems constructed to supply water for a town or city were developed in anticipation of, or as a response to, growth. The construction of water conveyance systems and other infrastructure does not generally or necessarily cause growth. However, there are instances in which water infrastructure can reasonably qualify for CRHR listing under Criterion 1. Water facilities that historically made the settlement of a town or locality possible have the potential to meet the significance threshold under Criterion 1. For example, the Mill Creek Zanja, an irrigation ditch completed in 1819 and constructed through today's Redlands and Mentone by Native American laborers, was listed on the National Register of Historic Places (NRHP) in 1977 with no significance criteria specified. As a resource listed on the NRHP, it was automatically listed on the CRHR as well. Known locally as "the Zanja," the resource was later determined to meet NRHP Criterion A/CRHR Criterion 1 and NRHP Criterion C/CRHR Criterion 3. The Zanja was constructed to provide irrigation water for agriculture at and around the Mission San Gabriel Assistencia. Under Criteria A/1, the resource is significant as the first irrigation ditch constructed in the San Bernardino Valley, where the Zanja and subsequent irrigation development provided the basis for both settlement and agricultural enterprise, the latter of which dominated the region's economy into the twentieth century (Van Boven 1976; California SHPO 2015).

Extensive inter-basin conveyance systems developed as major public works, according to long-term municipal, regional, or state plans, are also reasonable candidates for CRHR listing under Criterion 1. When determined eligible for listing under Criterion 1, such systems, or components of such systems, are also often determined eligible under Criterion 3, for association with historically

significant hydraulic engineers and/or for engineering or technological significance. Although portions of the original Los Angeles Aqueduct constructed between 1907 and 1913 have been found eligible for the NRHP and the CRHR, the entire resource has not been formally evaluated for listing on the NRHP or the CRHR. However, it has been designated a National Historic Civil Engineering Landmark, and has been recommended for designation as a National Historic Landmark. If designated as a National Historic Landmark, the Los Angeles Aqueduct would automatically be listed on the NRHP and the CRHR. The Los Angeles Aqueduct would likely meet NRHP Criterion A/CRHR Criterion 1 for the significance of its construction as a formative event in Southern California history, and NRHP Criterion C/CRHR Criterion 3, as the work of master engineer William Mulholland, and as the world's largest aqueduct for urban water supply at the time of its completion.

The five subject feeders and pipelines are not components of the seminal inter-basin systems constructed over great distances to transport Sierra Nevada or Colorado River water to the emerging San Francisco Bay Area and greater Los Angeles-era metropolises during the first half of the twentieth century. Those systems include the Los Angeles Department of Water and Power's Los Angeles Aqueduct (1913), East Bay Municipal Utility District's Mokelumne River Aqueducts (1929), San Francisco Public Utilities Commission's Hetch Hetchy Project (1934), and Metropolitan's Colorado River Aqueduct (1941). Although the five subject feeders and pipelines were developed to distribute increased water supplies to Metropolitan's Southern California distribution system from the State Water Project (SWP) (1973), they were not constructed as part of the SWP's California Aqueduct. Instead, they were built as additions to Metropolitan's pre-existing urban distribution network in Southern California. That system began distributing water from the Colorado River Aqueduct in the early 1940s. The first four of the five subject feeders and pipelines (Second Lower Feeder, Sepulveda Feeder, Rialto Pipeline, and Calabasas Feeder) were constructed incrementally over the period from 1966–1975, and the Allen-McColloch Pipeline was completed 5 years later. The event or events of their construction represent the kind of commonplace expansion of urban water-distribution networks that occurred with new supply and population growth in numerous American cities during the second half of the twentieth century, particularly cities in the arid West. In none of the five cases does the singular event of constructing one of the five subject feeders and pipelines appear to meet the threshold of significance necessary for CRHR listing under Criterion 1. The incremental expansion of the Metropolitan distribution system to accommodate new SWP water supply does not appear to represent a historically significant pattern of events qualifying any of these resources for CRHR listing under Criterion 1 individually or as part of a historic district.

The first of the five subject resources to be built, the Second Lower Feeder, and the four subsequently completed feeders and pipelines included in the proposed PCCP Rehabilitation Program do not appear to have technological or engineering significance. The five subject resources were constructed too late to have associations with the master engineers—Mulholland and others—who designed the first systems to convey water in open-air aqueducts, tunnels, siphons, and pipelines across great distances during the first half the twentieth century. Research has yielded no evidence that the five pipelines are associated with historically significant hydraulic engineers. None of the five subject resources appear to be the product of major technological innovation in the arena of hydraulic engineering. When construction work began on the Second Lower Feeder in 1966, the technology of PCCP was over 20 years old. As stated above, in 1961 AWWA estimated that 3,030 miles of PCCP had been installed in the United States for water conveyance purposes. PCCP was subject to modest design variation as its use evolved over time, including the 1964, 1972, and 1979 revisions to the AWWA standards (PCCPC301) discussed above. However, PCCP had become a commonplace water-conveyance technology before those revisions, which provided for limited

modification (mostly upper and lower size limits) of well-established design elements constituting PCCP and differentiation from other types of water-conveyance pipe. Additionally, as a distribution system feeder constructed from 1966 to 1970, the pipelines are not considered eligible under CRHR criteria because they do not meet the special consideration for historical resources achieving significance within the past 50 years (14 CCR Section 4852(d)(2)). For these reasons, none of the five subject resources included in the proposed PCCP Rehabilitation Program appear to meet the significance threshold for CRHR listing under Criterion 3.

References

California Office of Historic Preservation (SHPO). 2015. California Historical Resources Inventory (MS Access Database). On file at ICF International.

Van Boven, Alice. 1976. Mill Creek Zanja National Register Nomination Form (No. 77000329). Available: http://pdfhost.focus.nps.gov/docs/nrhp/text/77000329.PDF. Accessed April 20, 2015.

Appendix F
Greenhouse Gas Calculations

Program Buildout Assumptions for Greenhouse Gases Analysis

Anticipated Service Life of Relined PCCP and Program Components	30 years	SCAQMD Guidance, 2008: http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2	

Typical Excavation Site

Length of PCCP Segments

AMP	9 miles			27
Calabasas Feeder	9 miles		Average number of	27
Rialto Pipeline	16 miles	3	excavation sites per mile of	48
Second Lower Feeder	30 miles		PCCP	90
Sepulveda Feeder	37 miles			111
			Total Excavation Sites	**303**

Typical New Valve/Meter Vault Structure

Assumption: 1 new valve/meter vault structure per 5 miles of PCCP

Total PCCP Length	101 miles	**Total Excavation Sites**	**20**

Typical Below Grade AV/VV Relocation 1,000-foot segment assumed

The Second Lower Feeder has 34 below-grade AR/VV over its 30-mile length of PCCP.
Assumption: 1 AV/VV relocation per mile

	101 miles	**Total Sites**	**101**

Pipeline Replacement/Parallel Piping

Assumption: 1,000 feet of pipeline replacement per 10 miles of PCCP

	101 miles	**Total Sites**	**10**

GHG EMISSIONS

		Daily Emissions (lbs)							
		Off-Road			On-Road				
	Days	CO2	CH4	N2O	Idle CO2E	Run CO2E	Sub-Phase Total (lbs)	Program Component Total (MT)	Assumed Program Buildout (MT)
1.0 Typical Excavation Site									
1.1 Mobilize and Site Setup	5	1,538	12	12	14	249	9,127		
1.2 Excavation, Shoring, Dewatering	20	4,715	24	36	29	636	108,796		
1.3 Pipe Removal/Pipe Relining	80	9,305	25	71	21	298	777,521		
1.4 Backfill and Asphalt Replacement	15	1,377	10	11	36	780	33,217		
1.5 Site Restoration and Clean Up	5	208	2	2	11	152	1,871	**422**	**127,891**
2.0 Typical New Valve/Meter Vault Structure									
2.1 Mobilize and Site Setup	5	1,107	9	8	14	249	6,940		
2.2 Excavation, Shoring, Dewatering	20	4,284	20	33	36	777	103,009		
2.3 Construct New Valve Structure	30	9,863	24	75	14	249	306,786		
2.4 Install New Equipment	25	8,774	23	67	21	298	229,571		
2.5 Backfill and Asphalt Replacement	15	1,645	12	13	15	261	29,190		
2.6 Demolition of Old Vault Structure, Backfill and Asphalt Replacement	20	10,132	30	77	36	768	220,872		
2.7 Site Restoration and Clean Up	5	208	2	2	11	152	1,871	**407**	**8,149**
3.0 Typical Below Grade AV/VV Relocation									
3.1 Mobilize and Site Setup	1	-	-	-	10	149	159		
3.2 Remove Existing AV and Appurtenances	1	1,055	8	8	7	107	1,186		
3.3 Trench Excavation	2	11,172	19	85	11	253	23,083		
3.4 Install New AV and Equipment	1	1,075	7	8	7	107	1,205		
3.5 Backfill and Asphalt Replacement	1	2,321	10	18	19	398	2,765		
3.6 Site Restoration and Clean Up	1	-	-	-	8	128	135	**13**	**1,307**
4.0 Pipeline Replacement/Parallel Piping									
4.1 Mobilize and Site Setup	5	1,107	9	8	33	395	7,766		
4.2 Trench Excavation, Shoring	30	2,071	16	16	270	5,579	238,541		
4.3 Install Pipe	30	9,433	21	72	27	347	296,966		
4.4 Backfill and Asphalt Replacement	30	1,377	10	11	201	4,169	173,060		
4.5 Site Restoration and Clean Up	5	208	2	2	30	298	2,697	**326**	**3,261**

TOTAL PROGRAM BUILDOUT	**140,609**	MT
Service Life	30	years
Amortized Emissions	**4,687**	MT

Factors

Global Warming Potential	
CO2	1
CH4	25
N2O	298

Source: Greenhouse Gas Protocols (http://www.ghgprotocol.org/files/ghgp/tools/Global-Warming-Potential-Values.pdf)

lbs/MT 2204.62

Unmitigated GHG	**% Reduction**
141,759	0.8%

Appendix G
Energy Use Calculations

MWD PCCP Program

Energy Calculations

A	B	C	D	E	F
			Unit/Factor	**Formula**	**Source**
3	**TOTAL PROGRAM BUILDOUT**	140,608.5	MT CO2		Soure: Calculations by ICF 2016
4					
5		2,204.6	pounds/MT		Source: Conversion factor
6		22.4	pounds CO2/gallon diesel		Source: Oak Ridge National Laboratory. 2015. Transportation Energy Data Book. Edition 34. Table 11.12.
7		13,838,767	gallons diesel	C3*C5/C6	

Appendix H
Notices of Availability/Notices of Completion

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
700 NORTH ALAMEDA STREET
LOS ANGELES, CALIFORNIA 90012

NOTICE OF AVAILABILITY

DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE Prestressed Concrete Cylinder Pipe Rehabilitation Program

Pursuant to the California Environmental Quality Act (CEQA), The Metropolitan Water District of Southern California (Metropolitan), as Lead Agency, prepared a Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program (proposed Program). This Notice of Availability is to inform you that the Draft PEIR is being released for a 45-day public review period. The Draft PEIR is also being sent to responsible, trustee, and interested agencies as part of the review process required under CEQA (Section 21092 of the Public Resources Code) and the State CEQA Guidelines (Section 15087 of the California Code of Regulations).

PROGRAM DESCRIPTION: Metropolitan Water District proposes to rehabilitate portions of five existing subsurface water delivery pipelines within its service area. Approximately 100 miles of prestressed concrete cylinder pipe (PCCP) with diameters varying from 54 to 201 inches would be rehabilitated either by relining the existing pipe with steel or replacing existing pipe with new welded steel pipe. These five existing pipelines (also known as feeders) are: Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, Second Lower Feeder, and Sepulveda Feeder.

LOCATION: The five pipelines that would be rehabilitated extend primarily in existing public roads and on Metropolitan-owned rights-of-way in the following cities and counties:

Allen-McColloch Pipeline

- Anaheim
- Irvine
- Lake Forest
- Mission Viejo
- Orange
- Tustin
- Yorba Linda

Calabasas Feeder

- Calabasas
- Hidden Hills
- Los Angeles

Rialto Pipeline

- Claremont
- Fontana
- La Verne
- Rancho Cucamonga
- Rialto
- San Bernardino
- San Dimas
- Upland
- Unincorporated San Bernardino County

Second Lower Feeder

- Anaheim
- Buena Park
- Carson
- Cypress
- Lakewood
- Lomita
- Long Beach
- Los Alamitos
- Los Angeles
- Placentia
- Rolling Hills Estates
- Torrance
- Yorba Linda
- Unincorporated Los Angeles County
- Unincorporated Orange County

Sepulveda Feeder

- Culver City
- Gardena
- Hawthorne
- Inglewood
- Los Angeles
- Torrance

DRAFT PEIR: The Draft PEIR describes the proposed Program, existing environmental conditions, significant impacts (e.g., air quality, greenhouse gas emissions), potential significant impacts (e.g., biological resources, noise, traffic), and proposed mitigation measures.

PUBLIC REVIEW PERIOD: Due to the time limits mandated by State law (Section 15087 of the CEQA Guidelines), written comments must be received by Metropolitan not later than 45 days after the start of the review period which **begins September 1, 2016** and **ends on October 17, 2016**. Comments received by close of the public review period will be considered in the Final PEIR. All comments should be submitted in writing and include point of contact information.

Please send comments and responses to:

Hans Vandenberg
Program Management Unit
The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153
Phone: (213) 217-5683

Comments can also be submitted via e-mail to EPT@mwdh2o.com. Comments sent via e-mail should state "PCCP Rehabilitation Program Draft PEIR" in the subject line.

Copies of the Draft PEIR are available for public review at the following location:

The Metropolitan Water District of Southern California
Engineering Resource Center
700 North Alameda Street
Los Angeles, California 90012

Please contact Hans Vandenberg to make arrangements for viewing. Additionally, copies of the Draft PEIR are available for public review at the following locations:

Lomita Library
24200 Narbonne Avenue
Lomita, CA 90717

Carter Branch Library
2630 Linden A venue
Rialto, CA 92377

El Toro Library
24672 Raymond Way
Lake Forest, CA 92630

San Fernando Library
217 N. Malay Avenue
San Fernando, CA 91340

Brea Library
1 Civic Center Circle
Brea, CA 92821

La Verne Library
3640 D Street
La Verne, CA 91750

Los Angeles Public Library –
Central Library Branch
630 W 5th St.
Los Angeles, CA 90071

Or online at Metropolitan's website:
http://mwdh2o.com/AboutYourWater/CapitalProjects/Pages/Environmental%20Quality%20Act.aspx

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

September 1, 2016

Mr. Scott Morgan, Director
Office of Planning and Research
State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

Dear Mr. Morgan:

Notice of Availability of a Draft Program Environmental Impact Report for the Prestressed Concrete Cylinder Pipe Rehabilitation Program

Enclosed please find one original Notice of Completion (NOC) for the Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe Rehabilitation Program. Also enclosed are 15 Executive Summaries and electronic copies on compact disc (CD) of the Draft PEIR for this project. The Metropolitan Water District of Southern California is acting as the Lead Agency pursuant to the California Environmental Quality Act (CEQA).

In accordance with Section 21161 and 21092 of the California Public Resources Code (PRC) and Sections 15085 and 15087 of the State CEQA Guidelines, this NOC is submitted to your office for a public review period of 45 days, ending on October 17, 2016. The Draft PEIR is available on Metropolitan's website at: http://mwdh2o.com/AboutYourWater/CapitalProjects/Pages/Environmental%20Quality%20Act.aspx

We appreciate your assistance on this matter. If you have any questions, please contact Mr. Hans Vandenberg at (213) 217-5683 or hvandenberg@mwdh2o.com or Tiffany White at (213) 217-6261.

Very truly yours,

Arleen A. Arita

Arleen A. Arita
PCCP Rehabilitation Program Manager

HV/trw

Enclosures: Original Notice of Completion
Hardcopies of Executive Summary (15)
CDs containing the Draft PEIR (15)

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

October 18, 2016

Hans Vandenberg
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

Subject: Prestressed Concrete Cylinder Pipe Rehabilitation Program
SCH#: 2014121055

Dear Hans Vandenberg:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. The review period closed on October 17, 2016, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Scott Morgan
Director, State Clearinghouse

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2014121055
Project Title Prestressed Concrete Cylinder Pipe Rehabilitation Program
Lead Agency Metropolitan Water District of Southern California

Type EIR Draft EIR

Description Metropolitan Water District proposes to rehabilitate portions of five existing subsurface water delivery pipelines within its service area. Approximately 100 miles of prestressed concrete cylinder pipe with diameters varying from 54 to 201 inches would be rehabilitated either by relining the existing pipe with steel or replacing existing pipe with new welded steel pipe. These five existing pipelines (also known as feeders) are: Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, Second Lower Feeder, and Sepulveda Feeder.

Lead Agency Contact

Name Hans Vandenberg
Agency Metropolitan Water District of Southern California
Phone (213) 217-5683 **Fax**
email
Address P.O. Box 54153
City Los Angeles **State** CA **Zip** 90054-0153

Project Location

County Los Angeles
City
Region
Lat / Long
Cross Streets multiple
Parcel No.
Township **Range** **Section** **Base**

Proximity to:

Highways 101, 405, 110, 710, et al.
Airports Van Nuys & Long Beach
Railways
Waterways LA River, San Gabriel River, et al.
Schools Multiple
Land Use Mostly within public ROW

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Forest Land/Fire Hazard; Geologic/Seismic; Minerals; Noise; Public Services; Recreation/Parks; Schools/Universities; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Wetland/Riparian; Landuse; Cumulative Effects

Reviewing Agencies Resources Agency; Department of Fish and Wildlife, Region 5; Department of Fish and Wildlife, Region 6; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, Division of Transportation Planning; State Water Resources Control Board, Divison of Financial Assistance; Regional Water Quality Control Board, Region 8; Regional Water Quality Control Board, Region 4; Regional Water Quality Control Bd., Region 6 (Victorville); Native American Heritage Commission

Date Received 09/01/2016 **Start of Review** 09/01/2016 **End of Review** 10/17/2016

Note: Blanks in data fields result from insufficient information provided by lead agency.

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #2014121055

Project Title: Prestressed Concrete Cylinder Pipe Rehabilitation Program
Lead Agency: The Metropolitan Water District of Southern California
Contact Person: Hans Vandenberg
Mailing Address: P.O. Box 54153
Phone: (213) 217-5683
City: Los Angeles **Zip:** 90054-0153 **County:** Los Angeles

Project Location: County: Orange, San Bernardino, L.A. City/Nearest Community: Multiple cities/communities
Cross Streets: Multiple Zip Code: Multiple
Longitude/Latitude (degrees, minutes and seconds): n/a ° ' " N / n/a ° ' " W Total Acres: n/a
Assessor's Parcel No.: n/a Section: n/a Twp.: n/a Range: n/a Base: n/a
Within 2 Miles: State Hwy #: 101, 405, 110, 710, et al. Waterways: LA River, San Gabriel River, et al.
Airports: Van Nuys & Long Beach Railways: n/a Schools: Multiple

Document Type:
CEQA: ☐ NOP ☒ Draft EIR ☐ Supplement/Subsequent EIR (Prior SCH No.) ☐ Early Cons ☐ Neg Dec ☐ Mit Neg Dec Other:
NEPA: ☐ NOI Other: ☐ Joint Document ☐ EA ☐ Final Document ☐ Draft EIS ☐ Other: ☐ FONSI

Governor's Office of Planning & Research
SEP 01 2016
STATE CLEARINGHOUSE

Local Action Type:
☐ General Plan Update ☐ Specific Plan ☐ Rezone ☐ Annexation
☐ General Plan Amendment ☐ Master Plan ☐ Prezone ☐ Redevelopment
☐ General Plan Element ☐ Planned Unit Development ☐ Use Permit ☐ Coastal Permit
☐ Community Plan ☐ Site Plan ☐ Land Division (Subdivision, etc.) ☐ Other:

Development Type:
☐ Residential: Units Acres
☐ Office: Sq.ft. Acres Employees
☐ Commercial: Sq.ft. Acres Employees
☐ Industrial: Sq.ft. Acres Employees
☐ Educational:
☐ Recreational:
☒ Water Facilities: Type Distribution pipe MGD
☐ Transportation: Type
☐ Mining: Mineral
☐ Power: Type MW
☐ Waste Treatment: Type MGD
☐ Hazardous Waste: Type
☐ Other:

Project Issues Discussed in Document:
☒ Aesthetic/Visual ☐ Fiscal ☒ Recreation/Parks ☒ Vegetation
☒ Agricultural Land ☐ Flood Plain/Flooding ☒ Schools/Universities ☒ Water Quality
☒ Air Quality ☒ Forest Land/Fire Hazard ☐ Septic Systems ☐ Water Supply/Groundwater
☒ Archeological/Historical ☒ Geologic/Seismic ☐ Sewer Capacity ☒ Wetland/Riparian
☒ Biological Resources ☒ Minerals ☒ Soil Erosion/Compaction/Grading ☐ Growth Inducement
☐ Coastal Zone ☒ Noise ☒ Solid Waste ☒ Land Use
☐ Drainage/Absorption ☐ Population/Housing Balance ☒ Toxic/Hazardous ☒ Cumulative Effects
☐ Economic/Jobs ☒ Public Services/Facilities ☒ Traffic/Circulation ☐ Other:

Present Land Use/Zoning/General Plan Designation:
Mostly within public right of way

Project Description: *(please use a separate page if necessary)*

Metropolitan Water District proposes to rehabilitate portions of five existing subsurface water delivery pipelines within its service area. Approximately 100 miles of prestressed concrete cylinder pipe (PCCP) with diameters varying from 54 to 201 inches would be rehabilitated either by relining the existing pipe with steel or replacing existing pipe with new welded steel pipe. These five existing pipelines (also known as feeders) are: Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, Second Lower Feeder, and Sepulveda Feeder.

State Clearinghouse Contact: (916) 445-0613
State Review Began: 9 - 1 - 2016
SCH COMPLIANCE 10 - 17 - 2016
SD

Please note State Clearinghouse Number (SCH#) on all Comments
SCH#: 2014121055
Please forward late comments directly to the Lead Agency

AQMD/APCD 33/26
(Resources: 9 / 3)

Project Sent to the following State Agencies

- X Resources
- ☐ Boating & Waterways
- ☐ Coastal Comm
- ☐ Colorado Rvr Bd
- ☐ Conservation
- XX CDFW # 5, 6
- ☐ Delta Protection Comm
- ☐ Cal Fire
- ☐ Historic Preservation
- X Parks & Rec
- ☐ Central Valley Flood Prot.
- ☐ Bay Cons & Dev Comm.
- X DWR
- ☐ OES
- ☐ Resources, Recycl. & Recovery

CalSTA
- ☐ Aeronautics
- X CHP
- ☐ Caltrans #
- X Trans Planning

Other
- ☐ HCD
- ☐ Food & Agriculture

State/Consumer Svcs
- ☐ General Services

Cal EPA
- ☐ ARB: Airport & Freight
- ☐ ARB: Transportation Projects
- ☐ ARB: Major Industrial/Energy
- ☐ SWRCB: Div. of Drinking Water
- ☐ SWRCB: Div. Drinking Wtr #
- X SWRCB: Div. Financial Assist.
- ☐ SWRCB: Wtr Quality
- ☐ SWRCB: Wtr Rights
- XX Reg. WQCB # 8, 4, 6
- ☐ Toxic Sub Ctrl-CTC

Yth/Adlt Corrections
- ☐ Corrections

Independent Comm
- ☐ Energy Commission
- X NAHC
- ☐ Public Utilities Comm
- ☐ State Lands Comm
- ☐ Tahoe Rgl Plan Agency
- ☐ Conservancy
- ☐ Other:

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

September 1, 2016 **Via Federal Express**

Mr. Hugh Nguyen
Orange County Clerk
12 Civic Center Plaza Room 101
Santa Ana, California 92701

Dear Mr. Nguyen:

Notice of Availability of a Draft Program Environmental Impact Report for the
Prestressed Concrete Cylinder Pipe Rehabilitation Program

Enclosed please find two originals of the Notice of Availability (Notice) for the Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe Rehabilitation Program. The Metropolitan Water District of Southern California is acting as the Lead Agency pursuant to the California Environmental Quality Act (CEQA).

In accordance with Section 21092 of the California Public Resources Code and Section 15087 of the State CEQA Guidelines, this Notice is provided for posting in your office for a public review period of 45 days, ending on October 17, 2016. We respectfully request that you post this Notice as soon as possible. Please stamp the originals of the Notice and return one of the copies to Metropolitan in the enclosed self-addressed postage paid envelope for our files. The Draft PEIR is also available on Metropolitan's website at:

http://mwdh2o.com/AboutYourWater/CapitalProjects/Pages/Environmental%20Quality%20Act.aspx

We appreciate your assistance on this matter. If you have any questions, please contact Mr. Hans Vandenberg at (213) 217-5683 or hvandenberg@mwdh2o.com or Tiffany White at (213) 217-6261.

Very truly yours,

Arleen A. Arita
PCCP Rehabilitation Program Manager

HV/trw

Enclosure: Notice of Availability (2)
Self-addressed stamped envelope

Hugh Nguyen
Orange County Clerk - Recorder
P.O. Box 238 Santa Ana, CA 92702
12 Civic Center Plaza, Room 106 Santa Ana, CA 92701
Phone: (714) 834-2500
www.ocrecorder.com

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
700 NORTH ALAMEDA STREET
LOS ANGELES, CA 90012

Office of the Orange County Clerk-Recorder
Memorandum

SUBJECT: PUBLIC NOTICE

The attached notice was received, filed and a copy was posted on 09/02/2016

It remained posted for 30 (thirty) days.

Hugh Nguyen
Clerk - Recorder
In and for the County of Orange

By: Trejo, Ernesto Deputy

Public Resource Code 21092.3

The notice required pursuant to Sections 21080.4 and 21092 for an environmental impact report shall be posted in the office of the County Clerk of each county *** in which the project will be located and shall remain posted for a period of 30 days. The notice required pursuant to Section 21092 for a negative declaration shall be so posted for a period of 20 days, unless otherwise required by law to be posted for 30 days. The County Clerk shall post notices within 24 hors of receipt.

Public Resource Code 21152

All notices filed pursuant to this section shall be available for public inspection, and shall be posted ***within 24 hours of receipt*** in the office of the County Clerk. Each notice shall remain posted for a period of 30 days.
*** Thereafter, the clerk shall return the notice to the local **lead** agency *** within a notation of the period it was posted. The local **lead** agency shall retain the notice for not less than nine months.

Additions or changes by underline; deletions by ***

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
700 NORTH ALAMEDA STREET
LOS ANGELES, CALIFORNIA 90012

NOTICE OF AVAILABILITY

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LOCATION: The five pipelines that would be rehabilitated extend primarily in existing public roads and on Metropolitan-owned rights-of-way in the following cities and counties:

Allen-McColloch Pipeline
- Anaheim
- Irvine
- Lake Forest
- Mission Viejo
- Orange
- Tustin
- Yorba Linda

POSTED
SEP 02 2016
ORANGE COUNTY CLERK-RECORDER DEPARTMENT
BY: _____ DEPUTY

Calabasas Feeder
- Calabasas
- Hidden Hills
- Los Angeles

Rialto Pipeline
- Claremont
- Fontana
- La Verne
- Rancho Cucamonga
- Rialto
- San Bernardino
- San Dimas
- Upland
- Unincorporated San Bernardino County

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- Culver City
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- Hawthorne
- Inglewood
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Please send comments and responses to:

Hans Vandenberg
Program Management Unit
The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153
Phone: (213) 217-5683

Comments can also be submitted via e-mail to EPT@mwdh2o.com. Comments sent via e-mail should state "PCCP Rehabilitation Program Draft PEIR" in the subject line.

