The Metrop of Southern The mission of the l	politan Water District n California Metropolitan Water District of Southern California is to provide	Agenda		
present and future r	needs in an environmentally and economically responsible way.	A A A A A A A A A A A A A A A A A A A		
FAIRP Committee T. Smith, Chair	Finance, Audit, Insurance, and Real Property Committee - Final - Revised 2	Tuesday, January 9, 2024 Meeting Schedule		
D. Alvarez J. Armstrong	Meeting with Board of Directors *	08:30 a.m. FAIRP 10:30 a.m. EOP		
A. Chacon D. De Jesus	January 9, 2024	12:30 p.m. Break 01:00 p.m. BOD		
B. Dennstedt L. Fong-Sakai J. McMillan	8:30 a.m.			
C. Miller M. Petersen B. Pressman T. Quinn K. Seckel	Agendas, live streaming, meeting schedules, and other board materials are available here: https://mwdh2o.legistar.com/Calendar.aspx. If you have technical difficulties with the live streaming page, a listen-only phone line is available at 1-877-853-5257; enter meeting ID: 873 4767 0235. Members of the public may present their comments to the Board on matters within their jurisdiction as listed on the agenda via in-person or teleconference. To participate via teleconference 1-833-548-0276 and enter meeting ID: 876 9484 9772 or click https://us06web.zoom.us/j/87694849772? pwd=V3dGZGRYUjJ3allqdUxXTIJRM044Zz09			
MWD He	adquarters Building • 700 N. Alameda Street • Los Ang Teleconference Locations: aper Imaging • 8705 Gracie Allen Dr • Los Angeles, C/ 1545 Victory Blvd., 2nd floor • Glendale, CA 9120	geles, CA 90012 A 90048 01		

\* 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.

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

#### **Finance, Audit, Insurance, and Real Property Committee** Page 2

 A. Approval of the Minutes of the Finance, Audit, Insurance, and Real Property Committee Meeting for November 14, 2023 (Copies have been submitted to each Director, any additions, corrections, or omissions)

Attachments: 01092024 FAIRP 2A (11142023) Minutes

#### 3. OTHER MATTERS

**6G** Updated report on the list of certified assessed valuations for the fiscal year 2023/24 and tabulation of assessed valuations, percentage participation, and vote entitlement of member agencies as of January 9, 2024. [ADDED SUBJECT 1/4/24]

Attachments: 01092024 FAIRP 6G B-L

#### 4. CONSENT CALENDAR ITEMS - ACTION

7-9 Authorize the General Manager to execute 47 license agreements 21-2925 to update the conditions and extend the term of existing secondary use agreements comprising Metropolitan fee-owned parcels in Los Angeles, Orange, Riverside and San Bernardino counties; the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA (Assessor Parcel Nos. 0201-821-49; 0239-182-46; 0262-051-21; 0262-071-40; 0264-011-31: 0266-041-59: 0643-221-06: 0643-221-06: 0643-221-07: 0646-081-07: 0649-031-06; 189-200-007; 2526-024-270; 291-480-008; 303-090-036; 390-151-19; 430-210-014: 430-190-028: 4493-014-906: 452-052-03: 516-030-013; 516-100-006; 5260-013-910; 6204-012-901; 6204-033-901: 6204-028-901: 6680-200-02: 6680-500-16: 811-100-007; 8666-059-904; 8381-006-906; 8381-006-909; 8381-019-900; 8381-020-902; 8381-020-903; 8381-023-901; 8381-030-902: 8381-030-903; 8381-036-906; 8381-036-905; 8669-013-901; 8684-008-270; 921-700-013; 922-110-022; Parcel on Fargo Canyon Road, Riverside)

Attachments: 01092024 FAIRP 7-9 B-L 01092024 FAIRP 7-9 Presentation 7-10 Review and consider the City of Rancho Cucamonga certified Final Environmental Impact Report and take related CEQA actions, and authorize the General Manager to grant a permanent easement to the City of Rancho Cucamonga for public road and trail purposes on Metropolitan fee-owned property in the City of Rancho Cucamonga and identified Assessor Parcel Numbers 022-512-301; 022-512-302; 022-512-303; 022-512-304

Attachments: 01092024 FAIRP 7-10 B-L 01092024 FAIRP 7-10 Presentation

#### \*\* END OF CONSENT CALENDAR ITEMS \*\*

#### 5. OTHER BOARD ITEMS - ACTION

NONE

#### 6. BOARD INFORMATION ITEMS

NONE

#### 7. COMMITTEE ITEMS

a.	Business Continuity Update	
	Attachments: 01092024 FAIRP 7a Presentation	
b.	2023 Long-Range Finance Plan Needs Assessment	<u>21-2923</u>
c.	Annual Comprehensive Financial Report for FY 2022/23	<u>21-2924</u>
	Attachments: 01092024 FAIRP 7c Report 01092024 FAIRP 7c Presentation	
d.	Diamond Valley Lake Recreation Update	<u>21-2927</u>
	Attachments: 01092024 FAIRP 7d Presentation	
MAN	AGEMENT ANNOUNCEMENTS AND HIGHLIGHTS	
a.	General Auditor's report on monthly activities	<u>21-2891</u>
b.	Financial, Insurance, and Real Property activities	<u>21-2892</u>

Attachments: 01092024 FAIRP 8b Presentation

#### 9. SUBCOMMITTEE REPORTS AND DISCUSSION

8.

Finance, Audit, Insurance, and Real Property Committee

Page 4

- a. Discuss and provide direction to Subcommittee on Audits <u>21-2893</u>
- **b.** Discuss and provide direction to Subcommittee on Long-Term <u>21-2894</u> Regional Planning Processes and Business Modeling

#### 10. FOLLOW-UP ITEMS

NONE

#### 11. FUTURE AGENDA ITEMS

#### 12. ADJOURNMENT

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. Committee agendas may be obtained on Metropolitan's Web site https://mwdh2o.legistar.com/Calendar.aspx. 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 https://mwdh2o.legistar.com/Calendar.aspx.

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.

#### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

#### MINUTES

#### FINANCE, AUDIT, INSURANCE, AND REAL PROPERTY COMMITTEE

#### November 14, 2023

Chair Smith called the meeting to order at 10:31 a.m.

Director Peterson indicated he is participating under AB 2449 "emergency circumstances" for a back injury that prevents him from attending in person. Director Peterson appeared by audio and on camera.

Director Seckel made a motion, seconded by Director Dennstedt, to approve AB 2449 Emergency Circumstance participation for Director Peterson.

The vote was:

Ayes:	Directors Alvarez, Armstrong, De Jesus, Dennstedt, Dick, Fong-Sakai, McMillan, Miller, Seckel, and Smith.
Noes:	None
Abstentions:	None
Absent:	Directors Chacon, Petersen, Pressman, and Quinn.

The motion for Director Peterson to participate under AB 2449 Emergency Circumstance passed by a vote of 10 ayes, 0 noes, 0 abstain, and 4 absent.

Members present: Directors Alvarez, Armstrong, Chacon (entered after roll call), De Jesus (teleconference posted location), Dennstedt, Dick, Fong-Sakai, McMillan, Miller, Pressman (entered after roll call, teleconference posted location) Seckel, and Smith.

Members absent: Directors Petersen and Quinn.

Other Members present: Abdo, Ackerman, Bryant, Camacho, Cordero, Erdman, Garza, Goldberg, Kurtz, Luna, McCoy, Morris, Ortega, Peterson (AB 2449 Emergency Circumstance), and Ramos.

Director Peterson indicated that he is participating under AB 2449 "Emergency Circumstances" regarding physical emergency. Director Peterson appeared by audio and on camera.

Committee Staff present: Beatty, Benson, Chapman, Hagekhalil, Kasaine, Ros, Suzuki, and Upadhyay.

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

-2-

None

#### CONSENT CALENDAR ITEMS — ACTION

#### 2. CONSENT CALENDAR OTHER ITEMS-ACTION

A. Subject: Approval of the Minutes of the Finance, Audit, Insurance, and Real Property Committee Meeting for October 10, 2023 (Copies have been submitted to each Director, Any additions, corrections, or omissions)

#### 3. CONSENT CALENDAR ITEMS – ACTION

7-13	Subject:	Adopt a resolution providing financial assurance for the Colorado
	·	River Aqueduct Master Reclamation Plan, establish the
		Metropolitan Reclamation Plan Trust Fund, and amend Sections
		5200 and 5201 of the Metropolitan Water District Administrative
		Code to establish the Metropolitan Reclamation Plan Trust Fund; the
		General Manager has determined that this action is exempt or
		otherwise not subject to CEQA
	Motion	a. Adopt a resolution providing financial assurance for the Colorado
		River Aqueduct Master Reclamation Plan and establish the
		Metropolitan Reclamation Plan Trust Fund; and
		b. Amend Sections 5200 and 5201 of the Metropolitan Water
		District Administrative Code to establish the Metropolitan
		Reclamation Plan Trust Fund.
	Presented by:	Sam Smalls, Manager of Treasury and Debt Management

Ms. Kasaine introduced the item and Mr. Smalls presented the committee with an overview of the Colorado River Aqueduct Master Reclamation Plan and Surface Mining and Reclamation Act Financial Assurance. His presentation also included an overview of the distribution system, financial assurance resolution and trust fund, and the Administrative Code amendment.

The following Directors provided comments or asked questions:

- 1. Miller
- 2. Smith

Staff responded to the Directors' comments and questions.

Director Pressman entered the meeting.

After completion of the presentation, Director Dennstedt made a motion, seconded by Director Miller, to approve items 2A and 7-13.

-3-

The vote was:

Ayes:	Directors Alvarez, Armstrong, De Jesus, Dennstedt, Dick, Fong-Sakai, McMillan, Miller, Pressman, Seckel, and Smith.
Noes:	None
Abstentions:	None
Not Voting:	None
Absent:	Directors Chacon, Petersen, and Quinn.

The motion for item 2A and 7-13 passed by a vote of 11 ayes, 0 noes, 0 abstain, and 3 absent.

#### END OF CONSENT CALENDAR ITEMS

#### 4. OTHER BOARD ITEMS – ACTION

Direct Chacon entered the meeting.

8-7	Subject:	Adopt the 2023 Long-Range Finance Plan Needs Assessment; the General Manager has determined that the proposed action is	
		exempt or otherwise not subject to CEQA	
	Substitute Motion:	Concur with the 2023 Long-Range Finance Plan Needs Assessment for planning purposes	
	Presented by:	Khan Phan, Unit Manager, Rates, Charges, and Financial Planning Sam Smalls, Manager of Treasury and Debt Management	

Ms. Kasaine introduced the item and Ms. Khan presented the committee with a correction to the draft Long-Range Finance Plan Needs Assessment, summary of 2032 scenarios, extending the financial analysis to 2045, and summary of 2045 scenarios. Mr. Smalls continued the presentation with the debt capacity analyses and frequently asked questions.

The following Directors provided comments or asked questions:

- 1. Seckel
- 2. Smith
- 3. Armstrong
- 4. Miller
- 5. Fong-Sakai
- 6. Ortega
- 7. Dennstedt
- 8. Alvarez
- 9. Kurtz
- 10. Ackerman

Staff responded to the Directors' comments and questions.

After completion of the presentation, Director Armstrong made a substitute motion, seconded by Director Seckel, to approve item 8-7.

-4-

The vote was:

Ayes:	Directors Alvarez, Armstrong, De Jesus, Dennstedt, Dick, McMillan, Pressman, and Seckel.
Noes:	Director Chacon, Fong-Sakai, Miller, Smith
Abstentions:	None
Not Voting:	None
Absent:	Directors Petersen and Quinn.

The motion for item 8-7 passed by a vote of 8 ayes, 4 noes, 0 abstain, and 2 absent.

#### 5. BOARD INFORMATION ITEMS

None

#### 6. COMMITTEE ITEMS

 a. Subject: Update on member agency purchase order commitments covering January 1, 2015 through December 31, 2024
Presented by: Adam Benson, Group Manager, Finance

Ms. Kasaine introduced the item and Mr. Benson presented the committee with the current purchase order status, assessment of the current purchase order, and future Board options.

The following Directors provided comments or asked questions:

- 1. Miller
- 2. Smith

Staff responded to the Directors' comments and questions.

-5-

b.	Subject:	Quarterly Financial Report			
	Presented by:	Adam Benson, Group Manager, Finance			

Ms. Kasaine introduced the item and Mr. Benson presented the committee with Metropolitan's quarterly financial report for the period ending September 30, 2023. The report included cumulative water transactions in acre-feet, revenues, expenses for fiscal year 2023/24, and unrestricted reserves.

The following Directors provided comments or asked questions:

- 1. Smith
- 2. Fong-Sakai
- 3. Dick
- 4. Alvarez
- 5. Miller
- 6. Armstrong

Staff responded to the Directors' comments and questions.

c. Subject: Diamond Valley Lake Recreation Update

Item was deferred to January.

Subject: Pure Water Southern California Cost Recovery Alternatives

d.

Presented by: Arnout Van den Berg, Section Manager-Revenue & Budget

Ms. Kasaine introduced the item and Mr. Van den Berg presented the committee with follow up questions and comments from the previous committee meeting, and discussion of scenario six.

The following Directors provided comments or asked questions:

1. Smith

Staff responded to the Directors' comments and questions.

#### 7. MANAGEMENT ANNOUNCEMENTS AND HIGHLIGHTS

a. Subject: General Auditor's Report on Monthly Activities

Mr. Suzuki updated the committee on the General Auditor's activities, which included the status of the external quality assessment, upcoming items at the Subcommittee on Audits, and professional services obtained.

-6-

b. Subject: Financial, Insurance, and Real Property Activities

No report was given.

#### 8. SUBCOMMITTEE REPORTS AND DISCUSSION

a. Subject: Discuss and provide direction to Subcommittee on Audits

No direction was given.

b.	Subject:	Report from Subcommittee on Long-Term Regional Planning		
		Processes and Business Modeling		
	Presented by:	Director Seckel		

Director Seckel updated the committee on the upcoming Joint Task Force of Subcommittee members and Member Agency Managers.

c. Subject: Discuss and provide direction to Subcommittee on Long-Term Regional Planning Processes and Business Modeling

No direction was given.

#### 9. FOLLOW-UP ITEMS

None

#### **10. FUTURE AGENDA ITEMS** None

#### **11. ADJOURNMENT**

The next meeting will be held on January 9, 2024.

The meeting adjourned at 1:05 p.m.

Timothy Smith Chair



THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

## **Board Information**

## Board of Directors Finance, Audit, Insurance, and Real Property Committee

#### 1/9/2024 Board Meeting

#### Subject

Updated report on the list of certified assessed valuations for the fiscal year 2023/24 and tabulation of assessed valuations, percentage participation, and vote entitlement of member agencies as of January 9, 2024

#### **Executive Summary**

On December 28, 2023, San Diego Local Agency Formation Commission (SDLAFCO) finalized the reorganization of Fallbrook Public Utilities District (Fallbrook), consisting of the detachment of Fallbrook from San Diego County Water Authority (SDCWA) to Eastern Municipal Water District (Eastern.) As a result, the reorganization is effective at Metropolitan for all district purposes, including the assessed valuation of each impacted member agency for purposes of member agency participation, voting, and director entitlement. Fallbrook's service area totals \$5.01 billion in net assessed valuation, which minimally impacts SDCWA's and Eastern's assessed valuation percentage, but does not impact any director entitlement.

This letter provides an updated report on certified assessed valuations as a result of the Fallbrook reorganization.

#### **Fiscal Impact**

None

#### **Applicable Policy**

Metropolitan Water District Act Section 52: Additional Directors

Metropolitan Water District Act Section 55: Voting by Board

Metropolitan Water District Act Section 305: Certification of Assessed Valuations; Segregation of Valuations

#### Related Board Action(s)/Future Action(s)

Not applicable

#### **Details and Background**

#### Background

Member agency participation, vote, and director entitlement are determined at Metropolitan based on certified assessed valuations for each member agency's service area. (MWD Act, §§ 52, 55, 305.) The certified assessed valuations are reported to the Board each August after receipt of the certified information from each county assessor. On August 8, 2023, staff reported the assessed valuation to the Board for fiscal year (FY) 2023/24. However, on December 28, 2023, SDLAFCO finalized the deannexation of Fallbrook from SDCWA and annexation to Eastern's service area. The next day, SDLAFCO also filed the Certificate of Completion with the Secretary of the Metropolitan Board of Directors. As a result of the reorganization, the assessed valuation of Fallbrook's service area is now part of Eastern's service area and must be attributed to Eastern's certified assessed valuation for Metropolitan purposes, including participation, vote, and director entitlement. (MWD Act, § 455.)

**6G** 

Fallbrook's total net assessed valuation is \$5.01 billion, which is a small percentage of Metropolitan's total valuation (net of homeowners exemptions) of \$3.86 trillion for FY 2023/24 throughout its six-county service area. The transfer results in a 0.13 percent addition to Eastern's assessed valuation and an equivalent reduction from SDCWA's assessed valuation, as shown in **Table 1**. The percentage does not change for any other member agency. The updated percentage participation and vote entitlement by member agencies, provided in Attachment 1, is effective as of January 9, 2024, and the net change from FY 2022/23 to the current FY 2023/24 has also been updated, as reflected in Attachment 2.

Assessed valuation is also used to determine the number of representatives an agency has on the Metropolitan Board. Based on the percentage of assessed valuation being transferred to Eastern, the number of representatives for each agency remains the same and is also reported in Attachment 3.

The updated percentage participation and vote entitlement for the two impacted member agencies are as follows:

		Tab	ole 1			
The Metropolitan Water District of Southern California						
Comparison of Vote	Entitlement Per	centage for Fisca	al Years 2023/24	After The Fallbr	ook PUD Trans	fer
			<b>A</b> 5.			
	As of 8	3/15/2023	As of	1/9/2024		
	FY 2023/24			Y 2023/24 Change		ange
		Vote		Vote		Vote
	Vote	Entitlement	Vote	Entitlement	Vote	Entitlement
Member Agency	Entitlement	Percentage	Entitlement	Percentage	Entitlement	Percentage
Eastern MWD	11,559	2.99%	12,060	3.12%	501	0.13%
San Diego County Water Authority	67,702	17.53%	67,201	17.40%	(501)	-0.13%

Kesami 1/5/2024

Katano Kasaine Assistant General Manager/ Chief Financial Officer

Date

1/5/2024

Ade**l** Haqekhalil General Manager Date

- Attachment 1 Assessed Valuations, Percentage Participation, and Vote and Director Entitlement of Member Public Agencies as of January 9, 2024
- Attachment 2 Updated Comparison of Net Assessed Valuations for Fiscal Years 2022/23 and 2023/24
- Attachment 3 Updated Comparison of Vote Entitlement Percentage for Fiscal Years 2022/23 and 2023/24

Ref# cfo12698624

#### The Metropolitan Water District of Southern California Assessed Valuations, Percentage Participation, and Vote and Director Entitlement of Member Public Agencies As of January 9, 2024

	*Assessed Valuation	Percent	** Vote	*** Director
Member Agency	Amount Certified	<u>of Total</u>	<u>Entitlement</u>	<u>Entitlement</u>
Anaheim	60,384,239,089	1.56%	6,038	1
Beverly Hills	44,925,471,380	1.16%	4,493	1
Burbank	31,747,985,559	0.82%	3,175	1
Calleguas MWD	130,730,622,244	3.39%	13,073	1
Central Basin MWD	193,242,928,112	5.00%	19,324	2
Compton	6,413,398,218	0.17%	641	1
Eastern MWD	120,598,728,795	3.12%	12,060	1
Foothill MWD	24,094,186,106	0.62%	2,409	1
Fullerton	25,613,995,600	0.66%	2,561	1
Glendale	39,846,531,370	1.03%	3,985	1
Inland Empire Utilities Agency	160,301,386,680	4.15%	16,030	1
Las Virgenes MWD	30,903,464,678	0.80%	3,090	1
Long Beach	65,577,549,323	1.70%	6,558	1
Los Angeles	801,720,255,259	20.76%	80,172	5
MWD of Orange County	646,336,513,093	16.74%	64,634	4
Pasadena	38,640,474,384	1.00%	3,864	1
San Diego County Water Authority	672,010,650,192	17.40%	67,201	4
San Fernando	2,596,234,164	0.07%	260	1
San Marino	8,004,717,057	0.21%	800	1
Santa Ana	34,312,996,241	0.89%	3,431	1
Santa Monica	48,607,667,263	1.26%	4,861	1
Three Valleys MWD	86,341,467,819	2.24%	8,634	1
Torrance	35,904,604,824	0.93%	3,590	1
Upper San Gabriel Valley MWD	134,179,397,217	3.47%	13,418	1
West Basin MWD	270,636,770,769	7.01%	27,064	2
Western MWD	147,747,843,154	3.83%	14,775	1
TOTAL ASSESSED VALUATIONS WITHIN METROPOLITAN	3,861,420,078,590	100%	386,141	<u>38</u>

Percentage may not foot due to rounding.

#### 6G

#### The Metropolitan Water District of Southern California Comparison of Assessed Valuations Net of HOE for Fiscal Years 2022/23 and 2023/24

	FY 2022/23	FY 2023/24	Percentage
Member Agency	Net Assessed Valuation	Net Assessed Valuation	Change
Los Angeles County:			
Beverly Hills	\$ 42.674.597.044	\$ 44.925.471.380	5.3%
Burbank	28,930,674,618	31,747,985,559	9.7%
Glendale	38.135.312.336	39.846.531.370	4.5%
Los Angeles	756.988.951.892	801.720.255.259	5.9%
Pasadena	37.161.819.093	38.640.474.384	4.0%
San Marino	7,698,613,665	8,004,717,057	4.0%
Santa Monica	46.186.316.289	48.607.667.263	5.2%
Long Beach	61,510,103,081	65,577,549,323	6.6%
Torrance	34,159,203,429	35,904,604,824	5.1%
Compton	5.986.309.227	6.413.398.218	7.1%
West Basin MWD	254 528 802 947	270 636 770 769	6.3%
Three Valleys MWD	82 538 322 114	86 341 467 819	4.6%
	22 900 325 902	24 094 186 106	5.2%
Central Basin MWD	182 159 170 598	103 242 028 112	6.1%
Las Virgenes MWD	29 271 920 993	30 903 464 678	5.6%
Upper San Gabriel Valley MWD	126 877 023 875	134 179 397 217	5.8%
San Fernando	2,381,877,804	2,596,234,164	9.0%
	,,-,-,		
Total Los Angeles County	1,760,089,344,907	1,863,383,103,502	5.9%
Orange County:			
Anaheim	56,269,073,437	60,384,239,089	7.3%
Santa Ana	32,281,865,954	34,312,996,241	6.3%
Fullerton	23,900,520,075	25,613,995,600	7.2%
MWD of Orange County	609,134,298,271	646,336,513,093	6.1%
Total Orange County	721,585,757,737	766,647,744,023	6.2%
Riverside County:			
Fastern MWD	105 024 028 930	120 598 728 795	14.8%
Western MWD	135.413.345.350	147.747.843.154	9.1%
	100,110,010,000		0.170
Total Riverside County	240,437,374,280	268,346,571,949	11.6%
San Bernardino County:			
Inland Empire Utilities Agency	146,634,414,955	160,301,386,680	9.3%
San Diego County:			
San Diego County Water Authorit	y 632,321,979,224	672,010,650,192	6.3%
Ventura County:			
Calleguas MWD	123,683 835 701	130,730 622 244	57%
	120,000,000,701	100,100,022,244	0.17
Total Within Metropolitar	3,624,752,706,804	3,861,420,078,590	6.5%
Excluded Areas	82,867,799	87,104,636	5.1%
*Total Taxable by Metropolitar	n \$ 3,624,835.574.603	\$3,861,507,183,226	6.5%

#### The Metropolitan Water District of Southern California Comparison of Vote Entitlement Percentage for Fiscal Years 2022/23 and 2023/24

	FY 2022/2		3 FY 2023/24			Change		
Member Agency	Vote Entitlement	Vote Entitlement Percentage	Vote Entitlement	Vote Entitlement Percentage	Vote Entitlement	Vote Entitlement Percentage		
Anaheim	5,627	1.55%	6,038	1.56%	411	0.01%		
Beverly Hills	4,267	1.18%	4,493	1.16%	226	-0.01%		
Burbank	2,893	0.80%	3,175	0.82%	282	0.02%		
Calleguas MWD	12,368	3.41%	13,073	3.39%	705	-0.03%		
Central Basin MWD	18,216	5.03%	19,324	5.00%	1,108	-0.02%		
Compton	599	0.17%	641	0.17%	42	0.00%		
Eastern MWD	10,502	2.90%	12,060	3.12%	1,558	0.23%		
Foothill MWD	2,290	0.63%	2,409	0.62%	119	-0.01%		
Fullerton	2,390	0.66%	2,561	0.66%	171	0.00%		
Glendale	3,814	1.05%	3,985	1.03%	171	-0.02%		
Inland Empire Utilities Agency	14,663	4.05%	16,030	4.15%	1,367	0.11%		
Las Virgenes MWD	2,927	0.81%	3,090	0.80%	163	-0.01%		
Long Beach	6,151	1.70%	6,558	1.70%	407	0.00%		
Los Angeles	75,699	20.88%	80,172	20.76%	4,473	-0.12%		
MWD of Orange County	60,913	16.80%	64,634	16.74%	3,721	-0.07%		
Pasadena	3,716	1.03%	3,864	1.00%	148	-0.02%		
San Diego County Water Authority	63,232	17.44%	67,201	17.40%	3,969	-0.04%		
San Fernando	238	0.07%	260	0.07%	22	0.00%		
San Marino	770	0.21%	800	0.21%	30	-0.01%		
Santa Ana	3,228	0.89%	3,431	0.89%	203	0.00%		
Santa Monica	4,619	1.27%	4,861	1.26%	242	-0.02%		
Three Valleys MWD	8,254	2.28%	8,634	2.24%	380	-0.04%		
Torrance	3,416	0.94%	3,590	0.93%	174	-0.01%		
Upper San Gabriel Valley MWD	12,688	3.50%	13,418	3.47%	730	-0.03%		
West Basin MWD	25,453	7.02%	27,064	7.01%	1,611	-0.01%		
Western MWD	13,541	3.74%	14,775	3.83%	1,234	0.09%		
Total	362,474	100%	386,141	100%	23,667	0.00%		

Percentages may not foot due to rounding.



THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

### **Board Action**

#### Board of Directors Finance, Audit, Insurance, and Real Property Committee

#### 1/9/2024 Board Meeting

#### Subject

7-9

Authorize the General Manager to execute 47 license agreements to update the conditions and extend the term of existing secondary use agreements comprising Metropolitan fee-owned parcels in Los Angeles, Orange, Riverside and San Bernardino counties; the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA (Assessor Parcel Nos. 0201-821-49; 0239-182-46; 0262-051-21; 0262-071-40; 0264-011-31; 0266-041-59; 0643-221-06; 0643-221-06; 0643-221-07; 0646-081-07; 0649-031-06; 189-200-007; 2526-024-270; 291-480-008; 303-090-036; 390-151-19; 430-210-014; 430-190-028; 4493-014-906; 452-052-03; 516-030-013; 516-100-006; 5260-013-910; 6204-012-901; 6204-033-901; 6204-028-901; 6680-200-02; 6680-500-16; 811-100-007; 8666-059-904; 8381-006-906; 8381-006-909; 8381-019-900; 8381-020-902; 8381-020-903; 8381-023-901; 8381-030-902; 8381-030-903; 8381-036-906; 8381-036-905; 8669-013-901; 8684-008-270; 921-700-013; 922-110-022; Parcel on Fargo Canyon Road, Riverside)

#### **Executive Summary**

Metropolitan has entered into hundreds of active secondary use agreements (permits, licenses, leases) that have been in effect since as far back as 1970. Staff has identified 47 such "legacy" agreements, as shown on the map **(Attachment 1)**, that have remained active on a year-to-year, holdover basis with outdated terms and conditions. The proposed 47 replacement license agreements and permits would have base terms and options for a total of up to 30 years and include payment amounts or in-kind contributions established through our fair market value appraisal process. The requested board action is intended to provide for more efficient processing of the subject's existing 47 license agreements and permits instead of seeking separate board authorization for each license agreement, given their similar status. See **(Attachment 2)** for the List of 47 Agreements. This consolidated approach will improve the management of secondary use agreements, ensuring compliance with contemporary standards and continued compatibility of those secondary uses with Metropolitan's core mission.

#### **Proposed Action/Recommendation and Option**

#### Staff Recommendation: Option #1

#### **Option #1**

Authorize the General Manager to execute 47 license agreements to update the conditions and extend the term of existing secondary use agreements comprising Metropolitan fee-owned parcels in Los Angeles, Orange, Riverside and San Bernardino counties.

**Fiscal Impact:** Metropolitan may recognize a net annual increase in revenue up to 8% from \$280,692 to \$303,147 for the 47 license agreements.

**Business Analysis**: Allowing compatible uses within Metropolitan's fee-owned property generates revenue and advances public interest and local private commerce.

#### **Option #2**

Authorize the General Manager to execute 47 license agreements comprising Metropolitan's fee-owned parcels at fair market value and resubmit to the Board any license agreements recommended at a modified fee less than fair market value for authorization to execute the agreements.

**Fiscal Impact:** Metropolitan may recognize a net annual increase in revenue up to 5% from \$280,692 to \$294,727 for the 47 license agreements.

**Business Analysis:** Allowing compatible uses within Metropolitan's fee-owned property generates revenue and advances public interest and local private commerce.

#### **Option #3**

Do not authorize the General Manager to execute 47 license agreements and continue to allow the existing agreements to roll over until new ones can be taken back to the Board.

Fiscal Impact: Revenue from the 47 license agreements remain unchanged.

**Business Analysis:** Existing agreements with outdated terms will continue to present unfavorable risk exposure.

#### **Alternatives Considered**

Not applicable

#### **Applicable Policy**

Metropolitan Water District Administrative Code Section 8230: Grants of Real Property Interests

Metropolitan Water District Administrative Code Section 8231: Appraisal of Real Property Interests

Metropolitan Water District Administrative Code Section 8121: General Authority of General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

#### Related Board Action(s)/Future Action(s)

Not applicable

#### California Environmental Quality Act (CEQA)

#### **CEQA determination for Option #1 and Option #2:**

The proposed action is exempt from CEQA because it involves the licensing of existing public structures, facilities, involving negligible or no expansion of existing or former use, and no possibility of significantly impacting the physical environment. (State CEQA Guidelines Section 15301).

#### **CEQA determination for Option #3:**

None required

#### **Details and Background**

#### Background

Metropolitan's Land Management Unit is responsible for managing a portfolio of 240 active secondary use agreements. This real estate portfolio is currently generating approximately \$8 million in annual revenue, which includes the agriculture leases in Palo Verde and Bay Delta. Parties to the leases and land use licenses and permits range from member agencies, cities, and state and federal agencies to private businesses and organizations. The types of secondary uses authorized on Metropolitan's property include agriculture, recreation, parking, telecom, public roads, storage, access, infrastructure, and utilities.

The existing 47 license and permit agreements that are the subject of this authorization may include one or more of the following characteristics: below-market rates, the lack of current district standard terms and language, the lack of annual rent escalation terms, and holdover permittee or licensee status. Approximately a third of the subject leases or licenses entail long-term telecommunication tenancies at Black Metal Mountain. Your Board has authorized the upgrade of electrical infrastructure at Black Metal Mountain, and the related tenancies need to be updated in connection with this electrical upgrade project to ensure a fair share of these upgrade costs are passed on to the tenants. The continuation of these secondary use agreements will also be reviewed internally to ensure the current uses are compatible with Metropolitan's current and future use. Since all 47 licenses and permits have

been in effect for at least five years, board authorization is required to replace the old agreements with new license and permit agreements as recommended herein.

#### **Proposed Key Provisions**

- New Fair Market License Fee or Modified License Fee
- Annual Fee Increases of 4-5 percent
- New Liability and Insurance Terms
- Base Term and Optional Additional Term for a total of up to 30 years
- Reappraisal of License Fee every 5 Years
- Paramount Rights Provision
  - Staff is prepared to negotiate terms within the framework of the key provisions set forth herein, including conformance to the Administrative Code's fair market value guidelines. However, board authorization is also being requested to negotiate terms that may not be defined as a standard fair market rate as allowed by the Administrative Code. Pursuant to Administrative Code 8231(b), the General Manager or his designee is also authorized to enter into licenses or leases for less than appraised value based on offsetting mutual benefit factors and/or costs incurred by the licensee or permittee for things such as weed abatement, trespassing or illegal dumping costs. It is anticipated that a nominal percentage of the subject 47 licenses and permits will fall within this mutual benefit and cost offset category, as local conditions or licensed secondary uses lend themselves to in-kind contributions or shared site responsibilities.

12/18/2023 Liz Crosson Date Chief Sustainability, Resilience and Innovation Officer 12/20/2023 Adel Hagekhalil Date General Manager

Attachment 1 – General Location Map Attachment 2 – List of 47 Agreements

Ref# sri12696274





7-9

#### 1/9/2024 Board Meeting

7-9

#### Attachment 2, Page 1 of 4

Contract # (RL #)	Lessee	Size of Premises (Acres)	Use/Purpose	Location of Property or Facility Name	Lease Commencem ent Date	Lease Term (Yrs.)	Current Annual Amount	Annual Adjustmt	APNs	County
103	Frontier Communications, Inc.	N/A	Telecom	Gene Camp/Parker Dam	7/1/1970	1 Yr	\$170.33	None	0649-031-06	San Bernardino
333	Rain for Rent		Storage	Box Springs Feeder	1/1/1977	Yr to Yr	\$6,045.89	CPI	291-480-008	Riverside
334	State of California, Department of General Services-CHP	N/A	Telecom	Black Metal Mountain	7/1/1974	1 Yr.	\$1,700.00	None	0649-031-06	San Bernardino
335	Frontier Communications, Inc. (Verizon GTE)	N/A	Telecom	Black Metal Mountain	7/1/1974	1 Yr.	\$1,500.00	None	0649-031-06	San Bernardino
336	State of Arizona, Department of Public Safety	N/A	Telecom	Black Metal Mountain	7/1/1974	1 Yr.	\$1,500.00	None	0649-031-06	San Bernardino
362	U.S. Department of the Interior, Bureau of Land Management	N/A	Telecom	Black Metal Mountain	9/1/1976	1 Yr.	\$1,700.00	None	0649-031-06	San Bernardino
390	Southern California Edison Company, Property Acquisition, Real Properties	N/A	Telecom	Black Metal Mountain	2/1/1977	1 Yr.	\$1,700.00	None	0649-031-06	San Bernardino
401	County of Los Angeles	1.37	Recreation	Foothill Feeder/Rialto Pipeline	6/1/1977	30 Years	\$2,061.42	CPI	8666-059-904; 8381-006-906; 8381-006-909; 8381-019-900; 8381-020-902; 8381-020-903; 8381-023-901; 8381-030-902; 8381-030-903; 8381-036-906; 8381-036-905	Los Angeles
445	Shepherd of the Hill Lutheran Church	0.92	Parking	Foothill Feeder/Rialto Pipeline	6/1/1989	Yr to Yr	\$1,458.18	CPI	0201-821-49	San Bernardino
451	U.S. Department of Transportation, FAA	N/A	Telecom	Black Metal Mountain	10/1/1979	Yr to Yr	\$1,700.00	None	0649-031-06	San Bernardino
493	Woodbridge Village Association	0.05	Parking	East Orange County Feeder No. 2/Pressure Control Structure	6/1/1982	Yr to Yr	\$100.00	None	452-052-03	Orange
513	Western Area Power	N/A	Telecom	Black Metal Mountain	7/1/1974		\$1,500.00	None	0649-031-06	San Bernardino
591	U.S. Department of Justice, Federal Bureau of Investigation	N/A	Telecom	Black Metal Mountain	5/1/1985	22 Yrs 11 Mo	\$141.66	None	0649-031-06	San Bernardino

Page 1 of 4

#### 1/9/2024 Board Meeting

#### Attachment 2, Page 2 of 4

Contract # (RL #)	Lessee	Size of Premises (Acres)	Use/Purpose	Location of Property or Facility Name	Lease Commencem ent Date	Lease Term (Yrs.)	Current Annual Amount	Annual Adjustmt	APNs	County
597	State of California, Department of Fish and Game	N/A	Telecom	Black Metal Mountain	8/1/1984	23 Yrs 4 Mo	\$1,700.00	None	0649-031-06	San Bernardino
649	Terra Gen Development Company	10.00	Weather Tower	Colorado River Aqueduct/Whitewater	6/10/1985	Yr. to Yr.	\$1,500.00	None	516-030-013	Riverside
672	EPNG Pipeline Company	4.68	Oil Pipeline	Colorado River Aqueduct	6/2/1986	30 Yrs	\$4,188.00	2 Yr./PPI	0646-081-07	San Bernardino
686	Southern California Edison Company	0.99	Infrastructure	Colorado River Aqueduct	7/1/1986	30 Yrs.	\$0.00	None	6680-200-02; 6680-500-16	San Bernardino
742	County of San Bernardino Office or Public Safety-Forestry & Fire Warden	N/A	Telecom	Black Metal Mountain	1/18/1988	20 Yrs	\$0.00	Fixed Rate	0649-031-06	San Bernardino
841	Mountain View Congregation of Jehovah's Witnesses	0.26	Parking	Foothill Feeder/Rialto Pipeline	1/1/1993	Yr. to Yr.	\$500.00	Fixed Rate	0239-182-46	San Bernardino
847	Palomar Properties, Inc.	0.77	Landscaping	San Diego Pipeline No. 5	5/1/1989	Yr. to Yr.	\$1,429.70	4%	921-700-013	Riverside
874	Azusa Rock, Inc.	2.5	Access	Fish Canyon Adit	10/1/1989	Yr. to Yr.	\$444.65	5%	8684-008-270	Los Angeles
924	Samaritan Health Services (DBA Airevac)	N/A	Telecom	Black Metal Mountain	11/1/1990	17.5 Yrs.	\$1,700.00	Fixed Rate	0649-031-06	San Bernardino
964	U.S. Department of Justice, Drug Enforcement Administration	N/A	Telecom	Black Metal Mountain	8/9/1991	16 Yrs 6 Mo	\$1,700.00	Fixed Rate	0649-031-06	San Bernardino
972	Jayofer Inc	0.12	Parking	Middle Cross Feeder	9/1/1991	29 Years	\$850.96	3%	6204-012-901	Los Angeles
977	C & C Mountaingate, Inc.	0.215	Access	Sepulveda Canyon Control Facility	7/1/1992	Yr. to Yr.	\$651.27	3%	4493-014-906	Los Angeles
982	Caltrans, Department of Transportation	0.413	Telecom	East Iron Mountain	8/1/1991	Yr. to Yr.	\$1,500.00	Fixed Rate	0643-221-06; 0643-221-07	San Bernardino
1008	Martens, Mr. Eric W.	3.67	Telecom	Chuckwalla Communications Site	8/1/1992	Yr. to Yr.	\$333.68	5%	811-100-007	Riverside
1294	Hafif, Mr. Herbert	3.59	Landscaping	Foothill Feeder/Rialto Pipeline	4/15/1995	Yr. to Yr.	\$500.00	Fixed Rate	8669-013-901	Los Angeles

Page 2 of 4

#### 1/9/2024 Board Meeting

7-9

#### Attachment 2, Page 3 of 4

Contract # (RL #)	Lessee	Size of Premises (Acres)	Use/Purpose	Location of Property or Facility Name	Lease Commencem ent Date	Lease Term (Yrs.)	Current Annual Amount	Annual Adjustmt	APNs	County
1368	Coachella Valley Aggregates	1.22	Access	Colorado River Aqueduct	4/1/1995	24 Yrs.	\$0.00	N/A	N/A Fargo Canyon Rd	Riverside
1387	Cemex Construction Materials Pacific, LLC	0.12	Access	San Diego Pipeline 4 & 5	4/1/1995	Yr. to Yr.	\$3,704.37	3%	922-110-022	Riverside
1492	T-Mobile USA, Inc.	0.189	Telecom	Sepulveda Feeder	7/1/1996	25 Yrs.	\$21,324.36	3%	4493-014-906	Los Angeles
1522	Southern California Gas Company - Los Angeles	N/A	Telecom	Black Metal Mountain	1/1/1997	Yr. to Yr.	\$1,500.00	Fixed Rate	0649-031-06	San Bernardino
1635	RailAmerica, Inc.	0.012	Telecom	Iron Mountain Pumping Plant	7/1/1997	Yr. to Yr.	\$0.00	N/A	0643-221-06	San Bernardino
1653	State of California	0.0034	Telecom	Iron Mountain Pumping Plant	2/1/1998	Yr. to Yr.	\$0.00	N/A	0643-221-06	San Bernardino
1840	Whitewater Rock and Supply Company	14.426	Storage	Colorado River Aqueduct/Whitewater	11/1/2007	Month to Month	\$12,127.80	4%	516-100-006	Riverside
1851	Riverside Auto Auction	4.896	Parking	Upper Feeder	12/1/2001	Yr. to Yr.	\$46,773.36	4%	189-200-007	Riverside
1931	La Paz County	N/A	Telecom	Black Metal Mountain	5/1/2001	Yr. to Yr.	\$0.00	N/A	0649-031-06	San Bernardino
2033	Middle Ranch	2.3	Equestrian	Foothill Feeder/Sunland Tunnel 1	8/1/2004	Yr. to Yr.	\$13,474.80	5%	2526-024-270	Los Angeles
2193	Cemex Construction Materials Pacific, LLC	0.077	Access	Foothill Feeder/Rialto Pipeline	8/23/2004	Yr. to Yr.	\$331.83	5%	0262-071-40; 0264-011-31	San Bernardino
2387	CalMat dba Vulcan Materials Company, Western Division	1.155	Access	Foothill Feeder/Rialto Pipeline	5/1/2006	14 Yrs.	\$35,568.69	5%	0262-051-21	San Bernardino
2549	R & J Haringa Dairy	17	Agriculture	Colorado River Aqueduct/Casa Loma Siphon (1st Barrel)	1/1/2006	Yr. to Yr.	\$1,497.12	CPI	430-210-014; 430-190-028	Riverside
2763	LA Community College District	0.25	Parking	Middle Cross Feeder	7/1/2008	Yr. to Yr.	\$177.47	5%	6204-033-901; 6204-028-901	Los Angeles
2851	Industrial Parkway, LLC	1.8	Landscaping	Foothill Feeder/Rialto Pipeline	5/1/2008	Yr. to Yr.	\$579.30	4%	0266-041-59	San Bernardino
2859	So Cal Gas	0.06	Telecom	Garvey Reservoir	8/1/2008	Yr. to Yr.	\$17,393.38	CPI	5260-013-910	Los Angeles

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River Rat Radio

Selman Chevrolet

Duke Realty

3274

3296

4070

Contract # (RL #)	Lessee	Size of Premises (Acres)	Use/Purpose	Location of Property or Facility Name	Lease Commencem ent Date	Lease Term (Yrs.)

Telecom

Parking

Access

0.084

0.38

0.296

#### Attachment 2, Page 4 of 4

County

San Bernardino

Orange

Riverside

APNs

Annual

Adjustmt

4%

3%

4%

0649-031-06

390-151-19

303-090-036

Current

Annual

Amount

\$36,946.80

\$41,526.70

\$9,490.00

Page 4 of 4

Black Metal Mountain

East Orange County Feeder No.

2/Pressure Control Structure Colorado River Aqueduct 7-9

Yr. to Yr.

Yr. to Yr.

5 Yrs.

9/1/2012

12/13/2012

4/1/2017



# Finance, Audit, Insurance, and Real Property Committee Replace 47 Outdated Secondary Use Agreements

Item 7-9 January 9, 2024 Overview of Replacing Outdated Agreements

## Subject

• Authorize the negotiation and execution of 47 secondary use agreements (leases, licenses, permits) to replace the existing outdated terms.

Purpose

• Replace outdated agreements with new agreements that include Metropolitan's current standard terms and language.

# Service Area & CRA Map



26

# Portfolio Data

240 Active Agreements (58% Private, 42% Govt)

15-20 New Agreements Annually Secondary Use Agreements (Leases, Licenses, Permits) Annual Revenue \$8M

### **Annual Compliance**

- \* Site Inspections
- \* Rent Adjustments (120)
- \* Insurance Certificates
- \* Weed/Trash Cleanup

Outdated Terms

- Below-market Rates
- Lack of Insurance Requirements
- Inadequate Insurance Amounts
- Lack of Annual Rent Increase
- Holdover Tenancy Status
- Outdated Liability, Environmental and Paramount Rights Provisions

Key Provisions

- Mutually compatible uses subject to Metropolitan's paramount right
- Fair Market License Fee
- Modified Fair Market License Fee based on mutual benefits or shared site expenses
- Annual Fee Increase of 4-5%
- Current Liability and Insurance Terms
- Base Term of 5 Years
- Optional Extensions of 5-25 Years
- Reappraisal of License Fee every 5 Years

Board Options

## Option No. 1

• Authorize the General Manager to negotiate and execute 47 license agreements.

# Option No. 2

• Authorize the General Manager to negotiate and execute license agreements at fair market value (FMV) and resubmit to the Board any license agreements at less than FMV.

# Option No. 3

• Do not authorize the negotiation and execution of 47 license agreements.

## Board Options

## Staff Recommendation

Option No. 1





THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

### **Board Action**

## Board of Directors Finance, Audit, Insurance, and Real Property Committee

#### 1/9/2024 Board Meeting

7-10

#### Subject

Review and consider the Final Environmental Impact Report certified by the City of Rancho Cucamonga, and authorize the General Manager to grant a permanent easement to the City of Rancho Cucamonga for public road and trail purposes on Metropolitan fee-owned property in the City of Rancho Cucamonga and identified Assessor Parcel Numbers 022-512-301; 022-512-302; 022-512-303; 022-512-304

#### **Executive Summary**

This action authorizes the General Manager to grant a permanent easement to the city of Rancho Cucamonga for public road and trail purposes for the extension of Wilson Avenue, which is along Metropolitan's fee-owned Rialto Pipeline right-of-way. The road and trail improvements are being constructed to accommodate a residential development located just north of the Rialto Pipeline. Board authorization to grant this permanent easement is required as the real property interest to be conveyed exceeds five years.

#### Proposed Action(s)/Recommendation and Options

#### Staff Recommendation: Option #1

#### **Option #1**

Review and consider the Final Environmental Impact Report certified by the city of Rancho Cucamonga and authorize the General Manager to grant a permanent easement to the city of Rancho Cucamonga for public road and trail purposes in the city of Rancho Cucamonga and identified Assessor Parcel Numbers 022-512-301; 022-512-302; 022-512-303; 022-512-304.

**Fiscal Impact:** Metropolitan will receive positive revenue in the form of a one-time payment of \$1,361,000 as determined by a qualified licensed appraiser and a one-time processing fee of \$8,500.

**Business Analysis:** Cooperation with other agencies, by granting easements and other rights of entry, furthers the public interest and facilitates Metropolitan obtaining easements and other property rights critical for its operations. Metropolitan will also receive positive revenue in the form of fees and fair market value for the easement.

#### **Option #2**

Do not approve the permanent easement.

Fiscal Impact: Metropolitan will forgo a one-time payment of \$1,369,500.

**Business Analysis:** The city of Rancho Cucamonga will not be permitted to construct and maintain a public road and trail within Metropolitan property which may impact their future circulation in the area, and they may use eminent domain action to obtain the necessary easement. This option could hinder opportunities to obtain rights or permits for Metropolitan projects from the city in the future.

#### **Alternatives Considered**

Not applicable

#### **Applicable Policy**

Metropolitan Water District Administrative Code Section 8230: Grants of Real Property Interests

Metropolitan Water District Administrative Code Section 8231: Appraisal of Real Property Interests

Metropolitan Water District Administrative Code Section 8232: Terms and Conditions of Management

#### Related Board Action(s)/Future Action(s)

By Minute Item 48766, dated August 16, 2011, the Board adopted the proposed policy principles for managing Metropolitan's real property assets.

#### California Environmental Quality Act (CEQA)

#### **CEQA determination for Option #1:**

Acting as the Lead Agency, the city of Rancho Cucamonga certified a Final Environmental Impact Report on June 16, 2004, for the Tentative Tract Map Number 16072. The Lead Agency also approved the Findings of Fact, the Statement of Overriding Considerations, and the Mitigation Monitoring and Reporting Program. The Final EIR and related CEQA documents are included in Attachments 2-8.

The Board has reviewed and considered these environmental documents and adopts the findings of the Lead Agency. (State CEQA Guidelines Section 15096.)

#### **CEQA determination for Option #2:**

None required

#### **Details and Background**

#### Background

The city of Rancho Cucamonga is requesting a permanent easement between 65' and 85' feet wide along Metropolitan's fee-owned property to allow for the extension of Wilson Avenue to accommodate a new residential development project located north of Wilson Avenue in the city of Rancho Cucamonga (Attachment 1). The city is also extending an existing trail that will be parallel and just south of Wilson Avenue within Metropolitan's right-of-way. The new easement will cover the public street and trail. The cover over the 96-inch-inside-diameter prestressed concrete Rialto Pipeline has approximately 10 feet of cover in this area. The requested easement area is approximately four acres.

At the time of Metropolitan's acquisition of the property, Wilson Avenue was planned along our right-of-way but not accepted as a public road. Wilson Avenue and the related trail have already been constructed along our right-of-way west of this location. The proposed improvements will include a public road and related infrastructure, and a trail. The city of Rancho Cucamonga will assume responsibility for the public street and trail within the easement area. Staff evaluations have determined that the easement will not interfere with Metropolitan's operations.

The proposed permanent easement for public road purposes will have the following key provisions:

- Compatible use between two public entities with prior rights provisions for Metropolitan.
- For construction, operation, and maintenance of a public road and trail.
- The city of Rancho Cucamonga is responsible for the operation and maintenance of the public road and related facilities and for indemnifying Metropolitan.
- All plans for construction, maintenance, major repair, or replacement work shall be reviewed and approved by Metropolitan before the commencement of work.
- The city of Rancho Cucamonga will keep the easement area free of trespass, noxious weeds, and trash, at its sole cost and expense.

• Metropolitan will receive the fair market value for the proposed easement of \$1,361,000 as determined by a qualified licensed appraiser and a one-time processing fee of \$8,500.

12/19/2023 Liz Crosson Date Chief Sustainability, Resilience and Innovation Officer 12/20/2023 Adel Haqekhalil Date General Manager

- Attachment 1 Site Map
- Attachment 2 Draft EIR Vol. 1
- Attachment 3 Draft EIR Vol. 2
- Attachment 4 Draft EIR Vol. 3
- Attachment 5 EIR Findings of Fact (FEIR)
- Attachment 6 EIR Certification (RESOLUTION 04-204)
- Attachment 7 EIR NOD and CDFG Filing Fee 2004
- Attachment 8 EIR Response to Comments

Ref# sri12691625


# Draft Environmental Impact Report

City of Rancho Cucamonga Tentative Tract Map Number 16072 (State Clearinghouse 2002091053)



# Volume I Draft EIR

November 2003



# VOLUME I DRAFT Environmental Impact Report

7-10

## Rancho Cucamonga Tentative Tract Map Number 16072 Sch# 2002091053

Prepared for:

## City of Rancho Cucamonga

Community Development Department 10500 Civic Center Drive Rancho Cucamonga, CA 91729

Contact: Debra Meier

Prepared by:

Michael Brandman Associates 621 E. Carnegie Drive, Suite 100 San Bernardino, CA 92408 909.884.2255

Contact: Thomas J. McGill, Ph.D., Project Director Michael E. Houlihan, Project Manager



November 25, 2003

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#### SECTION 1 INTRODUCTION

#### 1.1 Purpose of the EIR

This draft environmental impact report (EIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) to evaluate the potential environmental impacts associated with the Etiwanda Properties Residential Development (Tentative Tract Map #16072) in the northern Etiwanda area of unincorporated San Bernardino County, within the City of Rancho Cucamonga's Sphere of Influence. This EIR has been prepared in conformance with CEQA, California Public Resources Code Section 21000 et seq; the California CEQA guidelines (California Code of Regulations, Title 14, Section 15000 et seq); and the rules, regulations, and procedures for implementing CEQA as adopted by the City of Rancho Cucamonga. This is a Project EIR, in conformance with Section 15161 of the State CEQA Guidelines and examines the environmental impacts associated with a specific development project.

The draft EIR is intended to serve as an informational document for public agency decision-makers and the general public regarding the objectives and components of the proposed project. This document will address the potentially significant adverse construction and long-term occupancy of the proposed project as well as identify feasible mitigation measures and alternatives that may be adopted to reduce or eliminate these impacts.

This EIR is the primary reference document for the formulation and implementation of a mitigation monitoring program for the proposed project. Environmental impacts cannot always be mitigated to a level that is considered less than significant. In accordance with Section 15093(b) of the State CEQA Guidelines, if a lead agency approves a project that has significant impacts that are not substantially mitigated (i.e., significant unavoidable impacts), the agency shall state in writing the specific reasons for approving the project, based on the final CEQA documents and any other information in the public record for the project. This is defined in Section 15093 of the state CEQA Guidelines as "a statement of overriding considerations."

#### 1.2 Scope of the EIR

The EIR will address the potential environmental effects of the proposed project. The scope of the EIR includes issues identified by the City of Rancho Cucamonga during preparation of the Initial Study (IS) and Notice of Preparation (NOP) for the proposed project, and issues raised by agencies and the general public in response to the IS/NOP.

## **Environmental Procedures**

Approval of the proposed development project requires discretionary actions by the City of Rancho Cucamonga, the Lead Agency, and by responsible agencies such as the Local Agency Formation Commission, California Department of Fish and Game, Regional Water Quality Control Board, and U.S. Army Corps of Engineers. This document analyzes the environmental effects of the proposed project using a level of analysis that is consistent with state CEQA Guidelines. This EIR discusses both the direct and indirect impacts, as well as the associated short-term and long-term effects of this project.

CEQA requires the preparation of an objective, full disclosure document to inform agency decisionmakers and the general public of the direct and indirect environmental effects of the proposed action; provide mitigation measures to reduce or eliminate potential adverse effects, and identify and evaluate reasonable alternatives to the proposed project.

## **Scoping Process**

In compliance with State CEQA Guidelines, the City of Rancho Cucamonga has taken steps to maximize opportunities to participate in the environmental process. During the preparation of the draft EIR, various federal, state, regional and local governmental agencies and other interested parties were contacted to solicit comments and inform the public of the proposed project. This included the distribution of the IS/NOP on September 11, 2002. The project was described, potential environmental effects associated with project implementation were identified, and agencies and the public were invited to review and comment on the NOP. The close of the NOP comment period was October 11, 2002. The IS/NOP and comment letters received during the NOP review period are included in Appendix A of this EIR. Agencies, organizations, and interested parties not contacted or who did not respond to the request for comments about the project during the preparation of the draft EIR.

## 1.3 EIR Focus and Effects Found to be Significant

Based on the findings of the IS/NOP, a determination was made that an EIR is required to address the potentially significant environmental effects of the proposed project. The scope of the EIR includes issues identified by the City of Rancho Cucainonga during the preparation of the IS/NOP for the proposed project, as well as environmental issues raised by agencies and the general public in response to the IS/NOP. The following issues are addressed in this EIR:

- Aesthetics
- Air Quality
- Biological Resources

- Noise
- Public Services
- Transportation and Traffic

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- Cultural Resources
- Geology and Soils

• Utilities and Service Systems

The environmental issues that were determined not to be significantly affected by the proposed project and therefore, do not require evaluation in the document, per section 15063(c) of the State CEQA Guidelines, are as follows:

- Agricultural Resources
- Hazards and Hazardous Materials
- Hydrology and Water Quality

- Mineral Resources
- Recreation

The above environmental issues that were determined not to be significantly affected by the proposed project were addressed in the NOP (see Appendix A). The NOP and the following discussion are intended to provide adequate environmental documentation for the issues that will not be further addressed in the EIR.

• Hydrology and Water Quality. The proposed residential project includes a proposed storm drain system that will connect to the existing channel west of the project site to the Etiwanda Regional Spreading Grounds located east of the project site. The proposed channel will be 35-feet wide and extend along the northern boundary of the project site. The storm drain system has been designed to accommodate storm flow requirements.

The project applicant proposes to construct the residential units in phases. During construction activities, the project includes a series of interim onsite detention basins in the fault zone open space area. These temporary facilities are required until the San Bernardino County Flood Control District completes planning and construction of the San Sevaine Regional Mainline Channel, regional flood control facilities for Etiwanda Creek outlined in the Etiwanda/San Sevaine Area 3 Master Plan Storm Drain facilities. The temporary facilities will adequately detain storm water runoff to reduce peak concentration so that no significant drainage impacts would occur. The detailed drainage evaluation is provided in *Tract 16072 Hydrology & Hydraulics Report* prepared by MDS Consulting in September 2002. This drainage study is available for review at the City of Rancho Cucamonga Planning Department at 10500 Civic Center Drive.

The proposed residential uses have the potential to create contaminated runoff containing compounds such as landscape chemicals and automotive fluids. To reduce the potential water quality impacts, the implementation of the following mitigation measure would reduce the impact to less than significant.

 Prior to the issuance of a grading permit, the project applicant will be required to prepare a Storm Water Pollution Protection Plan (SWPPP) and file a Notice of Intent with the Regional Water Quality Control Board (RWQCB). As part of standard construction practices, the City and RWQCB will require compliance with best management practices (BMPs) to ensure potentially harmful chemicals or pollutants are not discharged from the site. Such measures may include sandbags, temporary drainage diversion and temporary containment areas.

- Land Use and Planning. The proposed residential development includes a density of approximately 2.4 dwelling units per acre which is consistent with the Rancho Cucamonga General Plan and the Etiwanda North Specific Plan. The proposed project will be implemented in accordance with the Specific Plan and would be compatible with the surrounding land uses that are also part of the Specific Plan. The project applicant proposes annexation of the site into the City. In accordance with Government Code Section 56375, the property to be annexed must be "prezoned" as a condition of approval by the Local Agency Formation Commission (LAFCO). The adopted Etiwanda North Specific Plan will be retained as the applicable zoning for the site. Implementation of the proposed project would not result in significant impacts associated with land use and planning.
- Population and Housing. According to the City's General Plan, there are approximately 13,524 new housing units anticipated to be constructed with buildout of the remaining land uses identified in the City's General Plan. This increase in housing units would also result in approximately 30,680 new residents. Development of the proposed 358 residential units would represent 2.6 percent of the remaining housing units anticipated to be constructed in the City's planning area. The anticipated increase of approximately 1,238 residents represent approximately 4 percent of the future residents within the City's planning area. The proposed project's increase in housing units and population would not affect the existing growth forecasts identified in the City's General Plan. Furthermore, the project site has been designated as an area for residential growth to occur according to the City of Rancho Cucamonga Etiwanda North Specific Plan which was approved over 10 years ago. Therefore, the proposed project would result in a less than significant affect on population and housing projections.

## 1.4 Components of the EIR Analysis

The analysis of each environmental category within Section 5 of this EIR, (Existing Conditions, Thresholds of Significance, Project Impacts, Cumulative Impacts, Mitigation Measures, and Level of Significance After Mitigation) is organized into the following subsections:

- "Existing Conditions" describes the physical conditions that exist at this time and which may influence or affect the issue under evaluation.
- "Thresholds of Significance" defines the parameters that are used to determine the significance of an environmental effect.
- "Project Impacts" describes the potential environmental changes to the existing physical conditions that may occur if the proposed project is implemented.

- "Cumulative Impacts" describes the potential environmental changes to the existing physical conditions that may occur with the proposed project, together with anticipated growth in the vicinity of the project site.
- "Mitigation Measures" are those specific measures that may be required of the project by the decision-makers in order to (1) avoid an impact, (2) minimize an impact, (3) rectify an impact by restoration, (4) reduce or eliminate an impact over time by preservation and maintenance operations, or (5) compensate for the impact by replacing or providing substitute resources or environment.
- "Level of Significance After Mitigation" discusses whether the project and the project's contribution to cumulative impacts can be reduced to levels that are considered less than significant.

## 1.5 Project Sponsors and Contact Persons

The City of Rancho Cucamonga is the lead agency in the preparation of the EIR. Michael Brandman Associates is the environmental consultant for the project. Preparers of this EIR are provided in Section 10. Key contact persons are as follows:

Lead Agency	City of Rancho Cucamonga
_	Community Development Department
	10500 Civic Center Drive
	Rancho Cucamonga, CA 91730
	909.477.2750
	Debra Meier
Project Applicant	Richland Pinehurst, Inc.
	3 Imperial Promenade, Suite 150
	Santa Ana, CA 92707
	714.708.4740
Environmental Consultant	Michael Brandman Associates
	621 E. Carnegie Drive, Suite 100
	San Bernardino, CA 92408
	909.884.2255
	Thomas J. McGill, Ph.D., Project Director

## 1.6 Review of the Draft EIR

This draft EIR is distributed to responsible and trustce agencies, other affected agencies, and interested parties, as well as all parties requesting a copy of the draft EIR in accordance with Public Resources Code 21092(b)(3). The Notice of Completion of the draft EIR is also distributed as required by CEQA. During the 45-day public review period, the EIR, including technical appendices,

is available for review at the City of Rancho Cucamonga, Community Development Department, 10500 Civic Center Drive, Rancho Cucamonga, California.

Written comments of the draft EIR should be addressed to:

Debra Meier City of Rancho Cucamonga Community Development Department 10500 Civic Center Drive Rancho Cucamonga, CA 91729

Upon completion of the 45-day public review period, written responses to all significant environmental issues raised will be prepared and available for review at least 10 days prior to the public hearing before the City of Rancho Cucamonga City Council, at which the certification of the Final EIR will be considered. These environmental comments and their responses will be included as part of the environmental record for consideration by decision-makers for the project.

## 1.7 Incorporation by Reference

Environmental and planning documents prepared for development projects within the vicinity of the project site were reviewed in the preparation of this EIR. The following documents are hereby incorporated by reference and can be reviewed at the City of Rancho Cucamonga Planning Department:

- Etiwanda North Specific Plan Environmental Impact Report, City of Rancho Cucamonga, 1991.
- Rancho Cucamonga General Plan Update Environmental Impact Report, City of Rancho Cucamonga, 2001.

#### SECTION 2 EXECUTIVE SUMMARY

## 2.1 Proposed Project

The project includes of the annexation of land from unincorporated San Bernardino County into the City of Rancho Cucamonga, and the approval and development of Tentative Tract Map Number 16072 (TTM 16072) and associated Development Agreement. The project area is included in the City's General Plan, and has been pre-zoned by the Etiwanda North Specific Plan (Specific Plan).

The proposed project includes 358 detached single-family housing units on minimum lot sizes of 8,400 square feet, on approximately 150.8 acres. The northern portion of TTM 16072 includes development of 167 single-family homes on 56.61 acres, a density of 2.95 dwelling units per acre, with minimum lot sizes of 8,400 square feet and average lot sizes of 11,774 square feet. The southern portion includes development of 191 single-family homes on 65.71 acres, a density of 2.92 dwelling units per acre, with minimum lot sizes of 8,400 square feet and average lot sizes of 11,126 square feet. The combined density of the project is 2.93 dwelling units per acre. The gross density of the project including open space, flood control and streets is 2.38 dwelling units per acre.

## 2.2 Areas of Controversy/Issues to be Resolved

This EIR addresses 8 primary issues including geology and soils, biological resources, traffic and circulation, air quality, noise, aesthetics and views, cultural resources, and public services and utilities. One area of potential controversy is the proposed removal of Riversidian Alluvial Sage Scrub from the project area to construct the proposed project. No issues remain to be resolved.

## 2.3 Summary of Alternatives

Alternatives have been developed to avoid or substantially lessen environmental impacts of the proposed project. Section 15126.6 of the CEQA Guidelines, "states that an EIR shall include a range of reasonable alternatives to 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, and evaluate the comparative merits of the alternatives." Section 8 provides descriptions and analysis of each alternative in adequate detail to allow the decision-maker to decide whether or not an alternative should be adopted in lieu of the proposed project. The alternatives evaluated in the following EIR include the following:

- No Project/No Development Alternative
- Retention of Riversidian Alluvial Fan Sage Scrub Alternative

• Less Intense Development Alternative

Based on the evaluation of the alternatives in Section 8, the proposed project would be environmentally superior among all of the alternatives.

Following are the descriptions of each alternative.

#### No Project/No Development Alternative

The No Project/No Development Alternative would result in no additional environmental impacts relative to the proposed project. The significant unavoidable seismic ground shaking, loss of Riversidian alluvial fan sage scrub, short-term construction air emissions, long-term mobile emissions, and cumulative aesthetic/visual impacts associated with the proposed General Plan would not occur under this alternative. Furthermore, traffic, noise, and cultural impacts associated with the proposed project would also not occur under this alternative.

#### Retention of Riversidian Alluvial Fan Sage Scrub Alternative

Retention of Riversidian Alluvial Fan Sage Scrub (RAFSS) Alternative assumes that all vegetation classified as RAFSS are not affected by development. The project site contains approximately 10.6 acres of disturbed or ornamental woodland. In accordance with this alternative, development would only occur on the 10.6 acres. Based on the same residential density as the proposed project (i.e., 2.93 units per acre), 31 single-family housing units would be constructed. Although this level of development could eliminate the potential significant unavoidable effects associated with RAFSS, this alternative would not meet the objectives of the proposed project. Therefore, this alternative is not considered feasible.

#### Less Intense Development

The intent of this alternative is to avoid all significant, unavoidable, adverse long-term, air emission impacts. The long-term significant and unavoidable adverse impact associated with the proposed project is the potential generation of carbon monoxide (CO), oxides of nitrogen (NOx), and reactive organic compounds (ROC). To reduce long-term air emissions, approximately 104 residential units that are part of the proposed project would need to be eliminated for this alternative to reduce long-term air emissions to less than significant after the implementation of the mitigation measures identified for the proposed project. This would result in the development of approximately 255 residential units the dwelling units per acre would be approximately 1.7 units per acre compared to 2.4 units per acre identified in the proposed project. This alternative would not be consistent with the development

level contemplated in the Etiwanda North Specific Plan. This alternative also does not meet many of the objectives of the proposed project. Therefore, this alternative is not considered feasible.

## 2.4 Mitigation Monitoring Program

CEQA requires public agencies to set up monitoring report programs for the purpose of ensuring compliance with those mitigation measures adopted as conditions of approval in order to mitigate or avoid significant environmental effects as identified in the EIR. A mitigation monitoring program, incorporating the mitigation measures set forth in this document, will be adopted at the time of certification of the EIR.

#### 2.5 Summary of Significant Environmental Impacts and Mitigation Measures

Table 2-1 summarizes the potential environmental effects of the proposed project, project design features that will reduce impacts, recommended mitigation measures, and the level of significance after mitigation. After the implementation of the project design features and recommended mitigation measures, the following impacts associated with the proposed project would remain significant: geology and soils (seismic ground shaking), air quality (short-term and long-term emissions), aesthetics/visual (cumulative views). Under this scenario, the City would be required to adopt a statement of overriding considerations in accordance with CEQA Section 21081.

If some project design features are not approved or some mitigation measures are not adopted, the proposed project may result in significant impacts after mitigation. Under this scenario, significant and unavoidable impacts may occur and the City could be required to adopt a statement of overriding considerations.

Impacts of the project are classified as (1) NS, not significant (adverse effects that are not substantial according to CEQA, but may include mitigation); (2) S, significant (substantial adverse changes in the environment); (3) PS, potentially significant (potentially substantial adverse changes in the environment); (4) B, beneficial (beneficial changes in the environment). Project design features are listed when applicable and mitigation measures are listed, when feasible for each impact. Table 2-1 also includes a summary of impacts associated with cultural resources which is discussed in Section 1.3 because mitigation measures are recommended to reduce potential impacts to less than significant. Section 1.3 also identifies other effects, which are either not considered significant or are beneficial effects of the proposed project, but these are not the focus of this summary. The reader is referred to the full text of this EIR for a description of the environmental effects of the proposed project, the project design features that reduce impacts and the feasible mitigation measures that are recommended.

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#### Table 2-1: Executive Summary

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
GEOLOGY AND SOILS (SECTION 5.1)		
Seismic Hazards		
Fault-Induced Ground Rupture		
Development of the proposed project will result in the potential for fault-induced ground rupture at the project site. (S)	<b>GS-1:</b> Prior to issuance of a building permit for structures adjacent to the Etiwanda Avenue Scarp thrust fault on the project site, all structures north of this fault shall be set back 100 feet from the faulted zone and all structures south of this fault shall be set back 50 feet from the fault zone.	Not Significant.
Seismic Ground Shaking		
The proposed residential structures on the project site would be exposed to potentially high accelerations of ground motion. (S)	<b>GS-2:</b> Prior to the issuance of a building permit, structures will be designed and constructed in accordance with the Uniform Building Code and general engineering standards for seismic safety for development within Seismic Zone 4.	Significant and Unavoidable.
Fault Zone Detention Basins		
Two of the interim detention basins will be located within the fault zone traversing the central portion of the property. An analysis was completed to determine whether the water percolating into these basins would adversely affect the fault. The only known adverse effects associated with water percolation and seismicity are related to large lake-level changes. The interim basins will only hold water temporarily to a maximum of eight feet for less than 24-hours. Therefore, since the basins will be emptied relatively quickly there will be no significant seismic impacts associated with water impoundment. Furthermore, no fault gouge or	No measures are required.	Not Significant.
seismic impacts associated with water impoundment. Furthermore, no fault gouge or clay was observed within the onsite fault zone and		

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
thus there is no preferential path for water infiltration into the fault zone. (NS)		
Liquefaction		
The alluvial fan sediments on the project site have a relatively high permeability, and the probability of the water table at the site rising in the future to within 50 feet of the ground surface is low. As a result, the hazard of liquefaction is considered low. (NS)	No measures are required.	Not Significant.
Seismically-Induced Slope Instability		
Development of the proposed project including the interim detention basins will include graded slopes of up to 40 feet in height and gradients of 3:1 or less. Strong ground motions could induce slope instability. (S)	<b>GS-3:</b> Prior to the issuance of a grading permit, engineered slopes of the project site shall be designed in accordance with the Uniform Building Code to resist seismically induced failures. Slope design shall be based on pseudo- static stability analyses using soil-engineering parameters established for the site.	Not Significant.
Ground Lurching		
Colluvial soils and loose cohesionless soils are present at the surface of the project site. Ground lurching due to seismic shaking could result in impacts to structures. (S)	<b>GS-4:</b> Prior to the issuance of a grading permit, the grading plans shall state that the loose, cohesionless soils located on the surface of the site shall be removed and recompacted during grading operations.	Not Significant.
Seismically-Induced Settlement		
Strong ground shaking can cause settlement by allowing greater compaction of the soil particles. (S)	<b>GS-5:</b> Prior to the issuance of a grading permit, the grading plans shall state that the native surficial and artificial fills on the project site that are of low density, shall be removed and recompacted or exported offsite.	Not Significant.
Earthquake-Induced Dam/Reservoir Failure		
No large-capacity reservoirs or water tanks that could fail during an earthquake are located	No measures are required.	Not Significant.

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
upgradient from the project site. Furthermore, no reservoirs or tanks are proposed as part of the proposed project. Therefore, no impact from an earthquake-induced inundation at the project site is anticipated. (NS)		
Tsunami		
The project site is located at a minimum elevation of 1,635 feet above mean sea level and more than 45 miles inland. Due to the site's location, the risk of inundation from a tsunami is considered nil and not significant. (NS)	No measures are required.	Not Significant.
Seiche		
No large bodies of water are existing in the project area and none are proposed as part of the project. Therefore, the potential for a seiche to affect the project site is less than significant. (NS)	No measures are required.	Not Significant.
Slope Stability		
Implementation of the proposed project would result in slopes at 40 feet in height. (S)	<b>GS-6:</b> Prior to the issuance of a final grading approval, potentially unstable graded slopes that exceed approximately 15 feet in height will require additional stabilization measures such as buttressing cut slopes with compacted fill, adding geogrid reinforcement to fill slopes, using a higher compaction standard, and/or using retaining walls.	Not Significant.
Foundation Stability		
Compressible Soils		
The upper few feet of the native soil onsite is potentially compressible. Uncontrolled fills that exists on the project site due to old road fills and backfills from exploratory trenches are also compressible. These materials are of low density	<b>GS-7:</b> Prior to the issuance of a grading permit, the grading plans shall state that potentially compressible soils that are located on the project site shall be removed and recompacted in accordance with standard grading procedures.	Not Significant.

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
and would settle under the weight of the proposed fills and structures. (S)		
Collapsible Soils		
Due to the potential for variation in grain size within the alluvial fan deposits located on the project site, localized areas could result in potential collapse of soil material. (S)	<b>GS-8:</b> Prior to the issuance of a grading permit, the project's soil engineer shall identify the method(s) of eliminating the potential for collapsible soils on the grading plan. Potential methods include excavation and recompaction and presaturation and pre-loading of the susceptible soils in-place to induce collapse prior to construction. After construction, infiltration of water into the subsurface soils shall be minimized by proper surface drainage which directs excess runoff from the proposed slopes and structures.	Not Significant.
Expansive Soils		
Due to the granular nature of the onsite soil, the expansion characteristics are considered in the low range. (NS)	No measures are required.	Not Significant.
Ground Subsidence		
Since the current groundwater pumping program within the Chino Groundwater Basin includes monitoring ground elevations for subsidence and there are no oil extraction operations near the project area, the hazard posed by land subsidence is considered less than significant. (NS)	No measures are required.	Not Significant.
Rippability and Oversize Rock		
Because there is no bedrock at or within hundreds of feet from the surface, rippability of the onsite soils is less than significant. However, due to the presence of large cobbles and boulders in the onsite alluvium, special handling of oversize rocks will be required. The removal of boulders from the site could result in deficiencies of fill	<b>GS-9:</b> Prior to the issuance of a grading permit, the grading plans shall state that during grading operations, the soil engineer shall be consulted to relocate oversize rocks on the project site to reduce the potential deficiency of fill materials that could result from the removal of oversize rocks on the project site.	Not Significant.

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
material in the proposed balanced cut and fill grading design. Therefore, the presence of oversize rock could result in a potential significant impact. (S)		
BIOLOGICAL RESOURCES (SECTION 5.2)		
Natural Communities		
The proposed project will result in the loss of 147.7 acres of RAFSS. RAFSS is considered sensitive by the California Department of Fish and Game and loss of this plant community is considered significant. (S)	<b>B-1:</b> The project proponent will acquire and convey to the County of San Bernardino at a ratio of 1:1 (or 147.7 acres) of land within or near the North Etiwanda Open Space and Habitat Preservation Program (NEOSHPP) that supports similar RAFSS habitat. This measure will mitigate the loss of habitat that may support sensitive plants and animals as well as raptor foraging habitat. The quality of offsite mitigation land may affect the total acres needing to be acquired. If the offsite mitigation area contains a higher quality habitat, less land may need to be acquired, likewise, if a lower quality habitat is acquired, more land may need to be set aside as mitigation.	Not Significant.
	If the proponent is unable to acquire all or a portion of the offsite mitigation land, the proponent will deposit the equivalent mitigation cost of \$10,000 per developable acre with City- approved agency, which acquires and maintains open space. These funds will be used to purchase and manage mitigation lands. <b>B-2:</b> To reduce impacts on adjacent offsite habitat	
	during site preparation, grading and clearing limits shall be staked prior to issuance of the grading permits. The limits of grading and clearing shall be staked at 50-foot intervals with	

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	suitable indicators such as white PVC (polyvinylchloride) pipe with steel bases. Construction equipment shall not be operated beyond the grading and clearing limits, and a restoration program shall be incorporated to restore any disturbed offsite areas.	
	<b>B-3:</b> Landscaping adjacent to natural areas offsite shall use native and drought-tolerant plant species. Such species shall be reflected on Project landscape plans. The use of species known to be weedy invasives, such as German ivy (Senecio milkaniodes), periwinkle (Vinca major), or iceplant (Carpobrotus spp.), shall be prohibited.	
	<b>B-4:</b> In areas where night lighting may have adverse impacts on sensitive wildlife habitat, one or more of the following alternatives shall be utilized, recognizing the constraints of roadway lighting requirements: (1) low-intensity street lamps, (2) low-elevation light poles, or (3) shielding of internal silvering of the globes or external opaque reflectors.	
	<b>B-5:</b> Provide residents of the future development literature pertaining to sensitive wildlife in the area and provide ways the residents can reduce effects on the wildlife, including effects pets have on native wildlife. A list of invasive plants that are commonly planted in landscaping will be included in this literature and it will be recommended that certain plants be avoided, such as giant reed (Arundo donax) castor bean (Ricinus communis) and Pampas grass (Cortaderia selloana). This literature shall be approved by the City of Rancho Cucamonga and included within the conditions, covenants, and restrictions	

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	(CC&Rs).	
<b>Common Plant Species</b> The City of Rancho Cucamonga has a local tree preservation ordinance that requires a City permit to remove any tree over 15 feet high and 15 inches in circumference. A total of 213 trees meet the City's "heritage tree" criteria. Approximately 175 eucalyptus trees, 11 ornamental trees, 14 pepper trees, 9 southern California black walnut trees, and 4 western sycamore trees occur on-site. All trees within the project boundary were assessed as being of fair to poor condition physiologically, structurally, and another trees (S)	<b>B-6:</b> All 213 "heritage trees" shall be removed and replaced with native trees within the proposed development. Replacements have been proposed at a 1:1 ratio.	Not Significant.
Sensitive Plant Species		
Fifteen sensitive plant species have been identified as occurring within the general vicinity of the project site. Thirteen of these plants are listed as sensitive (List 1B) by the CNPS and are considered sensitive by CDFG. However, only Plummer's mariposa lilies were observed during field inventories. (S)	<b>B-7:</b> Prior to issuance of a grading permit, focused surveys for Plummer's mariposa lily shall be conducted by a qualified biologist. Surveys shall be conducted during flowering period (May to July) in all portions of the project site containing suitable habitat. If present, the number and location(s) will be documented and the resource agencies will be notified for consultation and possible collection and relocation.	Not Significant.
Sensitive Wildlife Species		
San Bernardino Kangaroo Rat The project site is within the Critical Habitat of	<b>B-8:</b> A follow-up focus survey for the San	Not Significant.
the federally listed endangered San Bernardino kangaroo rat. Protocol surveys conducted for this species in 2001 and 2002 were negative and revealed that although there will be a significant loss of RAFSS, there will be no direct impacts to this species from project implementation. (NS)	Bernardino kangaroo rat shall be conducted prior to the issuance of grading permits. If this species is determined to be present onsite, consultation with USFWS under the Endangered Species Act shall occur and USFWS-approved mitigation measures shall be implemented.	

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Coastal California Gnatcatcher		
The project site is within the known range and within designated Critical Habitat of the federally listed threatened coastal California gnatcatcher. Although the protocol surveys conducted in both 2001and 2002 were negative, 6 recent sightings have been documented within the immediate vicinity. Because the project site supports suitable habitat for this species, and the recent sighting on adjacent lands the potential for this species to use the project site is still considered high. Therefore, the loss or fragmentation of potential coastal California gnatcatcher habitat is considered significant. (PS)	<b>B-9:</b> A follow-up focused survey shall be conducted to confirm the absence of the coastal California gnatcatcher. Special focus will be placed in the northwest corner of the project site, which was not previously surveyed. If this species is determined to be present onsite, consultation with USFWS under the Endangered Species Act shall occur and USFWS-approved mitigation measures shall be implemented.	Not Significant.
Three species of rodents that were detected on the property are considered Species of Concern by CDFG. The three species present within the RAFSS habitat, include the Northwestern San Diego pocket mouse, San Diego desert woodrat, and the Los Angeles little pocket mouse. Because these three species are present onsite, the impacts to the habitat is considered significant (S)	<b>B-10:</b> The project proponent will have a qualified biological monitor present during initial brush clearing to reduce mortality to sensitive species, specifically sensitive rodent species, as well as incidental species.	Not Significant.
Raptors		
The project site does support nesting habitat for raptor species. Also, the project will result in the loss of 162.2 acres of raptor foraging habitat. The incremental loss and continued fragmentation of foraging habitat is considered adverse but not a significant impact. Raptors and all other bird species will find foraging habitat in the undeveloped areas to the north and west of the project site. (NS)	<b>B-11:</b> If grading activities are to occur during active nesting season (generally February 15 - August 31), a field survey shall be conducted by a qualified biologist to determine if active nests covered by the Migratory Bird Treaty Act and/or the CDFG Code are present. If active nests are present, the area will be flagged, along with a 100-foot buffer (300-feet for raptors) and will be avoiding until the nesting cycle is complete.	Not Significant.

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
Reptiles		
The project site provides suitable habitat for the San Diego horned lizard and orange-throated whiptail (State Species of Special Concern). Although neither species is formally listed, or proposed as endangered or threatened, the potential displacement of these sensitive species would be considered adverse but not significant by CDFG. (NS)	No measures are required.	Not Significant.
Regional Connectivity/Wildlife Movement Corridors		
The project site does not serve as a wildlife movement corridor or provide regional connectivity. No impacts to regional connectivity and/or wildlife movement corridors will occur with Project implementation. (NS)	No measures are required.	Not Significant.
Jurisdictional Areas		
A jurisdictional delineation was conducted by PCR on the project site on September 8, 2001 (Appendix C). Subsequent field surveys were also conducted by PCR in 2002. The survey revealed that there are three drainages found on the property that are considered under the jurisdiction of USACE and CDFG. Impacts to USACE areas would result in the removal of 1.13 acres of "waters of the U.S.", and no loss of wetlands. Total area of jurisdiction under the CDFG would also be approximately 1.13 acres.	<b>B-12:</b> The project proponent shall obtain a Section 404 of the Clean Water Act permit from the U.S. Army Corps of Engineers and a 1603 Streambed Alteration Permit from California Department of Fish and Game prior to grading or any other groundbreaking activities, and shall comply with the permit's mitigation requirements.	Not Significant
Jurisdictional determinations were also made for off-site portions of these drainages to the extent that they may be impacted by the proposed project. Drainages measured adjacent to the site include approximately 4,342 linear feet and 0.98		

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
acre of ACOE and CDFG jurisdictional streambed. None of these off-site areas meet the ACOE definition of a jurisdiction wetland. The proposed project would result in the loss of jurisdictional areas, both on and off site, of 2.01 acres of "waters of the U.S." and no loss of wetlands. Compliance with the mitigations that are required through the 404 process would reduce impacts to less than significant. (S)		
Conservation Plans		
Neither the City of Rancho Cucamonga nor the County of San Bernardino has released a habitat conservation plan that would address the lands within the project area or the species found or potentially occurring onsite. The proposed project would, therefore, not affect the County's development of their Multiple Species Habitat Conservation Plan or any approved local, regional, or state habitat conservation plan that addresses the lands within the project area. (NS)	No measures are required.	Not Significant.
TRAFFIC AND CIRCULATION (SECTION 5.3)		
Trip Generation		
The traffic generation for this project has been estimated, based upon the specific land use that has been planned for the proposed development. The proposed project consists of 358 single- family dwelling units. The proposed development is projected to generate approximately 3,436 daily trips.	The following measures are required to be implemented prior to issuance of a building permit.	Not Significant.
Opening Year (Year 2004)		
The following intersections would operate at an LOS F in the AM peak hour without and with the project.	<b>TT-1:</b> The project applicant shall contribute its fair share toward local off-site traffic improvements. On-site improvements will be	

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Environmental Impact	Miligation Measures	Level of Significance After Mitigation
<ul> <li>Etiwanda Avenue at Banyan Street</li> <li>Etiwanda Avenue at Highland Avenue</li> <li>East Avenue at Banyan STreet</li> <li>Although the project would not change the level of service, the contribution of project traffic to these three intersections during the AM peak hour represent a significant traffic impact.</li> <li>Without project traffic, all intersections would operate at LOS D or better during the PM peak hour which represents a less than significant impact. Except for the following intersection, all</li> </ul>	required in conjunction with the phasing of the proposed development to ensure adequate circulation within the project itself. The fair share contribution of all off-site improvements and timing of all onsite traffic improvements shall be subject to an agreement with the City of Rancho Cucamonga. This agreement shall be in place prior to tract map approval. <b>TT-2:</b> The project applicant shall update construction cost estimates and prepare a current cost of the project's fair share contribution toward	
<ul> <li>study area intersections operate at LOS D or better with the project during the PM peak hour.</li> <li>Etiwanda Avenue at Banyan Avenue The intersection of Etiwanda Avenue at Banyan Avenue will operate at LOS E with the project which exceeds the City's standard and is considered a significant impact. (S)</li> </ul>	TT-3: The project applicant shall construct Wilson Avenue from Etiwanda Avenue to East Avenue as a Special Divided Secondary Arterial (165 ft. Right-of-way) in conjunction with development of the proposed project or as determined by the Development Agreement with the City.	
	TT-4: The project applicant shall construct the extension of East Avenue from the south project boundary with a minimum 36-foot two-way paved access to the project in conjunction with development of the proposed project or as determined by the Development Agreement with the City.	
	<b>TT-5:</b> The project applicant shall construct East Avenue from the north project boundary to Wilson Avenue to provide 44-foot two-way paved access and the full shoulder (curb, gutter, street lights, and side walks) on west side of the street in conjunction with development of the proposed project or as determined by the Development Agreement with the City.	

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Environmental Impact	Miligation Measures	Level of Significance After Mitigation
	<b>TT-6:</b> The project applicant shall construct Etiwanda Avenue from the north project boundary to Golden Prairie Drive at its ultimate half-section width as a Secondary Arterial (96 ft. Right-of- way) in conjunction with development of the proposed project or as determined by the Development Agreement with the City.	
Buildout Year 2020		
Table 5.3-6 depicts the level of service at the study area intersections at buildout year (Year 2020) without and with the project. Table 5.3-6 shows the following intersections would operate at an LOS F in the AM peak hour without and with the project.	TT-7.: Prior to issuance of building permits, the applicant shall provide funds in accordance with the City's Transportation Development Fee. Collection of these fees shall represent the project's "fair-share" toward the following transportation improvements required for opening year (Year 2004):	Not Significant.
<ul> <li>Etiwanda Avenue at Highland Avenue</li> </ul>	• Installation of a traffic signal at Etiwanda	
• East Avenue at Wilson	Avenue at Banyan Street.	
East Avenue at Banyan Street	• Installation of a traffic signal at East Avenue at Banyan Street	
The project traffic contributed to these four study area intersections during the AM peak hour represent a significant traffic impact. Except for the following intersections all study area	<ul> <li>Construction of a southbound right turn lane at the intersection of Etiwanda Avenue at Highland Avenue.</li> </ul>	
intersections operate at LOS D or better during	TT-8 Prior to the issuance of building permits,	
the PM peak hour without the project.	with the City's Trasportation Development Fee.	
<ul> <li>Etiwanda Avenue (South) at witson Avenue</li> <li>Etiwanda Avenue at Banyan Street</li> <li>East Avenue at Banyan Street</li> </ul>	Collection of these fees shall represent the project's "fair share" toward the following transportation improvements required for	
These three intersections would operate at LOS F	Buildout Year 2020.	
which exceeds the Uity's standard and is considered a significant impact. Except for the	to provide a shared left and through lane, and a	
following intersections, all study area	shared right and through northbound lane, and	
intersections would operate at LOS D or better	one additional southbound lane to provide a	· · · · · · · · · · · · · · · · · · ·

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Environmental Impact	Miligation Measures	Level of Significance After Mitigation
<ul> <li>during the PM peak hour with the project.</li> <li>Etiwanda Avenue (South) at Wilson Avenue</li> <li>Etiwanda Avenue at Banyan Street</li> <li>East Avenue at Wilson Avenue</li> <li>East Avenue at Banyan Street</li> <li>These four intersections would operate at LOS F which exceeds the City's standard and is considered a significant impact. (S)</li> </ul>	<ul> <li>shared left and through and a shared right and through southbound lane on East Avenue at Banyon Street.</li> <li>Construction of a westbound through lane on Highland Avenue at Etiwanda Avenue.</li> <li>Installation of a traffic signal at the intersection of Etiwanda Avenue (North) at Wilson Avenue.</li> <li>Installation of a traffic signal at the intersection of Etiwanda Avenue (South) at Wilson Avenue.</li> <li>Installation of a traffic signal at the intersection of Etiwanda Avenue (South) at Wilson Avenue.</li> <li>Installation of a traffic signal at the intersection of Etiwanda Avenue (South) at Wilson Avenue.</li> </ul>	
AIR QUALITY(SECTION 5.4)		
Short-Term Construction-Related Emissions		
Short-term emissions will include fugitive dust and other particulate matter, as well as exhaust emissions, generated by earthmoving activities and operation of grading equipment during site preparation (demolition and grading). Short-term emissions will also include emissions generated during construction of the buildings as a result of operation of equipment, operation of personal vehicles by construction workers, electrical consumption, and coating and paint applications. Projected NOx, ROC, and PM10 emissions are above the SCAQMD recommended daily thresholds and NOx and ROC are above the quarterly thresholds during construction of the first phase of the project. The primary sources of NOx emissions are trucks used for rock removal and importation of concrete. The primary source of ROC emissions is the application of architectural coatings, and the primary source of PM10 is fugitive dust from earthmoving activities. Even with the reductions associated with	<ul> <li>AQ-1: The site shall be treated with water or other soil-stabilizing agents (approved by SCAQMD and RWQCB) daily to reduce PM10 emissions, in accordance with SCAQMD Rule 403.</li> <li>AQ-2: During construction, all haul roads shall be swept according to a schedule established by the City to reduce PM10 emissions associated with vehicle tracking of soil off-site. Timing may vary depending upon time of year of construction.</li> <li>AQ-3: Grading operations shall be suspended when wind speeds exceed 25 mph to minimize PM10 emissions from the site during such episodes.</li> <li>AQ-4: Chemical soil stabilizers (approved by SCAQMD and RWQCB) shall be applied to all inactive construction areas that remain inactive for 96 hours or more to reduce PM10 emissions.</li> <li>AQ-5: The construction contractor shall select the</li> </ul>	Significant and Unavoidable.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
implementation of construction related mitigation measures, the daily and quarterly emissions of NOx and ROC remain above the SCAQMD suggested thresholds. (S)	construction equipment used on-site based on low emission factors and high-energy efficiency. The construction contractor shall ensure the construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.	
	AQ-6: The construction contractor shall utilize electric or clean alternative fuel powered equipment, where feasible.	
	AQ-7: The construction contractor shall ensure that construction-grading plans include a statement that work crews will shut off equipment when not in use.	
	<b>AQ-8:</b> The construction contractor shall use low VOC architectural coating during the construction phase of the project.	
	AQ-9: During construction of the proposed improvements, temporary traffic control (e.g., flag person) will be provided during soil transport activities. Contractor will be advised not to idle trucks on site for more than ten minutes	
	AQ-10: During construction of the proposed improvements, only low volatility paints and coatings as defined in SCAQMD Rule 1113 shall be used. All paints shall be applied using either high volume low pressure (HVLP) spray equipment or by hand application.	
Long-Term Emissions		
Long-term impacts for the proposed residential subdivision consist of mobile emissions and stationary emissions. Mobile emissions estimates	AQ-11: The proposed project will participate in the cost of off-site traffic signal installation and synchronization through payment of the traffic	Significant and unavoidable.