POSTED

SEP 0 2 2016

ORANGE COUNTY CLERK-RECORDER DEPARTMENT

BY: _____ DEPUTY

Copies of the Draft PEIR are available for public review at the following location:

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Engineering Resource Center
700 North Alameda Street
Los Angeles, California 90012

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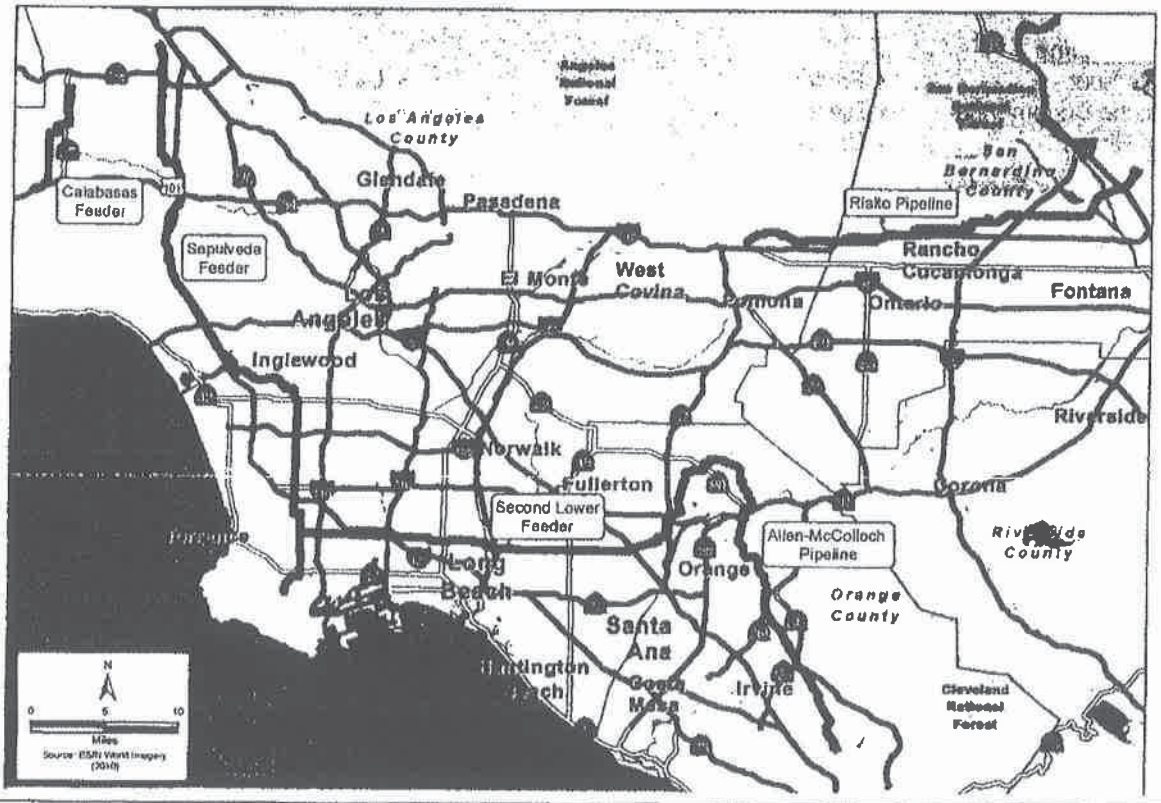

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

September 7, 2016 **Via Federal Express**

Ms. Laura Welch
Clerk of the Board
San Bernardino County
385 N. Arrowhead Avenue, 2nd Floor
San Bernardino, California 92415-0130

Dear Ms. Welch:

Notice of Availability of a Draft Environmental Impact Report for the
Prestressed Concrete Cylinder Pipe Rehabilitation Program

Enclosed please find two originals of the Notice of Availability (Notice) for the Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe Rehabilitation Program. The Metropolitan Water District of Southern California is acting as the Lead Agency pursuant to the California Environmental Quality Act (CEQA).

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We appreciate your assistance on this matter. If you have any questions, please contact Mr. Hans Vandenberg at (213) 217-5683 or hvandenberg@mwdh2o.com or Tiffany White at (213) 217-6261.

Very truly yours,

Arleen A. Arita
PCCP Rehabilitation Program Manager

HV/trw

Enclosure: Notice of Availability (2)
Self-addressed stamped envelope

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
700 NORTH ALAMEDA STREET
LOS ANGELES, CALIFORNIA 90012

NOTICE OF AVAILABILITY

DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE Prestressed Concrete Cylinder Pipe Rehabilitation Program

Pursuant to the California Environmental Quality Act (CEQA), The Metropolitan Water District of Southern California (Metropolitan), as Lead Agency, prepared a Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program (proposed Program). This Notice of Availability is to inform you that the Draft PEIR is being released for a 45-day public review period. The Draft PEIR is also being sent to responsible, trustee, and interested agencies as part of the review process required under CEQA (Section 21092 of the Public Resources Code) and the State CEQA Guidelines (Section 15087 of the California Code of Regulations).

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- Hidden Hills
- Los Angeles

Rialto Pipeline
- Claremont
- Fontana
- La Verne
- Rancho Cucamonga
- Rialto
- San Bernardino
- San Dimas
- Upland
- Unincorporated San Bernardino County

Second Lower Feeder
- Anaheim
- Buena Park
- Carson
- Cypress
- Lakewood
- Lomita
- Long Beach
- Los Alamitos
- Los Angeles
- Placentia
- Rolling Hills Estates
- Torrance
- Yorba Linda
- Unincorporated Los Angeles County
- Unincorporated Orange County

Sepulveda Feeder
- Culver City
- Gardena
- Hawthorne
- Inglewood
- Los Angeles
- Torrance

DRAFT PEIR: The Draft PEIR describes the proposed Program, existing environmental conditions, significant impacts (e.g., air quality, greenhouse gas emissions), potential significant impacts (e.g., biological resources, noise, traffic), and proposed mitigation measures.

PUBLIC REVIEW PERIOD: Due to the time limits mandated by State law (Section 15087 of the CEQA Guidelines), written comments must be received by Metropolitan not later than 45 days after the start of the review period which **begins September 1, 2016** and **ends on October 17, 2016**. Comments received by close of the public review period will be considered in the Final PEIR. All comments should be submitted in writing and include point of contact information.

Please send comments and responses to:

Hans Vandenberg
Program Management Unit
The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153
Phone: (213) 217-5683

Comments can also be submitted via e-mail to EPT@mwdh2o.com. Comments sent via e-mail should state "PCCP Rehabilitation Program Draft PEIR" in the subject line.

Copies of the Draft PEIR are available for public review at the following location:

The Metropolitan Water District of Southern California
Engineering Resource Center
700 North Alameda Street
Los Angeles, California 90012

Please contact Hans Vandenberg to make arrangements for viewing. Additionally, copies of the Draft PEIR are available for public review at the following locations:

Lomita Library
24200 Narbonne Avenue
Lomita, CA 90717

Carter Branch Library
2630 Linden A venue
Rialto, CA 92377

El Toro Library
24672 Raymond Way
Lake Forest, CA 92630

San Fernando Library
217 N. Malay Avenue
San Fernando, CA 91340

Brea Library
1 Civic Center Circle
Brea, CA 92821

La Verne Library
3640 D Street
La Verne, CA 91750

Los Angeles Public Library –
Central Library Branch
630 W 5th St.
Los Angeles, CA 90071

Or online at Metropolitan's website:
http://mwdh2o.com/AboutYourWater/CapitalProjects/Pages/Environmental%20Quality%20Act.aspx

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

September 1, 2016 **Via Federal Express**

Los Angeles County Clerk/Recorder
12400 E. Imperial Highway, Room 2001
Norwalk, California 90650

Attn: County Clerk/Recorder

Notice of Availability of a Draft Program Environmental Impact Report for the
Prestressed Concrete Cylinder Pipe Rehabilitation Program

Enclosed please find two originals of the Notice of Availability (Notice) for the Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe Rehabilitation Program. The Metropolitan Water District of Southern California is acting as the Lead Agency pursuant to the California Environmental Quality Act (CEQA).

In accordance with Section 21092 of the California Public Resources Code and Section 15087 of the State CEQA Guidelines, this Notice is provided for posting in your office for a public review period of 45 days, ending on October 17, 2016. We respectfully request that you post this Notice as soon as possible. Please stamp the originals of the Notice and return one of the copies to Metropolitan in the enclosed self-addressed postage paid envelope for our files. A check in the amount of $75.00 is also enclosed to cover administrative fees. The Draft PEIR is also available on Metropolitan's website at:

http://mwdh2o.com/AboutYourWater/CapitalProjects/Pages/Environmental%20Quality%20Act.aspx

We appreciate your assistance on this matter. If you have any questions, please contact Mr. Hans Vandenberg at (213) 217-5683 or hvandenberg@mwdh2o.com or Tiffany White at (213) 217-6261.

Very truly yours,

Arleen A. Arita
PCCP Rehabilitation Program Manager

HV/trw

Enclosure: Notice of Availability (2)
Self-addressed stamped envelope
Filing Fee

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
700 NORTH ALAMEDA STREET
LOS ANGELES, CALIFORNIA 90012

NOTICE OF AVAILABILITY

DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE Prestressed Concrete Cylinder Pipe Rehabilitation Program

Pursuant to the California Environmental Quality Act (CEQA), The Metropolitan Water District of Southern California (Metropolitan), as Lead Agency, prepared a Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program (proposed Program). This Notice of Availability is to inform you that the Draft PEIR is being released for a 45-day public review period. The Draft PEIR is also being sent to responsible, trustee, and interested agencies as part of the review process required under CEQA (Section 21092 of the Public Resources Code) and the State CEQA Guidelines (Section 15087 of the California Code of Regulations).

PROGRAM DESCRIPTION: Metropolitan Water District proposes to rehabilitate portions of five existing subsurface water delivery pipelines within its service area. Approximately 100 miles of prestressed concrete cylinder pipe (PCCP) with diameters varying from 54 to 201 inches would be rehabilitated either by relining the existing pipe with steel or replacing existing pipe with new welded steel pipe. These five existing pipelines (also known as feeders) are: Allen-McColloch Pipeline, Calabasas Feeder, Rialto Pipeline, Second Lower Feeder, and Sepulveda Feeder.

LOCATION: The five pipelines that would be rehabilitated extend primarily in existing public roads and on Metropolitan-owned rights-of-way in the following cities and counties:

Allen-McColloch Pipeline

- Anaheim
- Irvine
- Lake Forest
- Mission Viejo
- Orange
- Tustin
- Yorba Linda

ORIGINAL FILED
SEP 02 2016
LOS ANGELES, COUNTY CLERK

Calabasas Feeder

- Calabasas
- Hidden Hills
- Los Angeles

Rialto Pipeline

- Claremont
- Fontana
- La Verne
- Rancho Cucamonga
- Rialto
- San Bernardino
- San Dimas
- Upland
- Unincorporated San Bernardino County

Second Lower Feeder

- Anaheim
- Buena Park
- Carson
- Cypress
- Lakewood
- Lomita
- Long Beach
- Los Alamitos
- Los Angeles
- Placentia
- Rolling Hills Estates
- Torrance
- Yorba Linda
- Unincorporated Los Angeles County
- Unincorporated Orange County

Sepulveda Feeder

- Culver City
- Gardena
- Hawthorne
- Inglewood
- Los Angeles
- Torrance

DRAFT PEIR: The Draft PEIR describes the proposed Program, existing environmental conditions, significant impacts (e.g., air quality, greenhouse gas emissions), potential significant impacts (e.g., biological resources, noise, traffic), and proposed mitigation measures.

PUBLIC REVIEW PERIOD: Due to the time limits mandated by State law (Section 15087 of the CEQA Guidelines), written comments must be received by Metropolitan not later than 45 days after the start of the review period which **begins September 1, 2016** and **ends on October 17, 2016**. Comments received by close of the public review period will be considered in the Final PEIR. All comments should be submitted in writing and include point of contact information.

Please send comments and responses to:

Hans Vandenberg
Program Management Unit
The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, California 90054-0153
Phone: (213) 217-5683

Comments can also be submitted via e-mail to EPT@mwdh2o.com. Comments sent via e-mail should state "PCCP Rehabilitation Program Draft PEIR" in the subject line.

Copies of the Draft PEIR are available for public review at the following location:

The Metropolitan Water District of Southern California
Engineering Resource Center
700 North Alameda Street
Los Angeles, California 90012

Please contact Hans Vandenberg to make arrangements for viewing. Additionally, copies of the Draft PEIR are available for public review at the following locations:

Lomita Library
24200 Narbonne Avenue
Lomita, CA 90717

Carter Branch Library
2630 Linden A venue
Rialto, CA 92377

El Toro Library
24672 Raymond Way
Lake Forest, CA 92630

San Fernando Library
217 N. Malay Avenue
San Fernando, CA 91340

Brea Library
1 Civic Center Circle
Brea, CA 92821

La Verne Library
3640 D Street
La Verne, CA 91750

Los Angeles Public Library –
Central Library Branch
630 W 5th St.
Los Angeles, CA 90071

Or online at Metropolitan's website:
http://mwdh2o.com/AboutYourWater/CapitalProjects/Pages/Environmental%20Quality%20Act.aspx

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

Date: September 1, 2016

To: Distribution List

From: Arleen A. Arita, PCCP Rehabilitation Program Manager

Subject: Notice of Availability of a Draft Program Environmental Impact Report for the Prestressed Concrete Cylinder Pipe Rehabilitation Program

The Metropolitan Water District of Southern California, acting as Lead Agency under the California Environmental Quality Act (CEQA), has prepared a Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe Rehabilitation Program (SCH #2014121055). Enclosed is a Notice of Availability of the Draft PEIR, which provides a brief description of the project and information on the public review period for this Program, and where the Draft PEIR can be found. Please note the 45-day review and comment period will end on October 17, 2016.

If you have any questions, please contact Mr. Hans Vandenberg by email or mail at:

The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153
EPT@mwdh2o.com

Please reference the Prestressed Concrete Cylinder Pipe Rehabilitation Program in the subject line and include your name, address, email address and/or a contact phone number.

CA Division Of Occupational Safety And Health, Tunnel Safety Order Compliance
California Air Resources Board
Caltrans, District 12
City of Anaheim, Department of Public Works
City of Buena Park, Department of Public Works
City of Calabasas, Department of Public Works
City of Carson, Department of Public Works
City of Claremont, Department of Public Works
City of Culver City, Department of Public Works
City of Cypress, Department of Public Works
City of Fontana, Department of Public Works
City of Gardena, Department of Public Works
City of Hawthorne, Department of Public Works
City of Hidden Hills, Department of Public Works
City of Inglewood, Department of Public Works
City of Irvine, Department of Public Works
City of La Verne, Department of Public Works
City of Lake Forest, Department of Public Works
City of Lakewood, Department of Public Works
City of Lomita, Department of Public Works
City of Long Beach, Department of Public Works
City of Los Alamitos, Department of Public Works
City of Los Angeles, Department of Public Works
City of Mission Viejo, Department of Public Works
City of Orange, Department of Public Works
City of Placentia, Department of Public Works
City of Rancho Cucamonga, Department of Public Works
City of Rialto, Department of Public Works
City of Rolling Hills Estates, Department of Public Works
City of San Bernardino, Department of Public Works
City of San Dimas, Department of Public Works
City of Torrance, Department of Public Works
City of Tustin, Department of Public Works
City of Upland, Department of Public Works
City of Yorba Linda, Department of Public Works
County of Los Angeles, Department of Public Works
County of Orange, Department of Public Works
Long Beach Airport, Airport Advisory Commission
Regional Water Quality Control Board, Los Angeles Region
Santa Ana Regional Water Quality Control Board
South Coast AQMD
Torrance Airport, Airport Advisory Commission

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

September 1, 2016 **Via Federal Express**

Brea Library
1 Civic Center Circle
Brea, CA 92821

To Whom It May Concern:

Draft Program Environmental Impact Report for the
Prestressed Concrete Cylinder Pipe Rehabilitation Program (SCH # 2014121055)

Enclosed is a hardcopy with a CD containing the Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe Rehabilitation Program. Also enclosed is a copy of the Notice of Availability (Notice) for this Project. The Metropolitan Water District of Southern California is providing the Draft PEIR for public review pursuant to the Public Resources Code §21092 and the California Environmental Quality Act (CEQA) Guidelines §15087.

Please make the enclosed Draft PEIR available to your patrons for review within the library premises until October 17, 2016. We also kindly request that these materials only be reviewed by the public in the library and not be available for check-out. After October 17, 2016, the Draft PEIR may be discarded. Your assistance in this matter is appreciated.

If you have any questions, please contact Mr. Hans Vandenberg at (213) 217-5683 or hvandenberg@mwdh2o.com or Tiffany White at (213) 217-6261.

Very truly yours

Arleen A. Arita
PCCP Rehabilitation Program Manager

HV/trw

Enclosures: (1) Hardcopy and CD of the Draft PEIR
(1) Copy of the Notice

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

September 1, 2016 **Via Federal Express**

Carter Branch Library
2630 Linden Avenue
Rialto, CA 92377

To Whom It May Concern:

Draft Program Environmental Impact Report for the
Prestressed Concrete Cylinder Pipe Rehabilitation Program (SCH # 2014121055)

Enclosed is a hardcopy with a CD containing the Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe Rehabilitation Program. Also enclosed is a copy of the Notice of Availability (Notice) for this Project. The Metropolitan Water District of Southern California is providing the Draft PEIR for public review pursuant to the Public Resources Code §21092 and the California Environmental Quality Act (CEQA) Guidelines §15087.

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Very truly yours

Arleen A. Arita
PCCP Rehabilitation Program Manager

HV/trw

Enclosures: (1) Hardcopy and CD of the Draft PEIR
(1) Copy of the Notice

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

September 1, 2016 **Via Federal Express**

El Toro Library
24672 Raymond Way
Lake Forest, CA 92630

To Whom It May Concern:

Draft Program Environmental Impact Report for the
Prestressed Concrete Cylinder Pipe Rehabilitation Program (SCH # 2014121055)

Enclosed is a hardcopy with a CD containing the Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe Rehabilitation Program. Also enclosed is a copy of the Notice of Availability (Notice) for this Project. The Metropolitan Water District of Southern California is providing the Draft PEIR for public review pursuant to the Public Resources Code §21092 and the California Environmental Quality Act (CEQA) Guidelines §15087.

Please make the enclosed Draft PEIR available to your patrons for review within the library premises until October 17, 2016. We also kindly request that these materials only be reviewed by the public in the library and not be available for check-out. After October 17, 2016, the Draft PEIR may be discarded. Your assistance in this matter is appreciated.

If you have any questions, please contact Mr. Hans Vandenberg at (213) 217-5683 or hvandenberg@mwdh2o.com or Tiffany White at (213) 217-6261.

Very truly yours

Arleen A. Arita
PCCP Rehabilitation Program Manager

HV/trw

Enclosures: (1) Hardcopy and CD of the Draft PEIR
(1) Copy of the Notice

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

September 1, 2016 **Via Federal Express**

La Verne Library
3640 D Street
La Verne, CA 91750

To Whom It May Concern:

Draft Program Environmental Impact Report for the
Prestressed Concrete Cylinder Pipe Rehabilitation Program (SCH # 2014121055)

Enclosed is a hardcopy with a CD containing the Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe Rehabilitation Program. Also enclosed is a copy of the Notice of Availability (Notice) for this Project. The Metropolitan Water District of Southern California is providing the Draft PEIR for public review pursuant to the Public Resources Code §21092 and the California Environmental Quality Act (CEQA) Guidelines §15087.

Please make the enclosed Draft PEIR available to your patrons for review within the library premises until October 17, 2016. We also kindly request that these materials only be reviewed by the public in the library and not be available for check-out. After October 17, 2016, the Draft PEIR may be discarded. Your assistance in this matter is appreciated.

If you have any questions, please contact Mr. Hans Vandenberg at (213) 217-5683 or hvandenberg@mwdh2o.com or Tiffany White at (213) 217-6261.

Very truly yours

Arleen A. Arita

Arleen A. Arita
PCCP Rehabilitation Program Manager

HV/trw

Enclosures: (1) Hardcopy and CD of the Draft PEIR
(1) Copy of the Notice

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

September 1, 2016 **Via Federal Express**

Lomita Library
24200 Narbonne Avenue
Lomita, CA 90717

To Whom It May Concern:

Draft Program Environmental Impact Report for the
Prestressed Concrete Cylinder Pipe Rehabilitation Program (SCH # 2014121055)

Enclosed is a hardcopy with a CD containing the Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe Rehabilitation Program. Also enclosed is a copy of the Notice of Availability (Notice) for this Project. The Metropolitan Water District of Southern California is providing the Draft PEIR for public review pursuant to the Public Resources Code §21092 and the California Environmental Quality Act (CEQA) Guidelines §15087.

Please make the enclosed Draft PEIR available to your patrons for review within the library premises until October 17, 2016. We also kindly request that these materials only be reviewed by the public in the library and not be available for check-out. After October 17, 2016, the Draft PEIR may be discarded. Your assistance in this matter is appreciated.

If you have any questions, please contact Mr. Hans Vandenberg at (213) 217-5683 or hvandenberg@mwdh2o.com or Tiffany White at (213) 217-6261.

Very truly yours

Arleen A. Arita
PCCP Rehabilitation Program Manager

HV/trw

Enclosures: (1) Hardcopy and CD of the Draft PEIR
(1) Copy of the Notice

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

September 1, 2016 **Via Federal Express**

Los Angeles Public Library – Central Library Branch
630 W 5th St.
Los Angeles, CA 90071

To Whom It May Concern:

Draft Program Environmental Impact Report for the
Prestressed Concrete Cylinder Pipe Rehabilitation Program (SCH # 2014121055)

Enclosed is a hardcopy with a CD containing the Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe Rehabilitation Program. Also enclosed is a copy of the Notice of Availability (Notice) for this Project. The Metropolitan Water District of Southern California is providing the Draft PEIR for public review pursuant to the Public Resources Code §21092 and the California Environmental Quality Act (CEQA) Guidelines §15087.

Please make the enclosed Draft PEIR available to your patrons for review within the library premises until October 17, 2016. We also kindly request that these materials only be reviewed by the public in the library and not be available for check-out. After October 17, 2016, the Draft PEIR may be discarded. Your assistance in this matter is appreciated.

If you have any questions, please contact Mr. Hans Vandenberg at (213) 217-5683 or hvandenberg@mwdh2o.com or Tiffany White at (213) 217-6261.

Very truly yours

Arleen A. Arita
PCCP Rehabilitation Program Manager

HV/trw

Enclosures: (1) Hardcopy and CD of the Draft PEIR
(1) Copy of the Notice

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

September 1, 2016 **Via Federal Express**

San Fernando Library
217 N. Malay Avenue
San Fernando, CA 91340

To Whom It May Concern:

Draft Program Environmental Impact Report for the
Prestressed Concrete Cylinder Pipe Rehabilitation Program (SCH # 2014121055)

Enclosed is a hardcopy with a CD containing the Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe Rehabilitation Program. Also enclosed is a copy of the Notice of Availability (Notice) for this Project. The Metropolitan Water District of Southern California is providing the Draft PEIR for public review pursuant to the Public Resources Code §21092 and the California Environmental Quality Act (CEQA) Guidelines §15087.

Please make the enclosed Draft PEIR available to your patrons for review within the library premises until October 17, 2016. We also kindly request that these materials only be reviewed by the public in the library and not be available for check-out. After October 17, 2016, the Draft PEIR may be discarded. Your assistance in this matter is appreciated.

If you have any questions, please contact Mr. Hans Vandenberg at (213) 217-5683 or hvandenberg@mwdh2o.com or Tiffany White at (213) 217-6261.

Very truly yours

Arleen A. Arita
PCCP Rehabilitation Program Manager

HV/trw

Enclosures: (1) Hardcopy and CD of the Draft PEIR
(1) Copy of the Notice

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

August 29, 2016 **Transmitted Via E-mail**

Beatriz Cueva
California Newspaper Service Bureau, Inc.
915 East First Street
Los Angeles, California 90012

Dear Ms. Cueva:

Notice of Availability of a Draft Program Environmental Impact Report for the
Prestressed Concrete Cylinder Pipe Rehabilitation Program

Please provide advertising for the enclosed Notice of Availability (NOA) of a Draft Program Environmental Impact Report by The Metropolitan Water District of Southern California. We request that the Notice appear in the "Public Notices" section of The Los Angeles Daily Journal, The Yorba Linda Star, and the Orange County Register on September 1, 2016.

We request affidavits of publication at the earliest possible date. Please submit the invoice and affidavits to Mr. Hans Vandenberg, P.O. Box 54153, Los Angeles, CA 90054. Any questions should be directed to Mr. Hans Vandenberg at (213) 217-5683 or hvandenberg@mwdh2o.com, or Tiffany White at (213) 217-6261.

Very truly yours,

Arleen A. Arita

Arleen A. Arita
PCCP Rehabilitation Program Manager

HV/trw

Enclosure: Notice of Availability

(When required)
RECORDING REQUESTED BY AND MAIL TO:

LOS ANGELES DAILY JOURNAL
~ SINCE 1888 ~

915 E FIRST ST, LOS ANGELES, CA 90012
Mailing Address: P.O. Box 54026, Los Angeles, California 90054-0026
Telephone (213) 229-5300 / Fax (213) 229-5481

This space for filing stamp only

TIFFANY WHITE
METRO WATER DIST/ENVIRONMENTAL PLANNING
PO BOX 54153
LOS ANGELES, CA - 90054

PROOF OF PUBLICATION

(2015.5 C.C.P.)

State of California)
County of Los Angeles) ss

Notice Type: GPN - GOVT PUBLIC NOTICE

Ad Description:
NOTICE OF AVAILABILITY (SCH#2014121055)

I am a citizen of the United States and a resident of the State of California; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the principal clerk of the printer and publisher of the LOS ANGELES DAILY JOURNAL, a newspaper published in the English language in the city of LOS ANGELES, county of LOS ANGELES, and adjudged a newspaper of general circulation as defined by the laws of the State of California by the Superior Court of the County of LOS ANGELES, State of California, under date 04/26/1954, Case No. 599,382. That the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

09/01/2016

Executed on: 09/01/2016
At Los Angeles, California

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Signature

* A 0 0 0 0 0 0 4 2 0 8 3 6 2 *

DJ#: 2920873

Notice of Availability of a Draft Program Environmental Impact Report for the Prestressed Concrete Cylinder Pipe Rehabilitation Program (SCH # 2014121055)

Pursuant to the California Environmental Quality Act (CEQA), The Metropolitan Water District of Southern California (Metropolitan), as Lead Agency, has prepared a Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program (proposed Program). The proposed Program would involve rehabilitating five existing pipelines.

PROGRAM LOCATION: The five pipelines that would be rehabilitated extend primarily within existing public roads and on Metropolitan-owned rights-of-way in the listed cities and counties: 1) Allen-McColloch Pipeline (Anaheim, Irvine, Lake Forest, Mission Viejo, Orange, Tustin, Yorba Linda); 2) Calabasas Feeder (Calabasas, Hidden Hills, Los Angeles); 3) Rialto Pipeline (Claremont, Fontana, La Verne, Rancho Cucamonga, Rialto, San Bernardino, unincorporated San Bernardino County, San Dimas, Upland); 4) Second Lower Feeder (Anaheim, Buena Park, Carson, Cypress, Lakewood, Lomita, Long Beach, Los Alamitos, Los Angeles, Placentia, Rolling Hills Estates, Torrance, Yorba Linda, unincorporated Los Angeles County, unincorporated Orange County); 5) Sepulveda Feeder (Culver City, Gardena, Hawthorne, Inglewood, Los Angeles, Torrance).