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
are derived from motor vehicle traffic. Stationary emissions estimates are derived from the consumption of natural gas, electricity, the use of landscape equipment, and the storage and use of consumer products. When unmitigated emissions projections are compared with the SCAQMD suggested thresholds for significance, it is shown that long-term emissions exceed the applicable thresholds for NOx, CO and ROC. The primary source of these emissions is mobile emissions from vehicles. Even with the mitigation incorporated into the project NOx, CO and ROC emissions remain above the SCAQMD recommended threshold, and therefore the project may be expected to violate an ambient air quality standard. (S)	signal fair-share mitigation fee. This fee will be collected and utilized by the City to install and synchronize traffic lights as needed to prevent congestion of traffic flow on East Avenue between Banyan Street and the project boundary, and Etiwanda Avenue between Highland Avenue and the north terminus of Etiwanda Avenue. <b>AQ-12:</b> All appliances within the residential units of the project shall be energy-efficient as defined by SCAQMD. <b>AQ-13:</b> The project proponent shall contact local transit agencies to determine bus routing in the project area that can accommodate bus stops at the project access points and determine locations and feasibility of bus stop shelters provided at project areacter access.	
CO Hot Spot Anaiysis	project proponent a expense.	
Roadway segments in this analysis include:	No measures are required.	Not Significant.
<ul> <li>East Ave. from Victoria St. to the north project boundary (future north terminus of East St.),</li> <li>Etiwanda Ave. from Highland Ave. to the north terminus of Etiwanda Ave.,</li> <li>Wilson Ave. from Day Creek Blvd. to Wardman Bullock Rd.,</li> <li>Proposed "A" St. from Wilson Ave. to the proposed north terminus within the project,</li> </ul>		
<ul> <li>Proposed "N" St. from East Ave. to the proposed west terminus within the project,</li> <li>Proposed "Q" St. and "U" St. from Etiwanda Ave. to the east terminuses within the project.</li> <li>Assuming worst-case conditions, the estimated 1-hour and 8-hour average CO concentrations in combination with background concentrations are</li> </ul>		

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
below the State and Federal ambient air quality standards. No CO hot spots are anticipated as a result of traffic generated emissions by the proposed project in combination with other anticipated development in the area. (NS)		
Consistency Analysis		
The proposed project complies with the City of Rancho Cucamonga General Plan, which is consistent with the land use information that was the basis for the current AQMP. However, it is noted that the specific analysis indicates that both short-term and long-term emissions as a result of the project are above the SCAQMD thresholds. These emissions remain above the thresholds after implementation of mitigation measures. For this reason, it is appropriate to conclude that the proposed project is not in compliance with the AQMP. (S)	All feasible mitigation measures for reduction of air quality impacts have been incorporated into the project. However, short-term and long-term emissions remain above threshold levels for several pollutants after implementation.	Significant and unavoidable
Localized Sources of Toxic Air Contaminant Emissions		
A diesel fueled back-up generator is located at the potable water treatment plant (CCWD) on the south side of Wilson Avenue and would supply power to the critical components at the plant in the event of a power failure. The generator could present long-term exposure of diesel exhaust to future residents on the north side of Wilson Avenue closest to the plant (approximately 200 feet between the water treatment plant fence line to the proposed residential pads on the project site). All of the individual cancer risks are below the SCAQMD maximum threshold of 10 in one million—so long-term diesel emissions from the adjacent CCWD back-up generator will not pose a	No measures are required.	Not Significant.

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
significant health risk to future residents on the project site . (NS)		
NOISE (SECTION 5.5)		
Short-Term Construction-Related Impacts		
The transport of workers and equipment to the construction site would incrementally increase noise levels along site access roadways. Even though there would be a relatively high single event noise exposure potential with passing trucks (a maximum noise level of 86 dBA at 50 feet), the increase in noise would be less than 1 dBA when averaged over a 24-hour period, and would, therefore, have a less than significant impact on noise receptors along the truck routes. (NS)	No measures are required.	Not Significant.
Local residents would be subject to elevated noise levels from the operation of construction equipment. The grading and site preparation phase tends to create the highest noise levels because the noisiest construction equipment is found in the earthmoving equipment category. Existing residential lots are located approximately 24 feet west of the southwestern portion of the project site. These residences will be subject to elevated noise levels during construction activities. Section 17.02.120 of the Development Code exempts noise sources associated with, or vibration created by, construction, repair, remodeling, or grading of any real property or during authorized seismic surveys, provided said activities do not take place between the hours of 8 p.m. and 6:30 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday. The project applicant is anticipated to comply with the construction from former.	<ul> <li>While construction and grading activities are exempt from the City of Rancho Cucamonga Development Code, if conducted between the hours of 6:30 a.m. and 8:00 p.m. Monday through Saturday and no construction activities on Sundays and national holidays, the following initigation measures are recommended to reduce potential construction-related noise.</li> <li>N-1. During all project site excavation and grading, the project contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufactures standards.</li> <li>N-2. When construction operations occur in close proximity to occupied residential areas, appropriate additional noise reduction measures shall be implemented, including: changing the location of stationary construction equipment to maximize the distance between stationary</li> </ul>	Not Significant.

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Environmental Impact	Miligation Measures	Level of Significance After Mitigation
identified in the City's Development Code. Construction noise effects created during these time frames are considered less than significant. (NS)	equipment and occupied residential areas, installing muffling devices on equipment, shutting off idling equipment, notifying adjacent residences in advance of construction, and installing temporary acoustic barriers around stationary construction noise sources.	
· · · · · · · · · · · · · · · · · · ·	<b>N-3.</b> The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction related noise and the noise-sensitive receptors nearest the project site during all project construction.	
	N-4. During all project site construction, the construction contract shall limit all construction related activities that would result in high noise levels to between the hours of 6:30 a.m. and 8:00 p.m. Monday through Saturday. No construction shall be allowed on Sundays and public holidays.	
Long-Term Operational impacts		
<b>Onsite Impacts</b> An impact may be significant if the project sites a land use (i.e., residential) in an incompatible area due to excessive noise. The City has set a	The following mitigation measures are required to reduce potential long-term vehicular traffic noise levels on the project site.	Not Significant.
desireable daytime level of 60 dBA CNEL for residences. Based on the future (Buildout Year 2020) traffic volumes identified in Section 5.3, noise levels were calculated along the existing and future streets adjacent to the project site. These streets include Etiwanda Avenue, Wilson Avenue, and East Avenue. All of the residences proposed on the perimeter of the project site will be exposed to future year 2020 vehicular noise that range between 64.3 to 68.4 dBA CNEL. These future noise levels would result in significant noise impacts to the residences proposed on the	<b>N-5.</b> The project applicant shall construct sound barriers adjacent to the project lots as shown in Exhibit 5.5-2. The heights of the sound barriers shall be between 3 and 6.5 feet and placed at the top of the proposed slope and at the edge of pads on the residential lots that border Etiwanda Avenue, Wilson Avenue, and East Avenue. The sound barriers may be constructed of earthen berms, masonry, wood, or other similar materials, or combination of these materials to attain the total height required. These sound barriers shall	

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Environmental Impact	Miligation Measures	Level of Significance After Mitigation
perimeter of the site and adjacent to Etiwanda Avenue, Wilson Avenue, and East Avenue. (S)	be solid, with no openings from the ground to the indicated height.	
	<b>N-6.</b> Prior to the issuance of a building permit, residential structures proposed on all lots adjacent to Etiwanda Avenue, Wilson Avenue, and East Avenue will require mechanical ventilation so that windows can remain closed. Furthermore, these residential lots will require upgraded windows such as double-pane windows, if these lots have second story structures. To ensure the specific type of mechanical ventilation and paned windows are included in the building plans, a final acoustical study shall be prepared for City approval prior to approval of Development. The final acoustical study shall identify the specific requirements to reduce future interior noise levels to 45 dB CNEL or less.	
<i>Offsite Impacts</i> The project would not contribute to a significant project or cumulative impact of any of the offsite roadway segments that were analyzed. (NS)	No measures are required.	Not Significant.
AESTHETICS (SECTION 5.6)		
Existing visual characteristics of the natural vegetation located on the project site will be altered to a denuded character during grading activities. (NS)	No measures are required.	Not Significant.
Implementation of the proposed residential community will substantially alter the existing character of the project site as well as views of the San Gabriel Mountains. (S)	<b>AES-1:</b> The applicant shall install landscaping and perimeter walls prior to issuance of building permits for the following phases and locations as shown on the Project Phasing Plan (Exhibit 3-8):	Not Significant.
	<ul> <li>Phase 1-Along Wilson and Etiwanda Avenues.</li> <li>Phase 2-Along Wilson Avenue</li> </ul>	

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	Phase 3-Along Etiwanda Avenue	
	Phase 4 Along East Avenue	
	<b>AES-2:</b> Prior to approval of a landscape plan, the project applicant shall provide transitions between the developed and natural (unbuilt) environment through landscaping techniques.	
	AES-3: Prior to approval of a landscape plan, the project applicant shall ensure that streetscape design along the roadways adjacent to the project site create a strong landscaped edge, provides a coherent high-quality appearance along a particular route, and enhances the image of adjacent development.	
	<b>AES-4:</b> The project applicant shall provide for the undergrounding of utility lines and facilities, wherever feasible, to minimize the unsightly appearance of overhead utility lines and utility enclosures.	
	<b>AES-5:</b> Prior to approval of a landscape plan, trees and structures shall be used to frame and orient such views at key locations, and obstruction of views should be kept to a minimum along Etiwanda Avenue and East Avenue.	
Development of the proposed project and cumulative development in the project vicinity will result in the permanent alteration of the visual landscape of the San Gabriel Mountains. (S)	Implementation of mitigation measures AES-1 through AES-5.	Significant and Unavoidable.
CULTURAL RESOURCES (SECTION 5.7)		
Archeological/Historical Resources		
The results of the records search indicated that three archeological sites are within the project area, including the new site located during the site	<b>CR-1:</b> Prior to the issuance of a grading permit, the project applicant shall retain a City-approved archaeologist to develop an archaeological	Not Significant.

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
visit. It is also likely that prehistoric remains may still be buried. (PS)	mitigation mensures mitigation plan and a discovery clause/treatment plan. Both of these plans shall be reviewed and approved by the City. The archaeological mitigation plan shall include monitoring 50 percent of the excavation activities on the project site by a City-approved archaeologist and/or their representative. The discovery clause/treatment plan shall include recovery and subsequent treatment of any archaeological or historical remains and associated data uncovered by	
	brushing, grubbing or excavation. The treatment plan shall provide procedures for the curation of any detected cultural specimens. Any recovered cultural resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard professional archaeological practices. Examination by an archaeological specialist shall be included where necessary, dependent upon the artifacts, features, or sites that are encountered. Specialists will identify, date and/or determine significance potential.	
	<b>CR-2:</b> If the archaeological monitor discovers cultural deposits, earthmoving shall be diverted temporarily around the deposits until the deposits have been evaluated, recorded, excavated and/or recovered, as necessary, and in accordance with a City-approved recovery plan. Earthmoving shall be allowed to proceed through the area after the archaeologist determines the artifacts are recovered and/or site mitigated to the extent necessary.	
	<b>CR-3:</b> If a previously unknown cultural site is encountered during monitoring and it is determined by the archaeologist that a significance determination is required, the site	

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	shall be evaluated and recorded in accordance with requirements of the State Office of Historic Preservation (i.e., DPR 523 form). In this case, if the site is not determined to be significant, no measures subsequent to recording the site on appropriate forms are required. If any of the sites are determined to be significant, an adequate amount of artifacts at the specific archaeological site shall be collected by the City-approved archaeologist. The archaeologist shall determine the amount of artifacts needed to be collected.	
	<b>CR-4:</b> If human remains are encountered during excavations associated with this project, all work shall halt and the County Coroner shall be notified (Section 5097.98 of the Public Resources Code). The Coroner will determine whether the remains are of forensic interest. If the coroner, with the aid of the City-approved archaeologist, determines that the remains are prehistoric, he/she will contact the Native American Heritage Commission (NAHC). The NAHC will be responsible for designating the most likely descendant (MLD), who will be responsible for the ultimate disposition of the remains, as required by Section 7050.5 of the California Health and Safety Code. The MLD will make his/her recommendations within 24 hours of their notification by the NAHC. This recommendation may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials (Section 7050.5 of	
	<b>CR-5.</b> Any recovered archaeological resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard	

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Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	archaeological practices. Examination by an archaeological specialist should be included where necessary, dependent upon the artifacts, features or sites that are encountered. Specialists will identify, date and/or determine significance potential.	
	<b>CR-6:</b> A final report of findings will be prepared by the City-approved archaeologist for submission to the City, project applicant, and the Archaeological Information Center of the San Bernardino County Museum. The report will describe the history of the project area, summarize field and laboratory methods used, if applicable, and include any testing or special analysis information conducted to support the resultant findings.	
Paleontological Resources		-
According to the paleontological records search, the project area lies on surface exposures of Pleistocene older fan deposits. These deposits have high potential to contain fossil resources throughout their extent. No fossil resources are known for the project area and the nearest resources found in similar deposits are located approximately eight miles to the south. However, there is the likelihood of potential buried fossilized remains. (PS)	<b>CR-7:</b> Prior to the issuance of a grading permit, the project applicant shall retain a City-approved paleontologist. The City-approved paleontologist shall monitor all excavation activities in areas of the project underlain by previously undisturbed sediments. Earthmoving in areas of the site where previously undisturbed sediments will be buried but not disturbed will not be monitored. Monitoring shall begin once earthmoving reaches five (5) feet below the original ground surface.	Not Significant.
	<b>CR-8:</b> Monitoring shall be conducted on a full- time basis in areas of the project underlain by sensitive rock units associated with older alluvium being encountered by earthmoving.	
	<b>CR-9:</b> Should fossils be found within an area being cleared or graded, divert earth-disturbing	

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
	activities elsewhere until the monitor has completed salvage. If construction personnel make the discovery, the grading contractor should immediately divert construction and notify the monitor of the find. If too few fossil remains are found after 50 percent of earthmoving has been completed, monitoring can be reduced or discontinued in those areas at the project paleontologist's direction.	
	<b>CR-10:</b> If paleontological resources are detected. Prepare, identify, and curate all recovered fossils for documentation in the summary report and transfer to an appropriate depository (i.e., San Bernardino County Museum).	
	<b>CR-11:</b> A final report of findings will be prepared by the City-approved paleontologist for submission to the City, project applicant, and the San Bernardino County Museum. All collected specimens and the final report shall be provided to the San Bernardino County Museum.	
PUBLIC SERVICES AND UTILITIES (SECTION 5.8)		
Police Service		
The proposed project will create a demand for approximately 0.8 additional police officer. (NS)	No measures are required.	Not Significant.
Fire Services		
Development of the proposed project will create a need for approximately 0.22 additional fire protection staff. (NS)	F-1: Prior to the issuance building permits, the project applicant shall obtain approval from RCFD of the designs for the fire flow and proposed fire resistant structural materials.	Not Significant.
Water Service		
The proposed project will result in the demand for	W-1: Prior to the issuance of building permits,	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
approximately 220,760 gallons of water per day which represents a 0.7 percent increase in water currently demanded from existing development within the City's General Plan Planning Area. The project's demand for water is nominal; however, it will contribute to the potential significant cumulative impacts on water services. (S)	<ul> <li>the project applicant will be required to submit a water services development fee to ensure that adequate water supplies and facilities are available to meet the project demand.</li> <li>W-2: Prior to the issuance of a building permit for each phase, the project applicant shall submit a landscaping and irrigation plan for common areas to the City for approval. Landscaping and irrigation within common areas shall be designed to conserve water through the principles of Xeriscape as defined in Chapter 19.16 of the Rancho Cucamonga Municipal Code.</li> </ul>	
Wastewater Service		
Implementation of the proposed project will result in the generation of 96,930 gallons of wastewater per day. (S)	<b>WW-1:</b> Prior to the issuance of occupancy permits, the applicant shall provide funding to the Cucamonga County Water Agency for sewer service.	Not Significant.
Schools		
The construction of the proposed residential units will result in the generation of approximately 238 K-8 level students and 72 students in the 9 through 12 levels. (NS)	S-1: Prior to the issuance of building permits, the project applicant shall pay developer impact fees to the Etiwanda School District and Chaffey Joint Union High School District in accordance with Section 65995 of the Government Code for the proposed residences.	Not Significant.
HYDROLOGY AND WATER QUALITY (NOTICE OF PREPARATION)		
The project includes a proposed storm drain system that will connect to the existing channel west of the project site to the Etiwanda Regional Spreading Grounds located east of the project site. The storm drain system has been designed to accommodate storm flow requirements. (NS)	No measures are required.	Not Significant.

Environmental Impact	Mitigation Measures	Level of Significance After Mitigation
The project includes a series of interim onsite detention basins in the fault zone open space area. These temporary facilities are required until the San Bernardino County Flood Control District completes planning and construction of the San Sevaine Regional Mainline Channel, regional flood control facilities for Etiwanda Creek outlined in the Etiwanda/San Sevaine Area 3 Master Plan Storm Drain facilities. (NS)	No measures are required.	Not Significant.
The proposed residential uses have the potential to create contaminated runoff containing compounds such as landscape chemicals and automotive fluids. (S)	Prior to the issuance of a grading permit, the project applicant will be required to prepare a Storm Water Pollution Protection Plan (SWPPP) and file a Notice of Intent with the Regional Water Quality Control Board (RWQCB). As part of standard construction practices, the City and RWQCB will require compliance with best management practices (BMPs) to ensure potentially harmful chemicals or pollutants are not discharged from the site. Such measures may include sandbags, temporary drainage diversion and temporary containment areas.	Not Significant.

## SECTION 3 PROJECT DESCRIPTION

## 3.1 Project Location

The proposed project is located in the unincorporated area of the County of San Bernardino, in the Etiwanda portion of the City of Rancho Cucamonga's sphere of influence. The regional location is depicted on Exhibit 3-1. The project site is north of and includes the City-planned extension of Wilson Avenue between Etiwanda Avenue to the west and the proposed East Avenue extension to the east. The site is west of and includes East avenue from the existing terminus approximately 700 feet south of Wilson Avenue to the northern boundary of the existing Southern California Edison (SCE) utility corridor easement. Exhibit 3-2 shows the project vicinity. The site is generally south of the existing SCE easement.

# 3.2 Project Background and History

The project site is located in the Etiwanda North Specific Plan (ENSP) which was approved in 1991. The ENSP comprises of approximately 6,840 acres and a portion of this Specific Plan is located within the City of Rancho Cucamonga and the remainder is located within the City's Sphere of Influence. The project site is located within the City's Sphere of Influence. The project site is located within the City's Sphere of Influence. The project site is located within the City's Sphere of Influence. The project site is located within the City's Sphere of Influence. The project site is located within the City's Sphere of Influence. The project site is located within the City's Sphere of Influence. The project site is located within the City's Sphere of Influence. The project applicant is proposing to include housing at gross densities that are consistent with the densities identified in the ENSP.

# 3.3 Project Characteristics

The project includes of the annexation of land from unincorporated San Bernardino County into the City of Rancho Cucamonga, and the approval and development of Tentative Tract Map Number 16072 (TTM 16072).

## 3.3.1 Land Use

The proposed project includes 358 detached single-family housing units on minimum lot sizes of 8,400 square feet, on approximately 150.8 acres. The Red Hill Fault runs northeast across the project site and divides the tract into northern and southern phases. Exhibit 3-3 depicts the site plan of TTM 16072.

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Exhibit 3-1 Regional Location Map RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

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The northern portion of TTM 16072 would include development of 167 single-family homes on 56.61 acres, a density of 2.95 dwelling units per acre, with minimum lot sizes of 8,400 square feet and average lot sizes of 11,774 square feet. The southern portion would include development of 191 single-family homes on 65.71 acres, a density of 2.92 dwelling units per acre, with minimum lot sizes of 8,400 square feet and average lot sizes of 11,126 square feet. The combined density of the project would be 2.93 dwelling units per acres. The gross density of the project including open space, flood control and streets would be 2.38 dwelling units per acre.

Based on a population factor of 3.48 persons per single family household, the project is expected to include 1,238 residents.

A landscaped open space, 20-foot-wide trail connecting the Etiwanda Avenue Community Trail to East Avenue is proposed along the Red Hill Fault. The trail intersects the project site traveling in a northeasterly direction towards the mountains. Internal undulating landscaped slopes will be designed at various slope inclinations (2:1 maximum) to provide meandering of the tops and toes of the slopes. The proposed project also includes the installation of underground utilities (such as electricity, phone, etc.).

Table 3-1 below provides a statistical summary of the various land uses associated with TTM 16072.

Land Use	Gross Acreage	Percent
Single-family Detached Residential	94.18	62.50
Fault Zone/Open Space Area/Interim Detention Basin	13.24	8.78
Manufactured Open Space (Landscaped)	8.31	5.45
City Flood Channel	3.10	2.06
Public Streets	31.97	21.21
Total	150.80	100.00

Internal street patterns have been designed following the naturally trending terrain, which slopes at about 6 percent from the northwest to the southeast. Access to the project site would include two street connections to Etiwanda Avenue, one street connection to Wilson Avenue, and one street connection to East Avenue. No connections would be installed along the northern portion of the project site, adjacent to the SCE easement. In addition, the circulation system would provide for improvements to the existing streets along the perimeter of the project site. Along the western project boundary, Etiwanda Avenue is a partially improved secondary arterial street. The project would

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include half-width improvements (i.e., 52 feet wide) which would include the completion of full width improvements along the eastern side of Etiwanda Avenue from Golden Prairie Drive to the southern boundary of the SCE easement . Wilson Avenue is currently a well-graded dirt road along the southern project boundary. The project would include the full width development of Wilson Avenue (i.e., 165 feet wide) to a divided secondary arterial which includes improvements to the adjacent 65-foot wide Metropolitan Water District (MWD) easement. The proposed improvements to Wilson Avenue include a 4-foot meandering sidewalk on the north side of the right-of-way and a 7-foot meandering sidewalk and 12-foot trail along the south side of the right-of-way. East Avenue is currently a dirt road north of Summit Park to Wilson Avenue, and does not extend further north. The project would partially improve East Avenue from Summit Park to Wilson Avenue to provide pavement for two lanes of traffic (i.e., 20 feet wide). North of Wilson Avenue, the project would include half-width improvement of East Avenue (i.e., 33 feet wide) as a collector street to the southern boundary of the SCE easement. The project also includes full-width improvements (i.e., 66 feet wide) of Wilson Avenue within the SCE easement. Within the easement the project includes one driveway on each side of the right-of-way to allow SCE access to their utility facilities.

### 3.3.2 Infrastructure Improvements

#### Drainage System

The proposed project also includes onsite and offsite flood control and street improvements. Storm water conveyed from north of the project site will be directed to a proposed 35-foot wide storm channel located along the northern boundary of the project site. This proposed storm channel has been envisioned as a component of the Etiwanda/San Sevaine Area 3 Master Plan Storm Drain facilities. The proposed storm channel would protect the project site from upstream flows and would result in a modification of the site's current Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) designation of Zone D (area of undetermined flood hazard) to no significant flood hazard. The proposed culvert under Etiwanda Avenue is also part of the Master Plan. The implementation of these proposed drainage facilities would be consistent with the Master Plan.

Storm water collected from onsite areas north of the fault line will drain into interim detention basins placed within the open space/fault zone. The onsite areas south of the fault line will drain into an interim detention basin that is located in the southeastern portion of the project site directly adjacent to Wilson Avenue. The onsite detention basins will detain storm flows to reduce the potential peak concentrations flowing off of the project site and eventually into the existing 84-inch storm drain within the northern portion of the Wilson Avenue right-of-way (see Exhibit 3-4). The 84-inch storm drain currently conveys storm water to the east to Etiwanda Creek. The interim detention basins will not be required subsequent to the implementation of a future regional channel improvement at the confluence of the Etiwanda Creek and San Sevaine Creek Channels. Exhibit 3-5 illustrates the long-term drainage system plan for the proposed project.



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#### Water System

Domestic water would be provided to the project site by the Cucamonga County Water District (CCWD). Water lines on the project site would be connected to the existing 12" water line already in place along the southern project boundary on the Wilson Avenue alignment. The proposed lines extending west to Etiwanda Avenue will connect to the existing 10" water line located in Etiwanda Avenue (see Exhibit 3-6).

#### Sewer System

Wastewater treatment service would be provided by the Inland Empire Utilities Agency. A trunk sewer main is currently installed along Etiwanda Avenue at the eastern project boundary. In addition, a future trunk sewer main is planned on the East Avenue extension to meet the needs of planned and approved development projects. Wastewater service would be provided to the proposed project connecting to these existing and planned sewer mains (see Exhibit 3-7). CCWD provides sewer collection and conveyance systems to the wastewater treatment plants. Most of the project can gravity sewer southwesterly to the exchange sewer line at Wilson and Etiwanda Avenues until the East Avenue Trunk Sewer is completed

### 3.3.3 Fuel Modification Plan

The proposed *Fuel Modification Plan for Tract #16072* prepared by John B. Hatcher in June 2003 assesses the onsite and offsite wildland fire hazards and risks that may threaten life and property associated with proposed residential development within the Tract. The development plans in progress north and south of this area will provide additional barriers to an advancing wildland vegetation fire.

The purpose of this Fuel Modification Plan (FMP) is to provide native vegetation treatment direction for developers, architects, builders, and Rancho Cucamonga Fire Protection District (RCFPD) officials to use in making all proposed structures safe from wildland firest in the future. The FMP includes:

- A wildland fire hazard assessment and expected fire behavior of offsite and onsite native vegetative fuels.
- A long-term perimeter vegetative fuel modification treatment and maintenance plan to minimize any loss to residential structures within the project site due to wildland fire.
- A long term "firewise landscaping" and fuel modification treatment plan to be deployed around all structures.



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The FMP is based upon requirements in the Rancho Cucamonga Fire District Ordinance #39, and San Bernardino County Building Codes and Fire Safety (FR) Overlay District criteria. The Fuel Modification Plan Guidelines prepared by the Los Angeles County Fire Department were also used as reference material. The RCFPD has reviewed the proposed plan and has provided preliminary approval. The proposed FMP is available for review at the City of Rancho Cucamonga Planning Department.

## 3.4 **Project Objectives**

The following are the objectives of the proposed project.

- 1. To provide single-family housing units consistent with the intent of the City's General Plan and the Etiwanda North Specific Plan.
- 2. To annex the proposed 150-acre tentative tract and an adjacent 10-acre area at the northwest corner of Wilson and East Avenue into the City of Rancho Cucamonga.
- 3. To be consistent with, and implement, the policies and goals of the City of Rancho Cucamonga General Plan, Etiwanda North Specific Plan, City Development Code, and all other City development guidelines.
- 4. To create a project that is generally consistent and compatible with other existing and proposed uses in the vicinity of the project and community of Etiwanda in general.
- 5. To provide project infrastructure including streets, water and sewer mains, and flood control consistent with City and regional plans related to these services.
- 6. To phase the development of the proposed project to ensure adequate utilities are provided.
- 7. Provide a system of public/community facilities, including parks, trails, open space areas, and landscaping to support the residents of the project and surrounding area in an efficient and timely manner.
- 8. To design and landscape the proposed project to create an aesthetically pleasing living environment.

# 3.5 Intended Uses of the EIR

This EIR has been prepared in accordance with the California Environmental Quality Act of 1970 (CEQA), as amended (Public Resources Code section 21000, et seq.), and the California CEQA Guidelines. This report also complies with the rules, regulations, and procedures for implementation of CEQA as adopted by the City Council. The City is responsible for project approvals and supervision. Therefore, the City will serve as the Lead Agency for the proposed project.

The EIR may be utilized for the following discretionary approvals and permits hy the City:

• Annexation. Approval of annexing approximately 160 acres that comprise two parts; 150-acre project site and approximately 10 acres at the northwest corner of Wilson and East Avenues.

- Tentative Tract Map. Approval of TTM 16072 is required to subdivide the project site.
- Development Agreement. Approval of a development agreement for the proposed project will be required.
- Design Review. Approval of the proposed architecture, height, setbacks, landscaping, and other design components will be required.
- Grading Permits. Grading on the project site is subject to the review and approval of grading plans.
- **Building Permits.** Construction of development on the project site is subject to review and approval of building plans.

This DEIR may be used in the decision-making process for other approvals related to the project including but not necessarily limited to the following:

- Local Agency Formation Commission. Approval of prezoning and annexation of the approximately 150-acre project site as well as the adjacent 10-acre area at the northwest corner of Wilson and East Avenue will be required.
- San Bernardino County Flood Control District. The project will require a permit to connect the proposed storm channel along the northern boundary of the project site to the Etiwanda Spreading Grounds.
- Federal Emergency Management Agency. The project will require a revision of the site's Federal Emergency Management Agency's flood hazard designation on the Flood Insurance Rate Map (FIRM). The project applicant will be required to provide information showing that the proposed the proposed storm channel along the northern boundary of the project site would eliminate the existing flood hazard on the project site.
- Army Corps of Engineers. The project will require an USACE Section 404 permit because a portion of an area proposed for development is classified as "waters of the United States." The USACE has jurisdiction over developments in or affecting the navigable waters of the United States, pursuant to the Rivers and Harbors Act and the Clean Water Act. An USACE permit is required prior to discharging any dredge or fill material into United States waters, pursuant to Section 404 of the Clean Water Act.
- Regional Water Quality Control Board. The project will require a RWQCB Section 401 Water Quality Certification because a portion of an area proposed for development will disturb "waters of the United States" through discharging dredge or fill materials into these waters.
- California Department of Fish and Game. The project would require a CDFG agreement pursuant to Section 1603 of the Fish and Game Code for disturbance of drainage courses. A

written agreement is required prior to allowing development that may threaten, harm, or destroy existing wildlife habitats within areas of jurisdiction.

# 3.6 Project Phasing

TTM 16072 would be developed in four phases, which would be preceded by grading of the entire project site. Grading is estimated to take approximately 8 months to complete and would include construction of interim detention basins. Construction grading would follow the general form of the existing topography. Earthwork cut and fill are anticipated to balance onsite, with total raw cut of approximately 1,000,000 cubic yards (cy). Some screening activities of fill material may also take place to reduce or eliminate the rocks and boulders presently found onsite.

Construction of the four phases is estimated to take place over approximately 4.5 years, but would also depend on actual housing market conditions. Exhibit 3-8 identifies the anticipated project phasing. Phase 1 is estimated to take one year and ten months to construct and entails the construction of 88 units, including 3 models, and construction of their associated utilities and streets. Phase 1 also includes the construction of the storm channel along the northern property boundary, Etiwanda Avenue, East Avenue north and south of Wilson Avenue, and the full width development of the Wilson Avenue right-of-way.

Phase 2 is estimated to take one year and eight months to construct and entails the construction of 103 units, and construction of their associated utilities and streets. Phase 3 is estimated to take one year and six months to construct and entails the construction of 98 units and associated utilities and streets. Finally, Phase 4 is estimated to take one year and one month to construct 69 units including associated utilities and streets.

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Project Phasing Plan

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## SECTION 4 GENERAL DESCRIPTION OF ENVIRONMENTAL SETTING

### 4.1 Overview of Environmental Setting

The project site is located in the unincorporated North Etiwanda area of San Bernardino County. This area lies within the City of Rancho Cucamonga Sphere of Influence and is proposed to be incorporated into the City as part of the project approval process. The 150.8-acre site is located immediately north of the planned Wilson Avenue extension, between Etiwanda Avenue to the west and the proposed East Avenue extension to the east. The undeveloped property is located on an alluvial fan at the base of the San Gabriel Mountains. Currently the project site is comprised of a natural vegetation community largely comprised of sage scrub species and several mature trees.

A water treatment plant is located immediately south of the project site, with residential development to the south of the treatment plant. There is an SCE utility corridor casement immediately north of the project boundary. A large residential subdivision is currently located to the west of the subject property across Etiwanda Avenue, while properties to the north and immediate east of the site are presently undeveloped (see Exhibit 4-1).

# 4.2 Related Projects

Section 15130 of the CEQA Guidelines requires that an EIR discuss cumulative impact of a project when the incremental effects of a project are cumulatively considerable. Cumulative impacts are defined as an impact that is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. Cumulatively considerable means that the incremental effects of an individual 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. According to the CEQA Guidelines, elements considered necessary to provide an adequate discussion of cumulative impacts of a project include either: (1) list of past, present, and probable future projects producing related or cumulative impacts; or (2) a summary of projections contained in an adopted General Plan or related planning document which describes regional or areawide conditions contributing to a cumulative impact.

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Existing Environmental Setting
The following are the approved and/or planned projects in the vicinity of Tentative Tract #16072:

- Rancho Etiwanda. This project is located west of the site along Wilson Avenue, approximately 4,000 feet, and proposes to construct 685 single family homes on 250 acres. The project is approved and units are under construction.
- Rancho Etiwanda Estates. Proposes to build 632 single family homes on 247 acres located northwest of the project site and the current terminus of Etiwanda Avenue. The project is approved, no construction has begun at this time.
- Henderson Creek. This project is located along Wardman Bullock Road, north of Wilson Avenue and northeast of the project site. It proposes construction of 126 single-family dwellings on 90 acres. The project is in the review process in the City of Rancho Cucamonga.
- Tracy Development. This project is located immediately north of the proposed development and proposes to construct 269 single-family homes on approximately 107 acres. The project is in the initial phases of the review process with the City. Included in the project proposal are two park sites, approximately 3 acres each.
- Tentative Tract Map 16113. This project is located south of the site along East Avenue and proposes 23 single family residential lots on 17 acres. This project is approved but construction has not begun at this time.
- Tentative Tract Map 16114. This project is located south of the site along East Avenue and proposes 21 single family residential lots on 15 acres. This project is approved but construction has not begun at this time.
- Tentative Tract Map 16115. This project is located south of the site along East Avenue and proposes 17 single family residential lots on 18 acres. This project is approved but construction has not begun at this time.
- Tentative Tract Map 16116. This project is located south of the site along East Avenue and proposes 48 single family residential lots on 37 acres. This project is approved but construction has not begun at this time.
- Tentative Tract Map 16147. This project is located south of the site along Etiwanda Avenue and proposes 70 single family residential lots on 48 acres. This project is approved but construction has not begun at this time.
- Tentative Tract Map 14759. This project is located south of the site along Etiwanda Avenue and proposes 358 single family residential lots on 132 acres. This project is approved but construction has not begun at this time.

# SECTION 5 EXISTING CONDITIONS, PROJECT IMPACTS, CUMULATIVE IMPACTS, MITIGATION MEASURES, AND LEVEL OF SIGNIFICANCE AFTER MITIGATION

# 5.1 Geology and Soils

The following discussion is based on preliminary geotechnical investigations and supplemental geologic/fault investigations conducted by GeoSoils, Inc in 1998 and 2000 and the Geologic and Hydrologic Technical Background Report prepared by Earth Consultants International, Inc. in 2002 (see Appendix B).

# 5.1.1 Existing Conditions

# Regional/Local Geology

The region surrounding the project straddles the junction between two major southern California geologic provinces, the Transverse Ranges to the north, and the Peninsular Ranges to the south, with the base of the San Gabriel Mountains and the Sierra Madre-Cucamonga fault system marking the boundary. The San Gabriel Mountains, part of the Transverse Ranges, are a province defined by a series of predominantly east-west trending mountain ranges and their intervening valleys. The ranges stretch across the northern portion of San Bernardino County, as well as parts of Riverside, Los Angeles, Ventura and Santa Barbara counties. The Santa Ana River Valley is considered to be a part of the Peninsular Ranges, a northwest-trending geologic and structural grain aligned with the San Andreas fault system, and represented by northwest-trending mountains and valleys extending to the Mexican border.

The eastern San Gabriel Mountains are located in the central part of the Transverse Ranges, where they abruptly rise to heights of more than 6,000 feet above the valley floor. Bounded by the San Andreas fault zone on the northeast and the Cucamonga fault zone on the south, the mountains are essentially a large block of the earth's crust that has been squeezed up and thrust over the valley floor by north-south compression along the San Andreas tectonic plate boundary. Along the mountain front, the Santa Ana River Valley is shaped by coalescing alluvial fans that have a range of ages that coincides with the rise of the San Gabriel Mountains. The project site is situated on geologically young alluvium that blankets fans emanating from the Day and East Etiwanda Canyons to the north. These young sediments are underlain by older alluvial fan deposits, and at great depth, by crystalling bedrock similar to that exposed in the nearby mountains.

# Geologic Units

The site is underlain by alluvial fan sediments estimated to be several hundred feet thick. Locally, these sediments are covered by surficial deposits, including uncompacted artificial fill and colluvium.

Deposits of uncompacted artificial fill occur locally throughout the site and are generally associated with dirt roads and with backfilled test pits and exploratory fault trenches. These fault trenches were as much as approximately 1,130 feet in length, and range in depth from about 6 feet to almost 30 feet. The trench backfill consisted of native soils in a dry and loose condition; consequently the sites of these excavations are not currently suitable for support of fill embankments or building foundations.

During their preliminary geotechnical investigations, GeoSoils reported that colluvium mantles the alluvial fan deposits. Colluvium generally consists of silty, fine- to coarse-grained sand with scattered cobbles, and locally abundant cobbles. These materials are dry to damp, of low density, and are porous, especially near the surface. Because of these characteristics, colluvium is also unsuitable for the support of foundations and fill embankments.

The site is underlain by a thick section of Quaternary-age (deposited in the last two million years) alluvial fan deposits. The near-surface deposits, as observed in exploratory trenches, consist predominantly of silty sand or sand with pebbles, gravel, and cobbles, to sandy gravel/gravelly sand with cobbles and boulders. The stratigraphic sequence is medium- to thick-bedded, with bedding gently inclined to the south. Because the fan surfaces in this area are moderately dissected by streams and have moderate soil development, Morton and Matti (1987) classified these deposits as latest Pleistocene (between 11,000 and 2 million years old) and Holocene (less than 11,000 years old).

#### **Regional Faulting and Seismicity**

The project site is located in an area of large-scale seismic activity, as the Transverse Ranges province collides with terrain of the Peninsular Ranges province to the south. As mentioned above, the Sierra Madre-Cucamonga fault system delineates the boundary of these two provinces. This fault system was responsible for the destructive M6.4 San Fernando earthquake in 1971 and for the M5.8 Sierra Madre earthquake in 1991. In addition, evidence for prehistoric earthquakes along this fault system has been uncovered in numerous exploratory excavations in recent years. Consequently, most of this fault system has been assigned to an Alquist-Priolo Earthquake Fault Zone by the California Division of Mines and Geology (currently the California Geological Survey). Displacements on faults within this system are mainly of the thrust or thrust-oblique type, causing older geologic units to be pushed up along a series of faults that dip northward beneath the San Gabriel Mountains. In the Rancho Cucamonga area, this activity is represented by the Cucamonga fault zone.

Major active strike-slip faults are also present in the region, deforming the landscape and changing drainage patterns. Examples of this type of faulting include the San Andreas fault and the San Jacinto

fault, two of the most active fault systems in California. These structures are predominantly rightlateral faults and are responsible for creating linear valleys and ridges, as well as offset stream channels.

The faults mentioned above have the potential to generate strong ground motions at the project site. Other regional faults that could also produce significant ground shaking at the site include the San Jose fault and the Chino-Elsinore system. A summary of the various significant faults are described in the following paragraphs and summarized in Table 5.1-1.

Seismic Source (Name of fault or fault segment)	Mägnitude of the Maximum Magnitude Event	Peak Ground Accelerations (g)	Approximate Distance to Site (miles)
Cucamonga	7.0	0.72 - 0.92	<2
San Andreas	······································		
San Bernardino	7.3	0.42-0.51	9
Coachella Valley	7.4	0.43 - 0.54	9
Mojave	7.1	0.35 - 0.41	11
1857 Rupture	7.8	0.44 - 0.57	11
San Jacinto			
San Bernardino	6.7	0.51 - 0.55	5
San Jose	6.5	0.34 - 0.38	10
Sierra Madre	7.0	0.32 - 0.39	13
Chino	6.7	0.25 - 0.28	15

#### Table 5.1-1: Summary of Major Known Active Faults with the Potential to Cause Severe Seismic Shaking at the Site

Ground accelerations at the site were calculated using the EQFAULT computer software developed by Blake (2000) and the most recent fault parameters issued by the California Division of Mines and Geology in 1996.

The intensity of ground shaking at the given location depends primarily on the earthquake magnitude, the distance from the epicenter to the site of interest, the type of fault that causes the earthquake, and the response characteristics of the soils or bedrock units underlying the site. Given its proximity, the Cucamonga fault zone is potentially capable of producing intense ground accelerations at the site. A maximum magnitude earthquake on this fault could produce seismic shaking at the site with peak horizontal ground accelerations estimated between 0.72 g and 0.97g, depending on the attenuation relation used. Earthquakes on other faults and fault segments located farther away from the site could be expected to produce lower peak horizontal ground accelerations at the site.

#### San Andreas Fault

The San Andreas extends over 750 miles from Cape Mendocino in northern California to the Salton Sea region in southern California. It is considered the "master fault" that controls seismic activity in southern California. Its activity is known from historic earthquakes and from many fault studies that have shown that the San Andreas fault offsets or displaces recently deposited sediments.

The San Andreas fault is divided into segments in order to evaluate future earthquake potential. The segmentation is based on physical characteristics along the fault, particularly discontinuities that may affect the rupture length. While this methodology is valuable in predicting earthquakes, historical records and prehistoric earthquakes show it is possible for more than one segment to rupture during a large quake or for ruptures to overlap into adjacent segments. The closest segments of the San Andreas fault to the project site are the San Bernardino Mountains and Coachella Valley segments.

#### Cucamonga Fault

At a distance of little more than a mile, the Cucamonga fault zone is the closest known active fault to the project site capable of producing an earthquake (the Etiwanda Avenue scarp that extends through the project site is an active fault, but it is not thought capable of generating an earthquake on its own). The Cucamonga fault zone consists of several discontinuous fault strands in the eastern part, merging in the central part, and forming a single strand to the west. The Red Hill fault and the Etiwanda Avenue Scarp are secondary faults that are thought to represent the southernmost segments of these fault strands.

The relationships between faulted geologic units, alluvial stratigraphy, soil ages, and fault scarp morphology have been studied in an attempt to estimate how large an earthquake the Cucamonga fault zone is capable of generating, the slip rate, and how often a large earthquake will occur. If the Cucamonga fault were to break along its entire length, it is thought capable of a magnitude 7.0 earthquake. Such an event could produce peak horizontal ground accelerations estimated at 0.72g to 0.97g at the site.

#### San Jacinto Fault

The San Jacinto fault system has been a significant source of moderate- to large-magnitude earthquakes in southern California, having generated about ten earthquakes greater than magnitude 6.0 in the last century. The San Jacinto fault is divided into five segments. The San Bernardino segment and the San Jacinto Valley segments are the closest segments, located about 5 miles and 19 miles away, respectively.

Of these, the San Bernardino segment is potentially capable of producing the most intense ground accelerations at the site. A magnitude 6.7 earthquake would generate estimated peak horizontal ground accelerations at the site of about 0.51g to 0.55g.

#### Other Faults

The San Jose fault is an 11 mile long fault splay that branches southwestward from the Cucamonga-Sierra Madre fault system in the Upland area. A worst-case scenario earthquake on this fault, rupturing the entire length of the fault, would result in a magnitude 6.5 earthquake that could cause peak horizontal ground accelerations at the site of 0.34g to 0.38g.

The Sierra Madre fault, a continuation of the Cucamonga fault to the west contains several portions that are known to be active. The closest segment of the Sierra Madre fault to the site is located about 13 miles from the site.

The Chino fault is the northward extension of the Elsinore fault zone north of the Puente Hills. Based on its length, the Chino fault is considered capable of generating a maximum magnitude earthquake of magnitude 6.7.

#### **Onsite Faulting**

Active faulting has been identified within the project boundaries, and it has deformed the gently sloping fan surface as represented by the low escarpment trending northeasterly across the site. This feature was named the Etiwanda Avenue Scarp and is thought to be an extension of the Red Hill fault. The Red Hill fault and the Etiwanda Avenue Scarp are thought to be structurally related to the Cucamonga fault zone. Because the deformation is considered to be fault-related, the State assigned the scarp to an Alguist-Priolo Earthquake Fault Zone.

The presence of active faulting was confirmed through exploratory fault trenching on the project site in 1986. The fault appears to be of the reverse/thrust type, and has offset young alluvium and colluvium. A seismic investigation performed in 1998 by GeoSoils indicates that active faulting is not likely to occur within the remainder of the site.

#### Liquefaction

Liquefaction occurs when loose, cohesionless, water-saturated soils are subjected to strong seismic ground motion of significant duration. These soils essentially behave like liquids, losing all bearing strength. Structures built on these soils tilt or sink when soils liquefy. Liquefaction more often occurs in earthquake-prone areas underlain by young alluvium where the ground water table is less than 50 feet below the ground surface.

In general, the likelihood of liquefaction occurring in most of the Rancho Cucamonga area is low to non-existent. The ground water level below the project site is in excess of 100 feet below the surface.

## Slope Stability

Slope instability is a rare occurrence on gently sloping sites like the project site, and is usually limited to the banks of incised stream channels. Evidence for existing slope instability was not found during analysis of stereoscopic aerial photographs, or during site investigations. Because of the nearly flat gradient of the project site, it is not likely to be susceptible to seismically-induced landsliding.

#### Groundwater

Groundwater in the project area typically occurs in excess of 100 feet below the ground surface. Because of the nature of the alluvial fan deposits, it is possible for localized areas to have shallow purched water. However, springs, seeps, and other indicators of shallow, perched groundwater were not observed during the geologic investigations on the project site.

#### Soil Conditions

#### Soil Engineering Conditions

The upper 2 to 4 feet of native soils at the site are in a relatively dry, loose and porous condition, and as a result are considered to be highly compressible. Scattered artificial fills are also highly compressible.

Preliminary results of laboratory testing indicates that due to the granular nature of the onsite materials, expansion characteristics will generally be in the low range and sulfate attack on concrete, or corrosion of ferrous metals in contact with the soil is not likely to occur.

The granular, non-cohesive nature of the native soils indicates that they will have poor sidewall stability for trenching and finished slopes may be vulnerable to surficial instability.

#### Suitability as Fill Material

Natural moisture content of the native materials onsite is typically below the optimum amount required for proper compaction; consequently, additional moisture will need to be provided during compaction operations to provide for adequate compaction.

#### Rippability

Hard bedrock is not present in the shallow subsurface in the project area. The older fills, colluvium, and alluvium at the project site can be excavated (ripped) with conventional grading equipment.

# 5.1.2 Thresholds of Significance

A project is considered to have a significant impact on geology and soils if it:

• Exposes people or structures to 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 the substantial evidence of a known fault.
- Strong seismic ground shaking.
- Earthquake induced ground shaking capable of causing liquefaction, slope stability, ground lurching, settlement, dam/reservoir failure, tsunamis, and seiche.
- Is located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project.

# 5.1.3 Project Impacts

## Seismic Hazards

## Fault-Induced Ground Rupture

Surface slip along a fault plane can severely damage structures built across a fault. To protect structures from the hazard of ground rupturing, the Alquist-Priolo Act prohibits the siting of structures designed for human occupancy on top of an active fault. As discussed previously, an Alquist-Priolo Earthquake Fault Zone has been delineated across the project site to encompass the Etiwanda Avenue Scarp. The zone delineates the portion of the property that must undergo the required geologic studies needed to evaluate the faulting prior to project approval by the local agency. Several subsurface fault studies have been conducted within the project boundaries and active fault traces have been mapped. Therefore, the potential for fault-induced ground rupture at the site is considered to be a significant impact.

#### Fault Zone Detention Basins

Two of the interim detention basins will be located within the fault zone traversing the central portion of the property (see Exhibit 3-4). An analysis was completed to determine whether the water percolating into these basins would adversely affect the fault (Refer to Appendix B, GeoSoils, Inc., April 10, 2003). The only known adverse effects associated with water percolation and seismicity are related to large lake-level changes. The interim basins will only hold water temporarily to a maximum of eight feet for less than 24-hours. Therefore, since the basins will be emptied relatively quickly there will be no significant seismic impacts associated with water impoundment. Furthermore, no fault gouge or clay was observed within the onsite fault zone and thus there is no preferential path for water imfiltration into the fault zone.

# Seismic Ground Shaking

The strong ground motion or shaking that occurs during an earthquake is the primary cause of earthquake damage. The acceleration of the ground shaking at any one point depends primarily on the earthquake magnitude, distance from the earthquake source, and the local geologic conditions. The most severe shaking would be caused by an earthquake on the Cucamonga, San Andreas, or San Jacinto faults, each of these faults has the potential of generating peak horizontal ground accelerations at the site greater than about 0.5g. An earthquake on the Cucamonga fault has the potential of

generating strong ground motions of nearly 1.0 g. Given the potentially high accelerations that could occur at this site, the impact of strong ground motion is considered to be a significant impact.

# Seismic-Related Ground Failure Liquefaction

Liquefaction occurs when loose, cohesionless, water-saturated soils (generally fine-grained sands) are subjected to strong seismic ground motion of significant duration. Structures built on these soils may tilt or sink when the soils liquefy. Liquefaction more often occurs in earthquake-prone areas underlain by young alluvium where the ground water table is less than 50 feet below the ground surface.

In their preliminary investigation, GeoSoils determined that the potential for liquefaction at the project site is unlikely since the sediments underlying the area are coarse grained and ground water is greater than 50 feet below the surface. Loose surficial soils will be removed and replaced with compacted fill as part of normal grading activities, further reducing the potential for liquefaction to occur. Due to the relatively high permeability of the alluvial fan sediments and the required drainage control for the developed site, the probability of the water table at the site rising in the future to within 50 feet of the ground surface is low. The hazard of liquefaction is therefore considered to be less-than-significant.

#### Seismically-Induced Slope Stability

Slope instability is a rare occurrence on gently sloping sites similar to the project area and is typically limited to the banks of incised stream channels. Because of the nearly flat gradient, in its existing condition, the site would not likely be susceptible to seismically induced landsliding.

Strong ground motions can worsen unstable conditions in natural and man-made slopes. Factors controlling the stability of slopes include 1) slope height and inclination, 2) engineering characteristics of the earth materials comprising the slope, and 3) the intensity of ground shaking. With project implementation, graded slopes up to 40 feet in height and gradients of 3:1 or less are proposed. Consequently, seismically induced slope instability is considered to be potentially significant.

A slope stability analysis was also performed for the interim detention basin to be located just north of Wilson Avenue (Refer to Appendix B, GeoSoils, Inc., April 10, 2003). The analysis was performed with respect to static conditions, seismic groundshaking conditions, and under rapid drawdown conditions. The analysis indicates that the basin would meet minimum safety standards assuming that the slopes are designed and constructed per Uniform Building Code standards and general engineering standards for seismic safety.

#### **Ground Lurching**

Certain soils have been observed to move in a wave-like manner in response to intense seismic ground shaking. At present, the potential for ground lurching to occur can be predicted only generally. Under strong seismic ground motion conditions, lurching can be expected within loose, cohesionless soils, or in clay-rich soils with a high moisture content. Colluvial soils and loose cohesionless soils are present at the surface of the site; therefore, ground lurching due to seismic shaking is considered to pose a potentially significant impact at the site in its present condition.

#### Seismically-Induced Settlement

Strong ground shaking can cause settlement by allowing greater compaction of the soil particles. Native surficial soils and artificial fills on the project site are of low density and are therefore susceptible to settlement. Therefore, the onsite soils could result in significant settlement impacts.

#### Earthquake-Induced Dam/Reservoir Failure

No large-capacity reservoirs or water tanks that could fail during an earthquake are located upgradient from the project site. Furthermore, no reservoirs or tanks are proposed as part of the proposed project. Therefore, no impact from an earthquake-induced mundation at the project site is anticipated.

#### Tsunami

The project site is located at a minimum elevation of 1,635 feet above mean sea level and more than 45 miles inland. Due to the site's location, the risk of inundation from a tsunami is considered nil and not significant.

#### Seiche

No large bodies of water are existing in the project area and none are proposed as part of the project. Therefore, the potential for a seiche to affect the project site is less than significant.

#### Slope Stability

There are no existing landslide on or near the project site that would threaten the stability of the proposed development. In addition, there are no natural slopes nearby that pose a hazard to the project. Therefore, the existing topography on the project site would not result in landslide impacts.

Graded slopes are proposed on the project site and gradients for the slopes will be variable to provide a natural visual appearance. Cut and fill slopes of approximately 40 feet high are proposed to be constructed. The highest proposed slope that will be constructed will be at a 2:1 gradient and approximately 30 feet high. Slopes higher than 30 feet, as well as many smaller slopes will be constructed at a 3:1 gradient. Based on the slope design recommendations in the geotechnical investigation, graded slopes shall not exceed approximately 15 feet in height. This restriction is due to the grandular, non-cohesive nature of the onsite soils. Since the proposed project includes slopes at 40 feet in height, implementation of the proposed project could result in a slope stability impact.

#### Shallow Ground Water

Due to the unlikely presence of localized shallow perched groundwater and the highly permeable nature of the alluvium underlying the project site, impacts associated with shallow ground water would be less than significant.

# Foundation Stability

## **Compressible Soils**

The upper few feet of the native soil onsite is potentially compressible. Uncontrolled fills that exists on the project site due to old road fills and backfills from exploratory trenches are also compressible. These materials are of low density and would settle under the weight of the proposed fills and structures. This is considered a significant impact.

#### **Collapsible Soils**

Due to the potential for variation in grain size within the alluvial fan deposits located on the project site, localized areas could result in potential collapse of soil material. This is considered a significant impact.

#### **Expansive** Soils

Due to the granular nature of the onsite soil, the expansion characteristics are considered in the low range. Therefore, the potential for native soils on the project site to cause structural damage from expansion is considered less than significant.

#### **Ground Subsidence**

Since the current groundwater pumping program within the Chino Groundwater Basin includes monitoring ground elevations for subsidence and there are no oil extraction operations near the project area, the hazard posed by land subsidence is considered less than significant.

#### **Rippability and Oversize Rock**

Because there is no bedrock at or within hundreds of feet from the surface, rippability of the onsite soils is less than significant. However, due to the presence of large cobbles and boulders in the onsite alluvium, special handling of oversize rocks will be required. The removal of boulders from the site could result in deficiencies of fill material in the proposed balanced cut and fill grading design. Therefore, the presence of oversize rock could result in a potentially significant impact.

# 5.1.4 Cumulative Impacts

The proposed project will affect the earth resources of the site, and will also be affected by those resources. Earth resources affect the project and the project site through seismic and other potentially hazardous influences that occur naturally. Much of the area surrounding the project has been previously graded. The effects of the proposed project relate to modifying the site to accommodate development and to provide a safe and stable project foundation. However, soil and geologic influences tend to be inherent to a particular site, and therefore have little, if any cumulative relationship with planned and/or future development. The proposed project will expose future residents of the project site to significant and unavoidable seismic ground shaking due to the high potential for strong ground motion. The proposed project would contribute to a significant cumulative increase in residents that could be exposed to strong ground shaking.

# 5.1.5 Mitigation Measures

## Fault-Induced Ground Rupture

**GS-1** Prior to issuance of a building permit for structures adjacent to the Etiwanda Avenue Scarp thrust fault on the project site, all structures north of this fault shall be set back 100 feet from the fault zone and all structures south of this fault shall be set back 50 feet from the fault zone.

## Seismic Ground Shaking

**GS-2** Prior to the issuance of a building permit, structures will be designed and constructed in accordance with the Uniform Building Code and general engineering standards for seismic safety for development within Seismic Zone 4.

# Seismic-Related Ground Failure

#### Liquefaction

No measures are required.

#### Seismically-Induced Slope Stability

**GS-3** Prior to the issuance of a grading permit, engineered slopes on the project site shall be designed in accordance with the Uniform Building Code to resist seismically induced failures. Slope design shall be based on pseudo-static stability analyses using soil-engineering parameters established for the site.

#### Ground Lurching

**GS-4** Prior to the issuance of a grading permit, the grading plans shall state that the loose, cohesionless soils located on the surface of the site shall be removed and recompacted during grading operations.

#### Seismically-Induced Settlement

**GS-5** Prior to the issuance of a grading permit, the grading plans shall state that the native surficial and artificial fills on the project site that are of low density, shall be removed and recompacted or exported offsite.

#### Earthquake-Induced Dam/Reservoir Failure

No measures are required.

#### Tsunami

No measures are required.

#### Seiche

No measures are required.

#### **Slope Stability**

**GS-6** Prior to the issuance of a final grading approval, potentially unstable graded slopes that exceed approximately 15 feet in height will require additional stabilization measures such as buttressing cut slopes with compacted fill, adding geogrid reinforcement to fill slopes, using a higher compaction standard, and/or using retaining walls.

## **Shallow Ground Water**

No measures are required.

## Foundation Stability

#### Compressible Soils

**GS-7** Prior to the issuance of a grading permit, the grading plans shall state that potentially compressible soils that are located on the project site shall be removed and recompacted in accordance with standard grading procedures.

#### **Collapsible Soils**

**GS-8** Prior to the issuance of a grading permit, the project's soil engineer shall identify the method(s) of eliminating the potential for collapsible soils on the grading plan. Potential methods include excavation and recompaction and presaturation and pre-loading of the susceptible soils in-place to induce collapse prior to construction. After construction, infiltration of water into the subsurface soils shall be minimized by proper surface drainage which directs excess runoff from the proposed slopes and structures.

#### Expansive Solls

No measures are required.

#### Ground Subsidence

No measures are required.

#### Rippability and Oversize Rock

**GS-9** Prior to the issuance of a grading permit, the grading plans shall state that during grading operations, the soil engineer shall be consulted to relocate oversize rocks on the project site to reduce the potential deficiency of fill materials that could result from the removal of oversize rocks on the project site.

# 5.1.6 Level of Significance After Mitigation

Except for seismic ground shaking impacts, the implementation of the above mitigation measures will reduce geology and soil impacts to less than significant. Due to the potential for high accelerations of ground motions on the project site, seismic ground shaking would remain significant.

# 5.2 Biological Resources

This section addresses existing conditions and potential impacts to biological resources resulting from the proposed project. Information provided in this section was derived from a variety of sources, including the general and focused biological survey reports and biological resources assessment performed by PCR Services Corporation and located in Appendix C. Additional information was obtained through MBA biologists during field surveys conducted as part of this EIR and a literature review of applicable reference materials. The purposes of the biological resources investigations were to evaluate existing conditions onsite as a basis for evaluating potential project-related impacts and to determine available mitigation measures necessary for the protection of sensitive biological resources.

# 5.2.1 Existing Conditions

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## **Sensitive Biological Resources**

The following discussion provides a summary of the sensitive biological resources potentially occurring and/or observed on the project site. The potential for a species to occur onsite is based upon their known geographic ranges, elevational distributions, and presence of preferred habitats. The actual occurrence within the project site was determined by focused field surveys.

## **Sensitive Species Classifications**

Sensitive biological resources are habitats or individual species that have special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, or rare. The CDFG, the United States Fish and Wildlife Service (USFWS), and special groups like the California Native Plant Society (CNPS) maintain watch-lists of such resources.

# **Federal Protection and Classifications**

The Federal Endangered Species Act of 1973 (FESA) defines an endangered species as "...any species which is in danger of extinction throughout all or a significant portion of its range..." Threatened species are defined as "...any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of the FESA, it is unlawful to "take" any listed species. "Take" is defined in Section 3(18) of the Act as: "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Further, the USFWS, through regulation, has interpreted the terms "harm" and "harass" to include certain types of habitat modification as forms of "take." These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. In a case where a property owner seeks permission from a federal agency for an action that could affect a federally listed plant and animal species, the property owner and agency are required to consult with USFWS. Section 9(a)(2)(b) of the federal Endangered Species Act addresses the protections afforded to listed plants.

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#### State of California Protection and Classifications

California's Endangered Species Act (CESA) defines an endangered species as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion of its range due to one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, or disease." The State defines a threatened species as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the commission as rare on or before January 1, 1985 is a threatened species." Candidate species are defined as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list." Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike FESA, CESA does not include listing provisions for invertebrate species.

Under the California Endangered Species Act, "take" is defined as "...hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Exceptions authorized by the state to allow "take" require "...permits or memorandums of understanding..." and can be authorized for "...endangered species, threatened species, or candidate species for scientific, educational, or management purposes." Sections 1901 and 1913 of the California Fish and Game Code provide that notification is required prior to disturbance.

#### California Native Plant Society (CNPS)

The California Native Plant Society is a California resource conservation organization that has developed an inventory of California's sensitive plant species (Skinner and Pavlik 1994). This inventory is the summary of information on the distribution, rarity, and endangerment of California's vascular plants. CDFG recognizes plants on the CNPS 1B list as "special status" species.

#### City of Rancho Cucamonga Heritage Tree Preservation Ordinance

The City of Rancho Cucamonga has established a set of Tree Preservation Guidelines designed at preserving many of the City's "heritage trees." According to these guidelines, the City requires a tree survey report before any "heritage trees" are removed as part of a development project. Under the City's guidelines, a heritage tree is defined as meeting any of the following criteria: (1) all eucalyptus windrows; or (2) all woody plants in excess of fifteen feet in height and having a single trunk circumference of fifteen inches or more; or (3) any multi-trunk tree(s) having a total circumference of thirty inches or more, as measured twenty-four inches from ground level; (4) a stand of trees the nature of which makes each dependent upon the others for survival; or (5) any other tree as may be

deemed historically or culturally significant by the city planner because of size, condition, location or aesthetic qualities.

# **Environmental Setting**

The project site is located within an undeveloped area zoned for low to very low-density housing. To the west and south are residential communities, to the north is Southern California Edison (SCE) Corridor and additional undeveloped properties and to the east is undeveloped property, the Etiwanda Spreading Basin, and Etiwanda Creek flood control channel. Exhibit 4-1 illustrates the project site and vicinity.

The project site lies between the Day Creek flood control channel to the west and East Etiwanda Creek flood control channel to the east. Topographically, the project site is characterized by an alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. The Cucamonga Peak USGS topographic map identifies the area as having a blue-line stream bisecting the project site. However, flood control facilities, constructed subsequent to the preparation of the USGS map, have changed the area's drainage course and rechannelized the stream flows to the new concrete-lined channels. Flood flows from both Etiwanda Creek and Day Creek are now collected behind debris basins and levees at the top of the alluvial fans and diverted to the concrete channels. These alterations were completed in 1969 and have eliminated the historic sheet and debris flows on-site.

The project site is primarily undisturbed and vegetated with plant species which are associated with various stages of alluvial fan sage scrub communities.

PCR Services Corporation classified plant communities on the area proposed for Tentative Tract Map Number 16072 which encompasses approximately 150 acres. MBA evaluated the area within the boundary of Tentative Tract Map Number 16072 (150.8 acres) and five areas outside of the tract boundary which encompasses 11.4 acres. The five areas generally encompass (1) the storm channel extending to Etiwanda Spreading Basin east of the tract, (2) the northerly extension of East Avenue north of the tract, (3) the northerly extension of Etiwanda Avenue north of the tract boundary, (4) the ultimate right-of-way improvements along Wilson Avenue between Etiwanda Avenue and East Avenue, and (5) the southerly extension of East Avenue south of the tract. Therefore, the area that would experience direct effects from the implementation of the proposed tentative tract map as well as the associated improvements encompasses 162.2 acres. In addition, the study area for biological resources encompassed the area directly southeast of the tentative tract map and north of Wilson Avenue (9.2 acres), the area east of East Avenue to the Etiwanda Spreading Grounds (46.6 acres), and the portion of the SCE easement adjacent to the project site (10.5 acres). These additional areas were added to assess potential offsite impacts. The total area evaluated by MBA encompassed 228.5 acres.

The information provided below discussing existing vegetation, plant communities, and wildlife was based on a series of surveys and technical reports prepared by PCR Services Corporation. MBA reviewed these documents and performed limited field verification surveys in preparation of this evaluation.

# **Existing Vegetation Based on CNPS Classifications**

The following discussion of existing vegetation is based on the *Biological Resources Assessment Etiwanda Subdivision Tentative Tract 16072* prepared by PCR Services Corporation. A copy of this report is in Appendix C. PCR Services Corporation's classification of plant communities on the project site was based on the CNPS *Manual of California Vegetation* (Sawyer and Keeler-Wolfe 1995), and CDFG's *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986), and the CNDDB *List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base* (CDFG 2002). PCR Services Corporation primarily relied on the plant community classifications identified in the CNPS Manual to define the plant communities present on the site; while, the Holland classification was used only to define the non-native grassland community.

The following plant communities along with their respective acreage, were identified by PCR Services Corporation as occurring on the project site. Exhibit 5.2-1 shows the location of each of these plant communities primarily based on the classifications provided in the CNPS Manual.

#### California Buckwheat-White Sage Scrub (44.1 acres)

California buckwheat-white sage scrub covers 44.1 acres of the site. Species that characterize this plant community are white sage (*Salvia apiana*), California buckwheat (*Eriogonum faciculatum*) and pinebush (*Ericameria pinifolia*). Sub-dominant species include deerweed (Lotus scoparious).

A cluster of approximately seven green-bark ceanothus (*Ceanothus spinosus*) individuals occurs adjacent to the ephemeral wash and scalebroom scrub near the northwest corner of the site. In addition, a few individuals of green bark ceanothus and hoaryleaf ceanothus (*Ceanothus crassifolius*) were observed at disparate locations within this vegetation type. Approximately eleven individuals of our Lord's candle (*Yucca whiplei*) were observed just north of the easternmost disturbed area. California croton occurs (*Croton californicus*) in low abundance throughout this vegetation type.

# White Sage Scrub (82.5 acres)

White sage scrub covers 82.5 acres on-site. Species that characterize this vegetation type include white sage, California sagebrush (*Artemisia californica*), California buckwheat, and deerweed. White sage scrub on the castern half of the site is dominated by white sage and deerweed with California buckwheat as sub-dominant in some areas. Dominants on the western half of the site include California sagebrush and white sage.

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Other species observed included California croton, pinebush, bush mallow (*Malacothamnus* fasciculatus), green bark ceanothus, yerba santa (*Eriodycton trichocalyx* ssp. *trichocalyx*), rabbitbrush (*Chrysothamnus* naseosus ssp. *hololeucus*), California everlasting (*Gnaphalium californica*), southern California black walnut (*Juglans californica* var. *californica*), our Lord's candle, and holly-leafed cherry (*Prunus ilicifolia*). One southern California black walnut individual occurs within this vegetation type near the center of the site.

#### Scalebroom Scrub (11.2 acres)

Scalebroom scrub occupies approximately 11.2 acres on-site within the major ephemeral drainage that bisects the project site flowing northwest to southeast. Species that characterize this vegetation type are scalebroom, green bark ceanothus, California sagebrush, California buckwheat, yerba santa, white sage, and deerweed. Other species observed include mule fat (Baccharis salicifolia), needlegrass (*Achnatherum coronatum*), California sycamore (*Plantanus racemosa*), mugwort (*Artemisia douglasiana*), California aster (*Lessingia filaginifolia*), hoaryleaf ceanothus, California croton, our Lord's candle, black sage (*Salvia apiana*), and bush mallow.

#### Non-native Grassland (2.1 acres)

Non-native grassland covers approximately 2.1 acres near the center of the site in previously disturbed or developed areas. Non-native grassland on-site is dominated by wild oats (*Avena* sp.).

# Disturbed (6.0 acres)

Disturbed areas on the project site include cleared land, geotechnical trenching areas, and dirt access roads covering 6.0 acres. Vegetation has re-established in some previously disturbed areas and these areas have been included in the aforementioned vegetation types. Disturbed areas on the project site may be devoid of vegetation or may include grasses and forbs typical of ruderal and non-native grassland communities. Species observed on-site include castor bean (*Ricinus* communis), filaree (*Eriodium* spp.), telegraph weed (*Heterotheca grandiflora*), black mustard (*Brassica nigra*), red brome (*Bromus madritensis*) and wild oats (*Avena* spp.)

# Ornamental Landscaping (4.1 acres)

Ornamental species cover approximately 4.1 acres on-site. Eucalyptus (*Eucalyptus globules*) windrows occur in the center of the site and several ornamental species occur scattered throughout the site and in association with the remnant foundation including pepper tree (*Schinus molle*), olive tree (*Olea europaea*), oleander, and an unidentifiable ornamental tree near the southern property boundary.

# Existing Vegetation Based on The Holland System

The Holland System is another approach to classifying plant communities. MBA has reviewed the site conditions using the Holland system. MBA determined that the Holland system would be more appropriate in providing consistent information to the various agencies since the Holland system has

been used on several projects within the area, including the Conservation Plan for the Etiwanda-Day Canyon Drainage System Supporting the Rare Natural Community of Alluvial Fan Sage Scrub (Joan Safford and Ronald Quinn, 1998), the City of Rancho Cucamonga General Plan Update EIR, and the Milliken Avenue Extension EIR.

Under the Holland System, Alluvial Fan Sage Scrub (AFSS) is a distinctive subtype of Coastal Sage Scrub, a plant community that is differentiated from chaparral communities by a number of geographic, structural, physiological and taxonomic features. AFSS is generally found on alluvial fans on the coastal sides of southern California mountain ranges. AFSS has been further subdivided into three southern geographic communities, which are: Riversidean, Venturan, and Diegan. Riversidean (RAFSS) is the more inland of the three scrub communities. RAFSS has been described as open vegetation adapted to alluvial fans and outwashes. It is found on sandy, rocky alluvial flood deposits at the base of the San Bernardino, San Gabriel and San Jacinto Mountains. The vegetation is composed of drought-deciduous shrubs and evergreen woody shrubs, with a substantial herbaceous/wildflower understory.

An analysis by California Department of Fish and Game (1998) of vegetation along the alluvial fans of the San Gabriel Mountains identified six "groupings" or plant associations that comprise the RAFSS community in this area. The six groupings are described below:

*Etiwanda Alluvial Fan Group:* This upland grouping of RAFSS is dominated by white sage and typically occurs on the fan outside the active flood ways (CDFG 1998). Species found within this grouping include Whipple's yucca, holly-leaved cherry, California buckwheat, and California croton.

**Prickly Group:** A group that includes a species-rich association with high cover of scalebroom and California buckwheat, as well as high cover of species such as yerba santa, California juniper, matchweed (Gutierrezia sp.), Croton sp., prickly pear/cholla cactus (Opuntia sp.) and yucca. This group is often typed as an intermediate or mature alluvial scrub community.

Alluvial Chaparral Group: This is characterized by very dense, chaparral-like shrub cover dominated by chamise, white sage, and California sagebrush, however, stands dominated by other combinations of chaparral species have been observed.

*Riverside Group:* This is a distinctive geographic grouping of very open stands, with very low cover of California buckwheat and scalebroom, and a particularly high diversity of annual plants.

**Pioneer Group:** This grouping consists of the "pioneer" stage of alluvial scrub near active floodways and consists of an association of California buckwheat and scalebroom.

*Riparian Group:* This grouping differs from the pioneer group by having higher species diversity, riparian tree species, and a relatively low cover of scalebroom.

The following discussion is based upon a literature review and field verification surveys conducted by MBA for this EIR. For purposes of this EIR, MBA identified plant communities using the Holland system. The "groupings" are based on the 1998 CDFG Conservation Plan, as described above.

During MBA's field verification survey, it was determined that the majority of the proposed project site is composed of two groupings of RAFSS plant communities along the San Gabriel foothills.

The plant communities found in the biological resources study area based on the Holland system are described below and shown in Exhibit 5.2-2.

The two groupings of RAFSS plant communities or habitats found on the project site are considered a sensitive biological resource by several regulatory and conservation agencies including USFWS, CDFG and CNPS. RAFSS vegetation in the vicinity of the project site is maturing due to lack of fluvial process and thus is becoming less diverse and species rich, being dominated by a few species.

#### *Riversidean Alluvial Fan Sage Scrub (RAFSS)* The Etiwanda Alluvial Fan Group (171.3 acres)

This grouping of RAFSS is the most prevalent within the project site. The southeastern portion of the site contains 35.1 acres of RAFSS that has been disturbed by various activities that include fire, apiculture, soil exposure associated with road grading, recreational shooting, and some trash dumping. The RAFSS vegetation in this area is interspersed with open areas of exposed soil and non-native grasses.

#### Prickly group/Alluvial Chapparal Group (39.5 acres)

This grouping can be found bisecting the western portion of the project site within the area of an old creek bed that was diverted into a channel.

#### Ornamental Woodland and Disturbed (13.8 acres)

In addition to the above communities, MBA classified 3.1 acres as ornamental woodland and 10.7 acres as disturbed acreage.

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RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

#### Summary of Classifying Plant Communities

As described above, two different classification systems were used for the project and resulted in separate conclusions. The CNPS classification system uses a very quantitative approach to classifying plant communities, based on observance of species and their relative dominance within the community. The Holland system uses a more qualitative multi-factor approach and is considered less precise, and potentially allows for overlap of communities. However, under the Holland classification system, evaluation criteria may include plant species mix, geographic location, and soil type, and other environmental factors.

Table 5.2-1 summarizes the classifications of vegetation communities on the project site.

	MBA Data	
Acreage	Holland	Avreage
44.1	RAFSS - Etiwanda Alluvial Fan Group <sup>*</sup>	171.3
82.5	RAFSS - Prickly group/Alluvial Chaparral Group <sup>*</sup>	43.4
11.2		
2.1	Ornamental Woodland	3.1
4.1	Disturbed	10.7
6.0		
150.0	Total Area Surveyed	228.5
	Acreage 44.1 82.5 11.2 2.1 4.1 6.0 150.0	MBA DataAcreageHolland44.1RAFSS - Etiwanda Alluvial Fan Group*82.5RAFSS - Prickly group/Alluvial Chaparral Group*11.2—2.1Ornamental Woodland4.1Disturbed6.0—150.0Total Area Surveyed

Table	5.2-1:	Summary	of	Survey	Results
Iduic	0.2 1.	Summary	ΨL.	JUITES	L/C2/III2

Source: Michael Brandman Associates 2003.

As shown in Table 5.2-1, the PCR Services Corporation analysis found 137.8 acres of sensitive habitat on the 150-acre tentative tract map area. The MBA analysis included additional arcas as described previously and found 214.7 acres of sensitive habitat in the biological resources study area which includes approximately 140.3 acres of sensitive habitat within the tentative tract map area. The differences in vegetation definition did not substantially alter the conclusions of the presence of sensitive habitat within the proposed tentative tract map area. However, due to consistency with recent biological evaluations in the project vicinity and the high sensitivity of RAFSS removal by the regulatory and conservation agencies, the use of the Holland system is the most appropriate.

#### Existing Wildlife

The site also supports a large number of wildlife species, many of which were observed during the focused surveys conducted over the past two years. Eight species of invertebrates were observed, 68

bird species, 4 reptile species and 13 mammal species were seen on the project site during the focused surveys. No amphibians were observed on the property; this is likely due to the previous modification of the creek causing the elimination of suitable habitat for amphibians. Predominantly common birds such as California towhees, mourning doves and Costa's hummingbirds were observed, however, several California sensitive bird species were also observed. Sensitive species will be discussed below in the Sensitive Resource section. A complete list of these species can be found in the species compendium in AppendixC. A focused small mammal survey was conducted in the summer of 2002. Small mammals trapped included Dulzura kangaroo rat, San Diego pocket mouse, desert woodrat, Los Angeles pocket mouse, cactus mouse, California vole, and deer mouse. For complete details on the mammal study, please refer to AppendixC.

#### **Sensitive Plant Species**

Table 5.2-2 lists 16 sensitive plant species identified by the CNDDB and a literature review as occurring in the vicinity of the project site. Suitable habitat for 5 of these species occurs on site. Additionally, previous focused plant surveys by PCR Services Corporation for Tentative Tract 16072 confirmed the presence of Plummer's mariposa lily and Southern California black walnut. None of the other species were observed. The potential for each of the plant species to occur onsite is or within areas proposed for offsite improvements (see Appendix C) is shown in Table 5.2-2 below.

# Table 5.2-2: Sensitive Plant Species Potentially Occurring on the Project Site

Spec	ies 💦 👘	Status			1 If a France		Patra Baldes Oscilares
Scientific Name	Common Name	USFWS	CDFG	CNPS		n Biooming Feriod	Fotential for Occurrence
Berberis nevinii	Nevin's barberry	FE	SE	1B	Shrub	March - Apríl	Moderate - however none were observed during focused survey
Calochortus palmeri var. palmeri	Palmer's mariposa lily	none	none	1B	Perennial herb (bulberiferous)	May - July	Low- No suitable habitat
Calochortus plummerae	Plummer's mariposa lily	none	none	1B	Perennial Herb	May-July	Present
Centromadia pungens ssp. Laevis	smooth tarplant	none	попе	1B	Annual Herb	April-September	Low- No suitable habitat
Chorizanthe parryi var parryi	Parry's spineflower	none	none	3	Annual Herb	April-June	ModHigh, however, none were observed during focused survey
Claytonia lanceolota peirsonii	Peirson's spring beauty	None	None	1B	Perennial tuber	May-June	Absent
Dodecahema leptoceras	slender-homed spineflower	FE	SE	1B	Annual Herb	April-June	Mod however, none were observed during focused survey
Eriastrium densifolium sanctorum	Santa Ana river woollystar	FE	SE	1B	Perennial herb	July-August	Low-No suitable habitat
Eriogonum microthecum johnstonii	Johnston's buckwheat	None	None	1B	Shrub	July-September	No
Horkelis cuneata ssp. Puberula	mesa horkelia	none	none	1B	Perennial herb	February- September	Moderate
Lepidium virginicum robinsonii	Robinson's pepper-grass	None	None	1B	Annual Herb	January-July	Low-low quality habitat

# Table 5.2-2 (Cont.): Sensitive Plant Species Potentially Occurring on the Project Site

Spec	es	Status			642X 4421 200		
Scientific Name	Common Name	USFWS	CDFG	CNPS	Liferonn	Blooming Period	Potentiamor occurrence
Linanathus concinnus	San Gabriel linanthus	None	None	1 <b>B</b>	Annual herb	April-July	Absent
Monardella pringlei	Pringle's monardella	None	None	1A	Annual herb	May-June	Low- no suitable habitat
Navarretia prostrata	prostrate navarretia	none	none	1B	Annual herb	April-July	Low- no suitable habitat
Opuntia Basilaris var. brachyclada	short-joint beavertail	None	None	1B	Succulent Shrub	April- June	Absent
Potential for Occurrence: Low = Low potential for occurrence - No recent or historical records exist of the species occurring in the Project area or its immediate vicinity (within approximately 5 miles) and the diagnostic habitat requirements strongly associated with the species do not occur in the Project area or its immediate vicinity. Moderate = Moderate potential for occurrence - Either a historical record exists of the species in the Project area or its immediate vicinity or the diagnostic habitat requirements associated with the species occur in the Project area or its immediate vicinity and the diagnostic habitat requirements strongly associated with the species occur in the Project area or its immediate vicinity and the diagnostic habitat requirements strongly associated with the species occur in the Project area or its immediate vicinity and the diagnostic habitat requirements strongly associated with the species occur in the Project area or its immediate vicinity and the diagnostic habitat requirements strongly associated with the species occur in the Project area or its immediate vicinity and the diagnostic habitat requirements strongly associated with the species occur in the Project area or its immediate vicinity.							
U.S. Fish and Wildlife ServiceCalifornia Department of Fish and GameCalifornia Native Plant SocietyFEFederal EndangeredSECalifornia Endangered1AFTFederal ThreatenedSTCalifornia Threatened1BPEProposed EndangeredSRCalifornia Rare2PTProposed ThreatenedSRCalifornia Rare3FCFederal CandidateFPlants about which we need more information.FSCSpecies of Concern4Source:PCR Services Corporation 2002-					and elsewhere. but more common elsewhere.		

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The following sensitive plant species that are ranked 1B by CNPS have a moderate to high potential to occur on site:

Plummer's mariposa lily (Calochortus plummerae) CNPS List 1B. This plant prefers dry, rocky areas in coastal sage scrub, chaparral and yellow pine forest. It occurs below 5,000 feet elevation. It is known from the Santa Monica Mountains to the San Jacinto Mountains, including the San Gabriel Mountains. This species was observed on the project site in 2001 and 2002 and is considered present.

Mesa horkelia (Horkelis cuneata ssp. puberulla) CNPS List 1B. This plant grows in chaparral, cismontane woodlands and coastal scrubs with sandy or gravely soils. It ranges from San Diego County to San Luis Obispo. Many historical populations have been extirpated due to integration with other subspecies. Moderately suitable habitat occurs on site, however, this plant was not observed during site inventories. There is a moderate potential for this species to occur within the project site.

Slender-horned spineflower (Dodecahem aleptoceras) FE, SE, CNPS List 1B. This plant prefers sandy and gravely soils on alluvial fans and old floodplains; between 500 to 2,000 feet in elevation. This species is known to occur in Los Angeles, Riverside, and San Bernardino counties. Although the project site provides some suitable habitat for this species, the site is no longer subject to fluvial processes and, therefore, it has a lower potential to occur onsite. No slender-horned spineflowers were observed onsite, and this species is considered absent at this time.

Nevin's barberry (Berbieris nevinii) FE, SE. CNPS List 1B. This species is a perennial shrub that prefers sandy and gravelly places below 2,000 feet elevation, in coastal sage scrub and chaparral habitats. Known locations include the hills south of Loma Linda, San Bernardino County and in the area around Vail Lake, Riverside County. The project site is outside these known locations. Although the site provides marginal suitable habitat for this species, thus, it's moderate potential to occur onsite, however no specimens of this species were found during focused surveys. This species is considered absent from the site at this time.

#### **Sensitive Wildlife Species**

Eighteen (18) sensitive wildlife species identified by the CNDDB and a literature review occur in the vicinity of the project site (Table 3.3-2). During site surveys, seven sensitive wildlife species were observed onsite. State species of special concern that were observed onsite include the Cooper's hawk, Northern harrier, and San Diego desert woodrat. The Southern California rufous-crowned sparrow, Northwestern San Diego pocket mouse, Logger headed shrike, and Los Angeles little pocket mouse are both state and federal species of special concern. Focused surveys were conducted for the San Bernardino kangaroo rat (Dipodomys merriami parvus) in 2001 and 2002 and coastal California gnatcatcher (Polioptila californica) (letter reports of findings are contained in Appendix C) in 2001

and 2002. Although the findings of both surveys were negative, suitable habitat is present onsite. These species are, therefore, addressed below.

Spec	les	Stal	ius,	Potential for
Scientific Name	Common Name	USFWS	CDFG	Occurrence
Accipiter cooperi	Cooper's Hawk	None	SSC	Present
Aguila chrysaetos	Golden Eagle	None	SSC	High (foraging)
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	FSC	SSC	Present
Amphispiza belli belli	Bell's sage sparrow	None	SSC	Present
Batrachoseps gabrieli	San Gabriel slender salamander	None	None	Low- No suitable habitat
Chaetodipus fallax fallax	Northwestern San Diego pocket mouse	FSC	SSC	Present
Circus cyaneus	Northern harrier	None	SSC	Present
Cnemidophorus hyperythrus	Orange-throated whiptail	None	SSC	Moderate
<i>Dipodomys merriami parvus</i> San	San Bernardino Kangaroo Rat	FE	none	Moderate-High, however none were observed during focused surveys
Eumops perotis californicus	California mastiff bat	None	SSC	Moderate foraging
Lanius ludovicianus	Logger-headed shrike	FSC	SSC	Present
Neotoma lepida intermedia	San Diego desert woodrat	None	SSC	Present
Ovis canadensis nelsoni	Nelson's bighorn sheep	None	None	Low- elevation low as well as no habitat
Perognathus longimenbris brevinasus	Los Angeles little pocket mouse	FSC	SSC	Present
Phrynosoma coronatum blainvillei	San Diego Horned Lizard	None	SSC	Moderate-High

Table 5.2-3: Sensitive Wildlife Spec	ies Potentially Occurring on the Project Site
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Spec	les	Stat	us	Potential for		
Scientific Name	Common Name	USFWS	CDFG	Occurrence		
Polioptila californica	Coastal California gnatcatcher	FT	SSC	Moderate, however, none were observed during focused surveys		
Rana muscosa	Mountain Yellow- legged frog	PE	SSC	Absent- No suitable habitat		
Rhinichthys osculus Speckled dace		None	lone SSC Absent-No su habitat			
Rhphiomidas terminatus abdominalis	FE	None Absent-Site lacks Dehli sands.				
Potential for Occurrence:   Low = Low potential for occurrence - No recent or historical records exist of the species occurring in the Project area or its immediate vicinity (within approximately 5 miles) and the diagnostic habitat requirements strongly associated with the species do not occur in the Project area or its immediate vicinity.   Moderate = Moderate potential for occurrence - Either a historical record exists of the species in the Project area or its immediate vicinity or the some of the diagnostic habitat requirements associated with the species occur in the Project area or its immediate vicinity.   High = High potential for occurrence - A historical record exists of the species in the Project area or its immediate vicinity.   High = the diagnostic habitat requirements strongly associated with the species occur in the Project area or its immediate vicinity.						
U.S. Fish and Wildlife Service FE Federal Endangered FT Federal Intreatened PE Proposed Endangered PT Proposed Threatened FC Federal Candidate FSC Species of Concern Source: PCR Services Corporation	California Deg E State T State SC State	eartment of Endangered Threatened Species of S	Fish and Game			

San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE. The San Bernardino kangaroo rat (SBKR) is one of several kangaroo rat species that could occur within the vicinity and is no longer subject to the required fluvial processes. The Dulzura (*Dipodomys simulans*) and the Pacific kangaroo rat (Dipodomys agilis) occur in areas occupied by the San Bernardino kangaroo rat, but these other species have a wider habitat range. The habitat of the San Bernardino kangaroo rat is described as being confined to primary and secondary alluvial fan scrub habitats, with sandy soils deposited by fluvial (water) rather than aeolian (wind) processes. Burrows are dug in loose soil, usually near or beneath shrubs. The historic drainage system on the project site has been historically altered as a result of flood control efforts. This has resulted in a reduction in both the amount and quality of habitat available for SBKR.