PROGRAM DESCRIPTION: Metropolitan proposes to rehabilitate portions of five existing subsurface water delivery pipelines within its service area. Approximately 100 miles of prestressed concrete cylinder pipe (PCCP) with diameters ranging from 54 to 201 inches would be rehabilitated either by relining the existing pipe with steel liner or replacing existing pipe with new welded steel pipe. Relining the pipeline requires cutting an access portal into the existing pipeline, inserting the new liner into place, and welding together the new steel liner segments. New pipe replacement requires excavating an open trench, placing sand bedding, installing new welded steel pipe, and backfilling the trench.

This Notice of Availability is to inform you that the Draft PEIR is being released for a 45-day public review period. The Draft PEIR is also being sent to responsible, trustee, and interested agencies as part of the review process required under CEQA (Section 21092 of the Public Resources Code) and the State CEQA Guidelines (Section 15087).

This document is being made available for public review and comment during the period beginning September 2, 2016 and ending on October 17, 2016 (45-day public review period). All comments should be submitted in writing and include point-of-contact information. Comments received by close of the public review period will be considered in the Final PEIR. Please send comments and responses to:

Mr. Hans Vandenberg
The Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

The Draft PEIR describes the proposed Program, existing environmental conditions, significant impacts (e.g., air quality, greenhouse gas emissions), potential significant impacts (e.g., biological, noise, traffic), and proposed mitigation measures. Due to the time limits mandated by state law, written comments must be sent to Metropolitan during the public review period, which begins September 1, 2016 and ends October 17, 2016. Comments can also be submitted electronically to EPT@mwdh2o.com. Comments sent via e-mail should state Prestressed Concrete Cylinder Pipe Rehabilitation Program EIR in the subject line. Should you have any questions, please contact Mr. Salvador Vazquez at 213-217-6752 or by email svazquez@mwdh2o.com.

Copies of the Draft PEIR are available for public review at the following locations:

The Metropolitan Water District of Southern California
Engineering Resource Center
700 North Alameda Street
Los Angeles, CA 90012Los Angeles Public Library – Central Library Branch
630 W 5th St.
Los Angeles, CA 90071
Carter Branch Library
2630 Linden A venue
Rialto, CA 92377
Lomita Library
24200 Narbonne Avenue
Lomita, CA 90717
Brea Library
1 Civic Center Circle
Brea, CA 92821
El Toro Library
24672 Raymond Way
Lake Forest, CA 92630
La Verne Library
3640 D Street
La Verne, CA 91750
San Fernando Library
217 N. Malay Avenue
San Fernando, CA 91340
Or online at Metropolitan's website:

http://mwdh2o.com/AboutYourWater/CapitalProjects/Pages/Environmental%20Quality%20Act.aspx
9/1/16

DJ-2920873#

Los Angeles Times
MEDIA GROUP

PROOF OF PUBLICATION
(2015.5 C.C.P.)

STATE OF ILLINOIS
County of Cook

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the action for which the attached notice was published.

I am a principal clerk of the Los Angeles Times, which was adjudged a newspaper of general circulation on May 21, 1952, Cases 598599 for the City of Los Angeles, County of Los Angeles, and State of California. Attached to this Affidavit is a true and complete copy as was printed and published on the following date(s):

Sep 01, 2016

I certify (or declare) under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Dated at Chicago, Illinois
on this 01 day of 09, 20 16.

[signature]

435 N. Michigan Ave.
Chicago, IL 60611

Sold To:
Metropolitan Water District of Southern California - CU00559113
PO Box 54153
Los Angeles,CA 90054-0153

Bill To:
Metropolitan Water District of Southern California - CU00559113
PO Box 54153
Los Angeles,CA 90054-0153

Notice of Availability of a Draft Program Environmental Impact Report for the Prestressed Concrete Cylinder Pipe Rehabilitation Program (SCH # 2014121055)

Pursuant to the California Environmental Quality Act (CEQA), The Metropolitan Water District of Southern California (Metropolitan), as Lead Agency, has prepared a Draft Program Environmental Impact Report (Draft PEIR) for the Prestressed Concrete Cylinder Pipe (PCCP) Rehabilitation Program (proposed Program). The proposed Program would involve rehabilitating five existing pipelines.

PROGRAM LOCATION: The five pipelines that would be rehabilitated extend primarily within existing public roads and on Metropolitan-owned rights-of-way in the listed cities and counties: 1) Allen-McColloch Pipeline (Anaheim, Irvine, Lake Forest, Mission Viejo, Orange, Tustin, Yorba Linda); 2) Calabasas Feeder (Calabasas, Hidden Hills, Los Angeles); 3) Rialto Pipeline (Claremont, Fontana, La Verne, Rancho Cucamonga, Rialto, San Bernardino, unincorporated San Bernardino County, San Dimas, Upland); 4) Second Lower Feeder (Anaheim, Buena Park, Carson, Cypress, Lakewood, Lomita, Long Beach, Los Alamitos, Los Angeles, Placentia, Rolling Hills Estates, Torrance, Yorba Linda, unincorporated Los Angeles County, unincorporated Orange County); 5) Sepulveda Feeder (Culver City, Gardena, Hawthorne, Inglewood, Los Angeles, Torrance).

PROGRAM DESCRIPTION: Metropolitan proposes to rehabilitate portions of five existing subsurface water delivery pipelines within its service area. Approximately 100 miles of prestressed concrete cylinder pipe (PCCP) with diameters ranging from 54 to 201-inches would be rehabilitated either by relining the existing pipe with steel liner or replacing existing pipe with new welded steel pipe. Relining the pipeline requires cutting an access portal into the existing pipeline, inserting the new liner into place, and welding together the new steel liner segments. New pipe replacement requires excavating an open trench, placing sand bedding, installing new welded steel pipe, and backfilling the trench.

This Notice of Availability is to inform you that the Draft PEIR is being released for a 45-day public review period. The Draft PEIR is also being sent to responsible, trustee, and interested agencies as part of the review process required under CEQA (Section 21092 of the Public Resources Code) and the State CEQA Guidelines (Section 15087).

This document is being made available for public review and comment during the period beginning September 1, 2016 and ending on October 17, 2016 (45 day public review period). All comments should be submitted in writing and include point of contact information. Comments received by close of the public review period will be considered in the Final EIR. Please send comments and responses to:

Mr. Hans Vandenberg
The Metropolitan Water District of Southern California
Environmental Planning Team
P.O. Box 54153
Los Angeles, CA 90054-0153

The Draft PEIR describes the proposed Program, existing environmental conditions, significant impacts (e.g., air quality, greenhouse gas emissions), potential significant impacts (e.g., biological, noise, traffic), and proposed mitigation measures. Due to the time limits mandated by state law, written comments must be sent to Metropolitan during the public review period, which begins September 1, 2016 and ends October 17, 2016. Comments can also be submitted electronically to EPT@mwdh2o.com. Comments sent via e-mail should state Prestressed Concrete Cylinder Pipe Rehabilitation Program EIR in the subject line. Should you have any questions, please contact Mr. Salvador Vazquez at 213-217-6752 or by email svazquez@mwdh2o.com.

Copies of the Draft PEIR are available for public review at the following locations:
The Metropolitan Water District of Southern California
Engineering Resource Center
700 North Alameda Street
Los Angeles, CA 90012

Carter Branch Library
2630 Linden A venue
Rialto, CA 92377

Brea Library
1 Civic Center Circle
Brea, CA 92821

La Verne Library
3640 D Street
La Verne, CA 91750

Los Angeles Public Library – Central Library Branch
630 W 5th St.
Los Angeles, CA 90071

Lomita Library
24200 Narbonne Avenue
Lomita, CA 90717

El Toro Library
24672 Raymond Way
Lake Forest, CA 92630

San Fernando Library
217 N. Malay Avenue
San Fernando, CA 91340

Or online at Metropolitan's website:
http://mwdh2o.com/AboutYourWater/CapitalProjects/Pages/Environmental%20Quality%20Act.aspx

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

October 18, 2016

Hans Vandenberg
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

Subject: Prestressed Concrete Cylinder Pipe Rehabilitation Program
SCH#: 2014121055

Dear Hans Vandenberg:

The State Clearinghouse submitted the above named Draft EIR to selected state agencies for review. The review period closed on October 17, 2016, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Scott Morgan
Director, State Clearinghouse

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

FINAL

Programmatic Environmental Impact Report for the

Prestressed Concrete Cylinder Pipe Rehabilitation Program

SCH No. 2014121055

Volume 2: Findings of Fact, Mitigation Monitoring and Reporting Program, and Statement of Overriding Considerations

DECEMBER 2016

The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, California 90012

Metropolitan Report No. 1527

Prestressed Concrete Cylinder Pipe Rehabilitation Program Final Programmatic Environmental Impact Report

Volume 2: Findings of Fact, Mitigation Monitoring and Reporting Program, and Statement of Overriding Considerations

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December 2016

ICF International. 2016. Prestressed Concrete Cylinder Pipe Rehabilitation Program Final Programmatic Environmental Impact Report. December. (ICF 52.14.) Irvine, CA. Prepared for Metropolitan Water District of Southern California, Los Angeles, California.

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Findings of Fact in Support of the Proposed Program

1.1 Findings on Significant Impacts of the Proposed Program

The California Environmental Quality Act (CEQA) requires the lead agency, the Metropolitan Water District of Southern California (Metropolitan), to make written findings when deciding to approve a project for which an environmental impact report (EIR) was certified (California Public Resources Code, Section 21081). Specifically, Section 15091 of the State CEQA Guidelines states that:

(a) No public agency shall approve or carry out a project for which an EIR has been certified which identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding. The possible findings are:

(1) Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR.

(2) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

(3) Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the final EIR.

(b) The findings required by subsection (a) shall be supported by substantial evidence in the record (14 CCR 15091).

Section 15092 of the State CEQA Guidelines further stipulates that:

(b) A public agency shall not decide to approve or carry out a project for which an EIR was prepared unless either:

(1) The project as approved will not have a significant effect on the environment, or

(2) The agency has:

(A) Eliminated or substantially lessened all significant effects on the environment where feasible as shown in findings under Section 15091, and

(B) Determined that any remaining significant effects on the environment found to be unavoidable under Section 15091 are acceptable due to overriding concerns as described in Section 15093 (14 CCR 15092).

A Programmatic Environmental Impact Report (PEIR) was prepared for the Prestressed Concrete Cylinder Pipe Rehabilitation Program (proposed program). The PEIR identifies certain significant impacts that may occur as a result of the implementation of the proposed program, either alone or on a cumulative basis in conjunction with other past, present, and reasonably foreseeable projects.

Metropolitan is the lead agency with respect to the proposed program pursuant to State CEQA Guidelines Section 15367. As the lead agency, Metropolitan is required by CEQA to make findings with respect to each significant effect of the proposed program. The following sections make detailed findings with respect to the potential effects of the proposed program and refer, where appropriate, to the mitigation measures set forth in the Final PEIR.

The Final PEIR and the administrative record concerning the proposed program provide additional facts in support of the findings herein. Changes to the Draft PEIR are shown in strikeout/underline of this Final PEIR. Furthermore, the mitigation measures set forth in the Final PEIR and the Mitigation Monitoring and Reporting Program (MMRP) are incorporated by reference in these findings. The MMRP was developed in compliance with California Public Resources Code Section 21081.6.

1.1.1 Impacts Related to Aesthetics

1.1.1.1 Potentially Significant Impacts Related to Aesthetics

As discussed in Section 4.1 (Aesthetics), during the construction period, nighttime lighting may be required in construction work areas and staging areas for safety and security purposes. During construction and at staging areas, lighting may spill over into adjacent light-sensitive areas, especially residential land uses. Though temporary, this spillover light may result in significant impacts. With the implementation of Mitigation Measure MM AES-1, impacts related to nighttime lighting would be less than significant.

Impacts related to scenic vistas, scenic resources (including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway), and visual character/quality would be less than significant.

1.1.1.2 Mitigation

MM AES-1

In order to prevent impacts related to spillover lighting into light-sensitive land uses, all safety and security lighting at construction work areas and staging areas will be directed downward and shielded to avoid light spilling over into residential areas.

1.1.1.3 Findings per State CEQA Guidelines

Consistent with State CEQA Guidelines Section 15126.4(a)(1), feasible measures that can minimize significant adverse impacts were developed for the potentially significant impacts described above. The feasible measure is listed above as MM AES-1. Metropolitan finds that the above mitigation measure is feasible, is adopted, and will reduce the potential aesthetic impacts of the proposed program to less-than-significant levels. Accordingly, Metropolitan finds that, pursuant to California Public Resources Code Section 21081(a)(1) and State CEQA Guidelines Section 15091(a)(1), changes or alterations have been required in or incorporated into the proposed program that will mitigate or avoid any potentially significant impacts related to aesthetics.

1.1.1.4 Facts in Support of Findings Related to Aesthetics

Implementation of Mitigation Measure MM AES-1 would reduce potentially significant program impacts related to aesthetics to a less-than-significant level. There would be no significant, unavoidable impacts related to aesthetics after implementation of this mitigation measure.

1.1.2 Impacts Related to Agriculture and Forestry Resources

As discussed in Section 4.2 (Agriculture and Forestry Resources), the proposed program would not permanently convert any farmland to non-agricultural use. The proposed program would rehabilitate existing pipelines, usually located in existing roadway rights-of-way. Even where the pipelines cross agricultural lands, they are existing underground facilities. During construction, agricultural lands may be temporarily used for access to the pipeline or for staging construction equipment. However, all land would be restored to its pre-construction condition once rehabilitation is completed. Therefore, the proposed program would not permanently convert Important Farmland to non-agricultural use and impacts would be less than significant.

Impacts related to the potential for the proposed program to conflict with existing zoning for agricultural use, areas under a Williamson Act contract, forest land, or timberland, or the potential for the proposed program to result in the loss or conversion of forest land were determined to result in less-than-significant impacts in the Initial Study and are not discussed in the PEIR.

1.1.3 Impacts Related to Air Quality

1.1.3.1 Potentially Significant Impacts Related to Air Quality

As discussed in Section 4.3 (Air Quality), air pollutants would be emitted as a result of rehabilitation activities stemming from the use of construction equipment (primarily diesel-powered), haul and materials vehicle trips, and fugitive dust. Pollutants would exceed the daily regional mass emissions thresholds as well as the localized significance thresholds identified by the South Coast Air Quality Management District (SCAQMD) and would be significant. Following the implementation of Mitigation Measure MM AIR-1, the regional mass emissions would still exceed the SCAQMD regional mass emissions thresholds, but would no longer exceed the localized significance thresholds. Thus, the program would violate an air quality standard or contribute substantially to an existing or projected air quality violation, result in a cumulatively considerable net increase in any criteria pollutant for which the region is in non-attainment, and expose sensitive receptors to substantial pollutant concentrations, and impacts would be significant and unavoidable.

The proposed program would not conflict with, or obstruct, implementation of the applicable air quality plan, or create objectionable odors that would affect a substantial number of people; impacts related to these factors would be less than significant.

1.1.3.2 Mitigation

MM AIR-1

All off-road diesel-powered construction equipment greater than 50 horsepower will meet Tier 4 emission standards. All construction equipment will be outfitted with ARB best available control technology devices. Any emissions-control device used by the contractor will achieve

emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by ARB regulations. A copy of each unit's certified tier specification, best available control technology documentation, and ARB or SCAQMD operating permit will be provided to Metropolitan's Construction Inspector at the time of mobilization of each applicable unit of equipment.

1.1.3.3 Findings per State CEQA Guidelines

Consistent with State CEQA Guidelines Section 15126.4(a)(1), feasible measures that can minimize significant adverse impacts were developed for the potentially significant impacts described above. The feasible measure is listed above as MM AIR-1. Metropolitan finds that the above mitigation measure is feasible, is adopted, and will substantially reduce the potential air quality impacts. Nonetheless, the impacts would not be reduced to a less-than-significant level. Specific economic, legal, social, technological, or other considerations make mitigation measures or alternatives that would reduce air quality impacts to a less-than-significant level infeasible.

1.1.3.4 Facts in Support of Findings Related to Air Quality

Implementation of Mitigation Measure MM AIR-1 would reduce potentially significant program impacts related to air quality, but not to a less-than-significant level. There would be significant and unavoidable impacts related to air quality after implementation of this mitigation measure.

1.1.4 Impacts Related to Biological Resources

1.1.4.1 Potentially Significant Impacts Related to Biological Resources

As discussed in Section 4.4 (Biological Resources), rehabilitation activities have the potential to result in impacts on protected species. Migratory birds, including most birds that nest in the study area, are protected by the federal Migratory Bird Treaty Act, which forbids most forms of harm to birds, including to their active nests. In addition, California Fish and Game Code Section 3503 makes it unlawful to destroy nests or eggs of any bird. Where vegetation, and especially trees, is removed as part of construction, there is the potential for violations under the Migratory Bird Treaty Act and Section 3503 of the California Fish and Game Code, which would be a significant impact, but the level of impact would need to be determined at the project level when rehabilitation locations are known. Implementation of Mitigation Measure MM BIO-2 may reduce this impact, but potentially not to a less-than-significant level.

Various rehabilitation activities could affect riparian habitats and other sensitive natural communities. Vegetation clearing, excavation, materials storage, traffic, and other activities could remove habitat, result in impacts on runoff and/or water quality, potentially affecting habitat; air quality impacts (dust, exhaust) could affect adjacent habitat; and construction-related traffic could introduce hazardous materials into habitats. These effects could result in significant impacts on riparian habitats or sensitive natural communities, but the level of impact would need to be determined at the project level when rehabilitation locations are known. Implementation of Mitigation Measures MM BIO-3 and MM BIO-4 may reduce these impacts, but potentially not to less-than-significant levels.

Various rehabilitation activities could affect wetlands if present near work areas. Any of these effects could result in significant impacts on wetlands, but the level of impact would need to be

determined at the project level when rehabilitation locations are known. Implementation of Mitigation Measure MM BIO-5 may reduce these impacts, but potentially not to less-than-significant levels.

Various rehabilitation activities could also affect wildlife movement and dispersal in the vicinity of construction. Any of these effects could result in significant impacts on wildlife movement, but the level of impact would need to be determined at the project level when rehabilitation locations are known. Implementation of Mitigation Measure MM BIO-6 may reduce these impacts, but potentially not to less-than-significant levels.

Certain construction and maintenance activities are allowed under the Shell E&P and Metropolitan Habitat Conservation Plan (HCP) and Central and Coastal Natural Communities Conservation Plan (NCCP)/HCP, and would be allowed under the proposed North Fontana Multiple Species Habitat Conservation Plan (covered activities). However, the types of construction for the proposed program that would occur within the covered lands are not known at this time. Therefore, construction could potentially be inconsistent with the requirements of these plans, which would be a significant impact. Without knowing the location or type of rehabilitation activities in the covered lands, the level of impact and mitigation measures to address these impacts cannot be determined at this time. Also, it cannot be determined if impacts could be reduced to less-than-significant levels with mitigation. Therefore, impacts related to conflicts with the adopted Shell E&P and Metropolitan HCP and Central and Coastal NCCP/HCP and the proposed North Fontana Multiple Species Habitat Conservation Plan may be potentially significant and unavoidable. Additional project-specific analysis will be required for rehabilitation activities within the covered lands for these plans.

Many of the cities and counties along the pipelines in the proposed program have tree preservation policies or ordinances requiring permits for removal of trees or replacement of trees, or other protection for vegetation within their jurisdictions. Rehabilitation activities would require removal of some trees and other vegetation throughout the pipelines, including street trees and other landscaping. Although the program would require contractors to restore construction areas to pre-construction conditions after rehabilitation activities are completed, in some cases this restoration may not be consistent with local tree preservation policies or ordinances, which would be a significant impact. Implementation of Mitigation Measure MM BIO-7 would reduce these impacts to less-than-significant levels.

1.1.4.2 Mitigation

MM BIO-1 Take of Special-Status Species.

For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas) and that contain special-status species, a qualified biologist will visit the site. If the biologist determines that special-status species may occur, preconstruction surveys for special-status plants and/or wildlife will be completed prior to any construction and consultation with the appropriate resource agency will occur (U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife), if necessary, to determine measures to address impacts such as avoidance, minimization, restoration, or compensation.

MM BIO-2 Impacts on Nesting Birds.

For any projects within the program that require vegetation removal during the nesting season for sensitive species protected by the Migratory Bird Treaty Act and California Fish and Game Code Section 3513, including street trees and other landscaping, a qualified biologist will inspect the vegetation to be removed no more than 10 days prior to tree/vegetation removal to determine whether nesting birds are present. If a nest is found, the biologist will determine the site-specific measures necessary to avoid disturbing the nest until nesting activity has ceased. Nothing in this mitigation measure precludes the use of deterrent measures to prevent bird nesting.

MM BIO-3 Adverse Impacts on Riparian Habitat.

For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (except for landscaped developed areas) which contain riparian vegetation, a qualified biologist will visit the site to conduct pre-construction surveys. If the biologist determines that riparian vegetation is present, then habitat areas will be mapped and flagged for avoidance, or other measures will be taken, including applying for appropriate regulatory permits, as required.

MM BIO-4 Adverse Impacts on Sensitive Natural Communities.

Removal of or adverse impacts on sensitive natural communities will be minimized for rehabilitation projects in the program, except in accordance with adopted HCPs/NCCPs to which Metropolitan is a party for covered areas and covered activities. For such covered activities, Metropolitan will coordinate with the appropriate resource agencies, and Metropolitan's contractors will adhere to all requirements in the applicable plan. For any activities not covered by an adopted HCP/NCCP, the following shall apply:

For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (except for landscaped developed areas) and that contain sensitive natural communities, a qualified biologist will conduct pre-construction surveys for sensitive natural communities prior to any construction. These surveys will be conducted by a qualified biologist within 100 feet of ground-disturbing activities. If sensitive natural communities are located during the surveys, then habitat areas will be mapped and flagged for avoidance, or other measures will be taken including applying for appropriate regulatory permits, as required.

MM BIO-5 Adverse Impacts on Wetlands.

For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (including large landscaped areas, parks, and golf courses), which contain wetlands, a qualified biologist will visit the site to conduct pre-construction surveys. If the biologist determines that wetlands may be present, preconstruction wetlands jurisdictional delineations will be required prior to any construction. These delineations will be conducted by a qualified biologist within 100 feet of ground-disturbing activities. Any jurisdictional wetlands located during the

delineations will be mapped and flagged for avoidance or other measures may be taken, including applying for appropriate regulatory permits, as required.

MM BIO-6 Impacts on Wildlife Movement.

For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas), a qualified biologist will visit the site to determine if any identifiable wildlife movement corridors are present at the site. If the biologist determines that such corridors are present, then wildlife movement corridors will be mapped, flagged, and avoided, or other measures will be taken to protect wildlife movement, as appropriate.

MM BIO-7 Conflicts with Local Policies Related to Biological Resources.

For any projects within the program that require vegetation removal, Metropolitan will determine if there are any applicable local policies related to biological resources and, if so, coordinate with the affected jurisdiction as necessary to determine appropriate requirements for vegetation removal and replacement. The contractor will be required to comply with any applicable requirements. Nothing in this mitigation will require the contractor to make improvements beyond the existing condition prior to construction.

1.1.4.3 Findings per State CEQA Guidelines

Consistent with State CEQA Guidelines Section 15126.4(a)(1), feasible measures that can minimize significant adverse impacts were developed for the potentially significant impacts described above. The feasible measures are listed above as MM BIO-1 through MM BIO-7. Metropolitan finds that the above mitigation measures are feasible, are adopted, and will substantially reduce the potential biological resource impacts. Nonetheless, the impacts would not be reduced to a less-than-significant level. Specific economic, legal, social, technological, or other considerations make mitigation measures or alternatives that would reduce biological resource impacts to a less-than-significant level infeasible.

1.1.4.4 Facts in Support of Findings Related to Biological Resources

Implementation of Mitigation Measures MM BIO-1 through MM BIO-7 would reduce potentially significant program impacts related to biological resources, but not to a less-than-significant level. There would be significant and unavoidable impacts related to biological resources after implementation of these mitigation measure.

1.1.5 Impacts Related to Cultural Resources

1.1.5.1 Potentially Significant Impacts Related to Cultural Resources

As discussed in Section 4.5 (Cultural Resources), during rehabilitation, there is the potential for construction to result in adverse impacts on built environment resources. Specifically, ground-borne vibration from excavation and concrete cutting could potentially adversely affect nearby resources, which would be a significant impact. Implementation of Mitigation Measure MM CUL-1 would reduce this impact to a less-than-significant level.

If construction were to occur in proximity to any of the previously recorded archaeological resources, there is a potential to damage the sites and undiscovered buried components of the sites. The sediments in proximity to the pipelines have been previously disturbed by installation of the pipelines, and therefore the potential for intact archaeological resources is low, but not precluded; consequently, potential significant impacts on archaeological resources could occur. Mitigation Measure MM CUL-2 would mitigate impacts on these known resources to less-than-significant levels.

Pipelines routes that do not cross known archaeological sites and have been disturbed by previous construction have a low potential to encounter unknown buried archaeological resources, although resources could still be found intact in trench walls and other excavation areas; therefore, potential significant impacts on archaeological resources could occur. Due to this low potential, archaeological monitoring is not required. Mitigation Measures MM CUL-3 and MM CUL-4 would mitigate impacts on unknown resources to less-than-significant levels.

Areas selected for staging areas or for other activities beyond the alignments of the existing pipeline routes have not been identified and may contain archaeological resources. Staging or other rehabilitation activities could result in significant impacts on these resources. Implementation of Mitigation Measure MM CUL-5 would mitigate impacts on archaeological resources to less-than-significant levels.

The proposed program has the potential to affect paleontological resources within the pipeline alignments or in staging areas during rehabilitation activities. Paleontological resources could be inadvertently unearthed during ground-disturbing activities. Implementation of Mitigation Measure MM CUL-6 would reduce impacts on paleontological resources to less-than-significant levels.

The proposed program has the potential to disturb human remains within the pipeline alignments or in staging areas during excavations or grading. Human remains could be inadvertently unearthed during ground-disturbing activities. This could result in damage to or destruction of these human remains, including those interred outside of formal cemeteries, which would be a significant impact under CEQA. However, California State Law in Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the Public Resources Code requires specific procedures for identification and treatment of human remains, both Native American and non-Native American. Therefore, impacts on human remains from the proposed program would be less than significant.

1.1.5.2 Mitigation

MM CUL-1 Historic Resources Protection Program.

To avoid impacts on built environment (historic) resources, prior to any rehabilitation involving excavation or concrete cutting, a qualified cultural resource specialist will determine whether there are any identified or eligible historical resources present and whether proposed construction activities could adversely affect these resources. If any resources could be adversely affected by construction, measures will be taken to prevent adverse impacts on the resource, as determined by the qualified cultural resource specialist.

MM CUL-2 Avoidance or Monitoring of Archaeological Sites.

To avoid impacts on archaeological sites, prior to construction of any program element, such as pipeline alignments, construction staging areas, laydown areas, or relocation of pipelines in new

alignments, a new record search will be conducted to determine if additional sites or resources have been recorded on or adjacent to the proposed construction section. Reports will be examined to determine the condition of each site when recorded, if the site has been evaluated, and if destruction of the site is documented. Following this review, recorded archaeological sites that are within the pipeline route will be surveyed and their present conditions assessed (see MM CUL-4). Archaeological monitoring will be required during construction-related ground-disturbing activities if within the recorded area of a significant or potentially significant site and for a 50-foot buffer beyond the site boundary. A Native American monitor may be present if the site is prehistoric. If archaeological materials are discovered during monitoring, procedures outlined in MM CUL-4 will be implemented.

If it can be demonstrated that the site has been destroyed by previous construction or other actions and there is no potential for other buried parts of the site within the construction area, or if the site has been evaluated and determined not eligible for the California Register of Historical Resources (CRHR), then monitoring will not be required.