Protocol live-trapping surveys for SBKR were conducted on the project site in July and August of 2001 (Appendix C). No SBKR were observed during the surveys. SBKR, therefore, does not currently occur within the areas surveyed.

Northwestern San Diego Pocket Mouse (*Chaetodippus fallax fallax*) SSC. This small rodent species prefers open, sandy habitats in the valley and foothills of southwestern California. Their range extends from Orange County to San Diego County and includes portions of Riverside and San Bernardino Counties. Urbanization and agriculture have reduced this mouse's historical range. This species was trapped during focused survey activities and is considered present on site.

Los Angeles Pocket Mouse (*Perognathus longimembris brevinasus*) SSC. This species occupies similar habitats as the San Diego pocket mouse; however, it is confined to lower elevation grasslands and coast sage scrub habitats and digs burrows in loose soils. This species was found during trapping efforts and is considered present.

San Diego Desert Woodrat (*Neotoma lepidus intermedia*) SSC. This relatively small pale gray rat with a distinctive bicolored tail can be found occupying old burrows of kangaroo rats and ground squirrels or in stick middens. It often forages on cactus and other desert forbes. It is often attracted to areas containing rock outcrops in southern Riverside, San Bernardino and San Diego County. This rodent is a California Species of Concern and was found onsite.

Coastal California Gnatcatcher (*Polioptila californica californica*) FT, SSC. The California gnatcatcher is a species with restricted habitat requirements, being an obligate resident of coastal sage scrub habitats that are dominated by coastal sagebrush. This species generally occurs below 750 feet elevation in coastal regions and below 1,500 feet inland. It ranges from the Ventura County south to San Diego County and northern Baja California. It is less common in coastal sage scrub with a high percentage of tall shrubs, it prefers habitat with more low-growing vegetation. Coastal California gnatcatchers breed between mid-February and the end of August, with the peak of activity from mid-March to mid-May. Population estimates indicate that there are approximately 1,600 to 2,290 pairs of gnatcatchers remaining. Declines are attributed to loss of coastal sage scrub habitat through development, and there is some evidence of cowbird nest parasitism.

Three focused surveys were conducted for the coastal California gnateatcher by PCR Services Corporation between 1998 and 2002. All of these surveys were negative and it is concluded that this species does not currently occupy the site.

Southern California Rufous-Crowned Sparrow (Aimophila ruficeps canescans) FSC. This species was found on site during the focused gnatcatcher surveys. Suitable habitat exists onsite for

the rufous-crowned sparrow, which generally prefers rocky hillsides and steep bushy or grassy slopes. This species is considered present.

Bell's Sage Sparrow (Amphispiza belli belli) SSC. This coastal sub-species is typically found in chaparral of slopes and foothills. The coastal variety of the Bell's sage sparrow has seen declines in populations due to loss of habitat. This species was observed on site and is considered present.

Cooper's Hawk (Acipiter cooperil) SSC. This species was observed foraging at the project site. Cooper's hawks are often seen in wooded urban areas and native woodland communities. Preferred nesting habitats include oak and riparian woodlands dominated by sycamores and willows. The project site provides very marginal nesting habitat for this species; however, it uses the site to forage. Cooper's hawks prey on small birds and rodents that live in woodland and occasionally scrub and chaparral communities. This species is considered present.

Golden Eagle (Aquila chrysaetos) SSC. The golden eagle is a year-round resident of southern California and prefers open habitats of the deserts, mountains, foothills, and plains. Golden eagle nests are most often located in isolated areas either on cliff ledges or in large solitary trees. The site provides suitable foraging habitat and several golden eagles nest on the south facing slopes of the San Bernardino Mountains. This species is a State Species of Special Concern and is also protected under the Federal Bald Eagle Act. The project site does not provide nesting habitat for the golden eagle; however, there is a high potential this species uses the site to forage.

Northern Harrier (Circus cyanus) SSC. This species is a year-round resident of southern California. It nests on the ground in open areas such as grasslands and agricultural fields. It also forages in these habitats, but also forages in areas with low growing shrubs such as Riversidean sage scrub. This species was observed on site and was determined to be nesting by PCR Services Corporation biologists. This species is considered present,

Logger-headed Shrike (Lanius Iudovicianus) FSC, SSC. This species has been declining throughout the United States due to various reasons, including loss of habitat. This species of shrike hunts in open or brushy areas and nests in large shrubs such as ceanothus and lemonade berry. The site provides suitable nesting and foraging habitat. This species was observed on site and is considered present.

Orange-throated Whiptail (Cnemidophorus hyperythrus) SSC. The orange-throated whiptail occurs in open sage scrub or chaparral where loose soils and occasional rocky areas are found. It is known to occur in Orange, western Riverside, and southwestern San Bernardino counties. Although no individuals were observed onsite, the project site provides some suitable habitat for this species. The orange-throated whiptail has a moderate potential to occur onsite.

San Diego Horned Lizard (*Phrynosoma coronatum blainvilleri*) FSC, SSC. This species generally occurs in grassland, sage scrub, and chaparral, but can also be found in coniferous forest and broadleaf woodland. It is usually found in open sandy areas such as ridge tops and washes, especially where harvester ants (*Pogonomyrmex* spp.) are found. This species was formerly common throughout southern California west of the deserts, but has declined substantially due to development and as a result of over-collecting for the pet trade. Recent evidence also indicates that its preferred food, the harvester ant, has declined dramatically in areas near human habitation with the introduction and spread of the non-native Argentine ant (*Iridiomyrmex humilis*), which out competes the native species. Although the project site provides suitable habitat for this species, it was not observed onsite. Therefore, the San Diego horned lizard has a moderate potential to occur onsite.

# Regional Connectivity/Wildlife Movement Corridor

Most of the land within the City of Rancho Cucamonga has been converted from open space to commercial, industrial, residential, and recreational uses for the City of Rancho Cucamonga. Wildlife movement on a regional basis has predominantly ceased due to the development of the valley floor. However, the undeveloped areas to the north, within the County of San Bernardino, are likely to support east-west wildlife movement along the mountain foothills to the western portion of the San Gabriel Mountains as well as access to the San Bernardino Mountains.

The project site is surrounded by developed lands to the south and west. The site comprises the most southerly finger of the remaining undeveloped land along the San Gabriel foothills. Because the project site is surrounded by development to the south, east and west, it does not support regional wildlife movement across the area. Further, it does not link large open space areas together for wildlife. No significant impacts to wildlife corridors or regional wildlife connectivity are, therefore, expected to occur.

# **Jurisdictional Areas**

The project site lies between Day Canyon wash and East Etiwanda Creek. There is an unnamed blueline stream indicated on the Cucarnonga Peak USGS topographic map that bisects the project site. A jurisdictional delineation was conducted on the project site on September 8, 1998 by PCR Services Corporation (Appendix C). Subsequent field assessments were also conducted by PCR Services Corporation in 2002 to address new parcels added to the study area and any offsite areas that would be potentially impacted by the proposed project. The survey was conducted to determine the U.S. Army Corps of Engineers (USACE) and California Department of Fish and Game (CDFG) jurisdictional areas. The survey revealed that there are three jurisdictional drainages found on the property which convey flows across the fan and have sufficient flows to form a defined ordinary high water mark (OHM). The drainages total 6,335 linear feet and support 1.13 acres of USACE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State." None of the drainages meet the criteria of a jurisdictional wetland. All drainages are considered ephemeral in nature and support scrub vegetation. The site investigation also identified other minor drainages which exhibited indications of water flow. After consulting with the USACE, it was determined that these minor drainages were not considered jurisdiction because their width was less than one foot, the OHWM was not distinctive over the entire length of the drainage, and there was no riparian or wetland vegetation present in or around the minor drainages.

Jurisdictional determinations were also made for off-site portions of these drainages to the extent that they may be impacted by the proposed project. Drainages measured adjacent to the site include approximately 4,342 linear feet and 0.98 acre of USACE and CDFG jurisdictional streambed. None of these offsite areas meet the USACE definition of a jurisdiction wetland due to lack of hydrophytic vegetation and hydric soils. The proposed drainage improvement that extends into the Etiwanda Spreading Basin was also evaluated. According to PCR Services Corporation, this area is not expected to be regulated by USACE.

## Heritage Tree Survey

A total of 213 trees were surveyed and determined to meet the City's "heritage tree" criteria, requiring a tree removal permit. Approximately 175 eucalyptus trees (Eucalyptus spp.), 11 unidentifiable ornamental trees, 14 pepper trees (*Schinus molle*), 9 southern California black walnut trees (*Juglans californica* var. *californica*), and 4 western sycamore trees (*Platanus racemosa*) occur onsite. In general, all trees within the project boundary were assessed as being of fair to poor condition physiologically, structurally, and aesthetically.

All 175 eucalyptus trees show signs of beetle and/or psyllid infestation. These trees have not been maintained and have been stressed making them easy targets for insect pests.

The pepper trees, sycamores, walnuts and ornamental trees are all in fair health or aesthetics but exhibit poor structure. The pepper and walnut trees especially have been damaged through paintball activities. Injuries to the trees include paintball pellets embedded into the trunks and branches.

The tree survey recommended that all 213 "heritage trees" be removed and replaced with native trees within the proposed development. Among the species suggested as replacement trees are coast live oaks (*Quercus agrifolia*), interior live oak (*Quercus wislizeni* var. *frutescens*), western sycamores (*Platanus racemosa*), and southern California black walnuts (*Juglans californica* var. *californica*). Replacements have been proposed at a 1:1 ratio.
# 5.2.2 Thresholds of Significance

Guidelines establishing the significance of potential impacts on biological resources were derived from CEQA (Appendix G). A significant impact would occur if the proposed project would:

- 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;
- 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;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- 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;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

FESA also provides legal protection for threatened and endangered species nationwide. In addition, certain plant and animal taxa are considered sensitive as a result of their declining populations, vulnerability to habitat change, and restricted distributions. California has similar mandates including CESA, the California Species Preservation Act of 1980, and the California Native Plant Protection Act of 1977.

Certain species listed as threatened or endangered by the USFWS and/or by the California Fish and Game Commission are also protected by the California Native Plant Protection Act. Some habitats are considered sensitive biological resources by the CDFG. The CNPS compiles and maintains an inventory of sensitive plant species, including State and federally recognized rare plant species and those plants determined to be rare by that organization and other experts. In accordance with these requirements, a project will normally be deemed to produce a significant or potentially significant impact on biological resources if the project will:

- Result in a violation of any applicable regulations promulgated by a State or federal resource agency for the protection of rare, threatened, endangered, or otherwise protected species and their habitats, including wetlands; or
- Result in a violation of any applicable State or federal laws prohibiting the elimination or net reduction in a site's or an area's biological value through either direct removal of sensitive or protected onsite or near-site biological value through the avoidance of such impacts or through the provision of substitute resources or environs or other measures providing reasonable and relatively equivalent compensation for such impacts.

# 5.2.3 Project Impacts

### Natural Communities

The proposed project will result in the loss of 147.7 acres of RAFSS due to grading on the project site. Approximately 147.7 acres of RAFSS will be lost due to direct project impacts. RAFSS is considered sensitive by the California Department of Fish and Game and the loss of this plant community is considered significant. Implementation of the proposed project would not result in fragmenting offsite RAFSS habitat such as the habitat east of the site because this habitat is directly adjacent to the open space habitat within the Etiwanda Spreading Grounds.

### **Common Plant Species**

The City of Rancho Cucamonga has a local tree preservation ordinance that requires a City permit to remove any tree over 15 feet high and 15 inches in circumference. A total of 213 trees meet the City's "heritage tree" criteria. Approximately 175 eucalyptus trees, 11 ornamental trees, 14 pepper trees, 9 southern California black walnut trees, and 4 western sycamore trees occur on-site. In general, all trees within the project boundary were assessed as being of fair to poor condition physiologically, structurally, and aesthetically. The tree survey recommended that all 213 "heritage trees" be removed and replaced with native trees within the proposed development. Replacements have been proposed at a 1:1 ratio.

### **Common Wildlife Species**

The major impacts to wildlife in the vicinity of the project site involve elimination of habitat needed for cover, nesting, feeding, and open space. Small mammals such as rabbits, reptiles and bird species that occupy the RAFSS association will be displaced to other suitable habitat in the immediate vicinity. Project implementation will result in the encroachment on common wildlife species. Encroachment on common wildlife species is considered to be adverse but not a significant impact. Displaced wildlife species will likely find shelter in undeveloped areas on to the west. The area to the north is proposed to become developed.

## **Sensitive Plant Species**

Fifteen sensitive plant species have been identified as occurring within the general vicinity of the project site (Table 5.2-2). Thirteen of these plants are listed as sensitive (List 1B) by the CNPS and are considered sensitive by CDFG. According to CEQA Guidelines (Appendix G), loss of CNPS special status plant species is adverse but is not considered significant. Seven species have a moderate to high potential to occur onsite; however, only Plummer's mariposa lilies were observed during field inventories. Although not listed as threatened or endangered, this species is considered rare throughout its range. Project implementation would impact a substantial population of this species and is considered potentially significant. Nevin's barberry, Santa Ana wooly star and slender-horned spineflower are listed by the USFWS and CDFG as endangered. Project related impacts to federal or state listed endangered or threatened species is considered significant. However, evaluation of habitat requirements showed that one of these three listed plant species has no potential to occur onsite. Although the other two endangered species have a low to moderate potential to occur, they were not observed during the focused plant surveys and are not considered to be present.

### Sensitive Wildlife Species San Bernardino Kangaroo Rat

The project site is within the Critical Habitat of the federally listed endangered San Bernardino kangaroo rat. Protocol surveys conducted for this species in 2001 and 2002 were negative and revealed that although there will be a significant loss of RAFSS, there is not anticipated to be any direct impacts to this species from project implementation. The long-term loss of fluvial processes has resulted in dense vegetation and subsequently, has resulted in the loss of open ground favored by SBKR. Therefore, impacts to SBKR are not considered to be significant at this time. However, a follow-up focused survey is recommended prior to grading.

### Coastal Californía Gnatcatcher

The project site is within the known range and within designated Critical Habitat of the federally between listed threatened coastal California gnateatcher. Although the three protocol surveys conducted between 1998 and 2002 were negative, sightings have been documented in the project vicinity. According to the California Fish & Game CNDDB, five individuals were recorded between 1990 and 1998 in washes to the north of the project site (i.e., Lytle Creek, Cajon, Etiwanda and Day Canyon) and south of the site near Etiwanda Avenue and Baseline Road. Because the Project site supports suitable habitat for this species, and due to the sightings on adjacent lands, the potential for this species to use the project site is still considered high. Therefore, a follow-up survey will be conducted prior to site grading.

#### Other Rodents

Three species of rodents that were detected on the property are considered Species of Concern by CDFG. The three species present within the RAFSS habitat, include the Northwestern San Diego

pocket mouse, San Diego desert woodrat, and the Los Angeles little pocket mouse. Because these three species are present onsite, the impacts to the habitat is considered significant.

#### Raptors

The project site does support nesting habitat for raptor species. Also, the project will result in the loss of 217 acres of raptor foraging habitat. The incremental loss and continued fragmentation of foraging habitat is considered adverse but not a significant impact. Raptors and all other bird species will find foraging habitat in the undeveloped areas to the north and west of the project site.

#### Reptiles

The project site provides suitable habitat for the San Diego horned lizard and orange-throated whiptail (State Species of Special Concern). Although neither species is formally listed, or proposed as endangered or threatened, the potential displacement of these sensitive species would be considered adverse but not significant by CDFG. Their possible presence will be assessed as part of the various focused surveys listed as mitigation measures below. Observation of any sensitive species during the surveys, including the San Diego horned lizard and orange-throated whiptail, would be documented and subsequent clearance surveys prior to grading would be required as indicated below. Loss of habitat for these two reptile species would be adverse but not significant.

### Regional Connectivity/Wildlife Movement Corridors

The project site does not serve as a wildlife movement corridor or provide regional connectivity. No impacts to regional connectivity and/or wildlife movement corridors will occur with Project implementation.

## Jurisdictional Areas

A jurisdictional delineation was conducted by PCR Services Corporation on the project site on September 8, 2001 (Appendix C). Subsequent field surveys were also conducted by PCR Services Corporation in 2002. The survey revealed that there are three drainages found on the property that are considered under the jurisdiction of USACE and CDFG. Impacts to USACE areas would result in the removal of 1.13 acres of "waters of the U.S.", and no loss of wetlands. Total area of jurisdiction under the CDFG would also be approximately 1.13 acres. Compliance with the mitigations that are required through the 404 process would reduce impacts to less than significant.

Jurisdictional determinations were also made for off-site portions of these drainages to the extent that they may be impacted by the proposed project. Drainages measured adjacent to the site include approximately 4,342 linear feet and 0.98 acre of ACOE and CDFG jurisdictional streambed. None of these off-site arcas meet the ACOE definition of a jurisdiction wetland. The proposed project would result in the loss of jurisdictional areas, both on and off site, of 2.01 acres of "waters of the U.S." and

no loss of wetlands. Impacts to jurisdictional areas as a result of this project is considered to be less than significant.

### **Conservation Plans**

Neither the City of Rancho Cucamonga nor the County of San Bernardino has released a habitat conservation plan that would address the lands within the project area or the species found or potentially occurring onsite. The County of San Bernardino has started the process of developing a Multi-Species Habitat Conservation Plan; however, it is not expected to be released before development begins on the site. The proposed project would, therefore, not affect the County's development of their Multiple Species Habitat Conservation Plan or any approved local, regional, or state habitat conservation plan that addresses the lands within the project area. A 768-acre preserve, the North Etiwanda Preserve (NEP), was established by the County of San Bernardino in 1994 as mitigation for the development of the I-210 Freeway. In addition, over 3,000 acres including the NEP have been established in North Etiwanda and along Etiwanda Creek as mitigation for a variety of projects.

# 5.2.4 Cumulative Impacts

Per the provisions of CEQA, actions, which have impacts that are individually limited, but cumulatively considerable, may be considered significant and adverse. Potential cumulative impacts on biological resources are primarily related to both the regional and local loss of RAFSS and the displacement of sensitive plant and sensitive wildlife species from this habitat. In the immediate vicinity of the project site, there are proposed residential developments that will result in the loss of RAFSS habitat. Cumulatively, this loss of RAFSS habitat is considered significant. The implementation of the proposed project will significantly contribute to the cumulative loss of RAFSS habitat.

# 5.2.5 Mitigation Measures

The permanent loss of biological resources during site preparation and construction of the Project would be an unavoidable adverse impact. The loss of 147.7 acres of RAFSS and potential impacts to the California gnatcatcher associated with the project are considered significant. Mitigation measures are available to minimize and reduce impacts to less than significant. Implementation of these additional measures would be practical and effective in reducing or preventing significant impacts.

The following mitigation measures will be implemented to reduce potential impacts to biological resources associated with the proposed project.

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B-1 The proposed proponent will acquire and convey to the County of San Bernardino at a ratio of 1:1, or 147.7 acres, land within or near the North Etiwanda Open Space and Habitat Preservation Program (NEOSHPP) that supports similar RAFSS habitat. This measure will mitigate the loss of habitat that may support sensitive plants and animals as well as raptor foraging habitat. The quality of offsite mitigation land may affect the total acres needing to be acquired. If the offsite mitigation area contains a higher quality habitat, less land may need to be acquired, likewise, if a lower quality habitat is acquired, more land may need to be set aside as mitigation.

If the project proponent is unable to acquire all or a portion of the offsite mitigation land, the proponent will deposit the equivalent mitigation cost of \$10,000 per developable acre with City- approved agency, which acquires and maintains open space. These funds will be used to purchase and manage mitigation lands.

- **B-2** To reduce impacts on adjacent offsite habitat during site preparation, grading and clearing limits shall be staked prior to issuance of the grading permits. The limits of grading and clearing shall be staked at 50-foot intervals with suitable indicators such as white PVC (polyvinyl chloride) pipe with steel bases. Construction equipment shall not be operated beyond the grading and clearing limits, and a restoration program shall be incorporated to restore any disturbed offsite areas.
- **B-3** Landscaping adjacent to natural areas offsite shall use native and drought-tolerant plant species. Such species shall be reflected on project landscape plans. The use of species known to be weedy invasives, such as German ivy (*Senecio milkaniodes*), periwinkle (*Vinca major*), or iceplant (*Carpobrotus* spp.), shall be prohibited.
- **B-4** In areas where night lighting may have adverse impacts on sensitive wildlife habitat, one or more of the following alternatives shall be used, recognizing the constraints of roadway lighting requirements: (1) low-intensity street lamps, (2) low-elevation light poles, or (3) shielding of internal silvering of the globes or external opaque reflectors.
- **B-5** Provide residents of the future development literature pertaining to sensitive wildlife in the area and provide ways the residents can reduce effects on the wildlife, including effects pets have on native wildlife. A list of invasive plants that are commonly planted in landscaping will be included in this literature and it will be recommended that certain plants be avoided, such as giant reed (Arundo donax) castor bean (Ricinus communis) and Pampas grass (Cortaderia selloana). This literature shall be approved by the City of Rancho Cucamonga and included within the conditions, covenants, and restrictions (CC&Rs).
- **B-6** All 213 "heritage trees" shall be removed and replaced with native trees within the proposed development. Replacements have been proposed at a 1:1 ratio, as stipulated in the tree removal permit.
- B-7 Prior to issuance of a grading permit, focused surveys for Plummer's mariposa lily shall be conducted by a qualified biologist. Surveys shall be conducted during flowering period (May to July) in all portions of the project site containing suitable habitat. If present, the number and location(s) will be documented and the resource agencies will be notified for consultation and possible collection and relocation.
- **B-8** A follow-up focus survey for the San Bernardino kangaroo rat shall be conducted prior to the issuance of grading permits. If this species is determined to be present onsite, consultation with USFWS under the Endangered Species Act shall occur and USFWS

approved mitigation measures shall be implemented. Impacts to this species, if present, may be significant and unavoidably adverse.

- **B-9** A follow-up focused survey shall be conducted to confirm the absence of the coastal California gnatcatcher. Special focus will be placed in the northwest corner of the project site, which was not previously surveyed. If this species is determined to be present onsite, consultation with USFWS under the Endangered Species Act shall occur and USFWS-approved USFWS-approved mitigation measures shall be implemented. Impacts to this species, if present, may be significant and unavoidably adverse.
- **B-10** The project proponent will have a qualified biological monitor present during initial brush clearing to reduce mortality to sensitive species, specifically sensitive rodent species, as well as incidental species.
- **B-11** If grading activities are to occur during active nesting season (generally February 15 -August 31), a field survey shall be conducted by a qualified biologist to determine if active nests covered by the Migratory Bird Treaty Act and/or the CDFG Code are present. If active nests are present, the area will be flagged, along with a 100-foot buffer (300-feet for raptors) and will be avoiding until the nesting cycle is complete.
- **B-12** The project proponent shall obtain a Section 404 of the Clean Water Act permit from the U.S. Army Corps of Engineers and a 1603 Streambed Alteration Permit from California Department of Fish and Game prior to grading or any other groundbreaking activities, and shall comply with the permit's mitigation requirements.

# 5.2.6 Level of Significance After Mitigation

Implementation of the above mitigation measures will reduce the project's impacts to biological resources as well as the project's contribution to significant cumulative impacts on biological resources.

# 5.3 Transportation/Traffic

Potential impacts related to parking capacity, air traffic patterns, emergency access and alternative modes of transportation were all found to be less than significant in the Notice of Preparation prepared for this project (see Appendix A). The focus of the following discussion is related to the potential impacts associated with the project traffic and circulation system. This discussion summarizes the traffic impact study for the project, which was prepared by RK Engineering Group, Inc. The traffic impact study (The *Etiwanda Properties (TTM 16072) Traffic Impact Analysis, Rancho Cucamonga, California, Revised June 17, 2002*) is provided in its entirety in Appendix D of this document.

# 5.3.1 Existing Conditions

### Traffic Characteristics

Tentative Tract 16072 is situated on the north side of Wilson Avenue, approximately one mile north of State Route 210 (SR-210) and 2.25 miles west of Interstate 15 (1-15) freeways, between East Avenue and Etiwanda Avenue. Regional access to the site is provided by SR-210 and I-15. Various arterial roadways in the vicinity of the site provide local access. Exhibit 5.3-1, identifies the existing roadways in the study area. The following roadways provide service to the area:

- Wilson Avenue. Wilson Avenue is an east-west road on the south boundary of the project site. This roadway is currently a four-lane divided road west of Etiwanda Avenue and east of Wardman Bullock Road, and an unimproved dirt road between Etiwanda Avenue (along the project boundary line) and Wardman Bullock Road. This roadway is designated by the City of Rancho Cucamonga General Plan's Circulation Element as a Special Divided Secondary Arterial (four-lane divided highway) with an ultimate 165-foot right-of-way along the project boundaries. This roadway provides project access to the local and regional road network and once Wilson is completely paved could provide freeway access to I-15 at the Summit Avenue interchange.
- Etiwanda Avenue. Etiwanda Avenue is a north-south road running along the west boundary of the project site. It can also provide project access to the local and regional road network. Etiwanda Avenue is currently a four-lane divided road between Wilson Avenue and Golden Prairie Drive, and a two-lane undivided road south of Wilson Avenue and north of Golden Prairie Drive. This roadway is designated by the Circulation Element as a Collector (two-lane undivided road) with an ultimate 120-foot right-of-way south of Banyan Street, a Secondary Arterial Highway (four-lane undivided) with an ultimate 96-foot right-of-way north of Wilson Avenue.

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- East Avenue. East Avenue is a north-south roadway, located southeast of the project site. Currently, East Avenue is a two-lane undivided road south of 23rd Street, and an unimproved dirt road between 23rd Street and Wilson Avenue. Currently East Avenue does not exist north of Wilson Avenue. This project proposes extending East Avenue as a paved roadway north of 23rd Street and along the eastern boundary of the project site. The future extension of East Avenue can provide project access to the local and regional roadway network. Designated by the City of Rancho Cucamonga General Plan's Circulation Element as a Collector north of Wilson and a secondary south of Wilson. East Avenue's ultimate right-of-way is 88 feet south of Wilson Avenue and 66 feet north of Wilson Avenue.
- Banyan Street/Summit Avenue. Banyan Street is an east-west roadway, running south of the project site. Currently, Banyan Street is a two-lane undivided road that connects between Etiwanda Avenue and Wardman Bullock Road providing freeway access to I-15 in the project area by way of the Summit Avenue interchange. This roadway is shown in the San Bernardino County Congestion Management Program (CMP) Network as Banyan Street between Haven Avenue and Rochester Avenue and Summit Avenue east of Rochester Avenue (see Exhibit 3.12.1) and is designated by the Circulation Element of the City General Plan as a Collector (2-lane undivided road), with ultimate right-of-way of 66 feet.
- Highland Avenue. Highland Avenue is an east-west roadway, running south of the project site paralleling State Route 210. State Route 210 incorporated portions of the former Highland Avenue into its right-of-way. Currently the remnant portions of Highland Avenue that still exist are two-lane undivided roadways. The Rancho Cucamonga General Plan Circulation Element designation for these remnant segments of Highland Avenue is Collector Street (two lane undivided road) with a 66-foot right-of-way.
- Victoria Avenue. Victoria Avenue is an east-west roadway, also running south of the project site. Victoria Avenue is a two-lane undivided road. Designated by the City of Rancho Cucamonga as a Collector Street (two-lane undivided road), also with a 66-foot right-of-way.
- State Route 210. A new 14-mile stretch of the Foothill Freeway, State Route 210, opened on November 24, 2002. The new lanes through La Verne, Claremont, Upland, Rancho Cucamonga connect with six miles of the freeway opened in Rancho Cucamonga and Fontana in August 2001. This 20-mile stretch of freeway creates a new east/west route between San Bernardino and Los Angeles counties and provides an alternative to Interstate 10. The new freeway can be accessed at Carnelian, Archibald, Haven and Milliken Avenues and Day Creek Boulevard in Rancho Cucamonga. Ultimately, this freeway will connect the local area to points as far west as Azusa and Pasadena and east as far as Redlands.
- Interstate 15. Interstate 15 is a six-lane freeway connecting the project area with Norco, Riverside, and San Diego to the south, and Devore, and the High Desert areas to the north. The I-15 freeway interchange nearest the project site is at Summit Avenue, approximately 2 ¼

miles east of the project. This access requires traveling south on East Avenue or Etiwanda Avenue to Banyan Street/Summit Avenue then east to the freeway. When Wilson Avenue is paved between Etiwanda Avenue and Wardman Bullock Road, it will provide direct freeway access to I-15 at the Summit Avenue interchange.

Other unpaved roads and firebreaks criss-cross the project site. An unpaved maintenance road for the transmission towers located in the Southern California Edison easement is immediately north of the project boundary of the site. Other onsite roads lead to the abandoned ruins of a house and out buildings. These roadways are not discussed in the following evaluation because the maintenance road will not convey area traffic and the other onsite unpaved roadways will be abandoned firebreaks will only be used for emergencies and maintenance.

The existing land uses near the project site are single-family residential, and open space which includes a road system that is in transition from rural to urban. Overall, the area is urbanizing rapidly. Currently there are no public transportation routes (e.g., bus routes) directly serving the project site because it is essentially vacant land. Sidewalks and bicycle lanes do not currently exist in the project area.

### Methodology for Traffic Analysis

The ease at which intersections, within the study area, convey traffic largely controls the operation of the roadway system as a whole. Therefore, there was an analysis of traffic at study area intersections. Five existing and two proposed intersections within the study area were evaluated based on their potential to be significantly affected by project traffic. These intersections are:

- Etiwanda Avenue (north)/Wilson Avenue (existing)
- Etiwanda Avenue (south)/Wilson Avenue (proposed)
- Etiwanda Avenue/Summit Avenue (existing)
- Etiwanda Avenue/Highland Avenue (existing)
- East Avenue/Wilson Avenue (proposed)
- East Avenue/Summit Avenue (existing)
- East Avenue/Victoria Avenue (existing)

This analysis uses the Level of Service (LOS) system of categorization to evaluate the study area intersections. Traffic engineers use this LOS system of categorization to describe how well an intersection or roadway is functioning. The LOS measures several factors including operating speeds, freedom to maneuver, traffic interruptions, and average vehicle delay at intersections. The LOS approach uses a ranking system, similar to education, with level "A" being best and level "F" being worst. Table 5.3-1 describes the LOS levels. The City of Rancho Cucamonga has established an LOS D or better as the standard of acceptability except for 7 city intersections including the

intersection of Etiwanda Avenue at Highland Avenue. The City has established an LOS E or better as the standard of acceptability for the 7 intersections. LOS evaluations were conducted for study area intersections during peak hour traffic conditions. Peak hour traffic conditions refer to the amount of traffic that travels during the morning rush hour (AM Peak Hour) and evening rush hour (PM Peak Hour).

Pursuant City requirements, the 1997 Highway Capacity Manual (HCM; Operations Analysis method – Section 9) was used to analyze the level of service at intersections. The 1997 HCM evaluates level of service at signalized intersections based upon the average stopped delay (in seconds) per vehicle for various movements within the intersection. As defined by the 1997 HCM, the level of service for unsignalized intersections is based upon the worst-case delay by turning movement at the intersection (in seconds) per vehicle. Table 5.3-1 shows the criteria used to determine the level of service at intersections.

Level of Service (LOS)	Signalized Intersections; Stopped Delay (seconds/vehicle)	Unsignalized Intersections: Stopped Delay (seconds/vehicle)	Qualitative LOS Description
A	<u>≤</u> 10	<u>≤</u> 10	Free flow: Low volumes; high speeds; speed not restricted by other vehicles; all signal cycles clear with no vehicles waiting through more than one signal cycle.
В	> 10 and ≤ 20	> 10 and ≤ 15	Stable flow: Operating speeds beginning to be affected by other traffic; between 1% and 10% of the signal cycles have one or more vehicles waiting through more than one signal cycle
С	> 20 and ≤ 35	> 15 and ≤ 25	Stable Flow, Increased Density: Operating speeds and maneuverability closely controlled by other traffic; between 11% and 30% of the signal cycles have one or more vehicles waiting through more than one signal cycle; recommended ideal design standards.
D	> 35 and ≤ 55	> 25 and ≤ 35	Stable Flow, High Density: Tolerable operating speeds; 31% to 70% of the signal cycles have one or more vehicles waiting through more than one signal cycle; often used as design standards in urban areas.
E	>55 and ≤ 80	> 35 and ≤ 50	Flow at or Near Capacity: maximum traffic volume an intersection can accommodate; restricted speeds; 71% to 100% of the signal cycles have one or more vehicles waiting through more than one signal cycle.

Table 5.3-1: Level of Service	(LOS) Standards
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Level of Service (LOS)	Signalized Intersections: Stopped Delay (seconds/vehicle)	Unsignalized Intersections: Stopped Delay (seconds/vehicle)	Qualitative LOS Description
F	> 80	> 50	Forced or Breakdown Flow: Long queues of traffic; unstable flow; stoppages of long duration; traffic volume and traffic speed can drop to zero; traffic volume will be less than the volume occurring at LOS 'E' due to decreased speeds.
Source: "	Highway Capacity Ma Vashington D.C., 1997	nual," Highway Researd	ch Board Special Report 87, National Academy of Sciences,

### Table 5.3-1 (Cont.): Level of Service (LOS) Standards

## **Existing Intersections Level of Service**

Table 5.3-2 shows the existing traffic control status and the existing (2002) levels of service at the study intersections. As shown in Table 5.3-2, two intersections exceed the City's standard. Etiwanda Avenue at Summit Avenue and East Avenue at Summit Avenue are anticipated to operate at LOS "F" in the AM peak hour which is considered not acceptable.

A	A
F	C
Е	В
F	A
В	В
	F B

### Table 5.3-2: Existing (Year 2002) Levels pf Service at Study Area Intersections

#### **Congestion Management Plan**

The Congestion Management Plan (CMP) is a State of California mandated program as a result of Proposition 111 and implemented by the San Bernardino Associated Governments (SANBAG) in San Bernardino County. The purpose of the CMP is to provide comprehensive long range traffic planning in subregional areas such as the County of San Bernardino. A travel demand model has been developed for San Bernardino County, and it is referred to as the Comprehensive Transportation Plan (CTP) model. The CTP model is currently the only approved travel demand forecasting tool within the project study area because this model is the only one to receive the necessary "Finding of Consistency" from the SANBAG and Southern California Association of Governments (SCAG). The San Bernardino County CMP uses a volume to capacity (V/C) ratio to evaluate if an intersection is deficient during a peak period. A V/C ratio that equals or exceeds 1.0 is considered deficient. Table 5.3-3 shows the existing V/C ratio for the study area intersections.

Intersection	Traffic Control Status	AM Peak Hour V/C Ratio	Exceed V/C Ratio of 1.0?	PM Peak Hour V/C Ratio
Etiwanda Ave (North)/Wilson Ave.	AWSC	0.290	No	0.198
Etiwanda Ave/Summit Ave.	AWSC	1.417	Yes	0.732
Etiwanda Ave/Highland Ave.	Signal	0.982	No	0.568
East Ave/Summit Ave.	AWSC	1.063	Yes	0.299
East Ave/Victoria St.	Signal	0.153	No	0.166
AWSC - All Way Stop Controlled			• • • • • • • • • • • • • • • • • • •	· · · ·

### Table 5.3-3: Existing (Year 2002) Volume to Capacity (V/C)

As shown above, two intersections would exceed the V/C ratio established in the San Bernardino County CMP. These intersections are Etiwanda Avenue at Summit Avenue and East Avenue at Summit Avenue.

# 5.3.2 Thresholds of Significance

The City of Rancho Cucamonga General Plan has a threshold of LOS "D" as an acceptable level of service for all intersections within the City except for seven intersections that are listed in the City of Rancho Cucamonga General Plan Transportation Policies which may operate at LOS "E" during peak hours upon completion of maximum feasible improvements. One of the seven intersections includes the intersection of Etiwanda Avenue at Highland Avenue.

In addition to the City's threshold for intersections, the CMP establishes a threshold of significant traffic impact as exceeding the V/C ratio of 1.0.

# 5.3.3 Project Impacts

## **Trip Generation**

Trip generation represents the amount of traffic that is produced or attracted to a development. The traffic generation for this project has been estimated, based upon the specific land use that has been planned for the proposed development. The proposed project consists of 359 single-family dwelling units. Trip generation rates for the project are shown in Table 5.3-4. The trip generation rates are based upon the Institute of Transportation Engineers (ITE) publication *Trip Generation*  $6^{th}$  Edition.

Table 5.3-4 also shows the daily and peak hour trip generation for the proposed project. The proposed development is projected to generate approximately 3,436 daily trips.

Table	5.3-4:	Proi	ect Trir	o Gene	ration
TUDIC	V.V T.			o Gene	quon

	, In	Peal M Out	cHour In	M Out	Daily
Long Jerm The Generation Rates			· · · · · · · · · · · · ·		
Single Family Dwelling Unit	0.19	0.56	0.65	0.36	9.57
Trip Generation			·		
359 Single Family Dwelling Units	68	201	233	129	3,436
Sources: Institute of Transportation Engi	ineers (ITE), I	Frip Generation,	1997, Land Usc	Category 210.	

## **Traffic Distribution and Assignment**

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the location of employment, commercial and recreational opportunities, and the proximity to the regional freeway system. The directional orientation of traffic was determined by evaluating existing and proposed land uses within the community and existing traffic volumes.

The project trip distribution (direction the traffic will travel) was developed based on a review of site access and projected future traffic patterns as predicted in the CTP Model. The project trip distribution for the opening year (Year 2004) scenario and the buildout year (Year 2020) scenario are illustrated on Exhibits 5.3-5 and 5.3-6, respectively.

## **Project Traffic Impact**

## Opening Year (Year 2004)

Table 5.3-5 depicts the levels of service at the study area intersections at opening year (Year 2004) without and with the project. Table 5.3-6 shows the following intersections would operate at an LOS F in the AM peak hour without and with the project.

- Etiwanda Avenue at Summit Avenue
- Etiwanda Avenue at Highland Avenue
- East Avenue at Summit Avenue

Although the project would not change the level of service, the contribution of project traffic to these three intersections during the AM peak hour represent a significant traffic impact. Without project traffic, all intersections would operate at LOS D or better during the PM peak hour which represents a

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less than significant impact. Except for the following intersection, all study area intersections operate at LOS D or better with the project during the PM peak hour.

Etiwanda Avenue at Summit Avenue

The intersection of Etiwanda Avenue at Summit Avenue will operate at LOS E with the project which exceeds the City's standard and is considered a significant impact.

Intersection	Traffic Control Status	City LOS Standard	AM Peak Hour LOS	PM Peak Hour LOS
Opening Year Without Project	<u> </u>			2.1.5 (1.8) <u></u>
Etiwanda Ave North/Wilson Ave.	AWSC	≤D	A	A
Etiwanda Ave South/Wilson Ave.	TWSC	≤D	A	В
Etiwanda Ave/Summit Ave.	AWSC	≤D	F	D
Etiwanda Ave/Highland Ave.	Signal	≤E	F	В
East Ave/Wilson Avc.	TWSC	≤D	A	A
East Ave/Summit Ave.	AWSC	≤D	F	В
East Ave/Victoria St.	Signal	⊴D	В	В
Opening Year With Project				
Etiwanda Ave North/Wilson Ave.	AWSC	≤D	A	A
Etiwanda Ave South/Wilson Ave.	TWSC	≤D	В	В
Etiwanda Ave/Summit Ave.	AWSC	≤D	F	E
Etiwanda Ave/Highland Ave.	Signal	≤E	F	С
East Ave/Wilson Ave.	TWSC	≤D	Α	A
East Ave/Summit Ave.	AWSC	≤D	F	В
East Ave/Victoria St.	Signal	≤D	В	В

Table 5.3-5: Opening Year (Year 2004) Levels of Service

NA - Not Applicable: V/C ratios calculated only for signal and AWSC.

### Buildout Year 2020

Table 5.3-6 depicts the level of service at the study area intersections at buildout year (Year 2020) without and with the project. Table 5.3-6 shows the following intersections would operate at an LOS F in the AM peak hour without and with the project.

- Etiwanda Avenue at Summit Avenue
- Etiwanda Avenue at Highland Avenue
- East Avenue at Wilson

• East Avenue at Summit Avenue

The project traffic contributed to these four study area intersections during the AM peak hour represent a significant traffic impact. Except for the following intersections, all study area intersections operate at LOS D or better during the PM peak hour without the project.

- Etiwanda Avenue (South) at Wilson Avenue
- Etiwanda Avenue at Summit Avenue
- East Avenue at Summit Avenue

These three intersections would operate at LOS F which exceeds the City's standard and is considered a significant impact. Except for the following intersections, all study area intersections would operate at LOS D or better during the PM peak hour with the project.

- Etiwanda Avenue (South) at Wilson Avenue
- Etiwanda Avenue at Summit Avenue
- East Avenue at Wilson Avenue
- East Avenue at Summit Avenue

These four intersections would operate at LOS F which exceeds the City's standard and is considered a significant impact.

Intersection	Traffic Control Status	City LOS Standard	AM Peak Hour V/C Ratio	PM Peak Hour LOS
Year 2020 Without Project				
Etiwanda Ave North/Wilson Ave.	AWSC	≤D	A	С
Etiwanda Ave South/Wilson Ave.	TWSC	⊴D	В	F
Etiwanda Ave/Summit Ave.	AWSC	≤D	F	F
Etiwanda Ave/Highland Ave.	Signal	≤E	F	С
East Ave/Wilson Ave.	TWSC	≤D	F	С
East Ave/Summit Ave.	AWSC	≤D	F	F
East Ave/Victoria St.	Signal	≲D	В	В

Table 5.3-6:	Year 2020	Levels of	Service
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Intersection	Traffic Control Status	City LOS Standard	AM Peak Hour V/C Ratio	PM Peak Hour LOS
Year 2020 With Project	- <u></u>	<u></u>	A CONTRACTOR FROM	9
Etiwanda Ave North/Wilson Ave.	AWSC	⊴D	В	С
Etiwanda Ave South/Wilson Ave.	TWSC	≤D	В	F
Year 2020 With Project				1
Etiwanda Ave/Summit Ave.	AWSC	≤D	F	F
Etiwanda Ave/Highland Ave.	Signal	≤E	F	С
East Ave/Wilson Ave.	TWSC	≤D	F	F
East Ave/Summit Ave.	AWSC	≤D	F	F
East Ave/Victoria St.	Signal	≤D	В	В
AWSC – All Way Stop Controlled			•	

## Table 5.3-6 (Cont.): Year 2020 Levels of Service

TWSC - Two Way Stop Controlled

NA - Not Applicable: V/C ratios calculated only for signal and AWSC.

## Congestion Management Plan

As stated previously, a CMP transportation impact analysis is required for the proposed project. The San Bernardino County CMP uses a volume to capacity (V/C) ratio to evaluate if an intersection is deficient during a peak period. Table 5.3-7 and Table 5.3-8 depict the volume to capacity for the study area intersections at opening year (Year 2004) and buildout year 2020 without and with the project. As shown on these tables, all of the intersections identified above as exceeding the City's level of service standard would also exceed a V/C ratio of 1.0 except for two intersections. The V/C ratios for these two intersections (Etiwanda - South at Wilson and East Avenue at Wilson) are not applicable because V/C ratios are only calculated for signalized or all-way stop control intersections. These two intersections are two-way stop controlled intersections.

Intersection	Traffic Control Status	AM Peak Hour V/C Ratio	Exceed V/C Ratio of 1.0?	<b>PM Peak</b> Hour V/C Ratio	Exceed V/C Ratio of 1.0?
Opening Year Without Project					
Etiwanda Ave North/Wilson Ave.	AWSC	0.308	No	0.238	No
Etiwanda Ave South/Wilson Ave.	TWSC	NA	NA	NA	NA
Etiwanda Ave/Summit Ave.	AWSC	1.500	Yes	0.923	No
Etiwanda Ave/Highland Ave.	Signal	1.130	Yes	0.628	No
East Ave/Wilson Ave.	TWSC	NA	NA	NA	NA
East Ave/Summit Ave.	AWSC	1.836	Yes	0.396	No
East Ave/Victoria St.	Signal	0.200	No	0.227	No
Opening Year With Project					
Etiwanda Ave North/Wilson Ave.	AWSC	0387	No	0.312	No
Etiwanda Ave South/Wilson Ave.	TWSC	NA	NA	NA	NA
Etiwanda Ave/Summit Ave.	AWSC	1.566	Yes	1.066	Yes
Etiwanda Ave/Highland Ave.	Signal	1.180	Yes	0.688	No
East Ave/Wilson Ave.	TWSC	NA	NA	NA	NA
East Ave/Summit Ave.	AWSC	2.094	Yes	0.495	No
East Ave/Victoria St.	Signal	0.223	No	0.240	No

#### Table 5.3-7: Opening Year (Year 2004) Volume to Capacity

AWSC - All Way Stop Controlled TWSC - Two Way Stop Controlled

NA – Not Applicable:  $\dot{V}/C$  ratios calculated only for signal and AWSC.

Intersection	Traffic Control Status	AN Peak Hour V/C Ratio	Exceed V/C Ratio of 1.0?	PM Peak Hour V/C Ratio	Exceed V/C Ratio of 1.0?
Year 2020 Without Project					
Etiwanda Ave North/Wilson Ave.	AWSC	0.360	No	0.650	No
Etiwanda Ave South/Wilson Ave.	TWSC	NA	NA	NA	NA
Etiwanda Ave/Summit Ave.	AWSC	2.132	Yes	1.960	Yes
Etiwanda Ave/Highland Ave.	Signal	1.447	Yes	0.794	No
East Ave/Wilson Ave.	TWSC	NA	NA	NA	NA

### Table 5.3-8: Year 2020 Volume to Capacity

Traffic Control Status	AM Peak Hour V/C Ratio	VIC Ratio of 1.0?	PM Peak Hour V/C Ratio	Exceed V/C Ratio of 1.0?
AWSC	2.897	Yes	1.149	Yes
Signal	0.412	No	0.581	No
AWSC	0.435	No	0.705	No
TWSC	NA	NA	NA	NA
AWSC	2.140	Yes	2.178	Yes
Signal	1.491	Yes	0.845	No
TWSC	NA	NA	NA	NA
AWSC	3.082	Yes	1,199	Yes
Signal	0.430	No	0.593	NA
	Traffic Control Status AWSC Signal AWSC TWSC AWSC Signal TWSC AWSC Signal	Traffic Control StatusAM Peak Hour V/C RatioAWSC2.897AWSC2.897Signal0.412AWSC0.435TWSCNAAWSC2.140Signal1.491TWSCNAAWSC3.082Signal0.430	Traffic Control StatusAM Peak Hour V/C RatioExceed W/C Ratio of 1.0?AWSC2.897YesSignal0.412NoAWSC0.435NoAWSC0.435NoTWSCNANAAWSC2.140YesSignal1.491YesTWSCNANAAWSC3.082YesSignal0.430No	Traffic Control StatusAM Peak Hour V/C RatioExceed M/C Ratio of 1.0?PM Peak Hour V/C RatioAWSC2.897Yes1.149Signal0.412No0.581AWSC0.435No0.705TWSCNANANAAWSC2.140Yes2.178Signal1.491Yes0.845TWSCNANANAAWSC3.082Yes1.199Signal0.430No0.593

#### Table 5.3-8 (Cont.): Year 2020 Volume to Capacity

TWSC - Two Way Stop Controlled

NA - Not Applicable: V/C ratios calculated only for signal and AWSC.

## 5.3.4 Cumulative Impacts

The cumulative analysis is based on the traffic projections in the San Bernardino County Comprehensive Transportation Plan model. These traffic projections include the year 2020. The year 2020 traffic analysis is provided in Table 5.3-6 and evaluated in Section 5.3.2. As described, cumulative (year 2020) traffic volumes would result in five different intersections that would operate at an LOS F in the AM and PM peak hour. Following is a list of these five intersections.

- Etiwanda Avenue (South) at Wilson Avenue
- Etiwanda Avenue at Summit Avenue
- Etiwanda Avenue at Highland Avenue
- East Avenue at Wilson
- East Avenue at Summit Avenue

These five intersections would operate at LOS F which exceeds the City's standard and is considered a significant impact. Implementation of the proposed project would contribute to the significant cumulative impacts to these intersections.

# 5.3.5 Mitigation Measures

The following mitigation measures would reduce potential impacts to the transportation network and traffic circulation associated with the project. Table 5.3-9 summarizes the improvements and associated costs required to meet the City's level of service standards and the CMP requirements for the study area intersection. The project fair share contribution for the improvements at each location is identified in Table 5.3-10.

## Opening Year (Year 2004)

The following measures are required to be implemented prior to issuance of a building permit.

- TT-1 The project applicant shall contribute its fair share toward local off-site traffic improvements. On-site improvements will be required in conjunction with the phasing of the proposed development to ensure adequate circulation within the project itself. The fair share contribution of all off-site improvements and timing of all onsite traffic improvements shall be subject to a Development Agreement with the City of Rancho Cucamonga. This agreement shall be in place prior to tract map approval.
- **TT-2** The project applicant shall update construction cost estimates and prepare a current cost of the project's fair share contribution toward traffic improvements.
- **TT-3** The project applicant shall construct Wilson Avenue from Etiwanda Avenue to East Avenue as a special Divided Secondary Arterial (165 ft. Right-of-way) in conjunction with development of the proposed project or as determined by the Development Agreement with the City.
- TT-4 The project applicant shall construct the extension of East Avenue from the south project boundary with a minimum 36-foot two-way paved access to the project in conjunction with development of the proposed project or as determined by the Development Agreement with the City.
- TT-5 The project applicant shall construct East Avenue from the north project boundary to Wilson Avenue to provide 44-foot two-way paved access and the full shoulder (curb, gutter, street lights, and side walks) on west side of the street in conjunction with development of the proposed project or as determined by the Development Agreement with the City.
- TT-6 The project applicant shall construct Etiwanda Avenue from the north project boundary to Golden Prairie Drive at its ultimate half-section width as Secondary Arterial (96 ft. Right-of-way) in conjunction with development of the proposed project or as determined by the Development Agreement with the City.
- TT-7 Prior to issuance of building permits, the applicant shall provide funds in accordance with the City's Transportation Development Fee. Collection of these fees shall represent the project's "fair-share" toward the following transportation improvements required for Opening Year (Year 2004):
  - Installation of a traffic signal at Etiwanda Avenue at Summit Avenue.

- Installation of a traffic signal at East Avenue at Summit Avenue.
- Construction of a southbound right turn lane at the intersection of Etiwanda Avenue at Highland Avenue.

#### Buildout Year 2020

- **TT-8** Prior to the issuance of building permits, the applicant shall provide funds in accordance with the City's Trasportation Development Fee. Collection of these fees shall represent the project's "fair share" toward the following transportation improvements required for Buildout Year 2020.
  - Construction of one additional northbound lane to provide a shared left and through lane, and a shared right and through northbound lane, and one additional southbound lane to provide a shared left and through and a shared right and through southbound lane on East Avenue at Banyon Street.
  - Construction of a westbound through lane on Highland Avenue at Etiwanda Avenue.
  - Installation of a traffic signal at the intersection of Etiwanda Avenue (North) at Wilson Avenue.
  - Installation of a traffic signal at the intersection of Etiwanda Avenue (South) at Wilson Avenue.
  - Installation of a traffic signal at the intersection of East Avenue at Wilson Avenue.

#### Table 5.3-9: Required Offsite Project Area Intersection Improvements

Intersection/Segment	Improvement	Ť	otal Cost
Etiwanda AveNorth (NS) at:			
Wilson Ave. (EW)	Install Traffic Signal	\$	120,000
Etiwanda AveSourth- (NS) at:			
Wilson Ave. (EW)	Install Traffic Signal	\$	120,000
Summit Ave. (EW)	Install Traffic Signal	\$	120,000
Highland Ave. (EW)	Construct SB right turn lane	\$	50,000
	Construct WB through lane	\$	259,000
	Construct one additional SB lane to provide shared left and through, and shared right and through lane.	\$	259,000

Intersection/Segment	Improvement	Total Cost
	Construct EB left turn lane	\$ 50,000
	Construct WB left turn lane	\$ 50,000
Total		\$ 1 <b>,527,</b> 000
Source: RK Engincering Group, Inc. 200 Notes: SB = South bound WB = West bound NB = North bound EB = East bound	2.	

#### Table 5.3-9 (Cont.): Required Offsite Project Area Intersection Improvements

#### Table 5.3-10: Project Fair Share Contribution to Offsite Intersection Improvements

Intersection/ Segment	Total Cost	Existing Traffic	Year 2020 with Project	Project. Traffic	Total New	Project % of New Traffic	Project's Fair Share
and the state of the second			Irattic		<b>Fraffic</b>		ÇOŞt
Etiwanda AveNorth	(NS) at:						
Wilson Ave. (EW)	\$120,000	319	1,402	142	1,083	13.1%	\$15,734
Etiwanda AveSouth-	(NS) at:						
Wilson Ave. (EW)	\$120,000	291	1,450	160	1,159	13.8%	\$16,566
Summit Ave. (EW)	\$120,000	928	1,983	112	1,055	10.6%	\$12,739
Highland Ave. (EW)	\$309,000	1,214	2,209	109	995	11.0%	\$33,850
East Ave. (NS) at:							
Wilson Ave. (EW)	\$120,000	0	1,305	165	1,305	12.6%	\$15,172
Summit Ave (EW)	\$738,000	510	1,656	106	1,146	9.2%	\$68,262
Total	\$1,527,000						\$162,324

# 5.3.6 Level of Significance After Mitigation

After implementation of the above mitigation measures, no significant traffic impacts would occur. Table 5.3-11 shows the level of service and V/C ratio for each of the study area intersections. As shown, all intersections would operate at LOS D or better and the V/C ratio would be less than 1.0.

	Traffic Control	AM Peak	Hour	PM Peak Hour		
Imersecuon	Status	V/C Ratio	LOS	V/C Ratio	LOS	
Opening Year (2004) With Project						
Etiwanda Ave (West)/Wilson Ave.	AWSC	0.387	A	0.312	Α	
Etiwanda Ave (East)/Wilson Ave.	TWSC	NA	В	NA	В	
Etiwanda Ave (East)/Summit Ave.	Signal	0.735	В	0.560	D	
Etiwanda Ave (East)/Highland Ave.	Signal	0.935	D	0.570	В	
East Ave/Wilson Ave.	TWSC	NA	А	NA	А	
East Ave/Summit Ave.	Signal	0.735	В	0.370	В	
East Ave/Victoria St.	Signal	0.223	В	0.240	В	
Year 2020 With Project						
Etiwanda Ave (West)/Wilson Ave.	Signal	0.237	A	0.352	В	
Etiwanda Ave (East)/Wilson Ave.	Signal	0.306	A	0.849	В	
Etiwanda Ave (East)/Summit Ave.	Signal	0.888	С	0.917	С	
Etiwanda Ave (East)/Highland Ave.	Signal	0.888	С	0.748	C	
East Ave/Wilson Ave.	Signal	0.718	В	0.621	A	
East Ave/Summit Ave.	signal	0.786	С	0.602	В	
East Ave/Victoria St.	Signal	0.430	A	0.593	В	

### Table 5.3-11: Levels Of Service with Implementation of Mitigation Measures

AWSC - All Way Stop Controlled

TWSC - Two Way Stop Controlled

NA -- Not Applicable: V/C ratios calculated only for signal and AWSC.

<sup>1</sup> Average Delay calculated with Traffix, version 7.1R1 analysis software.

Once mitigation measures are implemented, project generated impacts to the transportation network and traffic circulation system are less than significant. .

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# 5.4 Air Quality

The following discussion summarizes the "Air Quality Impact Analysis Report for Tentative Tract No. 16072" (October 2002) prepared by Michael Brandman Associates. This report is contained in its entirety as Appendix E of this document. The focus of the following discussion is related to the potential impacts related to sensitive receptors, air quality plans, air quality standards, cumulative increases of pollutants, and production of odors.

# 5.4.1 Existing Conditions

## **Physical Setting**

The proposed project is located within the South Coast Air Basin (SCAB), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAB consists of Orange County, the coastal and mountain portions of Los Angeles County, as well as Riverside and San Bernardino counties. Regional and local air quality within the SCAB is affected by topography, atmospheric inversions, and dominant onshore flows. Topographic features such as the San Gabriel, San Bernardino, and San Jacinto Mountains form natural horizontal barriers to the dispersion of air contaminants. The presence of atmospheric inversions limits the vertical dispersion of air pollutants. With an inversion, the temperature initially follows a normal pattern of decreasing temperature with increasing altitude, however, at some elevation, the trend reverses and temperature begins to increase as altitude increases. This transition to increasing temperature establishes the effective mixing height of the atmosphere and acts as a barrier to vertical dispersion of pollutants.

Dominant onshore flow provides the driving mechanism for both air pollution transport and pollutant dispersion. Air pollution generated in coastal areas is transported east to inland receptors by the onshore flow during the daytime until a natural barrier (the mountains) is confronted, limiting the horizontal dispersion of pollutants. The result is a gradual degradation of air quality from coastal areas to inland areas, which is most evident with the photochemical pollutants formed under reactions with sunlight, such as ozone.

## Climate

Terrain and geographical location determine climate in the SCAB. The project site lies within the terrain south of the San Gabriel Mountains and north of the Santa Ana Mountains. The climate in the SCAB is typical of southern California's Mediterranean climate, which is characterized by dry, warm summers and mild winters. Winters typically have infrequent rainfall, light winds and frequent early morning fog and clouds that turn to hazy afternoon sunshine.

The following includes factors that govern micro-climate differences among inland locations within the SCAB: 1) the distance of the mean air trajectory from the site to the ocean; 2) the site elevation; 3) the existence of any intervening terrain that may affect airflow or moisture content; and 4) the

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proximity to canyons or mountain passes. As a general rule, locations farthest inland from the ocean have the hottest summer afternoons, the lowest rainfall, and the least amount of fog and clouds. Foothill communities in the SCAB have greater levels of precipitation, cooler summer afternoons and may be exposed to wind funneling through nearby canyons during Santa Ana winds. Terrain will generally influence local wind patterns. The project site is located in an alluvial area at the base of the San Gabriel Mountains, with the mountain and canyon areas immediately to the north.

Annual average temperatures in the SCAB are typically in the low to mid-60s (degrees Fahrenheit). Temperatures above 100 degrees are recorded for all portions of the SCAB and in winter months, temperatures in the lower 30s can be experienced in parts of the SCAB including the project site.

The rainy season in the SCAB is November to April. Summer rainfall can occur as widely scattered thunderstorms near the coast and in the eastern portion and mountainous regions. Rainfall averages vary over the SCAB. The project site in Rancho Cucamonga averages 15.4 inches of rainfall, while Riverside averages 9 inches. Rainy days vary from 5 to 10 percent of all days in the SCAB, with the most frequent occurrences of rainfall near the coast.

The interaction of land (offshore) and sea (onshore) breezes control local wind patterns in the area. Daytime winds typically flow from the coast to the inland areas, while the pattern typically reverses in the evening, flowing from the inland areas to the ocean. Air stagnation may occur during the early evening and early morning during periods of transition between day and nighttime flows. Approximately 5 to 10 times a year, the project site vicinity experiences strong, hot, dry desert winds known as the Santa Ana winds. These winds, associated with atmospheric high pressure, originate in the upper deserts and are channelized through the canyons and passes of the San Gabriel Mountains and into the inland valleys. Santa Ana winds can last for a period of hours or days, and gusts of over 60 miles per hour have been recorded. (See Exhibit 3.1, Dominant Wind Patterns of the South Coast Air Basin).

High winds, such as the Santa Ana winds, affect dust generation characteristics and create the potential for off-site air quality impacts, especially with respect to airborne nuisance and particulate emissions. Local winds in the project area are also an important meteorological parameter because they control the initial rate of dilution of locally generated air pollutant emissions. Exhibit 3.2, Windrose, shows the wind direction and speed frequency distribution in the project area.

### **Categories of Emission Sources**

Air pollutant emissions sources are typically grouped into two categories: stationary and mobile sources. These emission categories are defined and discussed in the following subsections.

#### Stationary Sources

Stationary sources are divided into two major subcategories: point and area sources. Point sources consist of a single emission source with an identified location at a facility. A single facility could have multiple point sources located onsite. Stationary point sources are usually associated with manufacturing and industrial processes. Examples of point sources include boilers or other types of combustion equipment at oil refineries, electric power plants, etc. Area sources are small emission sources that are widely distributed, but are cumulatively substantial because there may be a large number of sources. Examples include residential water heaters; painting operations; lawn mowers; agricultural fields; landfills; and consumer products, such as barbecue lighter fluid and hair spray.

#### Mobile Sources

Mobile sources are motorized vehicles, which are classified as either on-road or off-road. On-road mobile sources typically include automobiles and trucks that operate on public roadways. Off-road mobile sources include aircraft, ships, trains, and self-propelled construction equipment that operate off public roadways. Mobile source emissions are accounted for as both direct source emissions (those directly emitted by the individual source) and indirect source emissions, which are sources that by themselves do not emit air contaminants but indirectly cause the generation of air pollutants by attracting vehicles. Examples of indirect sources include office complexes, commercial and government centers, sports and recreational complexes, and residential developments.

#### **Air Pollution Constituents**

Air pollutants are classified as either primary, or secondary, depending on how they are formed. Primary pollutants are generated daily and are emitted directly from a source into the atmosphere. Examples of primary pollutants include carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>) and nitric oxide (NO)—collectively known as oxides of nitrogen (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), particulates ( $PM_{10}$ ) and  $PM_{25}$ ) and various hydrocarbons (HC) or volatile organic compounds (VOC), which are also referred to as reactive organic compounds (ROC). The predominant source of air emissions generated by the project development is expected to be vehicle emissions. Motor vehicles primarily emit CO, NOx and VOC/ROC/HC (Volatile Organic Compounds/Reactive Organic Compounds/Hydrocarbons).

Secondary pollutants are created over time and occur within the atmosphere as chemical and photochemical reactions take place. An example of a secondary pollutant is ozone  $(O_3)$ , which is one of the products formed when NOx reacts with HC, in the presence of sunlight. Other secondary pollutants include photochemical aerosols. Secondary pollutants such as oxidants represent major air quality problems in the SCAB.

The Federal Clean Air Act of 1970, established the National Ambient Air Quality Standards (NAAOS). Six "criteria" air pollutants were identified using specific medical evidence available at

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that time, and NAAQS were established for those chemicals. The State of California has adopted the same six chemicals as criteria pollutants, but has established different allowable levels. The six criteria pollutants are: carbon monoxide, nitrogen dioxide, ozone, lead, particulates less than 10 microns in size, and sulfur dioxide. The following is a further discussion of the *criteria pollutants*, as well as volatile organic compounds.

**Carbon Monoxide (CO)** – A colorless, odorless toxic gas produced by incomplete combustion of carbon-containing fuels. Concentrations of CO are generally higher during the winter months when meteorological conditions favor the build-up of primary pollutants. Motor vehicles are the major source of CO in the SCAB, although various industrial processes also emit CO through incomplete combustion of fuels.

**Oxides of Nitrogen (NO<sub>X</sub>)** – Important forms of nitrogen oxide in air pollution are nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>). The principal form of nitrogen oxide produced as a byproduct of fuel combustion is nitric oxide (NO), but NO reacts quickly with oxygen to form NO<sub>2</sub>, creating the mixture of NO and NO<sub>2</sub> commonly called NO<sub>X</sub>. Combustion in motor vehicle engines, power plants, refineries and other industrial operations, as well as ships, railroads and aircraft, are the primary sources of NO<sub>X</sub>. Although NO<sub>2</sub> concentrations have not exceeded national standards since 1991 and the state hourly standard since 1993, NO<sub>X</sub> emissions remain of concern because of their contribution to the formation of O<sub>3</sub> and particulate matter.

**Ozone**  $(O_3)$  – A colorless toxic gas that irritates the lungs and damages materials and vegetation. O<sub>3</sub> is one of a number of substances called photochemical oxidants that is formed when volatile organic compounds (VOC) and NO<sub>x</sub> react in the presence of ultraviolet sunlight. O<sub>3</sub> concentrations are higher in the SCAB than anywhere else in the nation and the damaging effects of photochemical smog are generally related to the concentration of O<sub>3</sub>. Conditions that lead to high levels of O<sub>3</sub> are adequate sunshine, early morning stagnation in source areas, high surface temperatures, strong and low morning inversions, greatly restricted vertical mixing during the day, and daytime subsidence that strengthens the inversion layer.

Lead (Pb) - Lead concentrations once exceeded the state and federal air quality standards by a wide margin, but have not exceeded state or federal air quality standards at any regular monitoring station since 1982. Though special monitoring sites immediately downwind of lead sources recorded very localized violations of the state standard in 1994, no violations have been recorded at these stations since 1996.

Atmospheric Particulates (PM) – A large portion of total suspended particulate (TSP) is fine particulate matter.  $PM_{10}$  consists of extremely small suspended particles or droplets 10 microns or

smaller in diameter that can lodge in the lungs, contributing to respiratory problems.  $PM_{2,5}$  is defined as particulate matter with diameter less than 2.5 microns.  $PM_{10}$  arises from such sources as road dust, agriculture, diesel soot, combustion products, tire and brake abrasion, construction operations, and fires. It is also formed from NO and SO<sub>2</sub> reactions with ammonia.  $PM_{10}$  scatters light and significantly reduces visibility.  $PM_{2.5}$  consists mostly of products from the reaction of NO<sub>X</sub> and SO<sub>2</sub> with ammonia, secondary organics and finer dust particles. The United States Environmental Protection Agency (USEPA) established its  $PM_{2.5}$  standard in July 1997.

**Sulfur Dioxide** - Sulfur dioxide (SO<sub>2</sub>) is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Although SO<sub>2</sub> concentrations have been reduced to levels well below state and federal standards, further reductions in SO<sub>2</sub> emissions are needed because SO<sub>2</sub> is a precursor to sulfate and PM<sub>10</sub>.

**Volatile Organic Compounds (VOCs)** - It should be noted that there are no state or federal ambient air quality standards for VOCs because they are not classified as criteria pollutants. VOCs are regulated, however, because a reduction in VOC emissions reduces certain chemical reactions, which contribute to the formation of ozone. VOCs are also transformed into organic aerosols in the atmosphere, contributing to higher  $PM_{10}$  and lower visibility levels. Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations of VOC because of interference with oxygen uptake. In general, ambient VOC concentrations in the atmosphere are suspected to cause coughing, sneezing, headaches, weakness, laryngitis, and bronchitis, even at low concentrations. Some hydrocarbon components classified as VOC emissions are thought or known to be hazardous. Benzene, for example, is a hydrocarbon component of VOC emissions that is known to be a human carcinogen.

#### **Monitored Air Quality**

The project site is within SCAQMD Source Receptor Area (SRA) 32. The air quality monitoring station for SRA 32 is in the City of Upland approximately 6.5 miles west of the project site. The most recent published data for SRA 32 is presented in Table 5.4-1, Air Quality Monitoring Summary 1991-2001. This data shows that the baseline air quality conditions in the project area include occasional events of very unhealthful air. Even so, the frequency of smog alerts has dropped significantly in the last decade. The greatest recognized air quality problem in the SCAB is ozone. The yearly monitoring records document that prior to 1995, approximately one-third or more of the days cach year experienced a violation of the state hourly ozone standard, with around ten days annually reaching first stage alert levels of 0.20 parts per million (ppm) for one hour. It is encouraging to note that ozone levels have dropped significantly in the last few years with less than one-eighth of the days each year experiencing a violation of the state hourly ozone standard in 2001. Locally, no first stage alert (0.20 ppm/hour) has been called by SCAQMD in over two years, and no second stage alert (0.35 ppm/hour) has been called by SCAQMD in the last ten years.

Although the overall air quality in SRA 32 is improving, one exception is the ambient concentrations of particulate matter smaller than 10 microns in diameter ( $PM_{10}$  and  $PM_{2.5}$ ). Over the last decade the State air quality standard for  $PM_{10}$  has been consistently exceeded in the area. The 1997 Federal standards for  $PM_{2.5}$  (annual arithmetic mean of 15 µg/m<sup>3</sup> and 24-hour average of 65 µg/m<sup>3</sup>) were recently upheld by the U.S. Supreme Court in February 2001. SCAQMD monitoring data shows SRA 32 exceeding the federal annual and 24-hour standards since SCAQMD began monitoring  $PM_{2.5}$  in 1999. Currently, there are no state standards established for  $PM_{2.5}$ . The sources contributing to particulate matter pollution include road dust, windblown dust, agriculture, construction, fireplaces and wood burning stoves, and vehicle exhaust.

### **Regulatory Setting**

The Federal and California ambient air quality standards (AAQS) establish the context for the local air quality management plans (AQMP) and for determination of the significance of a project's contribution to local or regional pollutant concentrations. The California and Federal AAQS are presented in Table 5.4-1: Air Quality Monitoring Summary- 1991-2001. The AAQS represent the level of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other diseases or illness and persons engaged in strenuous work or exercise, all referred to as "sensitive receptors". SCAQMD defines a "sensitive receptor" as a land use or facility such as schools, child care centers, athletic facilities, playgrounds, retirements homes and convalescent homes.

Both federal and state Clean Air Acts require that each nonattainment area prepare a plan to reduce air pollution to healthful levels. The 1988 California Clean Air Act and the 1990 amendments to the federal Clean Air Act (CAA) established new planning requirements and deadlines for attainment of the air quality standards within specified time frames. A revised Air Quality Management Plan (AQMP) that reflected these new requirements from the federal and state government was adopted by the SCAQMD in July 1991. The 1994 revision to this plan was adopted by the SCAQMD's Governing Board in September 1994 and incorporated by ARB in the California State Implementation Plan (SIP), in November 1994. The California SIP was fully approved by the EPA in September 1996. ì

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Pollutant/Standard			19. j. j. j.		Mon	toning	Year				
(Days Exceeded)	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	1-1722-12130014 (1994)	<u> </u>	14:06.58 <u>0.3x</u>	Ozor	le <sup>®</sup>	<u>-}.:::</u>				10000 AUCON	
California Standard											
1-Hour - 0.09 ppm	103 <sup>b</sup>	136 <sup>b</sup>	124 <sup>6</sup>	116 <sup>b</sup>	110 <sup>6</sup>	87 <sup>b</sup>	69 <sup>b</sup>	60 <sup>b</sup>	29 <sup>b</sup>	48 <sup>b</sup>	44 <sup>6</sup>
Federal Primary Stand	iards						· · · · · ·				
1-Hour - 0.12 ppm	67 <sup>b</sup>	81 <sup>6</sup>	55 <sup>b</sup>	79 <sup>ь</sup>	67 <sup>b</sup>	35 <sup>6</sup>	12 <sup>b</sup>	30 <sup>b</sup>	4 <sup>b</sup>	7 <sup>5</sup>	13 <sup>b</sup>
8-Hour - 0.08 ppm <sup>a</sup>							30 <sup>b</sup>	40 <sup>6</sup>	17 <sup>6</sup>	27 <sup>b</sup>	31 <sup>b</sup>
Max 1-Hour Conc. (ppm)	0.27	0.28 <sup>b</sup>	0.24 <sup>b</sup>	0.25 <sup>b</sup>	0.24 <sup>b</sup>	0.22 <sup>b</sup>	0.19 <sup>6</sup>	0.21 <sup>b</sup>	0.15 <sup>6</sup>	0.15 <sup>b</sup>	0.165 <sup>b</sup>
Max 8-Hour Conc. (ppm)*							0.13 <sup>b</sup>	0.17 <sup>b</sup>	0.12 <sup>b</sup>	0.125 <sup>b</sup>	0.136 <sup>b</sup>
			Ca	rbon M	lonoxid	e					
California Standard											
1-Ноиг - 20 ррт	0 <sub>p</sub>	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°
8-Hour - 9.0 ppm	0 <sup>b</sup>	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°
Federal Primary Stand	dards										
1-Hour - 35 ppm	0 <sup>6</sup>	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°
8-Hour - 9.5 ppm	0 <sup>b</sup>	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°
Max 1-Hour Conc. (ppm)	7.0 <sup>b</sup>	7.0°	7.0°	9.0°	6.3°	6.0°	8.0°	6.0°	5.0°	5.0°	4.0°
Max 8-Hour Conc. (ppm)	4.6 <sup>b</sup>	5.9°	6.0°	6.5°	5.9°	4.6°	6.0°	4.6°	4.0°	4.3°	3.25°
			N	itrogen	Dioxid	÷					
California Standard											
1-Hour - 0.25 ppm	00	0 <sup>b</sup>	06	06	06	0 <sup>b</sup>	06	0 <sup>b</sup>	0,	0 <sup>b</sup>	0 <sup>b</sup>
Federal Primary Stan	dards									-	
Annual Standard - 0.053ppm	Not	No <sup>e</sup>	No <sup>c</sup>	No <sup>e</sup>	No <sup>e</sup>	No <sup>e</sup>	No <sup>c</sup>	No <sup>c</sup>	No <sup>e</sup>	No <sup>e</sup>	No <sup>c</sup>
Max. 1-Hour Conc. (ppm)	0.21 <sup>b</sup>	0.14 <sup>b</sup>	0.15 <sup>b</sup>	0.17 <sup>b</sup>	0.20 <sup>b</sup>	0.11 <sup>b</sup>	0.14 <sup>b</sup>	0.116	0.13 <sup>b</sup>	0.15 <sup>b</sup>	0.13 <sup>b</sup>

## Table 5.4-1: Air Quality Monitoring Summary- 1991-2001

Pollutant/Standard					Mon	itoring	Year				
Ource: CARB 1/25/99 (Days Exceeded)	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
			S	ulfur D	ioxide						
California Standard											
1-Hour - 0.25 ppm	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	$0^{d}$	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>
24-Hour - 0.04 ppm	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>đ</sup>	0 <sup>d</sup>	0 <sup>d</sup>
Federal Primary Stand	lards										
24-Hour – 0.14 ppm	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	$0^{d}$	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>
Annual Standard – 0.03 ppm	No <sup>e</sup>	No <sup>e</sup>	No <sup>e</sup>	No <sup>e</sup>	No <sup>e</sup>	No <sup>e</sup>	No <sup>e</sup>	No <sup>e</sup>	No <sup>e</sup>	No <sup>e</sup>	No <sup>e</sup>
Max. 1-Hour Conc. (ppm)	0.05 <sup>d</sup>	0.02 <sup>d</sup>	0.01 <sup>d</sup>	0.03 <sup>d</sup>	0.02 <sup>d</sup>	0.01 <sup>d</sup>	0.01 <sup>d</sup>	0.02 <sup>d</sup>	0.01 <sup>d</sup>	0.02 <sup>d</sup>	0.01 <sup>d</sup>
Max. 24-Hour Conc. (ppm)	0.01 <sup>d</sup>	0.012 <sup>d</sup>	0.001 <sup>d</sup>	0.009 <sup>d</sup>	0.010 <sup>d</sup>	0.007 <sup>d</sup>	0.001 <sup>d</sup>	0.010 <sup>d</sup>	0.010 <sup>d</sup>	0.010 <sup>d</sup>	0.010 <sup>d</sup>
		]	Inhalab	le Parti	culates	(PM <sub>10</sub> )		•			<b>1</b>
California Standard											
24-Hour - 50 μg/m <sup>3</sup>	35 <sup>d</sup>	31°	34 <sup>c</sup>	38°	35°	35°	29°	28°	36°	31°	34°
Annual Geometric Mean (µg/m <sup>3</sup> )	57.7 <sup>4</sup>	48.9°	46.3°	52.7°	50.6°	48.2°	47.6°	41.3°	54.3°	47.1°	43.8 <sup>c</sup>
Federal Primary Stan	dards		,		<b>I</b>	·				•	
24-Hour – 150 μg/m <sup>3</sup>	0 <sup>d</sup>	04	0 <sup>d</sup>	0 <sup>d</sup>	2 <sup>đ</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>
Annual Arithmetic Mean (µg/m <sup>3</sup> ) /m <sup>3</sup> )	63.1 <sup>d</sup>	56.1 <sup>d</sup>	57.1 <sup>d</sup>	60.0 <sup>d</sup>	61.0 <sup>d</sup>	55.1 <sup>d</sup>	53.7 <sup>₫</sup>	50.2 <sup>d</sup>	60.2 <sup>d</sup>	52.6 <sup>d</sup>	60.5 <sup>d</sup>
Max. 24-Hour Conc. (µg/m <sup>3</sup> )	127 <sup>¢</sup>	105 <sup>¢</sup>	143 <sup>d</sup>	147 <sup>d</sup>	178 <sup>d</sup>	130 <sup>d</sup>	122 <sup>d</sup>	101 <sup>d</sup>	116 <sup>d</sup>	108 <sup>d</sup>	105 <sup>d</sup>
			Inhalab	le Parti	culates	(PM <sub>25</sub> )					
Federal Primary Stan	dards										
Annual Standard – 15µg/m³									Yesf	Yesf	Yes <sup>f</sup>
24-Hour – 65 µg/m <sup>3</sup>	1				1				3°	2 <sup>e</sup>	4 <sup>e</sup>
Annual Arithmetic Mean (µg/m <sup>3</sup> ) (µg/m <sup>3</sup> )									25.9 <sup>e</sup>	24.5 <sup>e</sup>	24.3°
Max. 24-Hour Conc. (µg/m <sup>3</sup> )									98.0 <sup>e</sup>	72.9 <sup>e</sup>	74.6°

### Table 5.4-1 (Cont.): Air Quality Monitoring Summary- 1991-2001

Rancho Cucamonga Tentative Tract Map Number 16072 - Draft EiR

Polluta Source: (Days	nt/Standard CARB 1/25/99 Exceeded) 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001
Note: *	1997 is first year of SCAQMD records for federal 8-hour Ozone standard.
ь	Upland air monitoring station (SRA 32) data summaries for ozone, NO2, and Ozone during all years, and CO
	in 1991.
c	San Bernardino monitoring station (also in SRA 34 data summaries for CO during 1992 through 2001.
á	Fontana air monitoring station (SRA 34) data summaries for SOx and PM10 during all years
e	Fontana monitoring station data summaries (SRA 34) for PM2.5. 1999 is first year of SCAQMD records for
1	federal 24-hour PM2.5 standard.
f.	Exceedance of the Annual Standards are expressed as either Yes or No indicating whether or not the standard
	has been exceeded for that year.

In November 1996, the SCAQMD Governing Board adopted a revised AQMP that modified the ozone attainment strategy for the SCAB and presented an attainment strategy for the national PM<sub>10</sub> standard. This revision was submitted by the ARB to the United States Environmental Protection Agency (USEPA) in February 1997 for approval. The 1997 Air Quality Management Plan is the most current Governing Board adopted AQMP.

The California Air Resources Board maintains records as to the attainment status of air basins throughout the state, under both State and Federal criteria. For 2001, the portion of the SCAB within which the project is located is designated as a non-attainment area for ozone and PM<sub>10</sub> under state standards, and as a non-attainment area for ozone, carbon monoxide, and PM<sub>10</sub> under federal standards. AAQS are presented in 5.4-1 Air Quality Monitoring Summary 1991-2001. The AAQS represent the level of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other diseases or illness and persons engaged in strenuous work or exercise, all referred to as "sensitive receptors." SCAQMD defines a "sensitive receptor" as a land use or facility such as schools, child care centers, athletic facilities, playgrounds, retirements homes and convalescent homes.

Both federal and state Clean Air Acts require that each nonattainment arca prepare a plan to reduce air pollution to healthful levels. The 1988 California Clean Air Act and the 1990 amendments to the federal Clean Air Act (CAA) cstablished new planning requirements and deadlines for attainment of the air quality standards within specified time frames. A revised Air Quality Management Plan (AQMP) that reflected these new requirements from the federal and state government was adopted by the SCAQMD in July 1991. The 1994 revision to this plan was adopted by the SCAQMD's Governing Board in September 1994 and incorporated by ARB in the California State Implementation Plan (SIP), in November 1994. The California SIP was fully approved by the EPA in September 1996.
In November 1996, the SCAQMD Governing Board adopted a revised AQMP that modified the ozone attainment strategy for the SCAB and presented an attainment strategy for the national PM<sub>10</sub> standard. This revision was submitted by the ARB to the United States Environmental Protection Agency (USEPA) in February 1997 for approval. The 1997 Air Quality Management Plan is the currently adopted AQMP.

The California Air Resources Board maintains records as to the attainment status of air basins throughout the state, under both State and Federal criteria. For 2001, the portion of the SCAB within which the project is located is designated as a non-attainment area for ozone and  $PM_{10}$  under state standards, and as a non-attainment area for ozone, carbon monoxide, and  $PM_{10}$  under federal standards.

## Project Compliance with Existing Regulations

The Air Quality Management Plan (AQMP) for the SCAB establishes a program of rules and regulations administered by SCAQMD and directed at attainment of the state and national air quality standards.

SCAQMD rules and regulations that apply to this project include SCAQMD Rule 403, which governs emissions of fugitive dust. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites.

SCAQMD Rule 1108 governs the sale and use of asphalt and limits the VOC content in asphalt used in the South Coast Air Basin. Although this rule does not directly apply to the project, it does dictate the VOC content of asphalt available for use during the construction.

SCAQMD Rule 1113 governs the sale of architectural coatings and limits the VOC contents in paints and paint solvents. Although this rule does not directly apply to the project, it does dictate the VOC content of paints available for use during the construction of the buildings.

## 5.4.2 Thresholds of Significance

The State CEQA Guidelines define a significant effect on the environment as "a substantial adverse change in the physical condition which exists in the area affected by the proposed project." In order to determine whether or not the proposed project would cause a significant effect on the environment,

the impact of the project must be determined by examining the types and levels of emissions generated and their impacts on factors that affect air quality. To accomplish this determination of significance, the SCAQMD has established air pollution thresholds against which a proposed project can be evaluated and assist lead agencies in determining whether or not the proposed project is potentially significant. If the thresholds are exceeded by a proposed project, then it should be considered significant.

While the final determination of whether or not a project is significant is within the purview of the lead agency pursuant to § 15064(b) of the State CEQA Guidelines, the SCAQMD recommends that the following air pollution thresholds be used by lead agencies in determining whether the proposed project could result in a significant impact. If the lead agency finds that the proposed project has the potential to exceed these air pollution thresholds, the project should be considered significant. Each of these threshold factors is discussed below.

## Thresholds for Construction Emissions

The following significance thresholds for construction emissions have been established by the SCAOMD. Projects in the South Coast Air Basin with construction-related emissions that exceed any of these emission thresholds should be considered to be significant:

- 2.5 tons per guarter or 75 pounds per day of ROG
- 2.5 tons per guarter or 100 pounds per day of NOx
- 24.75 tons per quarter or 550 pounds per day of CO
- 6.75 tons per guarter or 150 pounds per day of PM<sub>10</sub>
- 6.75 tons per guarter or 150 pounds per day of SOx

## **Thresholds for Operational Emissions**

Specific criteria for determining whether the potential air quality impacts of a project are significant are set forth in the SCAQMD Handbook. The criteria include emissions thresholds, compliance with State and National air quality standards and conformity with existing State Implementation Plan (SIP) or consistency with the current Air Quality Management Plan (AQMP). The daily operational emissions "significance" thresholds are:

## **Regional Emissions Thresholds**

- 55 pounds per day of ROG
- 55 pounds per day of NOx
- 550 pounds per day of CO
- 150 pounds per day of PM<sub>10</sub>
- 150 pounds per day of SOx

Projects in the South Coast Air Basin with operation-related emissions that exceed any of the emission thresholds should be considered to be significant.

## Local Emission Standards

- California State 1-hour CO standard of 20.0 ppm
- California State 8-hour CO standard of 9.0 ppm

The significance of localized project impacts depends on whether ambient CO levels in the vicinity of the project are above or below State and federal CO standards. If ambient levels are below the standards, a project is considered to have significant impacts if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. The SCAQMD defines a measurable amount as 1.0 ppm or more for the 1-hour CO concentration by or 0.45 ppm or more for the 8-hour CO concentrations.

The SCAQMD indicates in Chapter 6 of the CEQA Air Quality Handbook (SCAQMD 1993) (Handbook), that they consider a project to be mitigated to a level of insignificance if its emissions are mitigated below the thresholds provided above.

## **Operational Phase (Secondary Effects)**

The SCAQMD recommends that "additional indicators" should be used as screening criteria with respect to air quality. Relevant additional factors identified in the *Handbook* include the following significance criteria:

- interference with the attainment of the federal or State Ambient Air Quality Standards by either violating or contributing to an existing or projected air quality violation
- generation of vehicle trips that cause a CO "hot spot"
- projects that emit toxic air contaminants (TACs) or for projects that could be occupied by sensitive receptors within ¼ mile of a facility that emits TACs, emissions that individually or cumulatively exceed the maximum individual cancer risk of 10 in 1 million are considered significant.

The SCAQMD indicates in Chapter 6 of the *Handbook* that they consider a project to be mitigated to a level of insignificance if its secondary effects are mitigated below the thresholds provided above.

## Standard Conditions and Uniform Codes

All projects constructed in the South Coast Air Basin are subject to standards conditions and Uniform Codes. Compliance with these provisions is mandatory and as such, does not constitute mitigation under CEQA. Those conditions specific to air quality are included below:

• Adherence to SCAQMD Rule 403, which requires that "...every reasonable precaution (is taken) to minimize fugitive dust emissions..." from grading operations to control particulate emissions, shall be implemented during the grading and construction phase.

- Adherence to SCAQMD Rules 431.1 and 431.2 which require the use of low sulfur fuel for stationary construction equipment.
- Adherence to SCAQMD Rule 1108 which sets limitations on ROG content in asphalt.
- Adherence to SCAQMD Rule 1113 which sets limitations on ROG content in architectural coatings.
- The project shall comply with Title 24 energy-efficient design requirements as well as the provision of window glazing, wall insulation, and efficient ventilation methods in accordance with the requirements of the Uniform Building Code.

Since the project is located within the South Coast Air Basin under the jurisdiction of the SCAQMD and current air quality in the project area is typical of the air basin as a whole, these thresholds are considered valid and reasonable.

## 5.4.3 Project Impacts

## Short-Term Construction-Related Emissions

Short-term emissions will include fugitive dust and other particulate matter, as well as exhaust emissions, generated by earthmoving activities and operation of grading equipment during site preparation (demolition and grading). Short-term emissions will also include emissions generated during construction of the buildings as a result of operation of equipment, operation of personal vehicles by construction workers, electrical consumption, and coating and paint applications. See Appendix B for a complete discussion of assumptions used to calculate the following short-term emissions as a result of the proposed project.

Short-term emissions were evaluated with the URBEMIS 2001, version 6.2.1 computer program. The URBEMIS 2001 model sets default values for worker trips and the use of asphalt and architectural coatings. Model inputs include the projected types of land uses and their square footage areas, the year in which construction is to begin, and the length of the construction period. For the purposes of this analysis as a worst-case scenario, construction is slated to begin in the year 2004 and the construction period is anticipated to require approximately 12 months. Table 5.4-2, summarize the results of these evaluations. See Appendix E for a complete discussion of assumptions used to calculate the following short-term emissions as a result of the proposed project.

Pollution Source	NOX	ço	ROC	SOx1	PW10
Grading and Demolition	NG <sup>I</sup>	NG <sup>I</sup>	NG <sup>1</sup>	NG <sup>1</sup>	122.63
Mobile Grading Equipment	286.93	151.25 <sup>2</sup>	26.20	41.72	41.77
Stationary Equipment	10.28	39.90 <sup>2</sup>	12.60	0.15	0.60
Mobile Construction Equipment	97.96	39.32 <sup>2</sup>	7.49	8.00	7.13
Commuting Traffic	9.86	18.71	6.97	NG <sup>1</sup>	1.89
Architectural Coatings	NG <sup>1</sup>	NG <sup>1</sup>	1 <b>22.11</b>	NG <sup>1</sup>	NG <sup>1</sup>
Asphalt Paving	NG <sup>1</sup>	NG <sup>1</sup>	8.34	NG <sup>1</sup>	NG <sup>1</sup>
Emissions Totals (lbs/day)	405.03	249.18	183.71	49.87	174.02
Emissions Totals (tons/quarter) <sup>3</sup>	13.16	8.10	5.97	1.62	5.65
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr
Exceeds Threshold?	YES	NO	YES	NO	YES
Notes: <sup>1</sup> Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).					