MM CUL-3 Preconstruction Meeting for Identifying Cultural Resources.

To avoid impacts on previously unidentified cultural resources, all construction personnel will attend a preconstruction meeting that includes a discussion of cultural resources. The meeting will inform construction personnel on how to identify potential cultural resources during ground-disturbing activities and what to do if such potential resources are encountered.

MM CUL-4 Previously Unidentified Resources Encountered during Ground-disturbing Activities.

In the event that any potentially significant cultural resources are unexpectedly encountered during construction, work will be immediately halted and the discovery shall be protected in place. The contractor will halt construction within 50 feet of the exposed resource until a qualified cultural resources specialist evaluates the discovery.

If the qualified cultural resources specialist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. This additional work may include avoidance, testing, and evaluation or data recovery excavation. Work shall be prohibited in the restricted area until Metropolitan provides written authorization.

MM CUL-5 Archaeological Survey of Non-Pipeline Areas.

Prior to rehabilitation activities of any program element, each area will be subject to pedestrian survey for archaeological resources by a professional archaeologist retained by Metropolitan if ground-disturbing activities are slated to occur. If archaeological sites are recorded or found in these affected areas, the sites will be avoided to the greatest extent feasible. If a site cannot be avoided, site testing and evaluation by a professional archaeologist will be required. This may require test excavations, artifact analysis, evaluation for the CRHR and review by the State Historic Preservation Officer, and possibly data recovery excavation and reporting.

MM CUL-6 Develop a Program to Mitigate Impacts on Paleontological Resources for Each Contract Package

In order to avoid impacts on paleontological resources, the following mitigation program will be implemented for each contract package. This mitigation program will be conducted by a qualified professional paleontologist and will be consistent with the provisions of CEQA. This program will include the following:

1. Assessment of site-specific excavation areas to determine those that may be designated as highly sensitive for unique paleontological resources to be monitored during ground disturbance.
2. In these designated areas, if any, paleontological resources monitors qualified to Society of Vertebrate Paleontology standards will be equipped to salvage fossils as they are unearthed and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitoring may be reduced or eliminated if some of the potentially fossiliferous units are determined upon exposure and examination by qualified paleontological resources personnel to have low potential to contain fossil resources. Also in these designated areas, all unique paleontological resources, if any, will be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates.
3. Unique paleontological resources, if any, will be identified and curated into an established, accredited museum repository will be required.
4. Preparation of a report of findings including a summary of field work and laboratory methods, an overview of the program work area geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. If the monitoring efforts produced fossils, a copy of the report will also be submitted to the designated museum repository.

1.1.5.3 Findings per State CEQA Guidelines

Consistent with State CEQA Guidelines Section 15126.4(a)(1), feasible measures that can minimize significant adverse impacts were developed for the potentially significant impacts described above. The feasible measures are listed above as MM CUL-1 through MM CUL-6. Metropolitan finds that the above mitigation measures are feasible, are adopted, and will reduce the potential cultural resources impacts of the proposed program to less-than-significant levels. Accordingly, Metropolitan finds that, pursuant to California Public Resources Code Section 21081(a)(1) and State CEQA Guidelines Section 15091(a)(1), changes or alterations have been required in or incorporated into the proposed program that will mitigate or avoid any potentially significant impacts related to cultural resources.

1.1.5.4 Facts in Support of Findings Related to Cultural Resources

Implementation of Mitigation Measures MM CUL-1 through MM CUL-6 would reduce potentially significant program impacts related to cultural resources to a less-than-significant level. There would be no significant, unavoidable impacts related to cultural resources after implementation of these mitigation measures.

1.1.6 Impacts Related to Geology and Soils

As discussed in Section 4.6 (Geology and Soils), all of the feeders with the exception of the Calabasas Feeder would cross at least one Alquist-Priolo Earthquake Fault Zone. Fault rupture and seismic ground shaking, if it is to occur, could affect the integrity of a pipeline and damage could occur. Although there are designated Alquist-Priolo Earthquake Fault Zones within the study area for the proposed program, the proposed program would not include construction of structures intended for human occupancy. In addition, the hazard of fault rupture at a feeder/fault crossing would exist during program operation. However, similar to construction activities, this hazard is considered to pose an acceptable level of risk for operation of a water conveyance system and would not draw a significant amount of people to the area. Risks related to seismic ground failure, including liquefaction, landslides, soil erosion or topsoil loss, lateral spreading, subsidence, liquefaction, collapse, or expansive soil, would also be considered to pose an acceptable level of risk for operation of a water conveyance system. Therefore, implementation of the proposed program would not create a substantial risk to life or property involving rupture of a known earthquake fault, and impacts would be less than significant.

1.1.7 Impacts Related to Greenhouse Gas Emissions

1.1.7.1 Potentially Significant Impacts Related to Greenhouse Gas Emissions

As discussed in Section 4.7 (Greenhouse Gas Emissions), program-related rehabilitation activities would result in greenhouse gas (GHG) emissions from fuel combustion associated with on- and off-road construction equipment and vehicles. Emissions associated with construction would result in amortized annual emissions of just over 4,700 metric tons, which exceeds the SCAQMD threshold of 3,000 metric tons. As such, impacts would be significant. With the implementation of Mitigation Measure MM AIR-1, impacts would be reduced, but would remain significant.

Although the proposed program would generate GHG emissions, net increases in GHG emissions would occur only during the construction period and would not conflict with statewide GHG reduction goals. Impacts related to the potential for the proposed program to conflict with GHG reduction plans, policies, and regulations would be less than significant.

1.1.7.2 Mitigation

See MM AIR-1 above.

1.1.7.3 Findings per State CEQA Guidelines

Consistent with State CEQA Guidelines Section 15126.4(a)(1), feasible measures that can minimize significant adverse impacts were developed for the potentially significant impacts described above. The feasible measure is listed above as MM AIR-1. Metropolitan finds that the above mitigation measure is feasible, is adopted, and will reduce the potential GHG impacts. Nonetheless, the impacts would not be reduced to a less-than-significant level. Specific economic, legal, social, technological, or other considerations make mitigation measures or alternatives that would reduce GHG impacts to a less-than-significant level infeasible.

1.1.7.4 Facts in Support of Findings Related to Greenhouse Gas Emissions

Implementation of Mitigation Measure MM AIR-1 would reduce potentially significant program impacts related to GHG emissions, but not to a less-than-significant level. There would be significant and unavoidable impacts related to GHG emissions after implementation of this mitigation measure.

1.1.8 Impacts Related to Hazards and Hazardous Materials

1.1.8.1 Potentially Significant Impacts Related to Hazards and Hazardous Materials

As discussed in Section 4.8 (Hazards and Hazardous Materials), rehabilitation work would involve hazardous materials typical of a construction project, and it is expected that the proposed program would be operated in compliance with applicable federal, state, and local regulations. Any release of commonly used materials would be localized and immediately contained and cleaned up. It is possible that construction activities related to the proposed program may encounter contaminated media from nearby hazardous materials sites during excavations, potentially exposing the surrounding environment, including nearby schools, to hazardous conditions. These potential impacts would be significant. Implementation of Mitigation Measures MM HAZ-1 through MM HAZ-4 would reduce potential impacts on the surrounding environment, including school sites within 0.25 mile, to less-than-significant levels.

Rehabilitation activities would encounter numerous sites found in various environmental databases. In some cases, the existing pipelines traverse areas within or near National Priorities List sites. It is expected that most industrial and commercial facilities within 1 mile of the pipes that deal with storage, use, and disposal of hazardous materials comply with all appropriate federal, state, and local regulations to ensure safety of the surrounding public and environment. However, it is possible that construction activities may encounter contaminated media during excavations either at known or unknown sites, resulting in a significant hazard to the construction workers, the public, or the environment. This would be a significant impact. Implementation of Mitigation Measures MM HAZ-1 through MM HAZ-4 would reduce potential impacts to less-than-significant levels.

If any aboveground rehabilitation activities were to occur in airport runway protection zones, construction equipment and/or personnel could interfere with airport operations. Also, where pipelines cross under runway or taxiway areas, there is the potential for below-ground construction activities to affect or be affected by airport operations and safety. Impacts would be significant. Implementation of Mitigation Measure MM HAZ-5 would reduce potential impacts to less-than-significant levels.

No private airstrips are in the vicinity of any of the pipelines; therefore, the program would not result in safety hazards to workers involved in the rehabilitation activities associated with the proposed program.

In some cases the proposed program pipelines are within street rights-of-way that serve as emergency response routes and/or evacuation routes. If excavation were to take place in roadways that serve as emergency/excavation routes and capacity of the affected streets was reduced during construction (such as reducing four lanes to two lanes), the ability of these streets to serve as emergency/evacuation routes may be impaired. This would be a significant impact during

construction. Implementation of Mitigation Measure MM HAZ-7 would reduce these impacts to less-than-significant levels.

Implementation of the proposed program would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

1.1.8.2 Mitigation

MM HAZ-1 Project-Level Hazardous Materials Sites Assessment Prior to Construction Activities

To avoid exposure of construction workers, the public, or the environment to previously identified hazardous materials, during design, qualified Metropolitan staff or consultant(s) specializing in hazardous materials impact assessment will conduct a project-level analysis to determine if there are existing hazardous materials sites in the vicinity of the construction site and potential for existing hazardous materials sites to affect construction. This assessment will consist of a search for environmental-related information present in publicly accessible databases. The information will be reviewed to determine if the construction footprint or adjacent properties are listed in the databases. If the construction footprint or adjacent properties are listed in the databases, qualified Metropolitan staff or consultant(s) will determine the potential risk to construction workers, the public, or the environment from rehabilitation activities and identify all necessary avoidance, abatement, remediation, cleanup, disposal, monitoring, reporting, notifications, and/or other measures to prevent significant impacts.

MM HAZ-2 Encountering Unreported Hazardous Materials

To avoid exposure of construction workers, the public, or the environment to unreported hazardous materials in the soil, contractors will be required to inspect any site to be used for excavation, work zones, staging, or other rehabilitation-related activities prior to beginning construction. If odiferous, stained, or discolored soil is encountered, qualified Metropolitan staff or consultant(s) specializing in the identification and handling of hazardous materials will be retained to assess the site. Identification of possible hazardous materials would typically involve soil samples and laboratory analysis. The suspect soil will be isolated, covered, and avoided by construction personnel until analytical results are reviewed by qualified personnel. Soils identified as hazardous or contaminated will be handled, transported, and treated in accordance with all federal, state, and local existing hazardous materials regulations.

MM HAZ-3 Engineering Controls and Best Management Practices during Construction

To minimize human exposure to potential contaminants, during construction contractors will employ the use of engineering controls and best management practices (BMPs). Engineering controls and construction BMPs will include, but are not limited to, the following:

- Contractor employees working on site handling hazardous materials on contaminated media will be certified in the Occupational Health and Safety Administration's 40-hour Hazardous Waste Operations and Emergency Response training.
- Contractors will water or mist soil as it is being excavated and stockpiled or loaded onto transportation trucks.

MM HAZ-4 Encountering Contaminated Groundwater

To avoid exposure of construction workers, the public, or the environment to contaminated groundwater, suspect water removed from excavation areas (but not including dewatering of the pipelines themselves) will be tested by a qualified laboratory specializing in the identification of hazardous materials. If groundwater is considered hazardous, Metropolitan will notify the Regional Water Quality Control Board and local Environmental Health agencies regarding assessment and remediation requirements.

MM HAZ-5 Construction Activities within Runway Protection Zones

During the design phase for any projects in the program within the runway protection zones for Long Beach Municipal Airport or Van Nuys Airport (even where all construction would be accessed from outside the runway protection zones), project engineers will coordinate with the management of Long Beach Municipal Airport (Second Lower Feeder) or Van Nuys Airport (Sepulveda Feeder), as appropriate, to determine the methods of construction that will be necessary to avoid impacts on airport operations and safety. All operations and safety requirements of the airports will be incorporated into the construction design packages. All necessary requirements will be implemented during construction.

MM HAZ-6 Aboveground Elements in Runway Protection Zones

To avoid airport operations and safety impacts, no permanent aboveground elements of the proposed program, such as manhole covers, valve boxes, or electrical panels, will be located within runway protection zones (at Long Beach Municipal Airport for the Second Lower Feeder and Van Nuys Airport for the Sepulveda Feeder) without prior approval of the management of the appropriate airport.

MM HAZ-7: Maintaining Emergency/Evacuation Routes

To avoid impacts on emergency/evacuation routes, excavation sites will typically not be placed in roadways that serve as designated emergency/evacuation routes. If such streets cannot be avoided, the contractor will work with the local jurisdiction responsible for the emergency/evacuation routes to maintain adequate capacity. This will be accomplished by utilizing unused portions of the street right-of-way for travel lanes (such as temporarily prohibiting parking, restriping medians or parkway space, or detouring bike lanes) or by detouring the emergency/evacuation route to other roadways during construction. If detours are necessary, appropriate notification of emergency personnel and temporary signage will be used to direct emergency/evacuation traffic during construction.

1.1.8.3 Findings per State CEQA Guidelines

Consistent with State CEQA Guidelines Section 15126.4(a)(1), feasible measures that can minimize significant adverse impacts were developed for the potentially significant impacts described above. The feasible measures are listed above as MM HAZ-1 through MM HAZ-7. Metropolitan finds that the above mitigation measures are feasible, are adopted, and will reduce the potential hazards/hazardous materials impacts of the proposed program to less-than-significant levels. Accordingly, Metropolitan finds that, pursuant to California Public Resources Code Section 21081(a)(1) and State CEQA Guidelines Section 15091(a)(1), changes or alterations have been

required in or incorporated into the proposed program that will mitigate or avoid any potentially significant impacts related to hazards/hazardous materials.

1.1.8.4 Facts in Support of Findings Related to Hazards and Hazardous Materials

Implementation of Mitigation Measures MM HAZ-1 through MM HAZ-7 would reduce potentially significant program impacts related to hazards/hazardous materials to a less-than-significant level. There would be no significant, unavoidable impacts related to hazards/hazardous materials after implementation of these mitigation measures.

1.1.9 Impacts Related to Hydrology and Water Quality

1.1.9.1 Potentially Significant Impacts Related to Hydrology and Water Quality

As discussed in Section 4.9 (Hydrology and Water Quality), implementation of the proposed program could alter existing drainage patterns at each project site as a result of the presence of new aboveground facilities at each project site. The new facilities may change the extent of permeable or impermeable surfaces, which could alter the direction and volume of overland flows during both wet and dry periods. Aboveground enclosures are typically located on sidewalk median strips and house back-flow preventer valves and air vents. With the implementation of Mitigation Measure MM HYD-1, a grading and drainage plan would be developed during project design for aboveground facilities within pervious areas and implemented to ensure no increase in flooding on or off site. Impacts would be less than significant with mitigation.

Construction of each excavation area would require the use of heavy equipment and construction-related chemicals, such as fuels, oils, grease, solvents, and paints that would be stored in limited quantities on site. In the absence of proper controls, these construction activities could result in accidental spills or disposal of potentially harmful materials used during construction that could wash into and pollute surface waters or groundwater. As construction of each of the projects under the proposed program is initiated, individual construction discharge permits would be acquired, and construction BMPs would be designed to minimize erosion and sedimentation and prevent spills such that significant impacts would not result.

The proposed program facilities would not alter the course of a stream or river. The proposed program would not involve the alteration of these channels, nor is it expected to increase the flow within these channels. As a result, there would be no increase in erosion or siltation along river or stream channels, nor would the proposed program expected to increase the flow within these channels.

With respect to the potential for the proposed program to create or contribute runoff that would exceed the capacity of stormwater systems, runoff could be generated during construction of the proposed program facilities during a storm event or from non-stormwater discharges, such as water used for dust control or hydrostatic testing of the pipelines. However, BMPs would be regularly inspected and monitored for performance during construction activities, and impacts would be less than significant.

The proposed program is not subject to tsunami, as no portion of the proposed program is within a coastal zone. Some areas in the program vicinity are adjacent to enclosed bodies of water that could be subject to seiche under extreme conditions. However, the flood inundation area is a pre-existing condition within the project area, and the placement of the proposed project facilities in the inundation area would not exacerbate this condition. The proposed program facilities consist of either subterranean improvements or low-profile features and the potential impact on structures subject to inundation by seiche would be less than significant. In general, the proposed program would be in relatively flat areas that are not susceptible to mudflows.

1.1.9.2 Mitigation

MM HYD-1 Implementation of a Grading and Drainage Plan.

Prior to construction of aboveground project facilities, Metropolitan will prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in flooding, erosion, or sedimentation potential in accordance with applicable regulations and in coordination with the county and/or the city in which the facility would be located. The plan will identify and implement best management practices and other measures to ensure that potential increases in stormwater flows and erosion are minimized..

1.1.9.3 Findings per State CEQA Guidelines

Consistent with State CEQA Guidelines Section 15126.4(a)(1), feasible measures that can minimize significant adverse impacts were developed for the potentially significant impacts described above. The feasible measure is listed above as MM HYD-1. Metropolitan finds that the above mitigation measure is feasible, is adopted, and will reduce the potential hydrology/water quality impacts of the proposed program to less-than-significant levels. Accordingly, Metropolitan finds that, pursuant to California Public Resources Code Section 21081(a)(1) and State CEQA Guidelines Section 15091(a)(1), changes or alterations have been required in or incorporated into the proposed program that will mitigate or avoid any potentially significant impacts related to hydrology/water quality.

1.1.9.4 Facts in Support of Findings Related to Hydrology and Water Quality

Implementation of Mitigation Measure MM HYD-1 would reduce potentially significant program impacts related to hydrology/water quality to a less-than-significant level. There would be no significant, unavoidable impacts related to hydrology/water quality after implementation of this mitigation measure.

1.1.10 Impacts Related to Land Use and Planning

As discussed in Section 4.10 (Land Use), the proposed program would not physically divide an established community. In some cases, construction work areas, primarily for the excavation sites, may require access to certain facilities to be blocked or rerouted during construction. This could temporarily create barriers that would physically divide communities from the most direct access to community facilities. These changes would not be permanent and would only affect a given area for a duration between 6 and 9 months, and the contractors would be required to maintain access to facilities in some manner. The proposed program would not change land uses; the program's

consistency with land use plans would be the same as the existing condition. Impacts related to land use would be less than significant, and no mitigation measures are required.

1.1.11 Impacts Related to Mineral Resources

The Initial Study for the proposed program found no potential for significant impacts on mineral resources; therefore, mineral resources were not addressed in the PEIR. No mitigation would be required and no significant, unavoidable adverse impacts would occur.

1.1.12 Impacts Related to Noise

1.1.12.1 Significant Impacts Related to Noise

As discussed in Section 4.11 (Noise), noise levels during rehabilitation activities, specifically during excavation and concrete sawing, would be likely to reach very high levels, generally exceeding any noise-level restrictions set by some local jurisdictions. If construction were to occur in these jurisdictions, it is likely that noise levels would exceed local standards. Because of the type of construction and its location, there is no effective mitigation that would reduce this impact below a level of significance. Therefore, impacts would be significant, at least at some locations, related to exposing persons to, or generating, noise levels in excess of standards. Mitigation Measures MM NOI-2 through MM NOI-4 would reduce impacts, but not to a less-than-significant level.

For most locations, vibration from construction activities would not be great enough to result in impacts on vibration-sensitive receptors. However, at some locations, excavation, concrete-sawing, and other construction activities could generate vibration levels that could affect adjacent activities, such as near performing arts centers, hospitals, or where residences are close to the excavation site. Implementation of Mitigation Measure MM NOI-1 would reduce any impacts to less-than-significant levels.

The proposed program would not result in any permanent changes in noise levels after rehabilitation is complete. After construction is complete, the noise levels would be the same as the existing conditions. Therefore, there would be no impact.

Some portions of the existing pipelines are within airport land use plan areas or near airports. However, because the program would not change land uses, and construction workers would be wearing noise safety gear as required by the federal Occupational Safety and Health Administration, noise impacts related to nearby airports would be less than significant. There are no private airstrips in the vicinity of the existing pipelines. Therefore, there would be no impacts associated with noise from private airstrips.

1.1.12.2 Mitigation

MM NOI-1 Locate Excavation Sites Away From Vibration-Sensitive Uses

A noise and vibration consultant will be retained during excavation site planning to determine if there are vibration-sensitive land uses that could be affected by construction. Whenever possible, excavation sites will then be located so that vibration impacts would not affect vibration-sensitive land uses or mitigation would be included to reduce vibration levels at vibration-sensitive land uses to less-than-significant levels.

MM NOI-2 Locate Excavation Sites Away From Noise-Sensitive Receptors Where Feasible.

A noise consultant will be retained during excavation site planning to determine if there are sensitive receptors that could be affected by construction. Whenever possible, the excavation sites will be located in areas that would not affect sensitive receptors or where receptors can be shielded from construction noise.

MM NOI-3 Conduct Project-Level Noise Studies at Each Excavation Site Where Noise-Sensitive Receptors Are Present.

Project-level noise studies will be required at all excavation sites where sensitive receptors are present, as required in the planning stage by MM NOI-2. Such noise studies will identify the ambient noise levels, the receptors that would be affected, the noise levels the receptors will experience during construction, and any measures that can be used to reduce noise levels. All feasible mitigation measures identified in this noise study will be implemented.

MM NOI-4 Locate Staging Areas Away from Noise-Sensitive Receptors or Provide Noise Attenuation.

Whenever feasible, staging areas will be located in areas that would not affect sensitive receptors or where receptors can be shielded from staging-area noise. Where possible, noise screening will include temporary noise barriers with openings in the barriers kept to the minimum necessary for access.

1.1.12.3 Findings per State CEQA Guidelines

Consistent with State CEQA Guidelines Section 15126.4(a)(1), feasible measures that can minimize significant adverse impacts were developed for the potentially significant impacts described above. The feasible measures are listed above as MM NOI-1 through MM NOI-4. Metropolitan finds that the above mitigation measures are feasible, are adopted, and will reduce the potential noise impacts. Nonetheless, the impacts would not be reduced to a less-than-significant level. Specific economic, legal, social, technological, or other considerations make mitigation measures or alternatives that would reduce noise impacts to a less-than-significant level infeasible.

1.1.12.4 Facts in Support of Findings Related to Noise

Implementation of Mitigation Measures MM NOI-1 through MM NOI-4 would reduce potentially significant program impacts related to noise, but not to a less-than-significant level. There would be significant and unavoidable impacts related to noise after implementation of these mitigation measures.

1.1.13 Impacts Related to Population and Housing

The Initial Study for the proposed program found no potential for significant impacts on population and housing; therefore, population and housing were not addressed in the PEIR. No mitigation would be required and no significant, unavoidable adverse impacts would occur.

1.1.14 Impacts Related to Public Services

The Initial Study for the proposed program found no potential for significant impacts related to public services; therefore, public services were not addressed in the PEIR. No mitigation would be required and no significant, unavoidable adverse impacts would occur.

1.1.15 Impacts Related to Recreation

As discussed in Section 4.12 (Recreation), portions of the proposed program pipelines are located in rights-of-way or easements within recreational facilities, such as through parks, golf courses, or schoolyards. In these locations, excavation sites and work areas could result in part or all of the facility being unavailable during construction, for a maximum of approximately 6 months.[1] Also, construction staging areas may be located in parks, school yards, golf courses, or other recreational facilities for months or longer, depending on how many excavation sites the staging area is serving. Metropolitan would work with the local jurisdictions and schools to ensure that rehabilitation would not result in significant temporary impacts on recreational activities or permanent physical deterioration of recreational facilities. Because rehabilitation activities would not permanently preclude recreational uses and would not require them to be relocated elsewhere, rehabilitation activities would not lead to increased deterioration of recreational facilities. Impacts would be less than significant.

1.1.16 Impacts Related to Transportation and Traffic

1.1.16.1 Significant Impacts Related to Transportation and Traffic

During the course of the pipeline rehabilitation work, work zones would be established within existing roadways, requiring lane closures, temporary signage, traffic cones and delineators, fencing, and barriers (i.e., concrete trapezoidal "K rail," or Caltrans Temporary Type K railing). Where work zones are located within streets, temporary impacts on transportation would occur, including increased congestion and travel times, reduced access, and impacts on transit operations, bike routes, and pedestrian routes. The disruption of local and regional traffic caused by capacity reduction would be significant at some locations. Implementation of Mitigation Measure MM TRA-1 would reduce these impacts in some locations, but would not be feasible in all circumstances. Therefore, impacts on local and regional transportation are considered significant and unavoidable.

Because the proposed program would include rehabilitation of existing pipelines, which are underground, there would be minimal impacts related to long-term congestion management plans.

If any aboveground rehabilitation activities were to occur in airport runway protection zones, construction equipment and/or personnel could interfere with airport operations. However, impacts would be less than significant with the implementation of Mitigation Measures MM HAZ-5 and MM HAZ-6.

[1] Work areas may include access areas, staging areas, parking areas, safety areas, etc.

1.1.16.2 Mitigation

MM TRA-1 Excavation Siting to Minimize Traffic Impacts

Excavation sites would be located to avoid traffic impacts to the maximum extent feasible, considering the logistical requirements for pipeline rehabilitation (e.g., adequate spacing, pipeline logistics) and other impacts such as habitat and noise. To the maximum extent feasible, the following will be considered when locating excavation sites:

- Whenever feasible, where an off-road excavation site is available that would not result in other significant environmental impacts (e.g., to habitat, land uses), the off-road location will be used.
- Whenever feasible, excavation sites in roadways will be situated within medians where available, especially if the medians are not used for left-turn lanes and do not include large street trees or other features that would be difficult to restore after rehabilitation.
- Whenever feasible, excavation sites will be situated where the existing number of travel lanes can be maintained by temporarily removing parking (where adequate parking is available in the local area), temporarily relocating bike lanes to adjacent roadways, or temporarily restriping to provide narrower lanes (where they can be safely accommodated).
- Whenever feasible, excavation sites will be situated so that adequate access to adjacent properties can be maintained, including left-turn entrances.
- Whenever feasible, excavation sites will be situated so that bicycle and pedestrian circulation can be safely maintained, either by use of barriers or other safety features, or by providing alternative bicycle and pedestrian routes, with appropriate signage. Where feasible, siting excavation near heavily used pedestrian areas, such as around schools, hospitals, and transit stops, will be avoided. Where feasible, siting excavation in areas designated as safe routes to school will be avoided, or alternative routes will be developed in coordination with the local jurisdictions and school districts and providing appropriate signage, notification, and traffic controls.

MM TRA-2 Construction Traffic Control Plans

Metropolitan and/or its contractors will coordinate with the counties of Los Angeles, Orange, and San Bernardino as well as each local jurisdiction through which the pipelines travels (see tables above) to develop construction traffic control measures and procedures prior to the start of construction on each project. Measures to reduce temporary construction traffic and transportation impacts on city streets may include, but not be limited to, the following:

- Development of traffic control plans in coordination with local jurisdictions. The traffic control plans will be implemented and revised, as necessary and applicable.
- Provision of advance written notification of construction activities to residences and businesses around each construction site.
- Identification of travel routes and establishment of optimal arrival and departure times to minimize conflicts with residents, schools, and businesses, as feasible to minimize conflicts.
- Provisions to detour pedestrians and bicyclists from project near or on the sidewalks and bike lanes.

- Implementation of safety measures, such as signs, flaggers, cones, signage, and advance notice as appropriate.
- Covering of all open trenches when not in use or at the end of each work day, as applicable.

MM TRA-3 Maintaining Adequate Parking

Whenever feasible, excavation work zones and construction staging areas will not be sited in such a way that they result in inadequate availability of parking for adjacent land uses. If work zones or staging areas are planned for parking areas, a parking study will be completed by a qualified traffic consultant prior to construction to identify if adequate parking would be available locally.

See MM HAZ-5 and MM HAZ-6 above.

1.1.16.3 Findings per State CEQA Guidelines

Consistent with State CEQA Guidelines Section 15126.4(a)(1), feasible measures that can minimize significant adverse impacts were developed for the potentially significant impacts described above. The feasible measures are listed above as MM TRA-1 through MM TRA-3 and MM HAZ-5 and MM HAZ-6. Metropolitan finds that the above mitigation measures are feasible, are adopted, and will reduce the potential transportation impacts. Nonetheless, the impacts would not be reduced to a less-than-significant level. Specific economic, legal, social, technological, or other considerations make mitigation measures or alternatives that would reduce transportation/traffic impacts to a less-than-significant level infeasible.

1.1.16.4 Facts in Support of Findings Related to Transportation and Traffic

Implementation of Mitigation Measures MM TRA-1 through MM TRA-3 and MM HAZ-5 and MM HAZ-6 would reduce potentially significant program impacts related to transportation/traffic, but not to a less-than-significant level. There would be significant and unavoidable impacts related to transportation/traffic after implementation of these mitigation measures.

1.1.17 Impacts Related to Utilities and Service Systems

As discussed in Section 4.14 (Utilities and Service Systems), the proposed program would not generate any long-term or substantial quantities of wastewater, and it would not involve permanent structures with the potential to generate wastewater. In addition, the proposed program would not involve the construction of new water facilities or require new water supplies, and it would not increase the capacity of the Metropolitan water distribution system. The proposed program would also not generate substantial amounts of solid waste such that landfill capacity would be affected, or non-compliance with statutes and regulations related to solid waste would occur. Impacts related to utilities and service systems would be less than significant. No mitigation measures are required.

1.1.18 Impacts Related to Energy Conservation

As discussed in Section 4.15 (Energy Conservation), construction activities would require energy in the form of fuels for construction vehicles and equipment. Although the estimated fuel use would be substantial, the construction would occur over a long time horizon. As such, the annual fuel

consumption would represent a small portion of the total, a negligible increase in regional demand. In addition, all construction equipment would be maintained in accordance with manufacturers' specifications so equipment performance would not be compromised such that the inefficient use of fuel would result. Therefore, impacts related to energy use would be less than significant. No mitigation measures are required, but Mitigation Measure MM AIR-1 would reduce energy consumption.

1.2 Findings Regarding Alternatives to the Proposed Program

Section 15126.6(a) of the State CEQA Guidelines states that an EIR shall describe "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project," as well as provide an evaluation of "the comparative merits of the alternatives." Under Section 15126.6(a), an EIR does not need to consider alternatives that are not feasible, nor need it address every conceivable alternative to the project. The range of alternatives "is governed by the 'rule of reason' that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice." The focus is on informed decision-making and public participation rather than providing a set of alternatives simply to satisfy format.

As described below, two types of alternatives to the proposed program were considered—alternative locations and alternative methods—along with a No Program Alternative. Except for the No Program Alternative, all of these potential alternatives have been rejected, as described below.

1.2.1 Alternatives Eliminated from Further Consideration

1.2.1 Alternative Locations

Potential alternative pipeline locations are program feeder improvements, including the Allen-McColloch Pipeline, the Calabasas Feeder, the Rialto Pipeline, the Second Lower Feeder, and the Sepulveda Feeder, and are substantially constrained by the need to connect the existing pipelines at their origins and terminations and to the existing service connections. Any alternative location would also be constrained by the width of the existing Metropolitan rights-of-way. Such constraints mean that there is no reasonable way to achieve the objectives of the proposed program by replacing the pipelines in other locations. Therefore, no alternative locations for the proposed program were developed.

1.2.2 Alternative Methods

The program description includes various methods for rehabilitation of the pipelines, including steel cylinder relining, steel pipe sliplining, and new pipe replacement. All of these methods were considered in the PEIR as variations within the program. There are no other feasible methods for rehabilitating the existing pipelines. Therefore, no alternative methods for the proposed program were developed.

1.2.3 Alternatives to the Proposed Program Evaluated in the Draft PEIR

The proposed program was compared to the No Program Alternative.

1.2.3.1 No Program Alternative

Under the No Program Alternative, repairs and improvements included in the proposed PCCP Rehabilitation Program would not be planned and scheduled. Because the pipelines and feeders would continue to age, there would be a continued risk for failure. Metropolitan would need to prevent failures through localized and as-needed improvements, but these activities would not occur as part of a planned program. Much of this rehabilitation would thus occur as "urgent repairs" because of the lack of a systematic planning offered by the proposed PCCP Rehabilitation Program.

1.2.3.2 Comparison of Impacts

If an alternative is considered clearly superior to the proposed project relative to identified impacts, Section 15126.6 of the State CEQA Guidelines requires that alternative to be identified as the environmentally superior alternative. By statute, if the environmentally superior alternative is the No Project Alternative, an EIR must also identify an environmentally superior alternative among the other alternatives.

Two alternatives to the proposed PCCP Rehabilitation Program, other than the No Program Alternative, were considered; however, these alternatives were not further considered and analyzed for the reasons stated in Section 1.2.1, *Alternatives Eliminated from Further Consideration*. Table 1-1 shows a comparison of the impacts of the proposed PCCP Rehabilitation Program and the No Program Alternative. As shown in the table, the impacts would have similar or worse impacts for the No Program Alternative compared with those that would occur as a result of implementation of the proposed PCCP Rehabilitation Program.

The proposed PCCP Rehabilitation Program would allow for rehabilitation of the existing water conveyance and distribution system and associated infrastructure in a streamlined manner, thus ensuring the continued reliability and security of the water supply system. The proposed PCCP Rehabilitation Program, therefore, is considered to be the environmentally superior alternative. The No Program Alternative would not meet any of the program objectives identified by Metropolitan.

Table 1-1. Summary of Impacts

Environmental Resource Area	PCCP Rehabilitation Program Impacts	No Program Alternative Impacts
Aesthetics		
Threshold AES-A: Have a Substantial Adverse Effect on a Scenic Vista	Less than significant	Similar
Threshold AES-B: Substantially Damage Scenic Resources, Including, but not Limited to, Trees, Rock Outcroppings, and Historic Buildings within a State Scenic Highway	Less than significant	Similar

Environmental Resource Area	PCCP Rehabilitation Program Impacts	No Program Alternative Impacts
Threshold AES-C: Substantially Degrade the Existing Visual Character or Quality of the Site and Its Surroundings	Less than significant	Similar
Threshold AES-D: Create a New Source of Substantial Light or Glare that Would Adversely Affect Day or Nighttime Views in the Area	Less than significant with mitigation	Similar or worse, if urgent repairs required nighttime work with lighting
Agriculture & Forestry Resources		
Threshold AGR-A: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland) to Non-Agricultural Use	Less than significant	Similar
Threshold AGR-E: Involve Other Changes in the Existing Environment that, Because of Their Location or Nature, Could Result in the Conversion of Farmland to Non-Agricultural Use	Less than significant	Similar
Air Quality		
Threshold AQ-A: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan	Significant and unavoidable	Similar
Threshold AQ-B: Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation	Significant and unavoidable	Similar
Threshold AQ-C: Result in a Cumulatively Considerable Net Increase in Any Criteria Pollutant for Which the Region Is in Non-Attainment under an Applicable Federal or State Ambient Air Quality Standard	Significant and unavoidable	Similar
Threshold AQ-D: Expose Sensitive Receptors to Substantial Pollutant Concentrations	Significant and unavoidable	Similar
Biological Resources		
Threshold BIO-A: Have a Substantial Adverse Effect, either Directly or through Habitat Modifications, on Any Species Identified as a Candidate, Sensitive, or Special-status Species in Local or Regional Plans, Policies, or Regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service	Potentially significant and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts either by location or season
Threshold BIO-B: Have a Substantial Adverse Effect on Any Riparian Habitat or Other Sensitive Natural Community Identified in Local or Regional Plans, Policies, or Regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service	Potentially significant and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts by location
Threshold BIO-C: Have a Substantial Adverse Effect on Federally Protected Wetlands, as Defined by Section 404 of the Clean Water Act, through Direct Removal, Filling, Hydrological Interruption, or Other Means	Potentially significant and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts by location

Environmental Resource Area	PCCP Rehabilitation Program Impacts	No Program Alternative Impacts
Threshold BIO-D: Interfere Substantially with the Movement of Any Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors or Impede the Use of Native Wildlife Nursery Sites	Potentially significant and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts by location
Threshold BIO-E: Conflict with Any Local Policies or Ordinances Protecting Biological Resources, Such as a Tree Preservation Policy or Ordinance	Less than significant with mitigation	Similar or worse, if urgent repairs prevent ability to avoid impacts by location
Threshold BIO-F: Conflict with the Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Habitat Conservation Plan	Potentially significant and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts either by location or season
Cultural Resources		
Threshold CUL-A: Cause a Substantial Adverse Change in the Significance of a Historical Resource	Less than significant with mitigation	Similar or worse, if urgent repairs prevent ability to avoid impacts by location or to fully implement mitigation to protect resources
Threshold CUL-B: Cause a Substantial Adverse Change in the Significance of an Archaeological Resource	Less than significant with mitigation	Similar or worse, if urgent repairs prevent ability to avoid impacts by location or to fully implement mitigation to protect resources
Threshold CUL-C: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geologic Feature	Less than significant with mitigation	Similar or worse, if urgent repairs prevent ability to avoid impacts by location or to fully implement mitigation to protect resources
Geology and Soils		
Threshold GEO-A.I: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Rupture of a Known Earthquake Fault	Less than significant	Similar
Threshold GEO-A.II: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Strong Seismic Groundshaking	Less than significant	Similar

Environmental Resource Area	PCCP Rehabilitation Program Impacts	No Program Alternative Impacts
Threshold GEO-A.III: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Seismically Related Ground Failure, Including Liquefaction	Less than significant	Similar
Threshold GEO-A.IV: Expose People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death Involving Landslides	Less than significant	Similar
Threshold GEO-B: Result in Substantial Soil Erosion or the Loss of Topsoil	Less than significant	Similar
Threshold GEO-C: Be Located on a Geologic Unit or Soil that Is Unstable, or that Would Become Unstable as a Result of the Project, and Potentially Result in On- or Off-Site Landslide, Lateral Spreading, Subsidence, Liquefaction, or Collapse	Less than significant	Similar
Threshold GEO-D: Be Located on Expansive Soil, Creating Substantial Risks to Life or Property	Less than significant	Similar
Greenhouse Gas Emissions		
Threshold GHG-A: Generate Greenhouse Gas Emissions, either Directly or Indirectly, that May Have a Significant Impact on the Environment	Significant and unavoidable	Similar
Threshold GHG-B: Conflict with Any Applicable Plan, Policy, or Regulation of an Agency Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases	Less than significant	Similar
Hazards and Hazardous Materials		
Threshold HAZ-A: Create a Significant Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials	Less than significant	Similar
Threshold HAZ-B: Create a Significant Hazard to the Public or the Environment through Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment	Less than significant	Similar
Threshold HAZ-C: Emit Hazardous Emissions or Involve Handling Hazardous or Acutely Hazardous Materials, Substances, or Waste within 0.25 Mile of an Existing or Proposed School	Less than significant with mitigation	Similar
Threshold HAZ-D: Be Located on a Site That Is Included on a List of Hazardous Materials Sites and, as a Result, Create a Significant Hazard to the Public or the Environment	Less than significant with mitigation	Similar
Threshold HAZ-E: For a Project Located within an Airport Land Use Plan or, Where Such Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport, Result in a Safety Hazard for People Residing or Working in the Project Area	Less than significant with mitigation	Similar

Environmental Resource Area	PCCP Rehabilitation Program Impacts	No Program Alternative Impacts
Threshold HAZ-F: For a Project within the Vicinity of a Private Airstrip, Result in a Safety Hazard for People Residing or Working in the Project Area	No impacts	Similar
Threshold HAZ-G: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan	Less than significant with mitigation	Similar or worse if urgent repairs prevent implantation of mitigation to avoid or reroute emergency routes and make advance notifications
Threshold HAZ-H: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Wildland Fires, Including Areas where Wildlands Are Adjacent to Urbanized Areas or where Residences Are Intermixed with Wildlands	Less than significant	Similar
Hydrology and Water Quality		
Threshold WQ-A: Violate Any Water Quality Standards or Waste Discharge Requirements	Less than significant	Similar
Threshold WQ-C: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including through the Alteration of the Course of a Stream or River, in a Manner that Would Result in Substantial Erosion or Siltation On or Off Site	Less than significant	Similar
Threshold WQ-D: Substantially Alter the Existing Drainage Pattern of the Site or Area, Including through the Alteration of the Course of a Stream or River, or Substantially Increase the Rate or Amount of Surface Runoff in a Manner That Would Result in Flooding On or Off Site	Less than significant with mitigation	Similar
Threshold WQ-E: Create or Contribute Runoff Water that Would Exceed the Capacity of Existing or Planned Stormwater Drainage Systems or Provide Substantial Additional Sources of Polluted Runoff	Less than significant	Similar
Threshold WQ-J: Expose People or Structures to Inundation by Seiche, Tsunami, or Mudflow	Less than significant	Similar
Land Use		
Threshold LU-A: Physically Divide an Established Community	Less than significant	Similar
Threshold LU-B: Conflict with Applicable Land Use Plan, Policy, or Regulation of an Agency with Jurisdiction over the Project Adopted for the Purpose of Avoiding or Mitigating an Environmental Effect	Less than significant	Similar

Environmental Resource Area	PCCP Rehabilitation Program Impacts	No Program Alternative Impacts
Noise		
Threshold NOI-A: Expose Persons to or Generate Noise Levels in Excess of Standards Established in the Local General Plan or Noise Ordinance or Applicable Standards of Other Agencies	Significant and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts by location or require nighttime work
Threshold NOI-B: Expose Persons to or Generate Excessive Groundborne Vibration or Groundborne Noise Levels	Less than significant with mitigation	Similar or worse, if urgent repairs prevent ability to avoid impacts by location
Threshold NOI-C: Result in a Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity, Above Levels Existing without the Project	No impact	Similar
Threshold NOI-D: Result in a Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity, Above Levels Existing without the Project	Significant and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts by location or require nighttime work
Threshold NOI-E: For a Project Located within an Airport Land Use Plan or, Where Such a Plan Has Not Been Adopted, within 2 Miles of a Public Airport or Public Use Airport, Expose People Residing or Working in the Project Area to Excessive Noise Levels	Less than significant	Similar
Threshold NOI-F: For a Project within the Vicinity of a Private Airstrip, Expose People Residing or Working in the Project Area to Excessive Noise Levels	No impact	Similar
Recreation		
Threshold REC-A: Increase the Use of Existing Neighborhood and Regional Parks or Other Recreational Facilities Such That Substantial Physical Deterioration of the Facilities Would Occur or Be Accelerated	Less than significant	Similar or worse, if urgent repairs prevent ability to avoid impacts by location
Threshold REC-B: Include Recreational Facilities or Require the Construction or Expansion of Recreational Facilities, Which Might Have an Adverse Physical Effect on the Environment	No impact	Similar

Environmental Resource Area	PCCP Rehabilitation Program Impacts	No Program Alternative Impacts
Transportation and Traffic		
Threshold TRA-A: Conflict with an Applicable Plan, Ordinance, or Policy that Establishes Measures of Effectiveness for the Performance of the Circulation System, Taking into Account All Modes of Transportation, Including Mass Transit and Non-Motorized Travel, and Relevant Components of the Circulation System, Including, but not Limited to, Intersections, Streets, Highways and Freeways, and Pedestrian and Bicycle Paths	Significant and unavoidable	Similar or worse, if urgent repairs prevent ability to avoid impacts by location, planning and coordination with local jurisdictions, advance notifications, and provision of detours and adequate parking
Threshold TRA-B: Conflict with an Applicable Congestion Management Program, Including, but not Limited to, Level-of-Service Standards and Travel Demand Measures or Other Standards Established by the County Congestion Management Agency for Designated Roads or Highways	Less than significant	Similar
Threshold TRA-C: Result in a Change in Air Traffic Patterns, Including either an Increase in Traffic Levels or a Change in Location that Would Result in Substantial Safety Risks	Less than significant with mitigation	Similar or worse if urgent repairs occur in active runway areas
Threshold TRA-D: Substantially Increase Hazards Due to a Design Feature or Incompatible Uses	Less than significant with mitigation	Similar or worse if urgent repairs occur in locations resulting in hazardous condition
Threshold TRA-E: Result in Inadequate Emergency Access	Less than significant with mitigation	Similar or worse if urgent repairs affect emergency access
Threshold TRA-F: Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities or Otherwise Decrease the Performance or Safety of Such Facilities	Less than significant with mitigation	Similar or worse, if urgent repairs prevent ability to avoid impacts by location and provision of detours
Utilities and Service Systems		
Threshold UTIL-A: Exceed Wastewater Treatment Requirements of the Applicable Regional Water Quality Control Board	Less than significant	Similar
Threshold UTIL-B: Require or Result in the Construction of New Water or Wastewater Treatment Facilities or the Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects	No impact	Similar
Threshold UTIL-C: Require or Result in the Construction of New Stormwater Drainage Facilities or the Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects	No impact	Similar

Environmental Resource Area	PCCP Rehabilitation Program Impacts	No Program Alternative Impacts
Threshold UTIL-D: Have Sufficient Water Supplies Available to Serve the Project from Existing Entitlements and Resources, or Are New and Expanded Entitlements Needed	No impact	Similar
Threshold UTIL-E: Result in a Determination by the Wastewater Treatment Provider that Serves or May Serve the Project that it Has Adequate Capacity to Serve the Project's Projected Demand in Addition to its Existing Commitments	No impact	Similar
Threshold UTIL-F: Be Served by a Landfill with Sufficient Permitted Capacity to Accommodate the Project's Solid Waste Disposal Needs	Less than significant	Similar
Threshold UTIL-G: Comply with Federal, State, and Local Statutes and Regulations Related to Solid Waste	Less than significant	Similar
Energy Conservation		
Threshold ENE-A: Use Energy in an Inefficient, Wasteful, or Unnecessary Manner	Less than significant	Similar

1.3 General Findings

1. The potential environmental impacts of the proposed program have been analyzed, and the public has been afforded the opportunity to submit comments pursuant to CEQA requirements.
2. Any significant impacts have been substantially lessened or avoided by the mitigation measures set forth in the Draft and Final PEIR.
3. No comments regarding the Draft PEIR were received during the public review period. One comment letter was received after the public review period. Responses to the comments in that letter were provided in Chapter 9 of the Final PEIR, *Responses to Comments.* No new significant effects were identified as a result of public comments, though minor changes to some mitigation measures were made to require consultation with the appropriate agencies. Impacts have been avoided or substantially lessened by the mitigation measures described in the Draft and Final PEIR.

1.4 Legal Effects of Findings

To the extent that these findings conclude that the proposed mitigation measures outlined in the Final PEIR are feasible and have not been modified, superseded, or withdrawn, Metropolitan hereby commits to implementing these measures. These findings, in other words, are not merely informational, but rather constitute a binding set of obligations that will come into effect when Metropolitan approves the proposed program.

The mitigation measures that are referenced in the MMRP and adopted concurrently with these findings will be effectuated through the process of construction and implementation of the proposed program.

1.5 Independent Review and Analysis

Under CEQA, the lead agency must (1) independently review and analyze the EIR; (2) circulate draft documents that reflect its independent judgment; (3) as part of the certification of an EIR, find that the report or declaration reflects the independent judgment of the lead agency; and (4) submit copies of the documents to the State Clearinghouse if there is state agency involvement or if the project is of statewide, regional, or area-wide significance (California Public Resources Code, Section 21082.1(c)).

Metropolitan independently reviewed and analyzed the PEIR and determined that it reflects its independent judgment. Moreover, upon completing this review and making this determination, Metropolitan circulated the Draft PEIR for public review. With the preparation of these findings for submittal to Metropolitan's Board of Directors for adoption, Metropolitan finds that this Final PEIR reflects its independent judgment.

1.6 References Cited

14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act Guidelines, as amended.

California Public Resources Code, Sections 21000–21177. California Environmental Quality Act (CEQA), as amended.

Chapter 2
Mitigation Monitoring and Reporting Program

2.1 Introduction

The Mitigation Monitoring and Reporting Program (MMRP) for the proposed program has been prepared in accordance with Public Resources Code (PRC) Section 21081.6 and the California Environmental Quality Act (CEQA) Guidelines Section 15091(d). Metropolitan Water District (Metropolitan) will use this MMRP to track compliance with the program mitigation measures. Metropolitan's Board of Directors will consider the MMRP during the certification hearing for the Final Programmatic Environmental Impact Report (PEIR). The final MMRP will incorporate all mitigation measures adopted for the proposed program. Metropolitan makes the finding that the measures included in the MMRP constitute changes or alterations that avoid or substantially lessen the potentially significant environmental effects of the proposed project on the environment.

This MMRP summarizes mitigation commitments identified in the Prestressed Concrete Cylinder Pipe Rehabilitation Program Final PEIR. Table 2-1 provides the MMRP, which includes all mitigation measures, monitoring process, and monitoring timing. Metropolitan is the agency responsible for ensuring implementation of all mitigation measures. Impacts and mitigation measures are presented in the same order as in the Final PEIR. The columns in the table provide the following information:

- **Mitigation Measures:** The action(s) that will be taken to reduce the impact to a less-than-significant level or to the maximum extent feasible.
- **Timing of Implementation:** This column indicates the general schedule for conducting each monitoring task, either during the design phase, prior to construction, during construction, and/or after construction.
- **Implementation Party:** This column lists the party responsible for implementing the mitigation measure.

Table 2-1. Mitigation Monitoring and Reporting Program

Mitigation Measure(s)	Timing of Implementation	Implementing Party
4.1 Aesthetics		
MM AES-1: In order to prevent impacts related to spillover lighting into light-sensitive land uses, all safety and security lighting at construction work areas and staging areas will be directed downward and shielded to avoid light spilling over into residential areas.	Construction	Contractor
4.2 Agriculture and Forestry Resources[1]		
None required.		
4.3 Air Quality		
MM AIR-1: All off-road diesel-powered construction equipment greater than 50 horsepower will meet Tier 4 emission standards. All construction equipment will be outfitted with ARB best available control technology devices. Any emissions-control device used by the contractor will achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by ARB regulations. A copy of each unit's certified tier specification, best available control technology documentation, and ARB or SCAQMD operating permit will be provided to Metropolitan's Construction Inspector at the time of mobilization of each applicable unit of equipment.	Prior to Construction Construction	Contractor
4.4 Biological Resources		
MM BIO-1, Take of Special-Status Species: For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas) and that contain special-status species, a qualified biologist will visit the site. If the biologist determines that special-status species may occur, preconstruction surveys for special-status plants and/or wildlife will be completed prior to any construction and consultation with the appropriate resource agency will occur (U.S. Fish and Wildlife Service and/or California Department of Fish and Wildlife), if necessary, to determine measures to address impacts such as avoidance, minimization, restoration, or compensation.	Prior to Construction	Metropolitan Qualified Biologist

[1] Impacts under CEQA thresholds b, c, and d for agriculture and forestry resources were determined to be less than significant in the Initial Study and were not addressed in the Programmatic EIR.

Mitigation Measure(s)	Timing of Implementation	Implementing Party
MM BIO-2, Impacts on Nesting Birds: For any projects within the program that require vegetation removal during the nesting season for sensitive species protected by the Migratory Bird Treaty Act and California Fish and Game Code Section 3513, including street trees and other landscaping, a qualified biologist will inspect the vegetation to be removed no more than 10 days prior to tree/vegetation removal to determine whether nesting birds are present. If a nest is found, the biologist will determine the site-specific measures necessary to avoid disturbing the nest until nesting activity has ceased. Nothing in this mitigation measure precludes the use of deterrent measures to prevent bird nesting.	Prior to Construction	Metropolitan Qualified Biologist
MM BIO-3, Adverse Impacts on Riparian Habitat: For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (except for landscaped developed areas) which contain riparian vegetation, a qualified biologist will visit the site to conduct pre-construction surveys. If the biologist determines that riparian vegetation is present, then habitat areas will be mapped and flagged for avoidance, or other measures will be taken, including applying for appropriate regulatory permits, as required.	Prior to Construction	Metropolitan Qualified Biologist
MM BIO-4: Adverse Impacts on Sensitive Natural Communities: Removal of or adverse impacts on sensitive natural communities will be minimized for rehabilitation projects in the program, except in accordance with adopted HCPs/NCCPs to which Metropolitan is a party for covered areas and covered activities. For such covered activities, Metropolitan will coordinate with the appropriate resource agencies, and Metropolitan's contractors will adhere to all requirements in the applicable plan. For any activities not covered by an adopted HCP/NCCP, the following shall apply: For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (except for landscaped developed areas) and that contain sensitive natural communities, a qualified biologist will conduct pre-construction surveys for sensitive natural communities prior to any construction. These surveys will be conducted by a qualified biologist within 100 feet of ground-disturbing activities. If sensitive natural communities are located during the surveys, then habitat areas will be mapped and flagged for avoidance, or other measures will be taken including applying for appropriate regulatory permits, as required.	Prior to Construction	Metropolitan Qualified Biologist

Mitigation Measure(s)	Timing of Implementation	Implementing Party
MM BIO-5, Adverse Impacts on Wetlands: For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 100 feet of unpaved areas (including large landscaped areas, parks, and golf courses), which contain wetlands, a qualified biologist will visit the site to conduct pre-construction surveys. If the biologist determines that wetlands may be present, preconstruction wetlands jurisdictional delineations will be performed prior to any construction. These delineations will be conducted by a qualified biologist within 100 feet of ground-disturbing activities. Any jurisdictional wetlands located during the delineations will be mapped and flagged for avoidance or other measures may be taken, including applying for appropriate regulatory permits, as required.	Prior to Construction	Metropolitan Qualified Biologist
MM BIO-6, Impacts on Wildlife Movement: For any projects within the program that require vegetation removal, ground disturbance of unpaved areas, parking or staging of equipment or material on unpaved areas, access routes on unpaved areas, or any rehabilitation or construction staging within 300 feet of unpaved areas (except for landscaped developed areas), a qualified biologist will visit the site to determine if any identifiable wildlife movement corridors are present at the site. If the biologist determines that such corridors are present, then wildlife movement corridors will be mapped, flagged, and avoided, or other measures will be taken to protect wildlife movement, as appropriate.	Prior to Construction	Metropolitan Qualified Biologist
MM BIO-7, Conflicts with Local Policies Related to Biological Resources: For any projects within the program that require vegetation removal, Metropolitan will determine if there are any applicable local policies related to biological resources and, if so, coordinate with the affected jurisdiction, as necessary, to determine appropriate requirements for vegetation removal and replacement. The contractor will be required to comply with any applicable requirements. Nothing in this mitigation will require the contractor to make improvements beyond the existing condition prior to construction.	Prior to Construction	Metropolitan Contractor
4.5 Cultural Resources		
MM CUL-1, Historic Resources Protection Program: To avoid impacts on built environment (historic) resources, prior to any rehabilitation involving excavation or concrete cutting, a qualified cultural resource specialist will determine whether there are any identified or eligible historical resources present and whether proposed construction activities could adversely affect these resources. If any resources could be adversely affected by construction, measures will be taken to prevent adverse impacts on the resource, as determined by the qualified cultural resource specialist.	Design Phase Prior to Construction	Metropolitan Qualified Cultural Resource Specialist