#### Table 5.4-2: Estimated Short-Term Emissions

CO emissions for mobile equipment were calculated from the CEQA Air Quality Handbook.

Quarterly emission totals for all criteria pollutants reflect 65 workdays per quarter of construction activity. Bold = Above SCAOMD Thresholds.

The URBEMIS 2001 model assumes all aspects of construction of the project is additive. In actuality, initial grading, subsequent structure installation, and the application of paints and coatings are typically phased over the construction period and are not strictly additive; though in some largescale projects these phases may overlap. Evaluation of the preceding tables indicates that projected NOx, ROC, and PM<sub>10</sub> emissions are above the SCAQMD recommended daily thresholds and NOx and ROC are above the quarterly thresholds during construction of the first phase of the project. The primary sources of NOx emissions are trucks used for rock removal and importation of concrete. The primary source of ROC emissions is the application of architectural coatings, and the primary source of PM<sub>10</sub> is fugitive dust from earthmoving activities.

## Odors

Odor sensation is a personal response. Not all people are equally sensitive, and they do not always agree about the severity of an odor once it is detected. The human nose is still the best means of determining the strength of an odor. Precise documentation of the strength and nature of an odor is generally unavailable because of the large number of gases involved and their effects on each other. Additionally, odor measurement is difficult because no instrument has been found to successfully measure odor and all its components. The SCAQMD CEQA Handbook recommends that if quantitative analysis is not feasible, as is the case with odors, at minimum the evaluation should be addressed on a qualitative basis. Therefore, the following qualitative analysis was conducted.

The project presents the potential for generation of objectionable odors in the form of diesel exhaust and fumes from painting and asphalt applications during construction of the project in the immediate vicinity of the project site. The closest area with substantial numbers of people is the existing residential development west of Etiwanda Avenue. Local prevailing winds in the area travel from the southwest to northeast. These emissions would rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Recognizing the wind direction and the dispersion of the pollutants, the project will not subject a substantial number of people to objectionable odors.

## Long-Term Emissions

Long-term impacts for the proposed residential subdivision consist of mobile emissions and stationary emissions. Mobile emissions estimates are derived from motor vehicle traffic. Stationary emissions estimates are derived from the consumption of natural gas, electricity, the use of landscape equipment, and the storage and use of consumer products.

Table 5.4-3, is a summary of the total daily long-term project emissions derived by combining both mobile (motor vehicle emissions) and stationary (electrical and natural gas consumption, consumer product use, and emissions resulting from landscaping equipment) emissions at project build out. See Appendix B for a complete discussion of assumptions used to calculate the following long-term emissions as a result of the proposed project.

Pollution Source	NOx (Lbs/Day)	CO (Lbs/Day)	ROC (Lbs/Day)	SOx (Lbs/Day)	PM <sub>10</sub> (Lbs/Day)
Mobile Emissions	59.06	774.62	64.44	0.47	36.20
Electrical Consumption	0.87	1.16	0.06	0.70	0.23
Natural Gas Consumption	4.71	2,00	0.36	NG	0.01
Landscape Emissions	0.06	5.39	0.64	0.16	0.01
Consumer Products	NG	NG	22.38	NG	NG
Emissions Totals	64.70	783.17	87.88	1.33	36.45
SCAQMD Thresholds	55	550	55	150	150
Exceeds Threshold?	YES	YES	YES	NO	NO
Note: NG designates criteria poll	utants that have es	timated negligib	le values.		

Table 5.4-3: Composite Long-Term Emissions

When unmitigated emissions projections are compared with the SCAQMD suggested thresholds for significance, it is shown that long-term emissions exceed the applicable thresholds for NOx, CO and ROC. The primary source of these emissions is mobile emissions from vehicles.

## CO Hot Spot Analysis

In addition to total project emissions quantification, the project needs to be analyzed for the potential to create any localized concentration of pollutants that are in violation of the federal or state ambient air quality standards. These localized concentrations of pollutants are also referred to as "Hot Spots." Carbon Monoxide (CO) was used as an indicator pollutant to determine "Hot Spot" potential because it is a localized problem associated with traffic congestion and idling or slow-moving vehicles. The SCAQMD recommends that projects with sensitive receptors or projects that could negatively impact levels of service (LOS) of existing roads use the screening procedures outlined in the SCAQMD CEQA Air Quality Handbook to determine the potential to negatively impact the LOS on adjacent roadways and therefore, requires a CO hotspot analysis.

The SCAQMD CEQA Air Quality Handbook recommends using CALINE4, the fourth generation California Line Source Roadway Dispersion Model developed by the California Department of Transportation (Caltrans), to estimate 1-hour CO concentrations from roadway traffic. Input data for this model includes meteorology, street network geometrics, traffic information, and emissions generation rates. Meteorological data required includes average temperatures, wind direction, sigma theta (standard deviation of wind direction), and wind speed. Street network geometrics require the use of an x,y coordinate system onto which the modeled roadways can be overlain in order to identify the relative location of traffic lanes to nearby receptors. Total traffic volume of the adjacent roadway segments was calculated using total projected volumes generated from 375 homes combined with future traffic volumes for the year 2020 from the sub-regional travel demand model currently in use for long range planning in San Bernardino County. These calculations were estimated from intersection volumes found in the project specific traffic study for year 2020 (R K Engineering Group 2002) Emission factors were calculated in grams/mile/vehicle using the EMFAC2001 computer model.

Roadway segments in this analysis include:

- East Avenue from Victoria Street to the north project boundary (future north terminus of East Street.),
- Etiwanda Avenue from Highland Avenue to the north terminus of Etiwanda Avenue,
- Wilson Avenue from Day Creek Blvd. to Wardman Bullock Road.,
- Proposed "A" Street from Wilson Avenue to the proposed north terminus within the project,
- Proposed "N" Street from East Avenue to the proposed west terminus within the project,
- Proposed "Q" Street and "U" St. from Etiwanda Avenue to the east terminuses within the project.

The PM peak hour traffic volumes were used in this analysis because they represent the highest traffic volumes. Receptor placement in the CALINE4 model also took into account the location to the roadway network in relation to the planned and existing residential developments. The model procedure that was followed combined the results of the traffic analysis for year 2020 assuming very restrictive dispersion conditions in order to generate a worst-case impact assessment. Output from the CALINE4 model is in 1-hour CO concentrations in parts per million (ppm) at the selected receptor locations. The predicted 1-hour CO concentrations were determined by adding the ambient background 1-hour CO concentrations to the model projected 1-hour CO concentration. The 8-hour CO concentration was estimated by multiplying the 1-hour model estimate by the persistence factor for the project area (0.6) and adding the ambient background 8-hour CO concentration. The results from this screening procedure are presented in Table 5.4-4.

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Table 5.4-4: Microscale CO Concentration
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Receptor/Closest Intersection	Number of Vehicles/hr <sup>1</sup>	Traffic Generated CO Concentration <sup>2</sup>	Distance to Intersection	Background CO Concentration <sup>3</sup>	Estimated CO Concentration*	State Standards	Federal Standards
Worst Case 1-hour Average CO Concentration	ons						
Receptor 1 East Av./ Wilson Av.	1756	0.60 ppm	60 ft.	4.00 ppm	4.60 ppm	20 ppm	35 ppm
Receptor 2 East Av./ North Boundary APN 225-083-14.	1756	0.30 ppm	30 ft.	4.00 ppm	4.30 ррш	20 ppm	35 ppm
Receptor 3 East Av./Proposed "N"St.	1756	0.00 ppm	30 ft.	4.00 ppm	4.00 ррт	20 ррт	35 ppm
Receptor 4 East Av./Proposed "N" St.	1756	0.00 ppm	30 ft.	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 5 Wilson Av./West Boundary APN 225-083-14	308	0.00 ppm	60 ft.	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 6 Wilson Av./Proposed "A"St.	308	0.00 ppm	60 ft.	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 7 Wilson Av./Proposed "A" St.	308	0.00 ppm	60 ft.	4.00 ppm	4.00 ppm	20 ppm	35 ppm
Receptor 8 Wilson Av./Etiwanda Av.	308	0.20 ppm	60 ft.	4.00 ppm	4.20 ppm	20 ррт	35 ppm
Receptor 9 Etiwanda Av./Proposed "U" St.	296	0.50 ppm	30 ft.	4.00 ppm	4.50 ppm	20 ррт	35 ppm
Receptor 10 Etiwanda Av./Proposed "U" St.	296	0.40 ррт	30 ft.	4.00 ppm	4.40 ppm	20 ppm	35 ppm
Receptor 11 Etiwanda Av./Proposed "U" St	295	0.30 ppm	35 ft.	4.00 ppm	4.30 ppm	20 ррт	35 ppm

## Table 5.4-4 (Cont.): Microscale CO Concentrations

Receptor/Closest Intersection	Number of Vehicles/hr <sup>1</sup>	Traffic Generated CO Concentration <sup>2</sup>	Distance to Intersection	Background CO Concentration <sup>3</sup>	Estimated CO Concentration <sup>4</sup>	State Standards	Federal Standards
Worst Case 1-hour Average CO Concentration	ons 🖉		1				
Receptor 12 Etiwanda Av./Proposed "Q" St.	296	0.20 ppm	20 ft.	4.00 ppm	4.20 ррт	20 ppm	35 ppm
Receptor 13 Etiwanda Av./Proposed "Q" St.	2329	0.10 ppm	20 ft.	4.00 ppm	4.10 ppm	20 ppm	35 ppm
Receptor 14 Etiwanda Av./Proposed "Q" St.	2009	0.10 ppm	30 ft.	4.00 ppm	4.10 ppm	20 ppm	35 ppm
Worst Case 8-hour Average CO Concentration	ons						
Receptor 1 East Av./ Wilson Av.	406/943	0.36 ррт	60 ft.	3.25 ppm	3.61 ppm	9 ppm	9.5 ppm
Receptor 2 East Av./ North Boundary APN 225-083-14.	406/8	0.18 ppm	30 ft.	3.25 ppm	3.43 ppm	9 ppm	9.5 ppm
Receptor 3 East Av./Proposed "N"St.	53/53	0.00 ppm	30 ft.	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm
Receptor 4 East Av./Proposed "N" St.	1756	0.00 ppm	30 ft.	3.25 ppm	3,25 ppm	9 ppm	9.5 ppm
Receptor 5 Wilson Av./West Boundary APN 225-083-14	30 <b>8</b>	0.00 ppm	60 ft.	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm
Receptor 6 Wilson Av./Proposed "A"St.	308	0.00 ppm	60 ft.	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm
Receptor 7 Wilson Av./Proposed "A" St.	308	0,00 ppm	60 ft.	3.25 ppm	3.25 ppm	9 ppm	9.5 ppm

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Table 5.4-4	(Cont.):	Microscale CO	O Concentrations
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Receptor/Closest Intersection	Number of Vehicles/hr <sup>1</sup>	Traffic Generated CO Concentration <sup>2</sup>	Distance to Intersection	Background CO Concentration	Estimated CO Concentration <sup>4</sup>	State Standards	Federal Standards
Worst Case 8-hour Average CO Concentrati	ons						
Receptor 8 Wilson Av./Etiwanda Av.	308	0.12 ppm	60 ft,	3.25 ppm	3.37 ppm	9 ppm	9.5 ppm
Receptor 9 Etiwanda Av./Proposed "U" St.	296	0.30 ppm	30 ft.	3.25 ррт	3.55 ppm	9 ppm	9.5 ppm
Receptor 10 Etiwanda Av./Proposed "U" St.	296	0.24 ppm	30 ft.	3.25 ppm	3.49 ppm	9 ppm	9.5 ppm
Receptor 11 Etiwanda Av./Proposed "U" St	296	0.18 ppm	35 fl.	3.25 ppm	3.43 ppm	9 ppm	9.5 ppm
Receptor 12 Etiwanda Av./Proposed "Q" St.	296	0.12 <del>p</del> pm	20 ft.	3.25 ppm	3.37 ppm	9 ppm	9.5 ppm
Receptor 13 Etiwanda Av./Proposed "Q" St.	2329	0.06 ppm	20 ft.	3.25 ppm	3,31 ppm	9 ppm	9.5 ppm
Receptor 14 Etiwanda Av./Proposed "Q" St.	2009	0.06 ppm	30 ft.	3.25 ppm	3,31 ppm	9 ррт	9.5 ppm
Note:       1       Generated from project specific Traffic Study for local streets and Caltrans for freeway segments.         2       Maximum CO 1-hour and 8-hour average concentrations in SRA 32 for 2001         3       Predicted using CALINE4 computer model         4       Traffic generated CO concentrations + background CO concentrations         See Appendix B for CALINE4 output report							

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Assuming worst-case conditions, the estimated 1-hour and 8-hour average CO concentrations in combination with background concentrations are below the State and Federal ambient air quality standards. No CO hot spots are anticipated as a result of traffic generated emissions by the proposed project in combination with other anticipated development in the area.

### **Consistency Analysis**

The Air Quality Management Plan (AQMP) for the SCAB sets forth a comprehensive program that will lead the SCAB into compliance with all federal and state air quality standards. The AQMP control measures and related emission reduction estimates are based upon emissions projections for a future development scenario derived from land use, population, and employment characteristics defined in consultation with local governments. Accordingly, conformance with the AQMP for development projects is determined by demonstrating compliance with local land use plans and/or population projections.

The proposed project complies with the City of Rancho Cucamonga General Plan, which is consistent with the land use information that was the basis for the current AQMP. However, it is noted that the specific analysis indicates that both short-term and long-term emissions as a result of the project are above the SCAQMD thresholds. These emissions remain above the thresholds after implementation of mitigation measures. For this reason, it is appropriate to conclude that the proposed project is not in compliance with the AQMP.

## Localized Sources of Toxic Air Contaminant Emissions

A diesel fueled back-up generator is located at the potable water treatment plant (CCWD) on the south side of Wilson Avenue and would supply power to the critical components at the plant in the event of a power failure. The generator could present long-term exposure of diesel exhaust to future residents on the north side of Wilson Avenue closest to the plant (approximately 200 feet between the water treatment plant fence line to the proposed residential pads on the project site). This diesel fueled back-up generator is approximately 600 hp and will be test run once a week for 15 minutes. SCAQMD Rule 1110.1 limits the operation of the back-up generator to 200 hours per year or less.

The California Air Resources Board (CARB) has designated particulates within diesel exhaust as a toxic air contaminant (TAC). The CARB's Scientific Review Panel has established 3.0 X 10<sup>-4</sup> per  $\mu g/m^3$  as a unit risk value for diesel exhaust particulates. The unit risk value is a theoretical value of contracting cancer over a 70-year life span of exposure. SCAQMD uses a significance standard of 10 in one million as the maximum acceptable health risk.

SCREEN3, a U.S. EPA computer model designed to estimate maximum ground-level concentrations of air contaminants, was used to evaluate potential ambient concentrations of diesel particulates at

varying distances from the back-up generator. It is assumed that the back-up generator is at least 200 feet from the proposed neighboring residential units. Therefore, the model calculated ambient concentrations of diesel particulates at 20-meter intervals starting at 61 meters (approximately 200 feet) and continuing to a 200 meters (approximately 656 feet) distance from the water treatment plant fence line. The model output is in Appendix F.

The unit health risk value assumes constant exposure over a 70-year life span (total of 613,200 hours of exposure). The back-up generator will be test run once a week for fifteen minutes, which equates to a minimum run time of 13 hours per year (total exposure of 910 hours over 70 years). The SCAQMD permit for emergency generators allows a maximum run time of 200 hours per year (total exposure of 14,000 hours over 70 years). Therefore, the model output was multiplied by 0.00148 to convert modeled one-hour concentrations to average annual exposure concentrations if the back-up generator ran the minimum 13 hours per year, and 0.02283 to convert modeled one-hour concentrations to average annual exposure ran the maximum 200 hours per year. Table 5.4-5, Health Risk Assessment, shows individual cancer risks associated with varying run times and distances from the back-up generator.

The model procedure assumed that the back-up generator is operating at the facility fence line and assumed very restrictive dispersion conditions in order to generate a worst-case impact assessment.

Distance From	Ambient Concentration	Unit Risk Factor	Individual Cancer Risk
Health risk Associated	with the Minimum Runtime	of 15 minutes per Week of	f the Back-up Generator
61 Meters (200 ft.)	0.000118 µg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.035 in one million
80 Meters (262 ft.)	0.000078 µg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.023 in one million
100 Meters (328 ft.)	0.000054 µg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.016 in one million
120 Meters (394 ft.)	0.000039 µg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.012 in one million
140 Meters (459 ft)	0.000033 µg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.010 in one million
160 Meters (525 ft.)	0.000031 µg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.009 in one million
180 Meters (591 ft.)	0.000028 µg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.008 in one million
200 Meters (656 ft.)	0.000026 µg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.008 in one million

Table 5.4-5:	Health	Risk	Assessment
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Distance From Generator	Ambient Concentration	Unit Risk Factor	Individual Cancer Risk
Health risk Associated	with the Maximum Runtim	e of 200 hours per Year o	f the Back-up Generator
61 Meters (200 ft.)	0.00182 μg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.546 in one million
80 Meters (262 ft.)	0.00120 µg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.360 in one million
100 Meters (328 ft.)	0.00083 μg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.248 in one million
120 Meters (394 ft.)	0.00060 µg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.180 in one million
140 Meters (459 ft)	0.00050 µg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.150 in one million
160 Meters (525 ft.)	0.00047 µg/m <sup>3</sup>	3.0 X 10 <sup>-1</sup>	0.140 in one million
180 Meters (591 ft.)	0.00043 µg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.130 in one million
200 Meters (656 ft.)	0.00039 µg/m <sup>3</sup>	3.0 X 10 <sup>-4</sup>	0.118 in one million

#### Table 5.4-5 (Cont.): Health Risk Assessment

All of the individual cancer risks are below the SCAQMD maximum threshold of 10 in one millionso long-term diesel emissions from the adjacent generator will not pose a significant health risk to sensitive receptors and the surrounding community within the proposed project.

Considering the concentration and dispersion of the localized levels of CO and the level of health risk associated with localized sources of toxic air contaminants, future residents of the proposed project will not be exposed to substantial pollutant concentrations.

## 5.4.4 Cumulative Impacts

The SCAB is designated a non-attainment area for ozone, carbon monoxide, and PM<sub>10</sub>. As described in the previous discussion of thresholds of significance for air quality impacts, a determination can be made of the project's incremental contribution to cumulative air quality impacts based upon a project's compliance (or lack of compliance) with the AQMP. Compliance with the AQMP is demonstrated by conformance to the two key criteria of consistency-1) the population density of the project is consistent with the population projections used in the AQMP, and 2) project-generated emissions do not exceed the SCAQMD thresholds for short-term and long-term emissions. Although the proposed population density of the project is consistent with the population projections in the AQMP, the project-specific evaluation of emissions presented in the preceding analysis shows that even with recommended mitigation measures, NOx, CO and ROC emissions exceed the recommended SCAQMD threshold. Therefore, the project does not meet the second criteria for consistency with the AQMP. The greatest cumulative impact on regional air quality will be incremental pollutant emissions from increased traffic in the area and increased energy consumption from this project and other planned projects. This will be a significant air quality impact both on a project level and on a regional basis. Ultimate development of the area will generate thousands of

additional vehicle trips per day based on standard trip generation conditions. While this amount of additional pollution can be considered cumulatively considerable, the proposed project will comply with applicable transportation management and emission control measures imposed by the SCAQMD pursuant to the current and pending AQMP. Compliance with the currently adopted (and any future) AQMP is likely to reduce future emissions; however, this impact would remain significant.

## 5.4.5 Mitigation Measures

The following measures shall be implemented to reduce potentially significant impacts to air quality:

- AQ-1 The site shall be treated with water or other soil-stabilizing agents (approved by SCAQMD and RWQCB) daily to reduce PM<sub>10</sub> emissions, in accordance with SCAQMD Rule 403.
- AQ-2 During construction, all haul roads shall be swept according to a schedule established by the City to reduce PM<sub>10</sub> emissions associated with vehicle tracking of soil off-site. Timing may vary depending upon time of year of construction.
- AQ-3 Grading operations shall be suspended when wind speeds exceed 25 mph to minimize PM<sub>10</sub> emissions from the site during such episodes.
- AQ-4 Chemical soil stabilizers (approved by SCAQMD and RWQCB) shall be applied to all inactive construction areas that remain inactive for 96 hours or more to reduce PM<sub>10</sub> emissions.
- AQ-5 The construction contractor shall select the construction equipment used on-site based on low emission factors and high-energy efficiency. The construction contractor shall ensure the construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.
- AQ-6 The construction contractor shall utilize electric or clean alternative fuel powered equipment, where feasible.
- AQ-7 The construction contractor shall ensure that construction-grading plans include a statement that work crews will shut off equipment when not in use.
- AQ-8 The construction contractor shall use low VOC architectural coating during the construction phase of the project.
- AQ-9 During construction of the proposed improvements, temporary traffic control (e.g., flag person) will be provided during soil transport activities. Contractor will be advised not to idle trucks on site for more than ten minutes
- AQ-10 During construction of the proposed improvements, only low volatility paints and coatings as defined in SCAQMD Rule 1113 shall be used. All paints shall be applied using either high volume low pressure (HVLP) spray equipment or by hand application.
- AQ-11 The proposed project will participate in the cost of off-site traffic signal installation and synchronization through payment of the traffic signal fair-share mitigation fee. This fee will be collected and utilized by the City to install and synchronize traffic lights as

needed to prevent congestion of traffic flow on East Avenue between Summit Avenue and the project boundary, and Etiwanda Avenue between Highland Avenue and the north terminus of Etiwanda Avenue.

- AQ-12 All appliances within the residential units of the project shall be energy-efficient as defined by SCAQMD.
- AQ-13 The project proponent shall contact local transit agencies to determine bus routing in the project area that can accommodate bus stops at the project access points and determine locations and feasibility of bus stop shelters provided at project proponent's expense.

## 5.4.6 Level of Significance After Mitigation

In an effort to reduce estimated NOx, CO,  $PM_{10}$  and ROC emissions, a range of mitigation measures for short-term and long-term emissions listed above were considered. The following is a summary of an analysis of emissions after the implementation of mitigation measures. A more detailed explanation of the analysis can be found in the project specific Air Quality Impact Analysis Report located in Appendix E of this document.

## Short-term Emissions

In an effort to reduce estimated short-term emissions of NOx, ROC, and PM<sub>10</sub> emissions a range of reduction measures was considered. Effective emission reduction measures were narrowed to include properly maintaining mobile construction equipment (5% reduction of all mobile equipment emissions), provide temporary traffic control (e.g., flag person) during rock removal and concrete transport activities (5% reduction of all mobile equipment emissions), prohibit truck idling in excess of ten minutes (4% reduction of all mobile equipment emissions), apply low volatility paints as defined in SCAQMD Rule 1113 using either high volume low pressure (HVLP) spray equipment or by hand application (minimum of 65% reduction of architectural coating ROC emissions), and water all unpaved haul roads during construction three times a day (46% reduction in fugitive dust).

Pollution Source	NOx	CO.	ROC	SOx	S. PMin	
'Maximum Daily Emissions (Ibs/day)	351.15	222.50	99.62	42.91	110.76	
Emissions Totals (tons/quarter)	11.41	7.23	3.24	1.39	3.60	
SCAQMD Thresholds	100 lbs/day 2.5 tons/qtr	550 lbs/day 24.75 tons/qtr	75 lbs/day 2.5 tons/qtr	150 lbs/day 6.75 tons/qtr	150 lbs/day 6.75 tons/qtr	
Exceeds Threshold?	YES	NO	YES	NO	NO	
Note: Bold TYPE indicates emissions that are above the SCAOMD Thresholds.						

Table 5.4-6:	Mitigated	Short-Term	Emissions
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As shown in Table 5.4-7, even with the reductions associated with implementation of construction related mitigation measures, the daily and quarterly emissions of NOx and ROC remain above the SCAQMD suggested thresholds.

## Long-term Emissions

Mitigation measures for long-term mobile source emissions include synchronizing traffic lights on streets impacted by the project (reduction of 6% for all emissions) and construct on-site bus turnouts and/or bus stop shelters (reduction of 0.85% for all emissions). A stationary source mitigation measure includes the use of energy-efficient appliances (reduction of 3% for NOx and CO, 2.5% for ROC, and 6.5% for PM<sub>10</sub>). Table 5.4-5 shows the estimated total mitigated long-term emissions. Table 5.4-7, Mitigated Long-Term Emissions shows long-term emissions totals with identified mitigation measures incorporated into the project.

Pollution Source	NOx (Lbs/Day)	CO (Lbs/Day)	ROC (Lbs/Day)	SOx (Lbs/Day)	PM <sub>10</sub> (Lbs/Day)
Mobile Emissions	55.01	721.56	60.03	1.10	33.72
Electrical Consumption	0.85	1.11	0.06	0.70	0.22
Natural Gas Consumption	4.36	1.94	0.34	NG	0.01
Landscape Emissions	0.06	5.39	0.64	0.16	0.01
Consumer Products	NG	NG	22.38	NG	NG
Emissions Totals	60.28	730.00	83.45	1.33	33,96
SCAQMD Thresholds	55	550	55	150	150
Exceeds Threshold?	YES	YES	YES	NO	NO
Note: NG designates criteria polli	itants that have e	stimated negligib	le values.	• • ••••	2

Table	5.4-7:	Mitigated	Long-Term	Emissions
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Even with the mitigation measures described above incorporated into the project NOx, CO and ROC emissions remain above the SCAQMD recommended threshold, and therefore the project may be expected to violate an ambient air quality standard. Accordingly, the proposed project would result in significant unavoidable, air quality impacts is supported.

## 5.5 Noise

The focus of the following discussion addresses existing conditions and potential noise and groundborne vibration effects contributed to and by the proposed project. This discussion is based primarily upon a noise analysis prepared by RK Engineering Group Inc. (October 2002). This report is included as Appendix F.

# 5.5.1 Existing Conditions

Noise is defined as unwanted or objectionable sound. The effect of noise on people can include general annoyance, interference with speech communication, sleep disturbance and, in the extreme, hearing impairment. The unit of measurement used to describe a noise level is the decibel (dB). The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, the "A-weighted" noise scale, which weights the frequencies to which humans are sensitive, is used for measurements. Noise levels using A-weighted measurements are written dBA. Decibels are measured on a logarithmic scale which quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling a traffic volume, would increase the noise level by 3 dBA; a halving of the energy would result in a 3 dBA decrease.

## **Noise Scales**

**Equivalent Noise Level**  $(L_{eq})$ : Since noise levels are seldom constant, varying from moment to moment and throughout the day or night, the A-weighted noise level needs to be further described to provide meaningful data. Noise assessments are often based on the average equivalent energy concept where  $L_{eq(X)}$  represents the average energy content of a fluctuating noise source over a sample period and the subscript (x) represents the period of time in which the energy is computed and measured. For example,  $dBA_{Leq 20 \text{ minutes}}$  would represent the twenty-minute average of A-weighted noise measured in decibels.

**Day Night Noise Level (Ldn):** The Ldn scale represents a time weighted 24-hour average noise level based on the A-weighted decibel scale. Time weighted means that a noise occurring during certain sensitive time periods is penalized for occurring at these times. For the Ldn scale, the nighttime period (10:00 PM to 7:00 AM) noises are penalized by 10 dBA.

**Community Noise Equivalent Level (CNEL):** Noise levels can be further refined into Community Noise Equivalent Level (CNEL), where noise that occurs during certain hours of the evening and night are weighted (penalized) because they are considered subjectively more annoying during these time periods. CNEL is a 24-hour weighted average measure that adds 5 dBA to the average hourly noise levels between 7 p.m. and 10 p.m. (evening hours) and 10 dBA to the average hourly noise levels between 10 p.m. and 7 a.m. (nighttime hours). This weighting accounts for the increased human sensitivity to noise in the evening and nighttime hours.

Sensitive receptors are areas where humans are participating in activities that may be subject to the stress of significant interference from noise. Land uses associated with sensitive receptors often include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, education facilities, and libraries. Other receptors include office and industrial buildings, which are not considered as sensitive as single family homes, but are still protected by local land use compatibility standards.

#### Regulatory Environment State of California Standards

Exhibit 5.5-1 is a land use compatibility chart for community noise prepared by the California Office of Noise Control. It identifies normally acceptable, conditionally acceptable and clearly unacceptable noise levels for various land uses. A conditionally acceptable designation implies new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use is made and needed noise insulation features are incorporated in the design. By comparison, a normally acceptable designation indicates that standard construction can occur with no special noise reduction requirements.

## County of San Bernardino Noise Standards

The San Bernardino County General Plan presents interior and exterior noise level standards for both mobile and locally regulated sources. The overall purpose of the County General Plan is to protect the citizens of the County from the harmful and annoying effects of exposure to excessive noise, and to protect the economic base of the County by preventing the encroachment of incompatible land uses within areas affected by existing noise-producing uses. Under the County General Plan, noise sources which are stationary are regulated under stationary source noise standards which limit the level of noise that can be transmitted from one site to another. These noise level limits are not to exceed the values included in Table 5.5-1 for 30 minutes in any hour. The level may be increased by 5 dBA for 15 minutes, 10 dBA for 5 minutes and 15 dBA for 1 minute in any hour. Noise levels are not to exceed the noise standard plus 20 dBA for any period of time.

		(	CNEL or	LdN (	dBA)	
LAND USE CATEGORY	50	55 60	) 65	70	75	80
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Schools, Libraries, Churches, Hospitals, Nursing Homes		+	<u></u>	<u></u>	<u> </u>	<del>.</del>
	1.2020			(18 <b>9</b> )	_	 
Auditoriums, Concert Halls, Amphitheaters		<u> </u>	1			
Sports Arenas, Outdoor Speciator Sports	1 Alexandre	<u> </u>			ا مەمەرىيى ئېچى ت	
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Playgrounds, Neighborhood Parks				8	<b>C</b>	2
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Golf Courses, Riding Stables, Water Recreation, Cemeteries					C .	
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Office Buildings, Business Commercial and Professional				ं छे ः		1
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Industrial Manufacturing Utilities and Agriculture			- <b></b> (242.0)	<u>200 400</u> 600	<u>.</u> . R. 11	+
madonia, mananavaning, contrios and representato		+	<u> </u>	22	<u> </u>	 ••****
		<u> </u>	ii	1	· · · .	<u>u : : :</u>

Exhibit 5.5-1: City of Ranch	o Cucamonga Land Use	Noise Compatibility Matrix
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- A-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.
- B-Conditionally Acceptable: 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, with closed windows and fresh air supply systems or air conditioning will normally suffice.
- C-Normally Unacceptable: Development should generally be discouraged. If development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
- D-Clearly Unacceptable: Development should generally not be undertaken.

Source: City of Rancho Cucamunga General Plan Noise Element

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Rancho Cucamonga Tentative Tract Map	) Number 16072 – Draft EIR	Noise

With respect to mobile sources, the various types of land uses are limited to exterior Ldn or CNEL values presented in Table 5.5-2. Both residential and commercial land uses are limited to a level of 60 dBA Ldn or CNEL or 65 dBA, if substantially mitigated. This level would apply to any traffic that may pass any sensitive receptors. Open space areas, such as parks and recreational areas are limited to an Ldn or CNEL level of 65 dBA.

### Table 5.5-1: County of San Bernardino Noise Standards Stationary Noise Sources

Affected Land Uses	7:00 a.m 10:00 p.m. Leg (dBA)	10:00 p.m 7:00 a.m. Leg (dBA)
Residential	55	45
Professional Services	55	55
Other Commercial	60	60
Industrial	70	70

dBA - Decibel

Leq (Equivalent Energy Level) – The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period, typically 1, 8 or 24 hours.

1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	Land Use	Ldn (or C	NEL), dBA
Categories	Uşes	Interior <sup>®</sup>	Exterior
Residential	Single and multi-family, duplex, mobile homes	45	60°
Commercia!	Hotel, motel, transient housing	45	60°
	Commercial retail, bank, restaurant	50	п/а
	Office building, research and development, professional offices	45	65
	Amphitheater, concert hall, auditorium, movie theater	45	n/a
Institutional/Public	Hospital, nursing home, school classroom, church, library	45	65
Open Space	Park	n/a	65

#### Table 5.5-2: County of San Bernardino Noise Standards and Adjacent Mobile Noise Sources

#### Table 5.5-2 (Cont.): County of San Bernardino Noise Standards and Adjacent Mobile Noise Sources

Land Use Ldn (or CNEL), dBA
Categorias Uses Interior Exterior
n/a – Not applicable dBA Decibel CNEL -Community Noise Equivalent Level Ldn Day-night average sound level <sup>a</sup> Indoor environment excluding: bathrooms, kitchens, toilets, closets and corridors <sup>b</sup> Outdoor environment limited to: Private yard of single-family dwellings Park picnic areas Multi-family private patios or balconiesSchool playgrounds
<ul> <li>Mobile home parks Hotel and motel recreational areas</li> <li>Hospital/office building patios</li> <li><sup>6</sup> An exterior noise level of up to 65 dB (or CNEL) will be allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dB Ldn (or CNEL) with windows and doors closed. Requiring that windows and doors remain closed to achieve an acceptable interior noise level will necessitate the use of air conditioning or mechanical ventilation.</li> </ul>

### City of Rancho Cucamonga Noise Standards

The City of Ranch Cucamonga's noise standards are included in the City's Development Code for each land use district, as presented in Table 5.5-3. Additionally, the City has adopted a Noise Abatement section of the Development Code (Section 17.02.120) that has special provisions for determining and addressing noise issues. The City provides for an exemption from the noise guidelines when construction activity is limited to the hours of 6:30 a.m. to 8:00 p.m. excluding Sundays and all national holidays. (City Development Code Section 17.08.080(C)(2)) If the project would deviate from the criteria stated above this would result in a violation of the City Noise Ordinance and the project would result in significant noise impacts.

Land Use	Interior Standards	Exterior Standards
Residential		
-10pm to 7am	40dBA	45dBA
-7am to 10pm	55dBA	60dBA
Commercial/Office		
-10pm to 7am	None Identified	60dBA
-7am to 10pm	None Identified	65dBA
Industrial		
-Class A (industrial park)	60Ldn	65Ldn
-Class B (general industrial)	65Ldn	751.dn

	Table	5.5-3:	Land	Use	Noise	Standards
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Land Use	Interior Standards	Exterior Standards
-Class C (heavy industrial)	65Ldn	85Lda
dBA – Decibel Ldn = Day-night average sound level		

#### Table 5.5-3 (Cont.): Land Use Noise Standards

#### Existing Noise Levels Onsite Noise Environment

Limited sources of onsite noise exist within the essentially vacant project site. Adjacent land uses that can be considered noise sources in the project area include residential uses, Etiwanda Avenue immediately west and southwest of the project site, and the Cucamonga County Water District (CCWD) Water Treatment Plant immediately south of the project site.

### Offsite Noise Environment

Existing sources of offsite noise within the project area are primarily backyard activities at residential areas in close proximity to the project site, vehicular traffic on Etiwanda Avenue immediately west of the project, and the Cucamonga County Water District (CCWD) Water Treatment Plant south of the project. Portions of the project site adjacent to the intersection of Etiwanda Avenue at Wilson Avenue were considered to have the highest existing noise levels because of the traffic conditions on Etiwanda Avenue, the close proximity to residential land uses, and the CCWD Water Treatment Plant. Table 5.5-4 shows existing and baseline (opening year without project) noise levels at various roadway segments in the project vicinity.

Roadway	Segment	Existing CNEL at 100 feet (dBA) <sup>2</sup>	Baseline CNEL at 100 feet (dBA) <sup>2</sup>
Wilson Avenue	w/o Etiwanda Avenue West	54.1	55.7
Wilson Avenue	w/o Etiwanda Avenue East	59.3	60.0
Wilson Avenue	e/o East Avenue		
Summit Avenue	w/o Etiwanda Avenue	58.6	59.7
Summit Avenue	East Avenue to Etiwanda Avenue	60.3	60.9
Summit Avenue	e/o East Avenue	60.3	62.2
Highiand Avenue	w/o Etiwanda Avenue	65.5	63.7
Highland Avenue	East Avenue to Etiwanda Avenue	59.1	59.7
Victoria Street	East Avenue to Etiwanda Avenue	58.5	59.6
Victoria Street	e/o East Avenue	60.4	61.1

Table 5.5-4:	Existing 2	2	Baseline	No	ise	Contou	$rs^1$
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Roadway	Segment	Existing GNEL at / 100 feet (dBA)?	Baseline CNEL at 100 feet (dBA) <sup>2</sup>
Etiwanda Avenue	Summit Avenue to Wilson Avenue	59.8	60.1
Etiwanda Avenue	SR-210 Freeway to Summit Avenue	63.6	64.0
Etiwanda Avenue	Victoria Street to Highland Avenue	61.1	61.7
East Avenue	Summit Avenue to Wilson Avenue	52.0	58.6
East Avenue	SF-210 Freeway to Summit Avenue	56.5	58.6
East Avenue	Victoria Street to Highland Avenue	60.7	61.0
<sup>1</sup> Existing noise contour	s and baseline contours (i.e., opening year without	ut project traffic) are mod	leled using the traffic

#### Table 5.5-4 (Cont.): Existing & Baseline Noise Contours<sup>1</sup>

<sup>1</sup> Existing noise contours and baseline contours (i.e., opening year without project traffic) are modeled using the traffic data provided in the Etiwanda Properties (TTM 16072) Traffic Impact Analysis 6/17/02.

<sup>2</sup> Measured from the centerline of the street.

— Not built yet.

## 5.5.2 Thresholds of Significance

A project will have a significant noise effect on the environment if it meets both of the following criteria:

- · increase substantially the ambient noise levels for adjoining areas, and
- conflict with adopted environmental plans and goals of the community where it is located

The applicable noise standards governing the project site are the City of Rancho Cucamonga Noise Standards. Mobile sources of noise, such as truck deliveries are exempt from local ordinance but are still subject to CEQA and would be significant if the project generates a volume of traffic which would result in a substantial increase in mobile source-generated noise or sites sensitive land uses in incompatible noise areas.

CEQA does not define what is a "substantial increase". Webster's dictionary defines substantial as "considerable in quantity." As noted above in the discussion of noise definitions, the human ear can detect changes of 3 dBA and changes of less than 3 dBA, while audible under controlled circumstances, are not readily discernable in an outdoor environment. Thus, a change of 3 dBA is considered as a barely audible change. But CEQA uses a "substantial change" as its criterion. Because most people can readily hear a change of 5 dBA CNEL in an exterior environment, this value was established for the project as the CEQA criterion for substantial change for project only noise levels. A project is considered to contribute substantially to a significant cumulative noise impact if the project contributes a noise level of 3 dBA CNEL or greater. As a point of reference, Caltrans defines a noise increase as substantial when the predicted noise levels with the project would exceed existing noise levels by 12 dBA Leq.

## 5.5.3 Project Impacts

The generation of noise associated with the proposed project would occur over the short-term for site preparation and construction activities to implement the proposed project. In addition, noise would result from the long-term operation of the project. Both short-term and long-term noise impacts associated with the project are examined in this analysis.

### Short-Term, Construction-Related Impacts

Noise levels associated with construction activities would be higher than the ambient noise levels in the project area today, but would subside once construction of the proposed project is completed.

Two types of noise impacts could occur during the construction phase. First, the transport of workers and equipment to the construction site would incrementally increase noise levels along site access roadways. Even though there would be a relatively high single event noise exposure potential with passing trucks (a maximum noise level of 86 dBA at 50 feet), the increase in noise would be less than 1 dBA when averaged over a 24-hour period, and would, therefore, have a less than significant impact on noise receptors along the truck routes.

The second type of impact is related to noise generated by on-site construction operations, and local residents would be subject to elevated noise levels due to the operation of this equipment. Construction activities are carried out in discrete steps, each of which has its own mix of equipment, and consequently its own noise characteristics. These various sequential phases would change the character of the noise levels surrounding the construction site as work progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow noise ranges to be categorized by work phase. Table 5.5-5 lists typical construction equipment noise levels recommended for noise impact assessment at a distance of 50 feet.

The grading and site preparation phase tends to create the highest noise levels, because the noisiest construction equipment is found in the earthmoving equipment category. This category includes excavating machinery (backfillers, bulldozers, draglines, front loaders, etc.) and earthmoving and compacting equipment (compactors, scrapers, graders, etc.) Typical operating cycles may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Noise levels at 50 feet from earthmoving equipment range from 73 to 96 dBA while Leq noise levels range up to about 89 dBA. The later construction of structures is somewhat reduced from these values and the physical presence of the structure may break up line-of-sight noise propagation.

Type of Equipment	Range of Sound Levels Measured (dBA at 50 feet)	Suggested Sound Levels for Analysis (dBA at 50 feet)
Pile Drivers, 12,000-18,000 ft-lb/blow	81-96	93
Rock Drills	83-99	96
Jack Hammers	75-85	82
Pneumatic Tools	78-88	85
Pumps	68-80	77
Dozers	85-90	88
Tractor	77-82	80
Front-End Loaders	86-90	88
Hydraulic Backhoe	81-90	86
Hydraulic Excavators	81-90	86
Graders	79-89	86
Air Compressors	76-86	86
Trucks	81-87	86
Source: Noise Control for Buildings and Manufa	cturing Plants, BBN 1987.	

Table 5.5-5: Noise Associated with Typical Construction Equipme
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Existing residential lots are located approximately 24 feet west of the southwestern portion of the project site. These residential lots have fences along their properties; however, these fences are a combination of block wall and iron-rod fence that do not attenuate noise levels because the line-of-sight between a future construction noise source and the residence is not broken. Therefore, during project construction activities within the first 10 feet of the western boundary of the project site, noise levels could periodically exceed the levels identified above in Table 5.5-4. During the majority of the construction period, noise levels would be 30 to 40 dBA lower, ranging from 50 to 60 dBA, due to lower power settings and sound attenuation effect provided by longer distances to the construction equipment activities.

The City recognizes that construction noise is difficult to control and establishes allowable hours for this intrusion. Section 17.02.120 of the Development Code exempts noise sources associated with, or vibration created by, construction, repair, remodeling, or grading of any real property or during authorized seismic surveys, provided said activities do not take place between the hours of 8 p.m. and 6:30 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday. The project applicant is expected to comply with the construction time frames identified in the City's Development Code. Construction noise effects created during these time frames are considered less than significant.

Another potential impact of construction is that of vibration. Groundborne vibration is typically associated with blasting operations and potentially, the use of pile drivers.

#### Long-term Operational Impacts Onsite Impacts

An impact may be significant if the project sites a land use (i.e., residential) in an incompatible area due to excessive noise. The City has set a desirable daytime level of 60 dBA CNEL for residences. Based on the future (Buildout Year 2020) traffic volumes identified in Section 5.3, noise levels were calculated along the existing and future streets adjacent to the project site. These streets include Etiwanda Avenue, Wilson Avenue, and East Avenue. All of the residences proposed on the perimeter of the project site will be exposed to future year 2020 vehicular noise that range between 64.3 to 68.4 dBA CNEL. This future noise levels would result in significant noise impacts to the residences proposed on the perimeter of the site and adjacent to Etiwanda Avenue, Wilson Avenue, and East Avenue.

## Offsite Impacts

Table 5.5-6 shows noise levels along the same roadway segment analyzed under existing conditions, for opening year with and without the project. Based on the threshold for significant impacts established previously, the project would not contribute to a significant impact at any of the roadways at opening year.