Mitigation Measure(s)	Timing of Implementation	Implementing Party
MM CUL-2, Avoidance or Monitoring of Archaeological Sites: To avoid impacts on archaeological sites, prior to construction of any program element, such as pipeline alignments, construction staging areas, laydown areas, or relocation of pipelines in new alignments, a new record search will be conducted to determine if additional sites or resources have been recorded on or adjacent to the proposed construction section. Reports will be examined to determine the condition of each site when recorded, if the site has been evaluated, and if destruction of the site is documented. Following this review, recorded archaeological sites that are within the pipeline route will be surveyed and their present conditions assessed (see MM CUL-4). Archaeological monitoring will be required during construction-related ground-disturbing activities if within the recorded area of a significant or potentially significant site and for a 50-foot buffer beyond the site boundary. A Native American monitor may be present if the site is prehistoric. If archaeological materials are discovered during monitoring, procedures outlined in MM CUL-4 will be implemented. If it can be demonstrated that the site has been destroyed by previous construction or other actions and there is no potential for other buried parts of the site within the construction area, or if the site has been evaluated and determined not eligible for the California Register of Historical Resources (CRHR), then monitoring will not be required.	Prior to Construction Construction	Metropolitan Qualified Archaeologist/ Native American Monitor
MM CUL-3, Preconstruction Meeting for Identifying Cultural Resources: To avoid impacts on previously unidentified cultural resources, all construction personnel will attend a preconstruction meeting that includes a discussion of cultural resources. The meeting will inform construction personnel on how to identify potential cultural resources during ground-disturbing activities and what to do if such potential resources are encountered.	Prior to Construction	Metropolitan Contractor Qualified Cultural Resource Specialist
MM CUL-4, Previously Unidentified Resources Encountered during Ground-disturbing Activities: In the event that any potentially significant cultural resources are unexpectedly encountered during construction, work will be immediately halted and the discovery shall be protected in place. The contractor will halt construction within 50 feet of the exposed resource until a qualified cultural resources specialist evaluates the discovery. If the qualified cultural resources specialist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. This additional work may include avoidance, testing, and evaluation or data recovery excavation. Work shall be prohibited in the restricted area until Metropolitan provides written authorization.	Construction	Metropolitan Contractor Qualified Cultural Resources Specialist

Mitigation Measure(s)	Timing of Implementation	Implementing Party
MM CUL-5, Archaeological Survey of Non-Pipeline Areas: Prior to rehabilitation activities of any program element, each area will be subject to pedestrian survey for archaeological resources by a professional archaeologist retained by Metropolitan if ground-disturbing activities are slated to occur. If archaeological sites are recorded or found in these affected areas, the sites will be avoided to the greatest extent feasible. If a site cannot be avoided, site testing and evaluation by a professional archaeologist will be required. This may require test excavations, artifact analysis, evaluation for the CRHR and review by the State Historic Preservation Officer, and possibly data recovery excavation and reporting.	Prior to Construction	Metropolitan Qualified Archaeologist
MM CUL-6, Develop a Program to Mitigate Impacts on Paleontological Resources for Each Contract Package: In order to avoid impacts on paleontological resources, the following mitigation program will be implemented for each contract package. This mitigation program will be conducted by a qualified professional paleontologist and will be consistent with the provisions of CEQA. This program will include the following: 1. Assessment of site-specific excavation areas to determine those areas that may be designated as highly sensitive for unique paleontological resources to be monitored during ground disturbance. 2. In these designated areas, if any, paleontological resources monitors qualified to Society of Vertebrate Paleontology standards will be equipped to salvage fossils as they are unearthed and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitoring may be reduced or eliminated if some of the potentially fossiliferous units are determined upon exposure and examination by qualified paleontological resources personnel to have low potential to contain fossil resources. Also in these designated areas, all unique paleontological resources, if any, will be prepared to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates. 3. Unique paleontological resources, if any, will be identified and curated into an established, accredited museum repository. 4. Preparation of a report of findings including a summary of field work and laboratory methods, an overview of the program work area geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. If the monitoring efforts produced fossils, a copy of the report will also be submitted to the designated museum repository.	Prior to Construction Construction	Metropolitan Contractor Qualified Paleontologist

Mitigation Measure(s)	Timing of Implementation	Implementing Party
4.6 Geology and Soils[2]		
None required.		
4.7 Greenhouse Gas Emissions		
MM-AIR-1: (see above, under 4.3, Air Quality)		
4.8 Hazards and Hazardous Materials		
MM HAZ-1, Project-Level Hazardous Materials Sites Assessment Prior to Construction Activities: To avoid exposure of construction workers, the public, or the environment to previously identified hazardous materials, during design, qualified Metropolitan staff or consultant(s) specializing in hazardous materials impact assessment will conduct a project-level analysis to determine if there are existing hazardous materials sites in the vicinity of the construction site and potential for existing hazardous materials sites to affect construction. This assessment will consist of a search for environmental-related information present in publicly accessible databases. The information will be reviewed to determine if the construction footprint or adjacent properties are listed in the databases. If the construction footprint or adjacent properties are listed in the databases, qualified Metropolitan staff or consultant(s) will determine the potential risk to construction workers, the public, or the environment from rehabilitation activities and identify all necessary avoidance, abatement, remediation, cleanup, disposal, monitoring, reporting, notifications, and/or other measures to prevent significant impacts.	Prior to Construction	Metropolitan Environmental Consultant (Hazardous Waste)
MM HAZ-2, Encountering Unreported Hazardous Materials: To avoid exposure of construction workers, the public, or the environment to unreported hazardous materials in the soil, contractors will be required to inspect any site to be used for excavation, work zones, staging, or other rehabilitation-related activities prior to beginning construction. If odiferous, stained, or discolored soil is encountered, qualified Metropolitan staff or consultant(s) specializing in the identification and handling of hazardous materials will be retained to assess the site. Identification of possible hazardous materials would typically involve soil samples and laboratory analysis. The suspect soil will be isolated, covered, and avoided by construction personnel until analytical results are reviewed by qualified personnel. Soils identified as hazardous or contaminated will be handled, transported, and treated in accordance with all federal, state, and local existing hazardous materials regulations.	Prior to Construction Construction	Metropolitan Contractor Environmental Consultant (Hazardous Waste)

[2] Impacts under CEQA threshold e for geology and soils were determined to be less than significant in the Initial Study and were not addressed in the Programmatic EIR.

Mitigation Measure(s)	Timing of Implementation	Implementing Party
MM HAZ-3, Engineering Controls and Best Management Practices during Construction: To minimize human exposure to potential contaminants, during construction contractors will employ the use of engineering controls and best management practices (BMPs). Engineering controls and construction BMPs will include, but are not limited to, the following: • Contractor employees working on site handling hazardous materials on contaminated media will be certified in the Occupational Health and Safety Administration's 40-hour Hazardous Waste Operations and Emergency Response training. • Contractors will water or mist soil as it is being excavated and stockpiled or loaded onto transportation trucks.	Construction	Contractor
MM HAZ-4, Encountering Contaminated Groundwater: To avoid exposure of construction workers, the public, or the environment to contaminated groundwater, suspect water removed from excavation areas (but not including dewatering of the pipelines themselves) will be tested by a qualified laboratory specializing in the identification of hazardous materials. If groundwater is considered hazardous, Metropolitan will notify the Regional Water Quality Control Board and local Environmental Health agencies regarding assessment and remediation requirements.	Construction	Contractor Environmental Consultant (Hazardous Waste)
MM HAZ-5, Construction Activities within Runway Protection Zones: During the design phase for any projects in the program within the runway protection zones for Long Beach Municipal Airport or Van Nuys Airport (even where all construction would be accessed from outside the runway protection zones), project engineers will coordinate with the management of Long Beach Municipal Airport (Second Lower Feeder) or Van Nuys Airport (Sepulveda Feeder), as appropriate, to determine the methods of construction that will be necessary to avoid impacts on airport operations and safety. All operations and safety requirements of the airports will be incorporated into the construction design packages. All necessary requirements will be implemented during construction.	Design Phase Prior to Construction Construction	Metropolitan
MM HAZ-6, Aboveground Elements in Runway Protection Zones: To avoid airport operations and safety impacts, no permanent aboveground elements of the proposed program, such as manhole covers, valve boxes, or electrical panels, will be located within runway protection zones (at Long Beach Municipal Airport for the Second Lower Feeder and Van Nuys Airport for the Sepulveda Feeder) without prior approval of the management of the appropriate airport.	Design Phase Prior to Construction	Metropolitan

Mitigation Measure(s)	Timing of Implementation	Implementing Party
MM HAZ-7, Maintaining Emergency/Evacuation Routes: To avoid impacts on emergency/evacuation routes, excavation sites will typically not be placed in roadways that serve as designated emergency/evacuation routes. If such streets cannot be avoided, the contractor will work with the local jurisdiction responsible for the emergency/evacuation routes to maintain adequate capacity. This will be accomplished by utilizing unused portions of the street right-of-way for travel lanes (such as temporarily prohibiting parking, restriping medians or parkway space, or detouring bike lanes) or by detouring the emergency/evacuation route to other roadways during construction. If detours are necessary, appropriate notification of emergency personnel and temporary signage will be used to direct emergency/evacuation traffic during construction.	Design Phase Prior to Construction Construction	Metropolitan Contractor
4.8 Hydrology and Water Quality[3]		
MM HYD-1, Implementation of a Grading and Drainage Plan: Prior to construction of aboveground project facilities, Metropolitan will prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in flooding, erosion, or sedimentation potential in accordance with applicable regulations and in coordination with the county and/or the city in which the facility would be located. The plan will identify and implement best management practices and other measures to ensure that potential increases in stormwater flows and erosion are minimized.	Prior to Construction Construction	Metropolitan Contractor

[3] CEQA thresholds b, g, h, and i for hydrology and water quality were determined to be less than significant in the Initial Study and were not addressed in this PEIR.

Mitigation Measure(s)	Timing of Implementation	Implementing Party
4.1 Land Use[4]		
None required.		
4.11 Noise		
MM NOI-1, Locate Excavation Sites Away From Vibration-Sensitive Uses: A noise and vibration consultant will be retained during excavation site planning to determine if there are vibration-sensitive land uses that could be affected by construction. Whenever possible, excavation sites will then be located so that vibration impacts would not affect vibration-sensitive land uses or mitigation would be included to reduce vibration levels at vibration-sensitive land uses to less-than-significant levels.	Design Phase	Metropolitan Noise/Vibration Consultant
MM NOI-2, Locate Excavation Sites Away From Noise-Sensitive Receptors Where Feasible: A noise consultant will be retained during excavation site planning to determine if there are sensitive receptors that could be affected by construction. Whenever possible, the excavation sites will be located in areas that would not affect sensitive receptors or where receptors can be shielded from construction noise.	Design Phase	Metropolitan Noise/Vibration Consultant
MM NOI-3, Conduct Project-Level Noise Studies at Each Excavation Site Where Noise-Sensitive Receptors Are Present: Project-level noise studies will be required at all excavation sites where sensitive receptors are present, as required in the planning stage by MM NOI-2. Such noise studies will identify the ambient noise levels, the receptors that would be affected, the noise levels the receptors will experience during construction, and any measures that can be used to reduce noise levels. All feasible mitigation measures identified in this noise study will be implemented.	Environmental Phase	Metropolitan Noise/Vibration Consultant
MM NOI-4, Locate Staging Areas Away from Noise-Sensitive Receptors or Provide Noise Attenuation: Whenever feasible, staging areas will be located in areas that would not affect sensitive receptors or where receptors can be shielded from staging-area noise. Where possible, noise screening will include temporary noise barriers with openings in the barriers kept to the minimum necessary for access.	Prior to Construction Construction	Metropolitan Contractor

[4] For threshold c for land use, see Threshold BIO-F in Section 4.4, *Biological Resources*.

Mitigation Measure(s)	Timing of Implementation	Implementing Party
4.12 Recreation		
None required.		
4.13 Transportation and Traffic		
MM TRA-1, Excavation Siting to Minimize Traffic Impacts: Excavation sites would be located to avoid traffic impacts to the maximum extent feasible, considering the logistical requirements for pipeline rehabilitation (e.g., adequate spacing, pipeline logistics) and other impacts such as habitat and noise. To the maximum extent feasible, the following will be considered when locating excavation sites: • Whenever feasible, where an off-road excavation site is available that would not result in other significant environmental impacts (e.g., to habitat, land uses), the off-road location will be used. • Whenever feasible, excavation sites in roadways will be situated within medians where available and feasible, especially if the medians are not used for left-turn lanes and do not include large street trees or other features that would be difficult to restore after rehabilitation. • Whenever feasible, excavation sites will be situated where the existing number of travel lanes can be maintained by temporarily removing parking (where adequate parking is available in the local area), temporarily relocating bike lanes to adjacent roadways, or temporarily restriping to provide narrower lanes (where they can be safely accommodated). • Whenever feasible, excavation sites will be situated so that adequate access to adjacent properties can be maintained, including left-turn entrances. • Whenever feasible, excavation sites will be situated so that bicycle and pedestrian circulation can be safely maintained, either by use of barriers or other safety features, or by providing alternative bicycle and pedestrian routes, with appropriate signage. Where feasible, siting excavation near heavily used pedestrian areas, such as around schools, hospitals, and transit stops, will be avoided. Where feasible, siting excavation in areas designated as safe routes to school will be avoided, or alternative routes will be developed in coordination with the local jurisdictions and school districts and providing appropriate signage, notification, and traffic controls.	Design Phase Prior to Construction Construction	Metropolitan Contractor

Mitigation Measure(s)	Timing of Implementation	Implementing Party
MM TRA-2, Construction Traffic Control Plans: Metropolitan and/or its contractors will coordinate with the counties of Los Angeles, Orange, and San Bernardino as well as each local jurisdiction through which the pipelines travels to develop construction traffic control measures and procedures prior to the start of construction on each project. Measures to reduce temporary construction traffic and transportation impacts on city streets may include, but not be limited to, the following: • Development of traffic control plans in coordination with local jurisdictions. The traffic control plans will be implemented and revised, as necessary and applicable. • Provision of advance written notification of construction activities to residences and businesses around each construction site. • Identification of travel routes and establishment of optimal arrival and departure times to minimize conflicts with residents, schools, and businesses, as feasible to minimize conflicts. • Provisions to detour pedestrians and bicyclists from project activities near or on the sidewalks and bike lanes. • Implementation of safety measures, such as signs, flaggers, cones, signage, and advance notice, as appropriate. • Covering of all open trenches when not in use or at the end of each work day, as applicable.	Design Phase Prior to Construction Construction	Metropolitan Contractor
MM TRA-3, Maintaining Adequate Parking: Whenever feasible, excavation work zones and construction staging areas will not be sited in such a way that they result in inadequate availability of parking for adjacent land uses. If work zones or staging areas are planned for parking areas, a parking study will be completed by a qualified traffic consultant prior to construction to identify if adequate parking would be available locally.	Design Phase Prior to Construction Construction	Metropolitan Contractor Traffic Consultant
MM HAZ-5: (see above in 4.8, Hazards and Hazardous Materials). **MM HAZ-6:** (see above in 4.8, Hazards and Hazardous Materials). **MM HAZ-7:** (see above in 4.8, Hazards and Hazardous Materials).		
4.14 Utilities and Service Systems		
None required.		
4.15 Energy Conservation		
None required.		

2.2 References Cited

14 CCR 15000–15387 and Appendices A–L. Guidelines for Implementation of the California Environmental Quality Act Guidelines, as amended.

California Public Resources Code, Sections 21000–21177. California Environmental Quality Act (CEQA), as amended.

Chapter 3
Statement of Overriding Considerations

When a proposed project results in significant, unavoidable adverse impacts, CEQA requires the decision-making body of the Lead Agency to weigh the benefit of the proposed project against such environmental impacts in determining whether or not to approve the proposed project (*State CEQA Guidelines* Section 15043). In making this determination, the Lead Agency is guided by the *State CEQA Guidelines* Section 15093, which states:

> CEQA requires the decision-making agency to balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed project against its unavoidable environmental risks when determining whether to approve the project. If the specific economic, legal, social, technological, or other benefits of a proposed project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered "acceptable."

When the Lead Agency approves a project that will result in the occurrence of significant effects that are identified in the Final EIR but are not avoided or substantially lessened, the agency shall state in writing the specific reasons to support its action based on the Final EIR and/or other information in the record. The Statement of Overriding Considerations shall be supported by substantial evidence in the record.

If an agency makes a Statement of Overriding Considerations, the statement should be included in the record of the project approval and should be mentioned in the notice of determination. This statement does not substitute for, and shall be in addition to, Findings required pursuant to Section 15091.

In addition, PRC Section 21081(b) requires that when a public agency finds that economic, legal, social, technological or other reasons make infeasible the mitigation measures or alternatives identified in the EIR and the project thereby continues to have significant unavoidable adverse impacts, the public agency must also find that specific overriding economic, legal, social, technological or other benefits of the project outweigh those significant unavoidable impacts of the project.

The Final Programmatic EIR identified one alternative to the proposed program: the No Program Alternative. This alternative was evaluated to the extent to which it met the basic program objectives, while avoiding or substantially lessening any significant adverse impacts of the proposed program.

By statute, if the environmentally superior alternative is the No Project Alternative, an EIR must also identify an environmentally superior alternative among the other alternatives. The reasons detailed in the Findings and the Programmatic EIR (Chapter 5 of the Final Programmatic EIR) indicate the proposed program would have similar or lesser impacts than the No Program Alternative. The sections below explain the overriding considerations Metropolitan relied on in selecting the proposed program rather than the No Program Alternative.

3.1 Significant and Unavoidable Impacts

3.1.1 Air Quality

Based on the information and analysis set forth in the Final Programmatic EIR and the record of proceedings, implementation of the proposed program would result in temporary significant impacts related to air quality. Significant and unavoidable short-term emissions of air pollutants would be emitted as a result of rehabilitation activities stemming from the use of construction equipment (primarily diesel-powered), haul and materials vehicle trips, and fugitive dust. Pollutants would exceed the daily regional mass emissions thresholds as well as the localized significance thresholds identified by the South Coast Air Quality Management District (SCAQMD) and would be significant. Following the implementation of Mitigation Measure MM AIR-1, the regional mass emissions would still exceed the SCAQMD regional mass emissions thresholds for carbon monoxide (CO) and nitrogen oxides (NO_X), but would no longer exceed the localized significance thresholds. Thus, the program would violate an air quality standard or contribute substantially to an existing or projected air quality violation, result in a cumulatively considerable net increase in any criteria pollutant for which the region is in non-attainment, and expose sensitive receptors to substantial pollutant concentrations. No additional feasible mitigation measures are available that would reduce temporary air quality impacts to less than significant levels. Impacts would be significant and unavoidable.

3.1.2 Biological Resources

Based on the information and analysis set forth in the Final Programmatic EIR and the record of proceedings, rehabilitation activities have the potential to result in impacts on protected species. Migratory birds, including most birds that nest in the study area, are protected by the federal Migratory Bird Treaty Act, which makes it unlawful to take, possess, import, export, transport, sell, barter, or offer for sale any migratory bird, or the parts, nests or eggs of any bird. In addition, California Fish and Game Code Section 3503 makes it unlawful to take, possess, or needlessly destroy nests or eggs of any bird. Where vegetation, and especially trees, is removed as part of construction, there is the potential for violations under the Migratory Bird Treaty Act and Section 3503 of the California Fish and Game Code, which would be a significant impact, but the level of impact would need to be determined at the project level when rehabilitation locations are known. Implementation of Mitigation Measure MM BIO-2 may reduce this impact, but potentially not to a less-than-significant level.

Various rehabilitation activities could affect riparian habitats and other sensitive natural communities. Vegetation clearing, excavation, materials storage, traffic, and other activities could remove habitat and result in temporary impacts to runoff and/or water quality, potentially affecting habitat; air quality impacts (dust, exhaust) could affect adjacent habitat; and construction-related traffic could introduce hazardous materials into habitats. These effects could result in potentially significant impacts on riparian habitats or sensitive natural communities, but the level of impact would need to be determined at the project level when rehabilitation locations are known. Implementation of Mitigation Measures MM BIO-3 and MM BIO-4 may reduce these impacts, but potentially not to less-than-significant levels.

Various rehabilitation activities could also affect wetlands, if present near work areas. Any of these effects could result in significant impacts on wetlands, but the level of impact would need to be

determined at the project level when rehabilitation locations are known. Implementation of Mitigation Measure MM BIO-5 may reduce these impacts, but potentially not to less-than-significant levels.

In addition, various rehabilitation activities could affect wildlife movement and dispersal in the vicinity of construction. The level of impact would need to be determined at the project level when rehabilitation locations are known. Implementation of Mitigation Measure MM BIO-6 may reduce these impacts, but potentially not to less-than-significant levels.

Certain construction and maintenance activities are allowed under the Shell E&P and Metropolitan Habitat Conservation Plan (HCP) and Central and Coastal Natural Communities Conservation Plan (NCCP)/HCP, and would be allowed under the proposed North Fontana Multiple Species Habitat Conservation Plan (covered activities). However, the types of construction for the proposed program that would occur within the covered lands are not known at this time. Therefore, construction could be inconsistent with the requirements of these plans, which would be a significant impact. Without knowing the location or type of rehabilitation activities in the covered lands, the level of impact and mitigation measures to address these impacts cannot be determined at this time. Also, it cannot be determined if impacts could be reduced to less-than-significant levels with mitigation. Therefore, impacts related to conflicts with the adopted Shell E&P and Metropolitan HCP and Central and Coastal NCCP/HCP and the proposed North Fontana Multiple Species Habitat Conservation Plan may be potentially significant and unavoidable. Additional project-specific analysis will be required for rehabilitation activities within the covered lands for these plans.

For the purposes of this Programmatic EIR, the impacts identified above related to biological resources would be considered significant and unavoidable.

3.1.3 Greenhouse Gas Emissions

Based on the information and analysis set forth in the Final Programmatic EIR and the record of proceedings, program-related rehabilitation activities would result in greenhouse gas (GHG) emissions from fuel combustion associated with on- and off-road construction equipment and vehicles. Emissions associated with construction would result in amortized annual emissions of just over 4,700 metric tons, which exceeds the SCAQMD interim threshold of 3,000 metric tons. As such, impacts would be significant. With the implementation of Mitigation Measure MM AIR-1, impacts would be reduced, but would remain significant. Impacts would be significant and unavoidable.

3.1.4 Noise

Based on the information and analysis set forth in the Final Programmatic EIR and the record of proceedings, noise levels during rehabilitation activities, specifically during excavation and concrete sawing, would likely reach very high levels, generally exceeding any noise-level restrictions set by some local jurisdictions. Because of the type of construction and its location, there is no effective mitigation that would reduce this impact below a level of significance. Therefore, impacts related to exposing persons to, or generating, noise levels in excess of standards would be significant, at least at some locations. Implementation of Mitigation Measures MM NOI-2 through MM NOI-4 would reduce impacts, but not to a less-than-significant level at all locations. Impacts would be significant and unavoidable.

3.1.5 Transportation/Traffic

Based on the information and analysis set forth in the Final Programmatic EIR and the record of proceedings, during the course of the pipeline rehabilitation work, work zones would be established within existing roadways, requiring lane closures, temporary signage, traffic cones and delineators, fencing, and barriers (i.e., concrete trapezoidal "K rail," or Caltrans Temporary Type K railing). Where work zones are located within streets, temporary impacts on transportation would occur, including increased congestion and travel times, reduced access, and impacts on transit operations, bike routes, and pedestrian routes. The disruption of local and regional traffic caused by capacity reduction would be significant at some locations, but the level will need to be determined at the project level when rehabilitation locations are known. Analysis to determine the individual projects' impacts on vehicle miles traveled and/or level of service may be required. Implementation of Mitigation Measure MM TRA-1 would reduce these impacts in some locations, but would not be feasible in all circumstances. Therefore, impacts on local and regional transportation may be significant and unavoidable. Impacts would be significant and unavoidable.

3.2 Project Benefits

In September 2011, Metropolitan's Board authorized initiation of the PCCP Rehabilitation Program in order to develop a comprehensive, long-term plan for repair of Metropolitan's at-risk PCCP feeders. There were several drivers for the creation of this program: (1) the increasing number of failures of PCCP lines within the water industry, along with recognition of the risks associated with these failures; (2) trends of PCCP deterioration within Metropolitan's distribution system, based on monitoring data collected over a 14-year period; and (3) Metropolitan's experience with expensive, urgent repairs on PCCP lines. Based on this experience and on a risk assessment of Metropolitan's PCCP lines, staff concluded that approximately 100 miles of PCCP will have a reduced service life and need to be rehabilitated, especially in comparison with pipelines made of other materials.

As discussed in Chapter 3 of the Final Programmatic EIR, the following objectives of the proposed program would be achieved through program implementation:

- Reduce the risk of unplanned outages
- Extend the service life of the pipelines
- Perform the rehabilitation work in a cost-effective manner
- Minimize the effects of rehabilitation efforts on Member Agency deliveries
- Minimize the loss of hydraulic capacity due to rehabilitation
- Improve system operational and emergency flexibility

The pipelines identified for repair in the proposed program deliver drinking water to about 19 million people in Southern California. Rehabilitation of the deteriorating prestressed concrete cylinder portions in these pipelines would preserve this conveyance function and reduce the risk of pipeline failure, minimize repair costs and prevent unplanned shutdowns of the pipelines.

3.3 Statement of Overriding Considerations

After balancing the specific economic, legal, social, technological, and other benefits of the proposed program, Metropolitan has determined that the significant and unavoidable adverse environmental impacts identified above may be considered "acceptable" due to the specific program benefits that outweigh the significant and unavoidable adverse environmental impacts of the proposed program.

Metropolitan has considered information contained in the Final Programmatic EIR, as well as comments received from public agencies and interested parties during the public review period. In addition, Metropolitan commits to the proposed mitigation measures and acknowledges that program benefits outweigh the few significant and unavoidable, temporary adverse impacts identified above. In making this determination and commitment, Metropolitan incorporates by reference the Findings and the proposed Mitigation Monitoring and Reporting Program, as well as all of the supporting evidence cited therein and in the record of proceedings and administrative record.

Engineering & Operations Committee

Second Lower Feeder PCCP Rehabilitation Reach 3A

Item #7-7

May 10, 2022

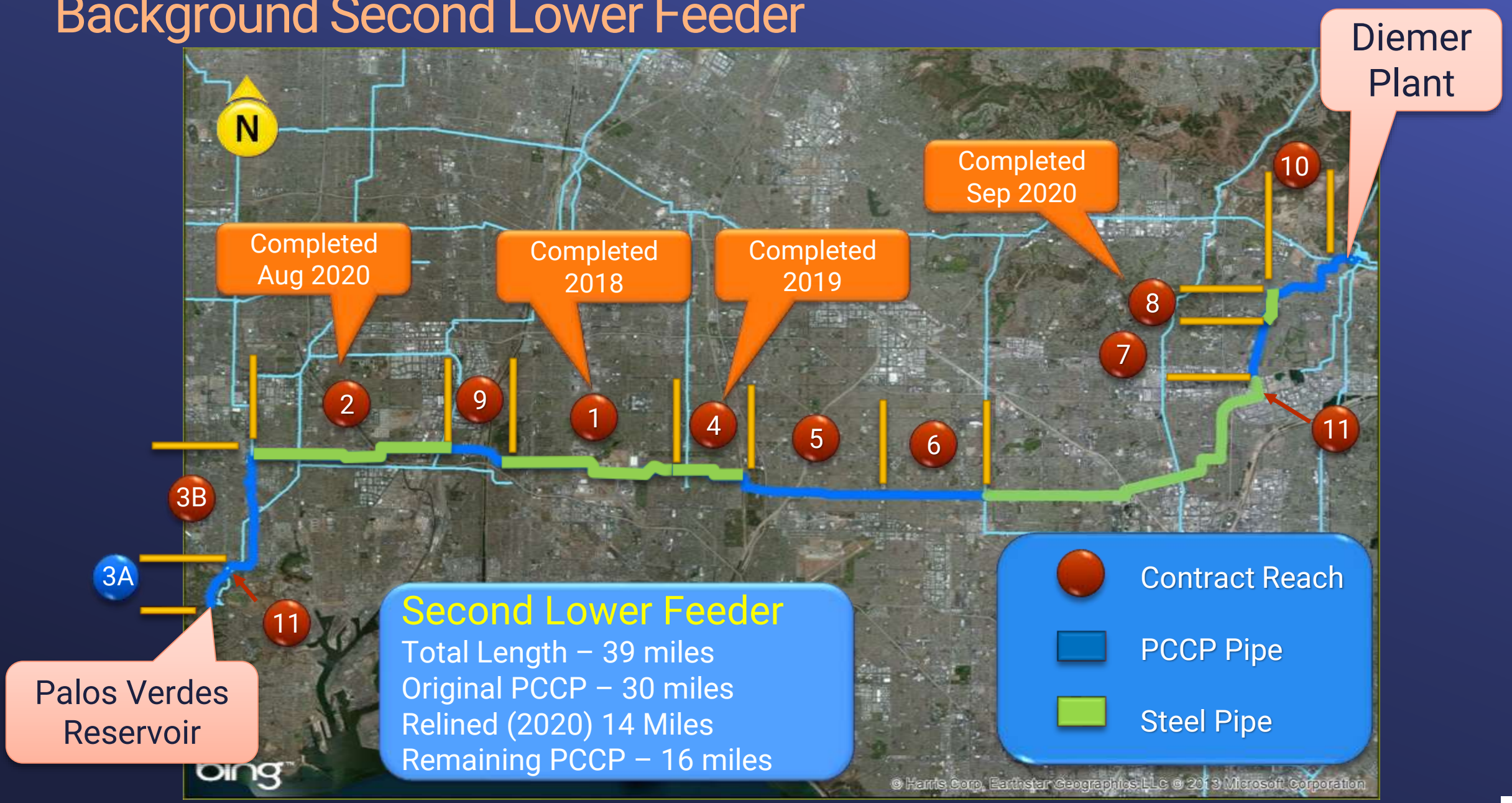
Second Lower Feeder PCCP Rehabilitation Reach 3A

Current Action

- Award $11,884,700 contract to J. F. Shea Construction, Inc. to perform construction rehabilitation of portions of the Second Lower Feeder

Distribution System

Background Second Lower Feeder



Second Lower Feeder PCCP Rehabilitation
Reach 3A

Alternatives Considered

- Construction of Reaches 3A & 3B under one construction contract and shutdown
  - Requires an 8-month shutdown
  - Member agencies in this area cannot sustain shutdowns longer than 4 months
- Selected Alternative – Separate Reach 3 into Reaches 3A and 3B
  - Provides greater lead time to procure temporary bypass piping and reduces schedule and materials procurement risks associated with longer shutdowns.

Contractor Scope

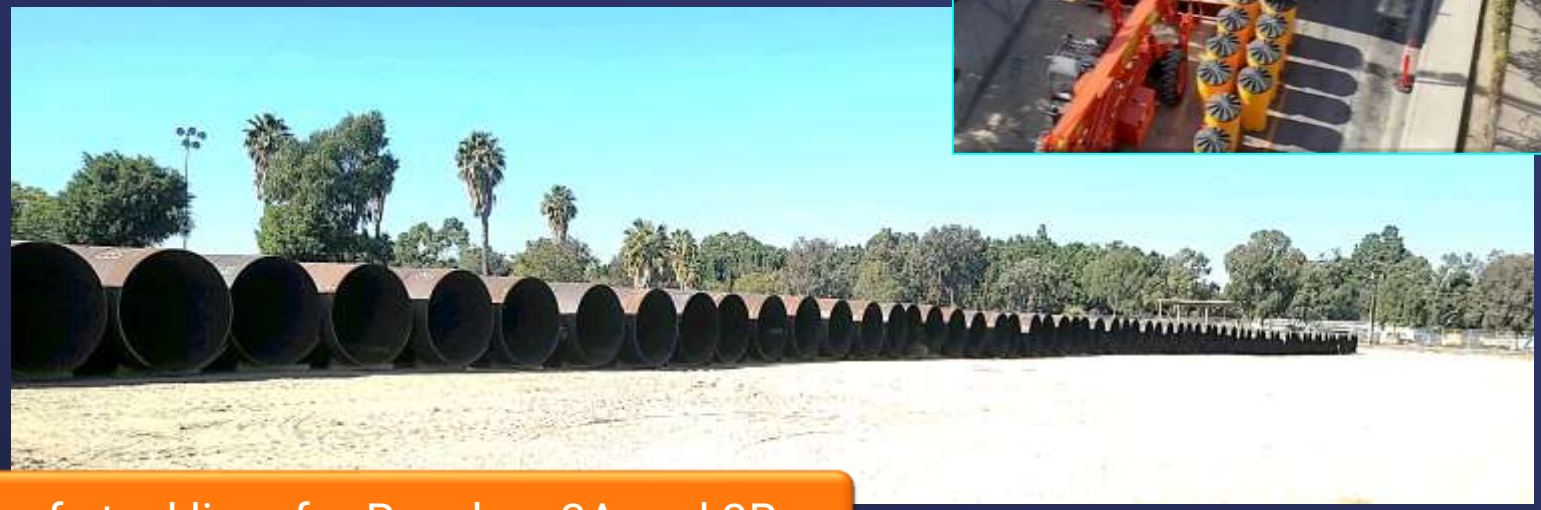
- Line approximately 6,500 ft. of existing PCCP
- Rehabilitate all maintenance holes and air release valves
- Construct a new maintenance hole at pipe access site
- Install bulkheads and piping to isolate Palos Verdes Reservoir
- Provide traffic control
- Restore work areas to preexisting conditions

Palos Verdes Reservoir Bulkhead Installations

Metropolitan Scope

- Dewater and return pipeline to service
- Fabrication inspection
- Construction management/inspection
- Submittal review and record drawings
- Coordinate license for temp R/W with local agency
- Permitting, outreach, & program management

Typical Pipe Access Site



Unloading and Storage of steel liner for Reaches 3A and 3B

Bid Results
Specifications No. 1903

Bids Received	April 5, 2022
No. of Bidders	2
Low Bidder	J. F. Shea Construction, Inc.
Low Bid	$11,884,700
Other Bid	$23,967,049
Engineer's estimate	$16.5 M
SBE Participation*	13%

*SBE (Small Business Enterprise) participation level set at 5%

Allocation of Funds

Contract	
J. F. Shea Construction, Inc.	$11,884,700
Metropolitan Labor	
Program mgmt., permitting, contract admin. & travel	814,000
Force Construction	1,644,000
Construction Management/Inspection	2,010,000
Submittal review, technical support, & record drwgs.	384,000
Incidental, Materials & Supplies	550,000
Right-of-Way	427,000
Professional Services	
Black & Veatch	255,000
Helix Group Inc.	200,000
Water Systems Consulting	75,000
Welding Inspection	90,000
Remaining Budget	766,300
Total	$19,100,000

Project Schedule

Board Options

- Option #1

  Review and consider Addendum No. 5 to the 2017 Programmatic Environmental Impact Report, and award an $11,884,700 contract to J. F. Shea Construction, Inc. to procure materials and perform construction for the rehabilitation of portions of the Second Lower Feeder.

- Option #2

  Do not move forward to rehabilitate Reach 3A of the Second Lower Feeder at this time.

Staff Recommendation

- Option #1


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928

Engineering & Operations Committee

State Water Project Dependent Area Solutions: Drought Action Planning Update

Item 6a

May 10, 2022

SWP Dependent Area Solutions: Overview

Issue

Some areas face significant challenges in a severe drought on the SWP system

Committed to Resolve this Issue

Identifying and implementing measures to ensure all portions of the service area attain a high level of reliability against multi-year, severe droughts

Current Drought Emergency

Actively manage through current severe conditions

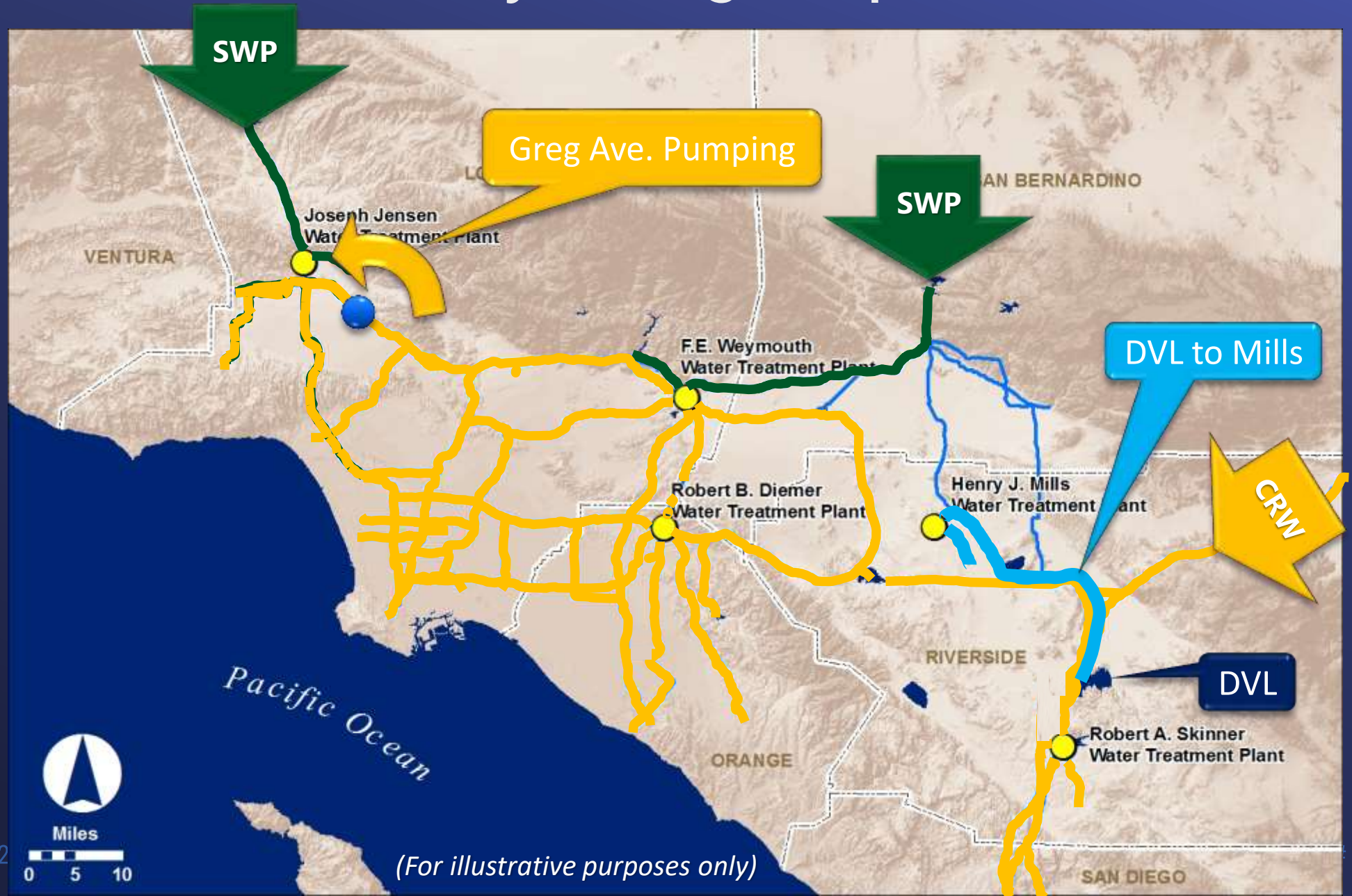
Future Severe Drought

Urgently prepare for the next severe drought

Standard Operation

(For illustrative purposes only)

Current Extraordinary Drought Operation



(For illustrative purposes only)

Current Extraordinary Drought Operation

(For illustrative purposes only)

Actions to Address Historic Drought

Board Actions

- Operational Shift Cost Offset Program (2021)
- DVL to Rialto Improvements (2021)
- SBVMWD Exchange (2021)
- SDCWA Exchange/Lease (2021)
- West Area Reliability Studies (2022)
- Reverse Cyclic Program (2022)

Member Agency Activities

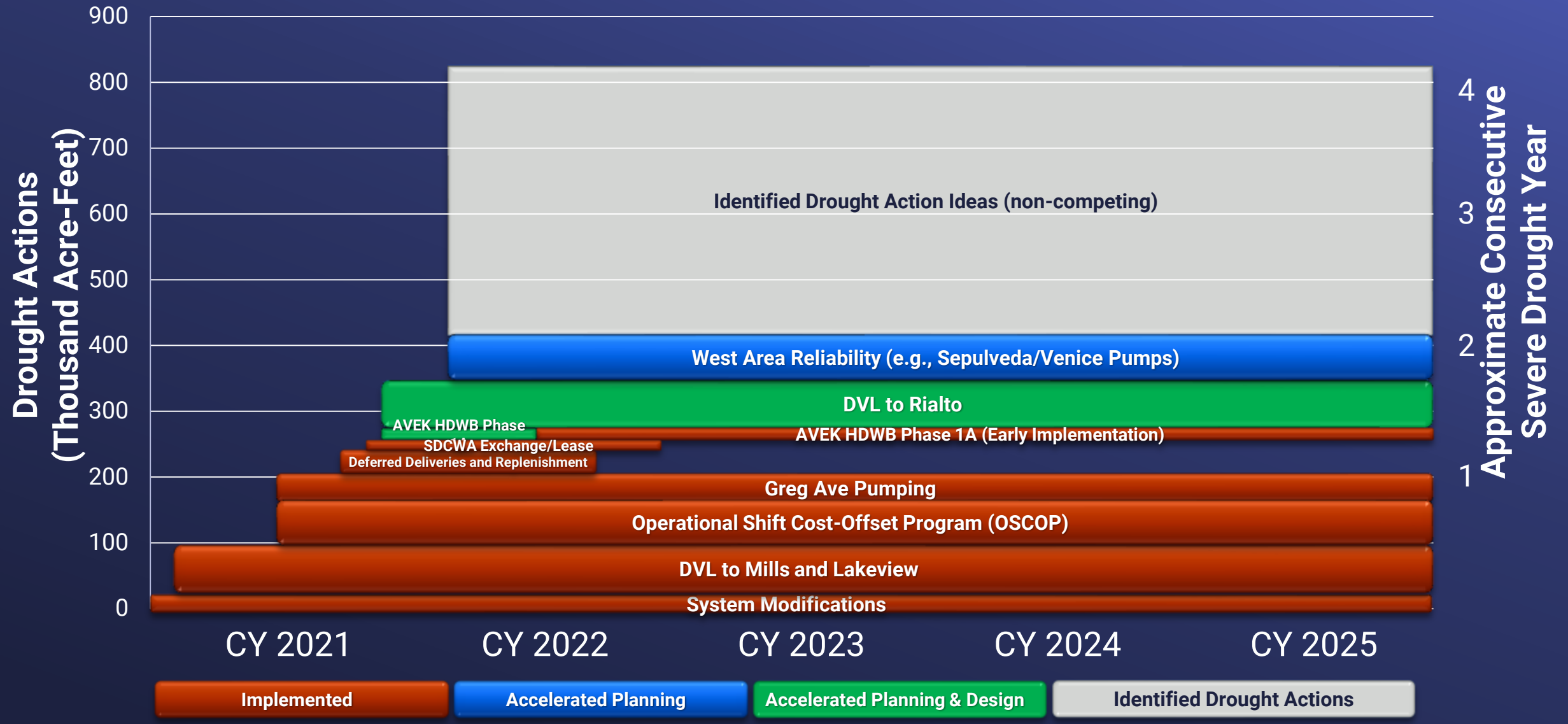
- SWP Dependent Areas Coordination Meetings
  - Brainstormed ideas and solutions
  - Prepared Drought Action Briefing Sheets
- Drought Action Planning and Development Workshops
  - Workshop #1: April 22
  - Workshop #2: June 10
  - Workshop #3: June 17

Developing SWP Dependent Area Solutions

* Possible use of CRW through Wadsworth Pumping Plant if DVL storage is depleted

For Illustration Purposes Only
Approximate Scale

Developing SWP Dependent Area Solutions



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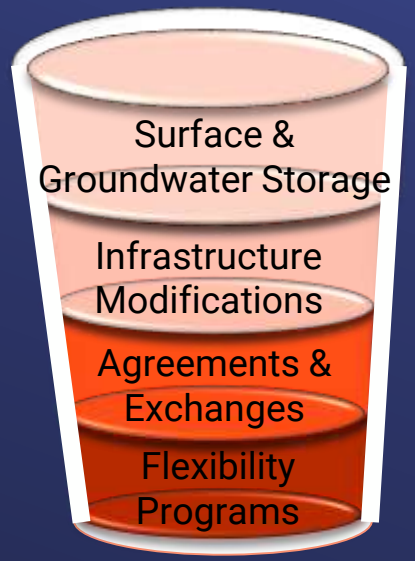
SWP Dependent Area Solution – Ideas and Moving Forward

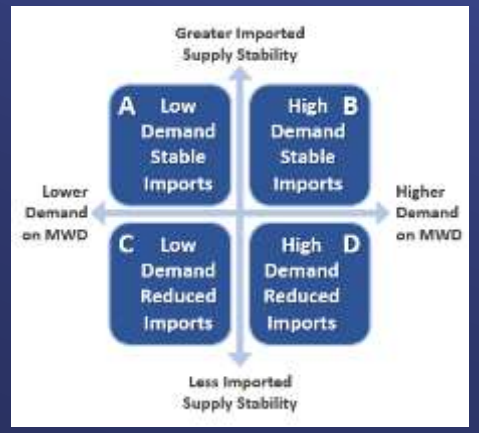
Region Wide Idea Generation and Alternative Identification

Drought Action Briefing Sheets



Portfolios of Drought Actions

Late Summer 2022



Evaluate the benefits of each option or portfolio, and test benefits

Develop an action plan

Implement Action Plan

SWP Dependent Area Solutions (workshops)

SWP Dependent Area Solutions – Decision Process

Developing Assessment/ Planning Tools

	Future Action	Potential Yield TAF/Year	Cost	Criteria A	Criteria B
☑	New Interconnections Project	80-100			
☑	Increased Banking Takes	5			
☑	Additional Exchange	5			
☑	New Pump Stations in Area A	~~70~~			
☑	Expanded Banking Program	70			
☑	Expanded Pump Station in Area A	70			
☑	New Pump Station in Area B				
☐	New Pump Station in Area B				
☐	CRW to Area B				
☐	Expanded Banking Program				
☐	New Reservoir				
☐	More Options				
	Total	230-250			

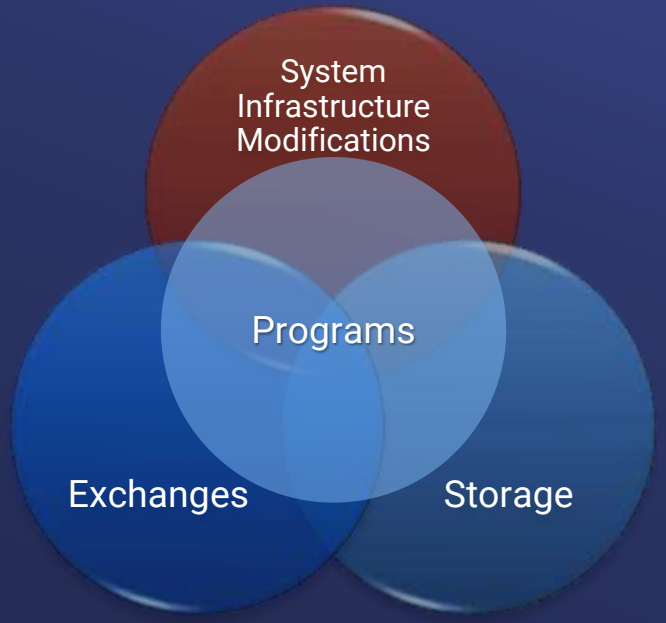
Smart tools assist in more comprehensive understanding of various mixes of projects/programs

Some projects may be mutually exclusive

EXAMPLE ONLY

Drought Action Planning & Development

Idea Sharing



General categories of drought actions

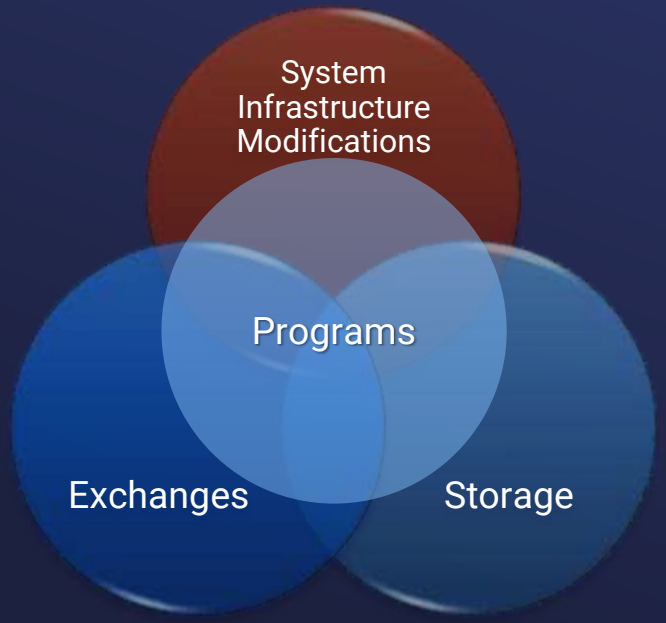
- Examples of drought action ideas generated by both Metropolitan and member agencies

Examples of drought action ideas generated by both Metropolitan and member agencies

- Operational Shift Cost-Offset Program
- Reverse Cyclic Program
- Antelope Valley – East Kern Banking Program
- DVL to Rialto Delivery
- Sepulveda Feeder Reverse Flow (Venice/Sepulveda Pump Stations)
- Exchanges
- Three Valley Municipal Water District Enhanced (TVMWD) JWL Pumpback
- Burbank Water and Power shift
- Las Virgenes Municipal Water District (LVMWD) Interconnection

System Infrastructure Modifications

Example: TVMWD



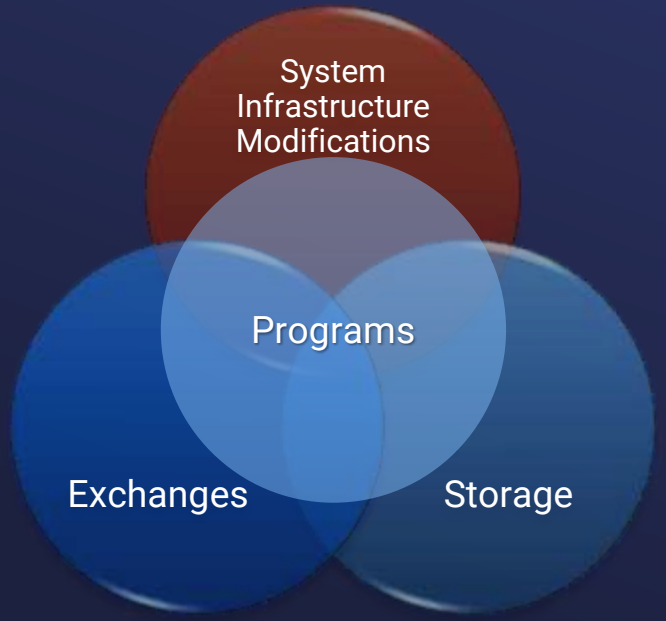
TVMWD Enhanced JWL Pumpback

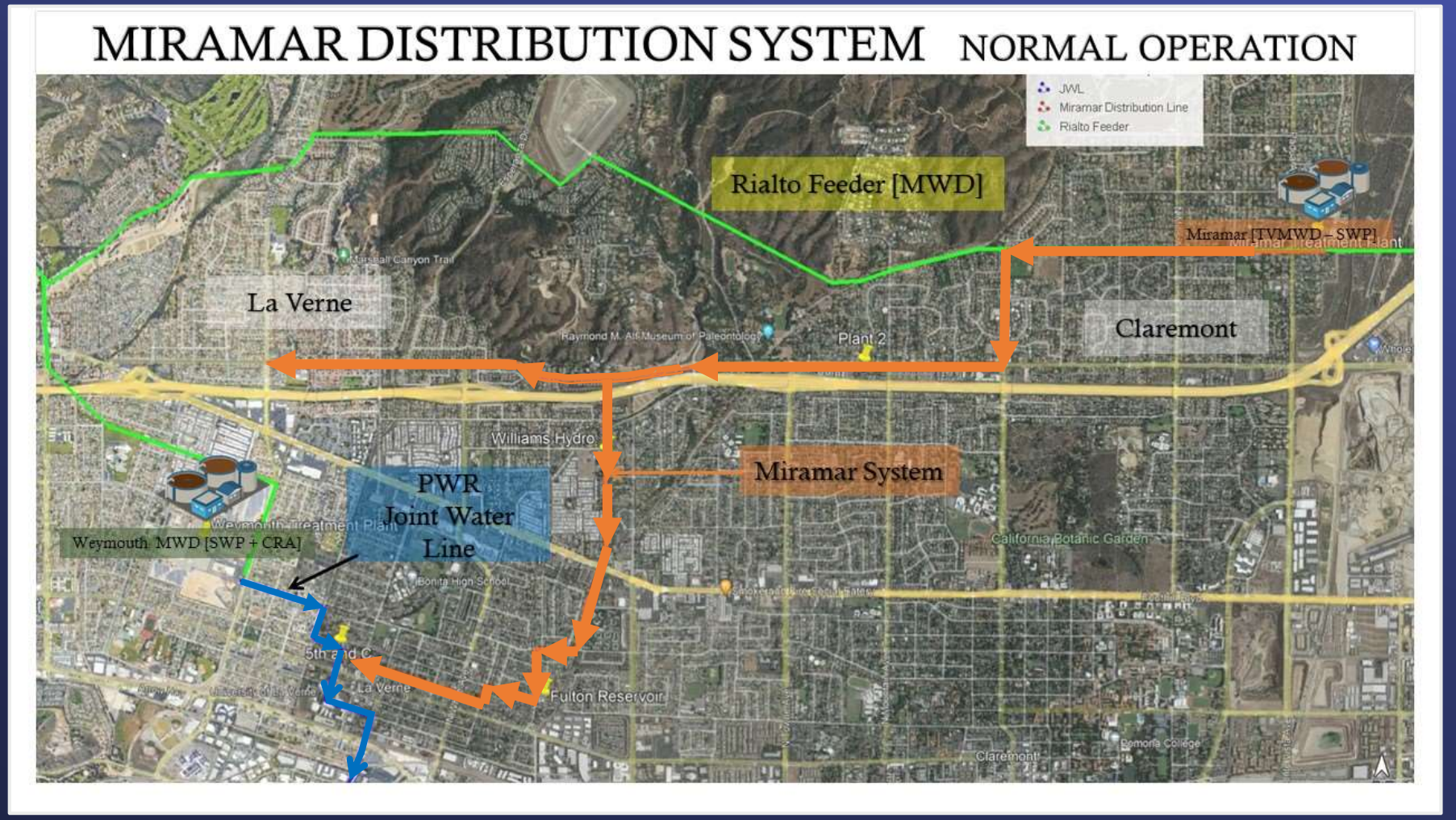
- Upgrade/expand existing TVMWD pumpback system
- Deliver additional treated Colorado River water via existing service connection
  - Up to 30 cfs
- Potentially shift 100% of TVMWD SWP use to Colorado River water
  - Potential near-term project (~Fall 2023)

5th and C Pumpback Station

System Infrastructure Modifications

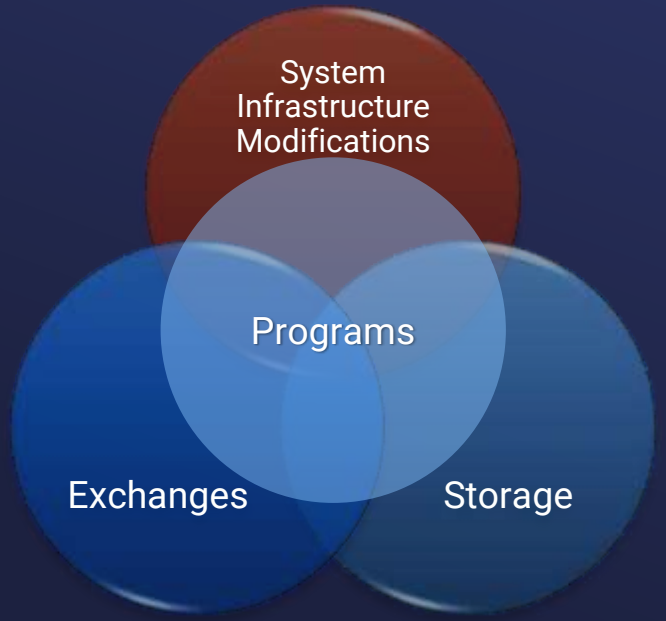
Example: TVMWD





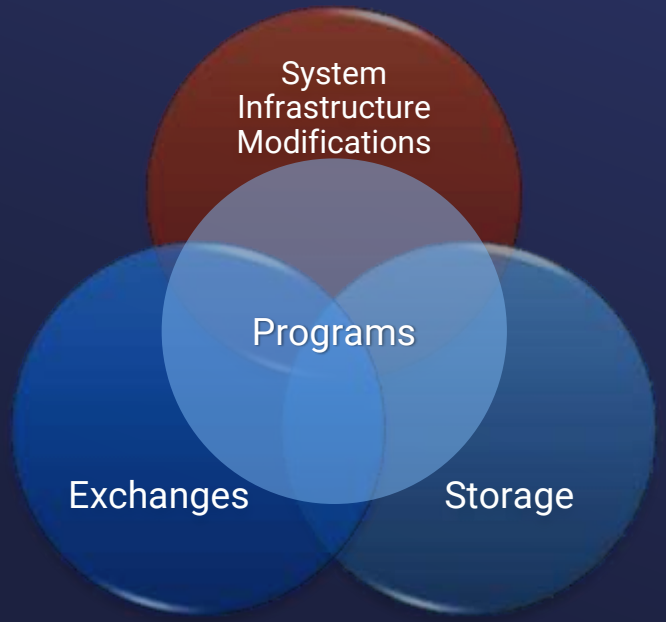
System Infrastructure Modifications

Example: TVMWD



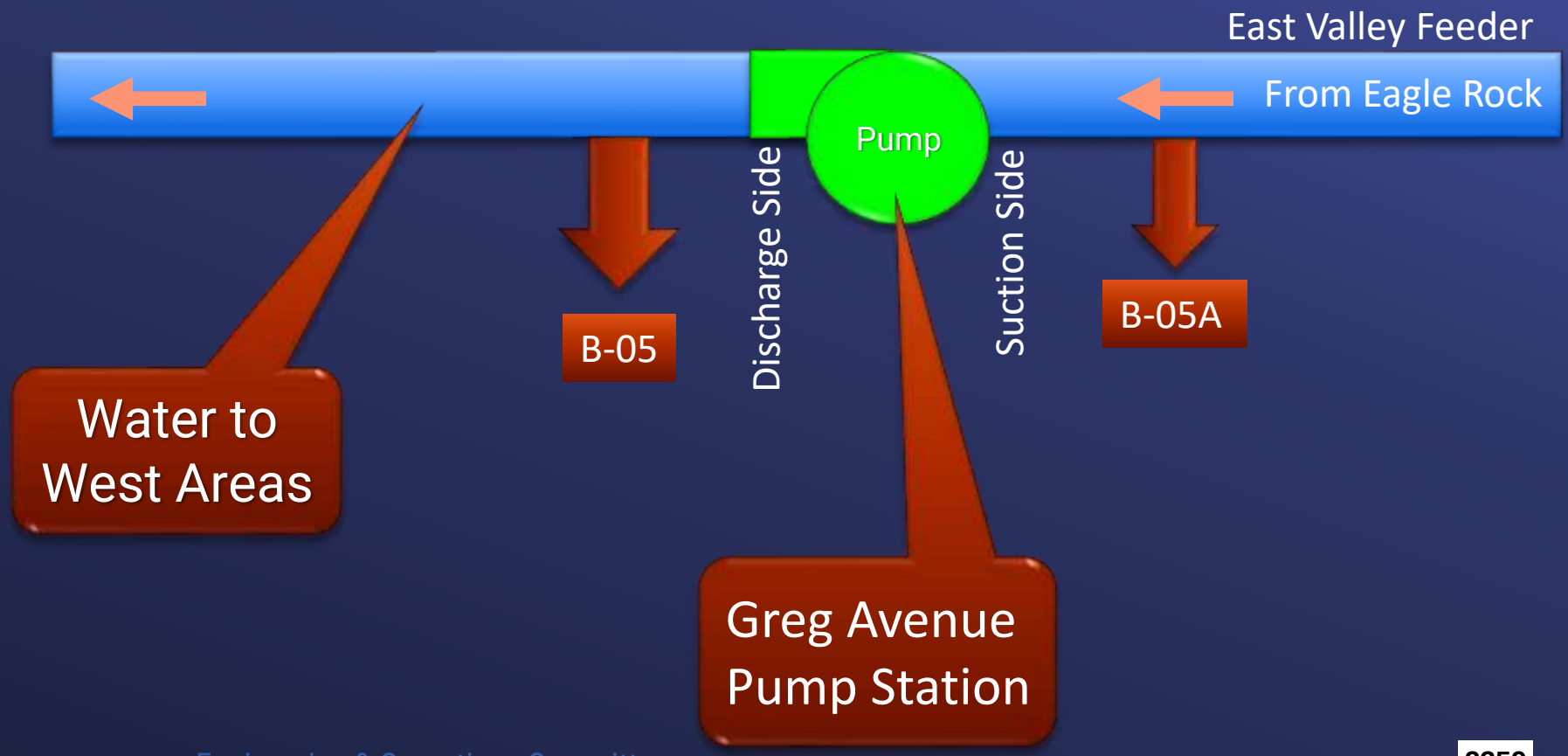
System Infrastructure Modifications

New Interconnection



Burbank Water and Power

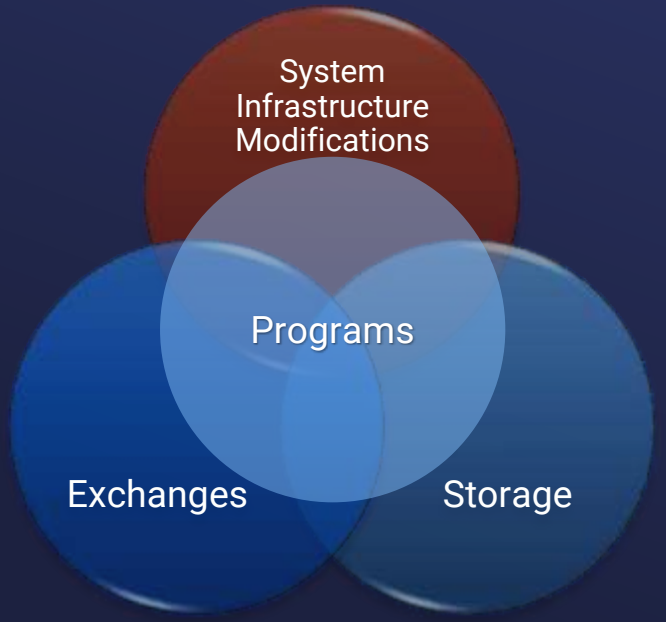
- Burbank B-05 to Burbank B-05A



SWP Dependent Area Solutions

System Infrastructure Modifications

Member Agency Interconnection



LVMWD/LA County Waterworks District 29 New Interconnection

- Utilize and upgrade existing facilities to convey CRW to LVMWD and Calleguas service areas
  - Enables LVMWD shift to CRW (9-30 TAF/year)
  - Can also provide CRW to Calleguas through upcoming interconnection
  - Potential online 2024-25


THE METROPOLITAN WATER DISTRICT OF
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Engineering & Operations Committee

Overview of Arc Flash Safety Planning

Item 6b

May 10, 2022

Electrical System Background

Staff performing electrical maintenance on 230kV circuit breaker

Safe, reliable power is essential for treating and delivering water

- Metropolitan has electrical infrastructure at 5 treatment plants, 15 hydroelectric plants, 7 pumping plants and numerous turnouts and pressure control structures
- Metropolitan has over 1,000 electrical systems from 480 volts to 230,000 volts
- Metropolitan has a strong and well-established safety culture and program

What is Arc Flash?

Switchgear undergoing arc flash testing (Stock image – Not a Metropolitan facility)

Arc flash is the explosion or flashover of electric current traveling through the air similar to the energy of a bomb blast

- Serious injury and property damage can result from arc flash events
- Arc flash is governed by electrical codes, standards, and regulations which are constantly evolving
- Recent regulatory changes require additional analysis of arc flash hazards
- Metropolitan's electrical safety program must evolve with these industry trends

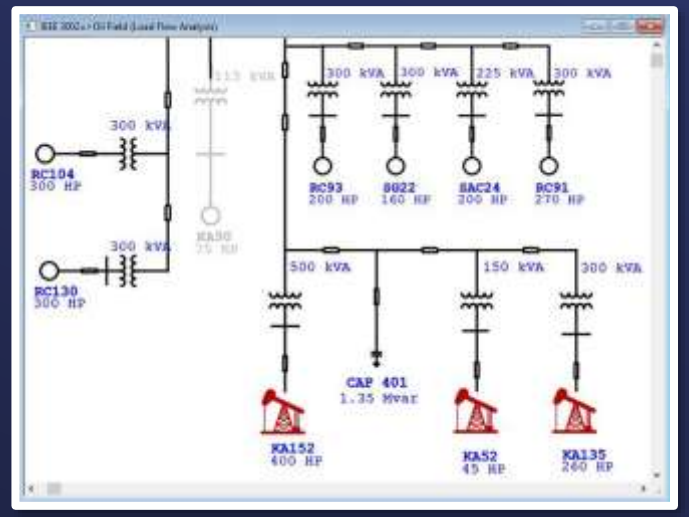
Arc Flash Safety at MWD

Photo from 1978 Eagle Mountain arc flash incident

Significant arc flash incident occurred in 1978 at Eagle Mountain Pumping Plant

- Led to Metropolitan centralizing electrical safety and other procedures through the development of System Operating Orders Manual (SOOM) in 1979
- Metropolitan evolved and developed a Health Safety and Environmental (HSE) Manual section based on National Fire Protection Association (NFPA) Standard 70E
- Arc flash studies are required to be reviewed every 5 years by NFPA 70E

Arc Flash Studies



ETAP power system analysis software single line diagram

Arc flash studies are required to assess hazards and conform to best practices including:

- Gathering all electrical system data and field verifying for accuracy
- Modeling collected data in software
- Having a qualified professional engineer perform an arc flash hazard analysis
- Creating and applying arc flash hazard labels on field equipment to enhance worker safety

Arc Flash Benefits

Switching at Venice (HEP)

Performing arc flash analysis provides numerous operational benefits and safety improvements:

- Identifies areas with highest safety risk
- Ensures protective devices are properly configured to work as needed
- Ensures electrical drawings are up to date and accurate
- Front-end engineering of capital project effort is reduced
- Enhances employee safety and reduces the risk of operational upsets

Arc Flash Safety Planning Summary

Staff racking out circuit breaker at Corona HEP

- Arc Flash Study will require significant resources and planning
- Metropolitan has a large geographical and electrical system footprint
- Metropolitan has a history of a robust electrical safety program
- Electrical Arc Flash is a serious hazard and exposure varies significantly based on specific installation details
- Existing arc flash hazard labels and arc flash studies required to be reviewed every 5 years

Arc Flash Safety Planning Next Steps

Staff isolating equipment for maintenance at Skinner WTP

- Performing arc flash analysis at all Metropolitan facilities will be a multi-year effort
- Staff will bring an action on this effort in the near future for Board consideration
- Arc flash analysis may lead to:
  - Improved safety procedures
  - Minor or major capital projects to improve system safety and reliability
- Staff are benchmarking arc flash hazard analysis strategy with other agencies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Engineering & Operations Committee

Water System Operations Manager's Report

Item 7a

Monday, May 10, 2022
9:30 a.m.

Current Operational Conditions

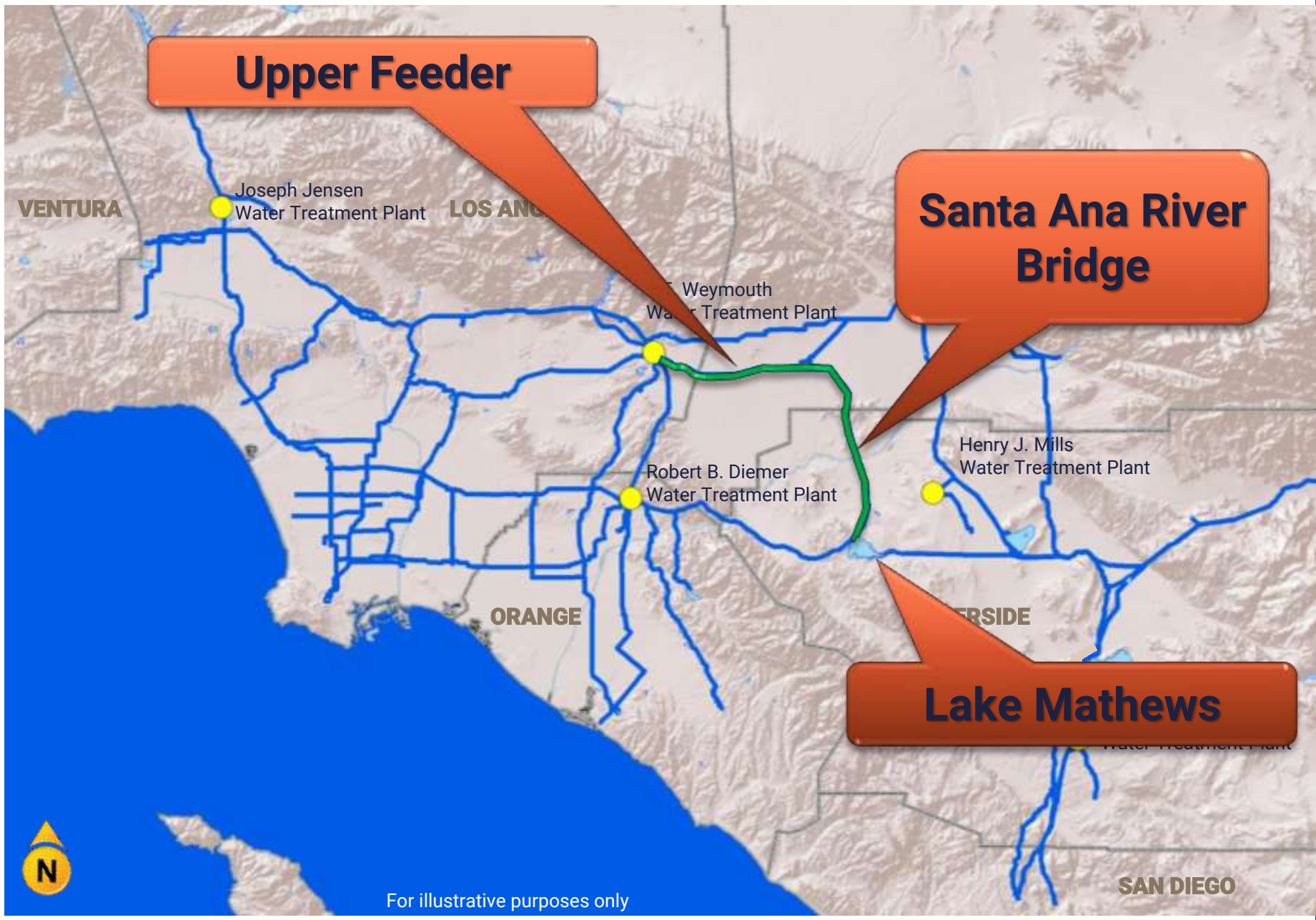
Continuing Drought Operations

- 2022 SWP Allocation is 5%
- SWP blend targets are 0% at Weymouth, Diemer, and Skinner plants
- DVL to Mills drought operation continues to perform well
- Managing storage based on WSDM principles
- April 2022 deliveries of 134 TAF were 4 TAF lower than April 2021

Improving Effectiveness Engineering/ Operations Partnering Effort

- ESG and WSO held its 5th Partnering Workshop to discuss key staff-led initiatives and continue to foster a high level of collaboration between the groups
- 70 staff and managers participated in this hybrid meeting

Upper Feeder Leak April 13, 2022



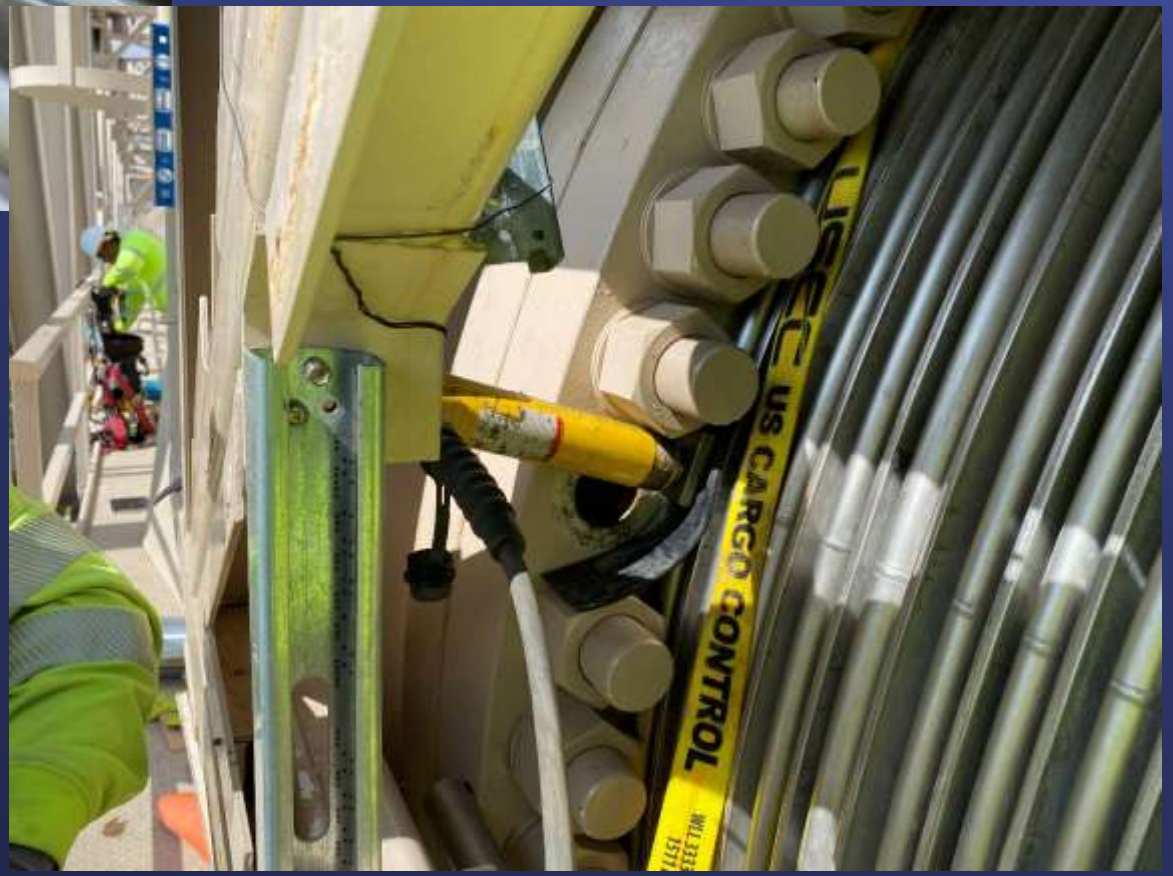
Upper Feeder - Santa Ana River Bridge

- 1010' Long
- 116" Diameter
- 750 cfs max flow

Stainless steel bellows allow for pipeline expansion/contraction

Upper Feeder - Santa Ana River Bridge

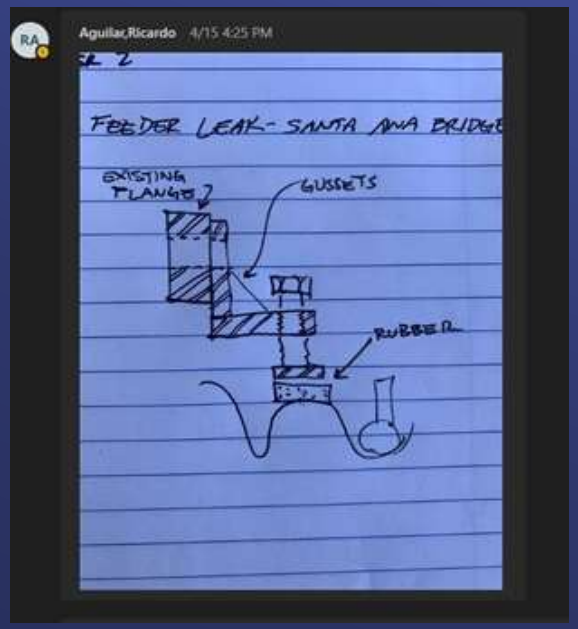
- Leak on bellows expansion joint
- Immediate temporary repair using rubber seal and jacking system

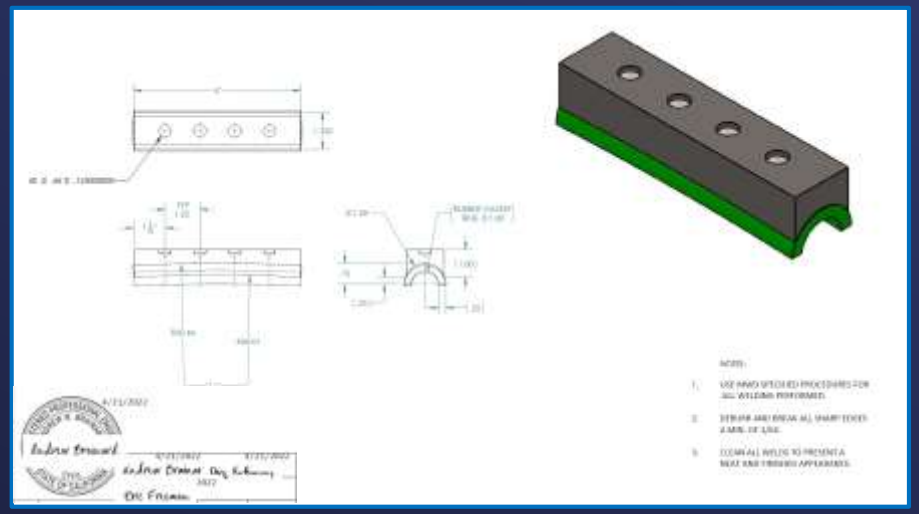


Liquid penetrant testing conducted

- No additional cracks observed

Upper Feeder Repair Plans





- Staff worked around-the-clock over the holiday weekend to investigate leak and develop immediate repair plan that reduced leak to a weep
- ESG/WSO collaborated online using Teams to design short-term innovative repair of custom bracket and plate fabricated in-house

Upper Feeder Repair Completed

- Short-term repair using custom bracket with backing plate, designed and fabricated in-house
- Urgent repair done while keeping feeder in operation to continue to provide CRW to region

Next Steps and Permanent Fix

Evaluate While in Service

- Increase flow incrementally while taking vibration measurements
- Perform hydraulic analysis to evaluate potential root causes
- Perform survey & structural inspection

Design & Procure Fix

- Likely new bellows or gland-packed expansion joint

Install

- Replace with new joint during future planned shutdown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Engineering & Operations Committee

Engineering Services Manager's Report

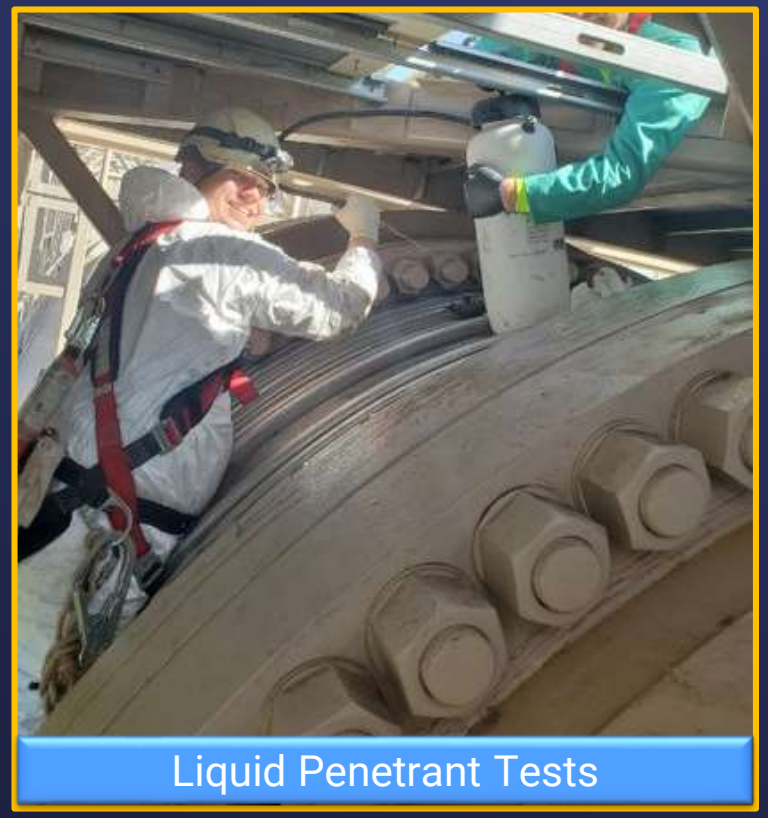
Item 7b

May 10, 2022

Construction & Procurement Contracts March 2022

Construction & Procurement Contracts Through March 2022	
Number of Contracts at end of March 2022	37
Total Bid Amount of Contracts in Progress at end of March 2022	$277M
Contracts Awarded in March 2022	1
Contracts With Notice To Proceed Issued in March 2022	1
Contracts Completed in March 2022	1
Contract Gross Earnings in March 2022	$6M

Upper Feeder Santa Ana River Crossing - Leak Incident
Investigation and Immediate Repair


Liquid Penetrant Tests


Short-Term Repair

Bridge Base Isolator Inspection

Upper Feeder Santa Ana River Crossing - Leak Incident

Path Forward

Mid-Term Solution

(2023 Shutdown)

- Option 1: Weld Repair
- Option 2: Install WEKO Seal

Long-Term Solution

- Option 1: Install New Bellows
- Option 2: Install Slip-Joint

Innovative CRA Pump Flow & Efficiency Pilot Study

Gene Unit #1 Main Pump Efficiency and Flow Test

- Pilot study completed last month by WSO and ESG
- Tested innovative ‘thermodynamic’ method for determining real-time pump efficiency and flow using pressure, temperature, power
  - Device provided by Riventa of Cornwall, UK
- Funded mostly by WaterStart, water innovation not-for-profit that MWD is a member

2022 Member Agency Engineering Managers Meeting Forum

- Co-hosted with City of Anaheim
- Presentation by Anaheim on Alternative Project Delivery and PFAS treatment
- City Panel with panelists from City of Anaheim, Glendale, Santa Ana, and Santa Monica
- MWD updates to RRWP, CIP, and Etiwanda Test Facility
- 13 Member Agencies in attendance

Casa Loma Siphon Barrel No. 1
Siphon Replacement Project Contract

Field Assembly of Kubota ERDIP Sections

30-inch HDPE Drainage Pipe and Excavation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