Roadway	Segment	CNEL at 100	Feet (dBA)	Denioat	Project	
		Without Project	With Project	Contribution	Contribution Significant?	
Wilson Avenue	w/o Etiwanda Avenue West	55.7	57.3	I.6	No	
Wilson Avenue	W/o Etiwanda Avenue East	60.0	60.9	0.9	No	
Wilson Avenue	e/o East Avenue	not built yet	not built yet		No	
Summit Avenue	w/o Etiwanda Avenue	59.7	59.7	0.0	No	
Summit Avenue	East Avenue to Etiwanda Avenue	60.9	60.9	0.0	No	
Summit Avenue	e/o East Avenue	62.2	62.7	0.5	No	
Highland Avenue	w/o Etiwanda Avenue	63.7	64.0	0.3	No	
Highland Avenue	East Avenue to Etiwanda Avenue	59.7	59.7	0.0	No	
Victoria Street	East Avenue to Etiwanda Avenue	59.6	59.6	0.0	No	

## Table 5.5-6: Opening Year Project Contributions

Roadway	Ségment	CNEL at 100	Feet (dBA)	Project Contribution	Project Contribution Significant?
		Without Project	With Project		
Victoria Street	e/o East Avenue	61.1	61.4	0.3	No
Etiwanda Avenue	Summit Avenue to Wilson Avenue	60.1	61.1	1.0	No
Etiwanda Avenue	SR-210 Freeway to Summit Avenue	64.0	64.4	0.4	No
Etiwanda Avenue	Victoria Street to Highland Avenue	61.7	62.0	0.3	No
East Avenue	Summit Avenue to Wilson Avenue	58.6	60.3	1.7	No
East Avenue	SF-210 Freeway to Summit Avenue	58.6	59.6	1.0	No
East Avenue	Victoria Street to Highland Avenue	61.0	61.6	0.6	No

Table 5.5-6	(Cont.): 0	Dpening	Year Pro	ject Contributions
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## 5.5.4 Cumulative Impacts

### **Onsite Impacts**

Implementation of the proposed project and future developments in the project vicinity will result in vehicular traffic noise levels that were evaluated in Section 5.5.3 (i.e., Onsite Impacts). As discussed, future (Year 2020) traffic noise levels generated from the proposed project and other developments in the project vicinity will result in significant noise levels affecting the project residences proposed along Etiwanda Avenue, Wilson Avenue, and East Avenue.

## **Offsite Impacts**

Table 5.5-6 shows project contribution to noise levels for the year 2020. As shown, the project will not contribute to a significant cumulative impact at any of the analyzed segments.

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Roadway	Segment	Without Project	With Project	Contribution	
Wilson Avenue	w/o Etiwanda Avenue West	59.9	60.6	0.7	No
Wilson Avenue	W/o Etiwanda Avenue East	62.8	63.3	0.5	No
Wilson Avenue	e/o East Avenue	63.6	63.8	0.2	No
Summit Avenue	w/o Etiwanda Avenue	63.1	63.1	0.0	No

Table 5.5-7: Year 2020 Project Contribution

Rancho Cucamonga	Tentative	Tract Map	Number	16072-	Draft EIR

	Segment	CNEL at 100	Feet (dBA)	Project Contribution	Project Contribution Significant?
Roadway		Without Project	With Project		
Summit Avenue	East Avenue to Etiwanda Avenue	62.8	62.8	0.0	No
Summit Avenue	e/o East Avenue	63.9	64.0	0.1	No
Highland Avenue	w/o Etiwanda Avenue	64.8	65.0	0.2	No
Highland Avenue	East Avenue to Etiwanda Avenue	62.1	62.1	0.0	No
Victoria Street	East Avenue to Etiwanda Avenue	62.9	62.9	0.0	No
Victoria Street	e/o East Avenue	63.8	64.0	0.2	No
Etiwanda Avenue	Summit Avenue to Wilson Avenue	61.5	62.3	0.8	No
Etiwanda Avenue	SR-210 Freeway to Summit Avenue	66.0	66.3	0.3	No
Etiwanda Avenue	Victoria Street to Highland Avenue	64.4	64.6	0.2	No
East Avenue	Summit Avenue to Wilson Avenue	61.8	62.5	0.7	No
East Avenue	SF-210 Freeway to Summit Avenue	63.7	64.0	0.3	No
East Avenue	Victoria Street to Highland Avenue	62.6	63.0	0.4	No

## 5.5.5 Mitigation Measures

While construction and grading activities are exempt from the City of Rancho Cucamonga Development Code, if conducted between the hours of 6:30 a.m. and 8:00 p.m. Monday through Saturday and no construction activities on Sundays and national holidays, the following mitigation measures are recommended to reduce potential construction-related noise.

- **N-1** During all project site excavation and grading, the project contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufactures standards.
- N-2 When construction operations occur in close proximity to occupied residential areas, appropriate additional noise reduction measures shall be implemented, including: changing the location of stationary construction equipment to maximize the distance between stationary equipment and occupied residential areas, installing muffling devices on equipment, shutting off idling equipment, notifying adjacent residences in advance of

construction, and installing temporary acoustic barriers around stationary construction noise sources.

- **N-3** The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction related noise and the noise-sensitive receptors nearest the project site during all project construction.
- N-4 During all project site construction, the construction contract shall limit all construction related activities that would result in high noise levels to between the hours of 6:30 a.m. and 8:00 p.m. Monday through Saturday. No construction shall be allowed on Sundays and public holidays.

The following mitigation measures are required to reduce potential long-term vehicular traffic noise levels on the project site.

- **N-5** The project applicant shall construct sound barriers adjacent to the project lots as shown in Exhibit 5.5-2. The heights of the sound barriers shall be between 3 and 6.5 feet and placed at the top of the proposed slope and at the edge of pads on the residential lots that border Etiwanda Avenue, Wilson Avenue, and East Avenue. The sound barriers may be constructed of earthen berms, masonry, wood, or other similar materials, or combination of these materials to attain the total height required. These sound barriers shall be solid, with no openings from the ground to the indicated height.
- N-6 Prior to the issuance of a building permit, residential structures proposed on all lots adjacent to Etiwanda Avenue, Wilson Avenue, and East Avenue will require mechanical ventilation so that windows can remain closed. Furthermore, these residential lots will require upgraded windows such as double-pane windows, if these lots have second story structures. To ensure the specific type of mechanical ventilation and paned windows are included in the building plans, a final acoustical study shall be prepared for City approval prior to approval of Development Review applications for product development. The final acoustical study shall identify the specific requirements to reduce future interior noise levels to 45 dB CNEL or less.

## 5.5.6 Level of Significance After Mitigation

Implementation of the above mitigation measures will reduce potential short-term and long-term noise impacts to less than significant.

#### 5.6 Aesthetics

The following analysis addresses visual resources in the project vicinity and the potential for visual impacts to occur as a result of implementing the proposed project. An evaluation of the local policies and goals was conducted to help determine the value of an area's scenic vista as perceived by the local community. The information provided in the General Plans for the City of Rancho Cucamonga and the County of San Bernardino was used to determine the local significance of the area's visual character.

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## 5.6.1 Existing Conditions

The project site is located in the north Etiwanda area of unincorporated San Bernardino County, just north of the City of Rancho Cucamonga and within the City's Sphere of Influence. This area is located on an alluvial fan at the base of the San Gabriel Mountains and provides a dramatic and significant backdrop to the community. Currently the project site is comprised of a natural vegetation community largely comprised of sage scrub species and several mature trees.

The visual character of the site is a gentle slope from the northwest to the southeast on the Etiwanda Alluvial Fan. The site is covered with native vegetation, and a prominent ridge, known as the Etiwanda Avenue Scarp, travels across the project site in a northeasterly direction. Significant scenic view corridors exist within this area which include panoramic views of the San Gabriel mountains and the City.

The project area may be viewed as a backdrop to the San Bernardino National Forest and the San Gabriel Mountains for many residents and visitors to the region. The project site is within the Etiwanda North Specific Plan area. The Etiwanda North Specific Plan identifies Wilson Avenue and East Avenue as view corridors. The City of Rancho Cucamonga and County of San Bernardino have also designated Wilson Avenue as a scenic corridor in their respective General Plans. The scenic corridor designation was established to ensure that development along Wilson Avenue preserves the scenic quality of this view corridor. Key viewsheds for enjoying the San Gabriel Mountains arc located along Wilson Avenue west of Wardman Bullock Road and east of San Sevaine. A third mountain viewshed is located west of Day Creek Boulevard.

The project site is at a transition point within the project area. Development in the North Etiwanda area is changing the formerly natural landscape. Residential development is ongoing to the west and south of the project area. A water treatment plant is located immediately south of the project site, with additional residential development to the south of the treatment plant. The panoramic views of the valley area are also shifting from natural vegetation to developed urban areas.

Properties to the north and immediate east of the site are presently undeveloped. Under the City's General Plan, conservation areas have been established along the base of the San Gabriel Mountains and include the U.S. Forest Service Conservation Area and the North Etiwanda Preserve. The San Sevaine Preserve lies to the north and east of the project site. These conservation areas continue to provide a natural backdrop to the scenic mountain vista.

Photographs of the project site and surrounding area were taken. A location index of the photographs is provided in Exhibit 5.6-1. Photographs of the various features described above are located in Exhibit 5.6-2 and Exhibit 5.6-3.

## 5.6.2 Thresholds of Significance

A determination that a change in visual character and aesthetics of a project site is subjective. For purposes of this analysis, an impact on visual and aesthetic nature of the project area is considered to be significant if the project would:

- Have a substantial adverse effect on a scenic vista;
- Substantially degrade the existing visual character or aesthetic quality of the site and its surroundings.

## 5.6.3 Project Impacts

## Short-Term Impacts

Construction activities associated with the proposed project will result in the removal of the natural vegetation on the project site. The proposed grading on the project site is planned to occur within eight months from issuance of a grading permit. Scrapers, bulldozers, and graders will be visible during the grading operations. The existing visual characteristics of the natural vegetation on the project site will be removed and some additional views of the base of the San Gabriel Mountains will be provided. The residents located west of the project site will experience the greatest change in the visual character; however, the proposed construction activities are not expected to result in a substantial degradation of existing visual characteristics. Therefore, the proposed construction activities would result in a less than significant visual impact on the adjacent residents.

## Long-Term Impacts

Implementation of the proposed residential community will substantially alter the existing character of the project site. Views from Wilson Avenue to the north are of the San Gabriel Mountains and the alluvial fan. The proposed residences will include similar structural heights as the adjacent residential communities. In addition, the proposed project will be consistent with the landscape policies and design standards identified in the Etiwanda North Specific Plan. These policies ensure a smooth visual transition for development yet retain the area's rural character. Greenbelts are proposed on the



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00180027 • 11/2003 | 5.6-1\_Photo Index Map.cdr


Photograph 1: View to the north from Wilson Avenue.



Photograph 2: View to the northeast from Wilson Avenue.



# Exhibit **5.6-2** Site Photographs 1 and 2

00180027 • 11/2003 | 5.6-2\_ Site Photographs 1 and 2.cdr

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072







# Exhibit **5.6-3** Site Photographs 3 and 4

00180027 • 11/2003 | 5.6-3\_Site Photographs 3 and 4

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

project site to soften the impact of residential structures and rows of trees are proposed to be planed to the east and south of the development to minimize visual impacts. The project includes the extension of the community trail through the center of the project site. The trail will be landscaped to provide shade and visual character to the Community Trail.

Paved roadways would be placed within the project and to the east (East Avenue) and south (Wilson Avenue) of the project. The scenic vista, looking north from Wilson Avenue, would be permanently altered as a result of this project.

Existing conservation areas, such as the North Etiwanda Preserve and the U.S. Forest Service will preserve the natural visual character of the North Etiwanda area, however, the proposed project will partially obscure the views of these natural environments to residents and travelers along Wilson Avenue. Views of the natural environment will still be found east of the site near the San Sevaine Preserve. The proposed project could potentially create significant aesthetic impacts to the area.

Streetlighting, security lighting, and residential lighting would be installed creating a new source of light and glare in the area. Areas to the west and south of the project site have been developed and currently provide sources of nighttime glare.

### 5.6.4 Cumulative Impacts

Future developments in the project vicinity (i.e., north, south, and west) will permanently alter the visual landscape of this region and obscure panoramic vistas. As part of urbanization, new streets will be developed and new lighting sources will be added increasing nighttime glare. Cumulative impacts to views and aesthetics in the project vicinity are considered to be significant. Development of the proposed project would contribute to significant cumulative impacts to views and aesthetics in the project vicinity.

### 5.6.5 Mitigation Measures

The City has provided for the protection of essential view corridors which provide valuable vistas of the San Gabriel Mountains as well as vista points of the community. In the City's EIR for the General Plan Update, the City determined that the conversion of open space to urban uses result in a potential significant visual impact.

In the City's EIR for the General Plan Update, mitigation measures were established to minimize impacts to the area's visual character. Mitigation measures which apply to the preservation of scenic vistas are as follows:

- AES-1 The applicant shall install landscaping and perimeter walls prior to issuance of building permits for the following phases and locations as shown on the Project Phasing Plan (Exhibit 3-8):
  - Phase 1-Along Wilson and Etiwanda Avenues.
  - Phase 2-Along Wilson Avenue
  - Phase 3- Along Etiwanda Avenue
  - Phase 4- Along East Avenue
- AES-2 Prior to approval of a landscape plan, the project applicant shall provide transitions between the developed and natural (unbuilt) environment through landscaping techniques.
- **AES-3** Prior to approval of a landscape plan, the project applicant shall ensure that streetscape design along the roadways adjacent to the project site create a strong landscaped edge, provides a coherent high-quality appearance along a particular route, and enhances the image of adjacent development.
- **AES-4** The project applicant shall provide for the undergrounding of utility lines and facilities, wherever feasible, to minimize the unsightly appearance of overhead utility lines and utility enclosures.
- AES-5 Prior to approval of a landscape plan, trees and structures shall be used to frame and orient such views at key locations, and obstruction of views should be kept to a minimum along Etiwanda Avenue and East Avenue.

### 5.6.6 Level of Significance After Mitigation

Implementation of the above measures will reduce visual impacts associated with the development of the proposed project to less than significant. However, the project will still contribute to a significant cumulative impact due to the multiple residential developments that are planned to occur along the view corridor within the next several years.

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### 5.7 Cultural Resources

This section summarizes information contained in an archaeological and paleontological resource evaluation and significance assessment of the project site prepared by Michael Dice, M.A. Senior Archeologist, Michael Brandman Associates in June 2003. The report includes a cultural resource records search, field survey, paleontological records search and archaeological/historical significance test for the project Area of Potential Effect (APE). The complete report can be found in Appendix G of this EIR

### 5.7.1 Existing Conditions

#### Prehistoric and Ethnographic Background

The Paleo-Indian Period of North America (~13,000-11,000 Years Before Present, YBP) Little is known of Paleo-Indian peoples in the California archaeological record, and the culture history of this period generally follows that described for North America as a whole. Current thinking suggests that the period begins with the crossing of man from Siberia, following a route from the Bering Strait into Canada and the Northwest Coast some time after the Wisconsin Ice Sheet receded (~14,000 YBP) and before the Beringia land bridge was submerged (~12,000 YBP). The timing, manner and location of the crossing is under great dispute, but the initial migration probably occurred as a result of a reduction of the Laurentide ice sheet along the Alaskan Coast and interior Yukon. With the possible exception of the Meadowcroft Rockshelter, an unequivocally dated human settlement in North America is unknown prior to the earliest defined date from the Clovis complex (~11,200 YBP: Fagan 1995). This includes the controversial Monte Verde Creek site in Chile and the Meadowcroft rockshelter. Both sites exhibit early levels dated roughly at 12,000 YBP.

Most of the known California Late Paleo-Indian/early Archaic sites are located near extinct desert valley lakes, caves and on the Channel Islands off the coast. These consist of occupation sites, butchering stations and burials. Late Paleo-Indian/early Archaic burials are known along the southern California coast (Chartkoff and Chartkoff 1984). As glaciation receded, large stream-fed lakes were left behind throughout the American West. Many early sites in California are known along these dry lake margins. Dates are generally late (e.g. Moratto 1984) relative to other Paleo-Indian sites in North America. Lakeshore occupation sites exhibit artifacts such as large projectile points (Clovis, Folsom), debitage, and fire-cracked rock concentrations.

The Paleo-Indian period ends with a marked extinction of large game native to North America and a modification of the prehistoric toolkit. The late Pleistocene-early Holocene geologic period (~11,000 YBP) in California is marked by generally warmer temperatures in desert valleys and less precipitation in mountainous areas.

#### The Archaic Period (~11,000-2,500 YBP)

Most of the known California Late Paleo-Indian/early Archaic sites are located near extinct desert valley lakes, caves and on the Channel Islands. These consist of occupation sites, butchering stations and burials. Late Paleo-Indian/early Archaic burials are known along the southern California coast (Chartkoff and Chartkoff 1984). As the glaciers receded, large stream-fed lakes were left behind throughout the American West. Many early sites in California are known along these dry lake margins in the Mojave Desert. Dates are generally late (e.g. Moratto 1984) relative to other Paleo-Indian sites in North America. Lakeshore occupation sites exhibit artifacts such as large projectile points (Clovis, Folsom), debitage, and fire-cracked rock concentrations.

#### The Late Prehistoric Period (~2,500 YBP- A.D.1769)

The late prehistoric period was characterized by the increasing importance of acorn processing, in addition to other hunting and gathering. Meighan (1954) identified the period after AD 1400 as the San Luis Rey complex. San Luis Rey I (AD 1400 – 1750) is associated with bedrock mortars and milling-stones, cremations, small triangular projectile points with concave bases, and Oilvella beads. The San Luis Rey II (AD 1750-1850) period is marked by the addition of pottery, red and black pictographs, cremation urns, steatite arrow straighteners, and non-aboriginal materials (Meighan 1954:223, Keller and McCarthy 1989:6). The San Luis Rey complex most likely represents the forbearers of the Luiseño (Bean and Shipek 1978:550). Work at Cole Canyon and other sites suggests that the origins of this complex, and of the ethnographically described lifeway of the native people of the region, is believed to have been well established by at least AD 1000 (Keller and McCarthy 1989:80).

#### Indigenous Native American Presence

According to Bean and Smith (1978), the project area lies in the western portion of an area utilized by the Gabrielino. Kroeber (1925) and Bean and Smith (1978) form the primary historical sources for this group. The arrival of Spanish explorers and the establishment of missions and outposts during the 18th century ended the prehistoric period in California and, due to the introduction of diseases such as smallpox and mass removal of local Indian groups to the Missions San Gabriel and Mission San Juan Capistrano, Gabrielino society began to fragment. The project area lies within an area near the Santa Ana Rifer floodplain that is clearly defined as Gabrielino territory: the Juaneno group lies several dozen miles to the southeast.

The Gabrielino spoke a language that belongs to the Cupan group of the Takic subfamily of the Uto-Aztecan language family (a language family that includes the Shoshoean groups of the Great Basin). The total Gabrielino population at about 1770 AD was roughly 5,000 persons, based on an estimate of 100 small villages of 50-200 people apiece. Their range is generally thought to have been located on the Pacific coast from Malibu to San Pedro Bay and south to Aliso Creek, then east to Temescal Canyon, then north to the headwaters of the San Gabriel River. Also included were several islands, including Catalina. This large area encompasses the city of Los Angeles, much of Rancho 1/9/2024 Board Meeting

Cucamonga, Corona, Glendale, and Long Beach. By 1800, most Gabrielinos had either been killed, or fully subjugated by their Spanish conquerors,

The first modern social analyses of Gabrielino culture took place in the early part of the 20th century (Kroeber 1925), but by that time acculturation and disease had nearly extirpated this once strong people. The population studied was a mere remnant. Nonetheless, the early ethnographers viewed the Gabrielino as a chief-oriented society of semi-sedentary hunter-gatherers. Influenced by coastal and interior environmental settings, their material culture was guite elaborate and consisted of wellmade wood, bone, stone and shell items. Included among these was a hunting stick made to bring down numerous types of game. Located in an area of extreme environmental diversity, large villages may have been permanent (such as that found on or near Red Hill), with satellite villages utilized seasonally. Their living structures were large, domed and circular thatched rooms that may have housed multiple families. The society exhibited ranked individuals, possibly chiefs, who possessed a much higher level of economic power than unranked persons.

#### Historic Alta Loma and Rancho Cucamonga

The historic data described below was taken primarily from Stoebe et al (1981) and Clucas (1979). Following the collapse of the Mexican/Spanish Rancho economic system in California in the middle part of the 19th century, modern growth in Southern California could not begin until three limiting issues could be overcome: potable and reliable water, reliable transportation of goods and services and an agricultural-friendly governmental organization. The history of the Alta Loma area is an excellent example of how basic changes in these limitations throughout Southern California are reflected in the local history. Alta Loma, a small town now subsumed with the City of Rancho Cucamonga, was begun as part of an effort by wealthy businessmen in the late 19th century to subdivide vast tracts of land, make a handsome profit as a result of the sale, and allow small-scale orchardists to take advantage of a climate suitable for the growth of tropical produce. As part of that effort, the developers created or utilized existing rail transportation and associated communication services that made shipping agricultural products possible. In addition, the development of water storage and irrigation systems allowed small orchards to survive, while local government infrastructure was designed to provide maximum service to the small farmer.

Originally known as "Ioamosa", Alta Loma was created out of the remnants of the original Rancho Cucamonga. The original rancho was owned by Isaac Williams, the richest cattle baron in California (Rasmussen 2001). Upon his death, Williams willed half of the Rancho to Dona Merced Williams. Eventually marrying John Rains, Dona Merced was forced to sell the entire Rancho in 1870 as a result of a massive accumulation of debts after her husbands' violent death. These lands were quickly purchased by homesteaders to grow produce and businessmen looking for property to subdivide, including Adolph Petsch, Benjamin Eaton and Isaias Hellman. In 1871, Hellman obtained title of the Rancho after the death of John Rains.

Forming the Cucamonga Homestead Association (CHA) before 1880, Hellman and his partners increased the size of their holdings by adding lands lying outside the original Rancho boundary, and then brought water to CHA lands via a flume built in the upper reaches of Cucamonga Canyon. In 1881, A. Petsch created a new subdivision, the Hermosa Tract, out of lands not originally a part of the Rancho. That same year, Hellman created the nearby Iowa tract. The two subdivisions were combined to create the community of Ioamesa in 1887, which was the same year water was brought to the area. An 1888 California State Engineering Department map shows water for the Hermosa tract originating from Deer Creek and springs in the steep canyons a few miles west of the study area, while that for the Iowa tract originated from Cucamonga Canyon. Metal pipelines constructed by Chinese labor served both.

Assessors parcel books and archived parcel maps show that many of the properties in loamesa were divided into small parcels on or just prior to 1887. Nearly all of the subdivisions were sold as 20 acre parcels with the long axis running from east-to-west. This configuration was probably set to take advantage of the main water outlet locations and associated gravity fed irrigation systems. In addition, 20 acres was probably the minimum needed by a family orchard to survive on his crop. The assessor's parcel books show that most landowners in loamosa held more than one 20-acre parcel.

By 1886, rail transportation was probably reliable enough to assume that crop shipments could take place on a regular basis. The ATSF (California Central Railway) railroad served the Upland, Cucamonga and Riałto areas, the Southern Pacific served the South Cucamonga and Ontario areas, and the Pacific Electric ran through Alta Loma. This latter rail allowed shipments of local lemons, peaches and grapes to Los Angeles, San Bernardino and other points east. That same year, the town of Alta Loma was incorporated.

Although the survey detected remnants of irrigation systems associated with wells and/or flume outlets, it is not believed that the property has ever been utilized for citriculture. A 1953 Rupp aerial photograph (see below, Exhibit 5) bears no evidence of orchards, cut trees or irrigation alignments. Based on our experience with other pieces of land that once bore orchards, it is likely that landowners found the ground too rocky for such crops.

#### Archival Research

Robin Laska, Assistant Center Coordinator for the Archaeological Information Center (AIC) of the San Bernardino County Muscum conducted the archaeological record search at the AIC, on September 20, 2002. This consisted of a search for any previously recorded cultural resource sites and/or isolates on or within a one-mile radius about the study area by examining topographic maps for previous survey or study locations as well as locations of previously recorded archaeological sites. The California Office of Historic Preservation Directory of Historic Properties was reviewed, along with the National Register of Historic Places list, the list of California State Historic Landmarks, and the California Points of Historic Interest list. The AIC research indicated that none of the study area had been directly surveyed for the existence of cultural resources. Two historic sites lie within the direct area of potential impact (APE) of the project. These sites have not yet been evaluated for significance under CEQA and Section 106 of the NHPA. Nine historic sites and one prehistoric isolated tool are located within a one-mile radius of the study area. Two of these historic sites appear to be National-Register eligible and one appears to lie within the indirect APE of the project. It was determined through map research that five or more structures had been plotted on various archival maps for the project area.

Eric Scott, PhD., Curator of Paleontology at the San Bernardino County Museum (SBCM) conducted the paleontological literature and records review at the SBCM on September 17 2002. The SBCM research showed that the Tract is situated on "Pleistocene older fan deposits". These deposits have high potential to contain fossil resources throughout their extent.

Christeen Taniguchi M.A., MBA architectural historian and MBA staff archaeologist Dustin Kay, B.S., evaluated three historic archaeological sites for significance.

#### Results

#### Previous Research and Records Review Results

The record search indicated that the study area may have been directly surveyed for cultural resources in 1991, as part of a cultural resource study associated with the North Etiwanda Specific Plan (McKenna 1991). The search also indicated that two historic sites have been recorded within the search radius.

#### Known Cultural Resources in the Project Vicinity

According to AIC files, ten known area-specific archaeological investigations have occurred within a one-mile radius of the Study Area. Five non-specific overviews of the project area have also been produced. Eleven known historic archaeological sites lacking significance determinations are within the search radius, along with two National Register eligible historic archaeological sites and one isolated prehistoric artifact. Of these, site P#1081 1/H Locus west, site P#1081 1/H Locus east and site P#1081-19/H are located in the project area. Although older site recordation forms associated with these sites are available for review, they had not been previously evaluated for significance under CEQA.

A review of the National Register Index for San Bernardino County (NRHP 2003) showed that no National Register-eligible sites are located in the study area. Review of NR-eligible sites showed that two are located within the search radius. These are noted in Table 5.7-1.

Site Number	Site Description	
P1081-1/H east	Light scatter of historic artifacts and rock alignment.	
P1081-1/H west	Multiple historical components associated with irrigation pipes and refuse deposits.	
P1081-15/H	Three rock alignments and cluster of rock piles.	
P1081-16/H	Historic trash scatter located east of structure complex known as 19H.	
P1081~19/H east	Ranch complex.	
P1081-19/H west	Ranch complex.	
P1081-35/H	1880s weir box with later structural additions.	
P36-060,255	Isolated obsidian biface.	
CA-SBR-82	CPHI-82: first house utilizing hydroelectric power in California. May be considered NR-eligible if intact.	
CA-SBR-3131/H	Rock wall possibly associated with 1880s Etiwanda Water Company base camp.	
CA-SBR-4946/H	12 rectangular rock cairns.	
CA-SBR-7661/H	3 concrete structure foundations and 18 refuse dumps. Early twentieth century.	
СА-SBR-7694	Also known as PSBR-36H. Boulder 1 and Boulder 2 transmission lines. NR- eligible. Lies approximately ½ mile north of the study area.	
CA-SBR-10296/H	Three historic refuse deposits and an overgrown trail.	
CA-SBR-10297/H	Historic rock wall, rock pile and eucalyptus trees.	

Table 5.7-1: Known Cultural Resource Located Within One Mile of the Study	Area
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NR-eligible CA-SBR-7694 lies approximately ½ mile north of the project area. We do not believe that the development of the project will impact this site as the power lines lies well outside the direct APE. Site CA-SBR-82 is quite probably NR-cligible, but this site is also located well outside the APE and cannot be seen from the project area.

#### Cultural Resources Fieldwork

MBA Senior Archaeologist Michael Dice, and MBA staff archaeologists Marnie Vianna and Dustin Kay undertook a reconnaissance of the project area on September 19, 2002. The entire 160-acre project area was surveyed to protocol utilizing 15 to 20 meter transect spacing. During the survey, two previously recorded sites, and one new site were observed within the study area. The two ranch complexes P1081-19/H (Locus A, West; Locus B, East) were clearly observed and extensive photographs were taken of this site. The site is unusual as it exhibits numerous well-made rock alignments in and around the complex. Two structural complexes were observed. Locals currently use Locus B as an informal paintball course.

Irrigation features and rock alignments associated with the west loci of P1081-1/H were also observed and photographed. This appears to be relatively intact due to its isolation. No remnants of the east loci of P1081-1/H were found. A rock berm associated with flood control construction, built prior to 1953, was detected on the archival photograph and then located during the survey. The significance of both sites is evaluated in Section 5.7.3.

### 5.7.2 Thresholds of Significance

A project is considered to have a significant impact if it would cause a substantial adverse change on a historical or archaeological resource.

### 5.7.3 Project Impacts

### Cultural Resources

#### General

Based upon the types of historic and prehistoric occupation in the area, it is likely that artifacts could be found within the project area. Encountering a buried site would increase our knowledge of the prehistoric and historic use of the area as well as increase our understanding of the potential for other buried sites.

Three archeological sites are within the project area, including the new site located during the site visit. It is also likely that prehistoric remains may still be buried. Due to the likelihood of potential buried historic and prehistoric remains, impacts to archeological and prehistoric resources from development of the proposed project are considered potentially significant.

#### Significance of Known Cultural Features Onsite

In order to determine whether the cultural resources are eligible for inclusion in the National Register of Historic Places, or any State or local cultural resource roll, four evaluative criteria (A, B, C and D) must be utilized as follows:

- A) Is associated with events that have made a significant contribution to the broad patterns of our history;
- B) Is associated with the lives of persons significant in our past;
- C) Embodies the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possesses high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction; or
- D) That have yielded or may be likely to yield, information important in prehistory or history.

If avoidance of a site cannot occur as a result of an action, the project developmental plans must be evaluated in order to determine whether the action would cause a "substantial adverse change" in the Significance of the resource utilizing the criteria above. Adverse changes to such resources are defined in 36CFR800.5. All archaeological or historical sites must be carefully evaluated relative to the effects of the action, even if they have been or have not been listed at the time the proposed action

will take place. Although avoidance of cultural resources is always the best choice, where necessary, impacts to previously listed or potentially listed resources must be mitigated for.

Should it be determined that a cultural resource is or could be potentially listed on the National Register of Historical Resources or the California Register, a testing and/or historical structure evaluation of the resource must take place prior to impact. Should it be determined that the resource is significant and that impacts will cause a substantial adverse change in its significance, that resource must undergo data collection prior to impact. Under CEQA, should Phase 2 test results determine that the resource will not qualify for listing in the California (or National) Register of Historical Resources, no further mitigation of any kind is required. At the federal level, a Section 106 consultation shall determine the level of additional mitigative needs once data collection has taken place. In June 2003, MBA conducted a historical significance assessment for the known historical resources onsite and the results are summarized below.

#### Ranch Complex P#1081-19/H (Locus B, East)

On February 23, 1991, Jeanette McKenna recorded this site on DPR422A forms during work on the Etiwanda North Specific Plan. The AIC labeled the site P#1081-19/H. The west ranch complex was not discussed at that time. For the purposes of analysis, the two complexes were treated separately. Locus A consists of the eastern portion with cobble foundations representing long-abandoned structures, while Locus B consists of all historical materials found in the northwest quarter of the study area. Locus B exhibits the remains of two cobble wall and mortar structures, along with other features surrounding the foundations. One foundation is near the center of the property (with low irregular wall remnants; its ground plan or use could not be determined. The second foundation was most likely the main building on the property. A property must be shown to be significant for one or more of the four Criteria for Evaluation: A, B, C, or D. Based on these criteria, Locus B is evaluated below.

- Criterion A: Event. Locus B does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at the state or national level. The property may, however, have some local significance for its association with Rufus Putnum "Put" Perdew, a locally known resident of Etiwanda.
- Criterion B: Person. Locus B does not qualify under California Register Criterion B: Person, as historical research failed to identify any of the past owners or occupants of the house as historically significant at the state or national level. The resource may, however, have some local significance for its association with Rufus Putnum "Put" Perdew, a locally known resident of Etiwanda.
- Criterion C: Design/Construction. Locus B does not qualify under California Register Criterion C: Design/Construction at the state or national level as a property that embodies the distinctive characteristics of a type, period, or method of construction; is not representative of the work of a master or creative individual; and does not qualify as a structure possessing high artistic values.

• Criterion D: Information Potential. It is possible that subsurface study of Locus B may lead to further information, but not likely with regard to the historical and architectural significance of the property. The history of this ranch complex is virtually unknown and has not been previously investigated. Unfortunately, most of the important data associated with historical sites in California is associated with characteristics of the superstructure. Buried historical materials, except under unusual circumstances (such as human burials or privies), typically do not yield substantial amounts of historical information. In this case, MBA does not think that excavation would yield substantial amounts of historical information that might change the significance rating of the complex. However, if human remains or privies were uncovered during grading, such deposits would constitute features that, after analysis, might be of importance to the understanding of the historic nature of early Rancho Cucamonga.

#### Ranch Complex P#1081-19/H (Locus A, West)

This ranch complex (Locus A, West) consists of structures and features that appear to be of later construction than those within the other ranch complex (Locus B, East). At the northernmost side of Locus A is an aging eucalyptus wind break with a low cobble wall that parallels it just to the north (see DPR forms, Feature 1). Both are about 240 meters long and run east to west. Running perpendicular to the south of the windbreak is an irregular row of eucalyptus trees about 110 meters long (Feature 2). At the south end of the property is another cobble wall, about 140 meters long, running east to west (Feature 3). There is a dirt access road running east to west through this property; Locus B shares this road. The significance of Locus A is evaluated below.

- Criterion A: Event. Locus A does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at either the local, state or national level.
- Criterion B: Person. Locus A does not qualify under California Register Criterion B: Person, as historical research failed to identify any of the past owners or occupants of the house as historically significant at the state or national level. It is possible that the resource has some local significance through a local family such as the Perdews, but this has not been established.
- Criterion C: Design/Construction. The subject resource does not qualify under California Register Criterion C: Design/Construction at the state or national level as a property that embodies the distinctive characteristics of a type, period, or method of construction, or as representative of the work of a master or creative individual. Furthermore, Locus A does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as a structure possessing high artistic values.
- Criterion D: Information Potential. Subsurface study of the resource may lead to further information, but likely not with regard to the historical and architectural significance of the property. The history of Locus A is virtually unknown and has not been investigated previously. Unfortunately, most of the important data associated with historical sites in California is associated with characteristics of the superstructure. Buried historical materials, except under unusual circumstances (such as human burials or privies), typically does not commonly yield substantial amounts of historical information. In this case, we do not feel that excavation would yield substantial amounts of historical information that might change the significance rating of the complex. However, if human remains or privies were uncovered during grading, we feel that such deposits would constitute features that, after analysis, might be of importance to the understanding of the historic nature of early Rancho Cucamonga.

The location of the subject resource has remained the same since its construction. It, therefore, retains its location element for integrity purposes. The subject is currently a historic archaeological ruin. The design elements are no longer clearly distinctive. The subject ranch Locus A possesses a high degree of original setting. Locus A was constructed of typical materials and a common pattern for its time and location. The subject property is currently a historic archaeological ruin. The workmanship is, however, reflective of early twentieth century vernacular architectural styles in southern California that used locally available building materials such as cobblestone. The subject is currently a historic archaeological ruin, but has enough structural elements to retain the aesthetic or historic sense of a particular period. The subject resource is not linked directly with any event or person significant in California history at the state or national level. Its local significance as linked with the Perdew family has not been established.

#### Irrigation Complex P#1081-1/H

On February 23, 1991, Jeanette McKenna recorded this site on DPR422A forms during work on the Etiwanda North Specific Plan. The AIC labeled the site P#1081-1/H (Locus West) and P#1081-1/H (Locus East). The eastern portions of the complex could not be observed in the field, suggesting that this portion of the site has been graded over or lost to pot hunting. The site consists of remnants of a disused water irrigation system near the dirt portion of Etiwanda Avenue. The site is about 180 meters long. At the northwest end is a subsurface concrete structure (see DPR forms, Feature 1), surrounded by ceramic pipe fragments and concrete structural remains. There are also foundation remains of a nearby concrete standpipe and trash scatter. A rock berm defines the line of the system as it runs southeast (Feature 2). There are currently ceramic pipe and concrete fragments scattering the areas surrounding the berm. About 90 meters south from the concrete substructure is a concrete circular water diversion system with a subterranean ceramic pipe. A construction date could not be established, although it appears to be from the early quarter of the twentieth century. The irrigation system is visible in an 1938 aerial photograph. The significance of the irrigation complex is evaluated below.

- Criterion A: Event. The resource does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at either the local, state or national level.
- Criterion B: Person. The subject resource does not qualify under California Register Criterion B: Person, because historical research failed to identify any significant person associated with this irrigation system at the local, state or national level.
- Criterion C: Design/Construction. The subject resource does not qualify under California Register Criterion C: Design/Construction at the local, state or national level as a property which embodies the distinctive characteristics of a type, period, or method of construction. The subject resource does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as representative of the work of a master or creative individual. The subject resource does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as a structure possessing high artistic values.

• Criterion D: Information Potential. Subsequent study of the subject resource is not likely to lead to further information regarding the historical and architectural significance of the property. The location of the subject resource has remained the same since its construction. It, therefore, retains its location element for integrity purposes. It appears that the irrigation system's original design elements remain intact for integrity purposes. The subject irrigation system possesses a high degree of original setting.

This irrigation system was constructed of materials typical of its likely construction period of the early quarter of the twentieth century.

The workmanship is reflective of irrigation system construction during the likely time at the early quarter of the twentieth century. Although in ruinous condition, most of the structural elements appear intact and have not been compromised. It retains its feeling element for integrity purposes. The subject resource is not linked directly with any event or person significant in California history at the local, state or national level.

#### Evaluation of Berm Temp #1

This man made flood control berm was the only new historic site detected during the survey. It is approximately 18 meters wide, 520 meters long and 2 meters high. It may have been initially used as a firebreak and later for control of water that runs through the intermittent stream channel that crosses the project area from northwest to southeast. Two circular concrete bench markers were detected during the survey. They have inscribed metal plates indicating that the structure was built in 1949 by the San Bernardino County Flood Control District. The historical significance of this feature is described below.

- Criterion A: Event. The resource does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at either the local, state or national level.
- Criterion B: Person. The subject resource does not qualify under California Register Criterion
- B: Person, as historical research failed to identify any significant person associated with this berm at the local, state or national level.
- Criterion C: Design/Construction. The subject resource does not qualify under California Register Criterion C: Design/Construction at the local, state or national level as a property which embodies the distinctive characteristics of a type, period, or method of construction; as representative of the work of a master or creative individual, or as a structure possessing high artistic values.
- Criterion D: Information Potential. Subsequent study of the subject resource is not likely to lead to further information regarding the historical and architectural significance of the property.

The location of the subject resource has remained the same since its construction. It, therefore, retains its location element for integrity purposes. Although somewhat obscured with vegetation

growth, the berm's original design elements remain intact for integrity purposes. The subject berm possesses a high degree of original setting. This feature was constructed of material typical of berm construction. The workmanship is reflective of berm construction. Although obscured by vegetation, the berm is intact and has not been compromised. It retains its feeling element for integrity purposes. The subject resource is not linked directly with any event or person significant in California history at the local, state or national level.

Based on the above evaluation, none of the four onsite features were deemed to be architecturally or historically significant utilizing the criteria established by state and federal protocols. Therefore, none of these cultural resources are eligible for inclusion in the National Register of Historic Places, or any State or local cultural resource roll

#### **Paleontological Resources**

According to the paleontological records search, the project area lies on surface exposures of Pleistocene older fan deposits. These deposits have high potential to contain fossil resources throughout their extent. No fossil resources are known for the project area and the nearest resources found in similar deposits are located approximately eight miles to the south.

However, due to the likelihood of potential buried fossilized remains, impacts on paleontological resources from development of the proposed project are considered potentially significant.

### 5.7.4 Cumulative Impacts

Implementation of the proposed project and related projects would result in the impact of known cultural resources, and the potential impact for buried paleontological resources. As a result, implementation of the proposed project would contribute to significant cumulative impacts to prehistoric and historic resources.

### 5.7.5 Mitigation Measures

The following measures are recommended to reduce impacts on archaeological resources:

**CR-1** Prior to the issuance of a grading permit, the project applicant shall retain a Cityapproved archaeologist to develop an archaeological mitigation plan and a discovery clause/treatment plan. Both of these plans shall be reviewed and approved by the City. The archaeological mitigation plan shall include monitoring 50 percent of the excavation activities on the project site by a City-approved archaeologist and/or his/her representative. The discovery clause/treatment plan shall include recovery and subsequent treatment of any archaeological or historical remains and associated data uncovered by brushing, grubbing or excavation. The treatment plan shall provide procedures for the curation of any detected cultural specimens. Any recovered cultural resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard professional archaeological practices. Examination by an archaeological specialist shall be included where necessary, dependent upon the artifacts, features, or sites that are encountered. Specialists will identify, date and/or determine significance potential.

- **CR-2** If the archaeological monitor discovers cultural deposits, earthmoving shall be diverted temporarily around the deposits until the deposits have been evaluated, recorded, excavated and/or recovered, as necessary, and in accordance with a City-approved recovery plan. Earthmoving shall be allowed to proceed through the area after the archaeologist determines the artifacts are recovered and/or site mitigated to the extent necessary.
- **CR-3** If a previously unknown cultural site is encountered during monitoring and it is determined by the archaeologist that a significance determination is required, the site shall be evaluated and recorded in accordance with requirements of the State Office of Historic Preservation (i.e., DPR 523 form). In this case, if the site is not determined to be significant, no measures subsequent to recording the site on appropriate forms are required. If any of the sites are determined to be significant, an adequate amount of artifacts at the specific archaeological site shall be collected by the City-approved archaeologist. The archaeologist shall determine the amount of artifacts needed to be collected.
- CR-4 If human remains are encountered during excavations associated with this project, all work shall halt and the County Coroner shall be notified (Section 5097.98 of the Public Resources Code). The Coroner will determine whether the remains are of forensic interest. If the coroner, with the aid of the City-approved archaeologist, determines that the remains are prehistoric, he/she will contact the Native American Heritage Commission (NAHC). The NAHC will be responsible for designating the most likely descendant (MLD), who will be responsible for the ultimate disposition of the remains, as required by Section 7050.5 of the California Health and Safety Code. The MLD will make his/her recommendations within 24 hours of their notification by the NAHC. This recommendation may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials (Section 7050.5 of the Health and Safety Code).
- **CR-5** Any recovered archaeological resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard archaeological practices. Examination by an archaeological specialist should be included where necessary, dependent upon the artifacts, features or sites that are encountered. Specialists will identify, date and/or determine significance potential.
- **CR-6** A final report of findings will be prepared by the City-approved archaeologist for submission to the City, project applicant, and the Archaeological Information Center of the San Bernardino County Museum. The report will describe the history of the project area, summarize field and laboratory methods used, if applicable, and include any testing or special analysis information conducted to support the resultant findings.

### Paleontological Resources

CR-7 Prior to the issuance of a grading permit, the project applicant shall retain a Cityapproved paleontologist. The paleontologist shall review the approved development and construction plans. The City-approved paleontologist shall monitor all excavation activities in areas of the project underlain by previously undisturbed sediments. Earthmoving in areas of the site where previously undisturbed sediments will be buried but not disturbed will not be monitored. Monitoring shall begin once earthmoving reaches five (5) feet below the original ground surface.

- **CR-8** Monitoring shall be conducted on a full-time basis in areas of the project underlain by sensitive rock units associated with older alluvium being encountered by earthmoving.
- CR-9 Should fossils be found within an area being cleared or graded, divert earth-disturbing activities elsewhere until the monitor has completed salvage. If construction personnel make the discovery, the grading contractor should immediately divert construction and notify the monitor of the find. If too few fossil remains are found after 50 percent of earthmoving has been completed, monitoring can be reduced or discontinued in those areas at the project paleontologists direction.
- **CR-10** If paleontological resources are detected. Prepare, identify, and curate all recovered fossils for documentation in the summary report and transfer to an appropriate depository (i.e., San Bernardino County Museum).
- **CR-11** A final report of findings will be prepared by the City-approved paleontologist for submission to the City, project applicant, and the San Bernardino County Museum. All collected specimens and the final report shall be provided to the San Bernardino County Museum.

## 5.7.6 Level of Significance After Mitigation

Implementation of the above mitigation measures would ensure that impacts on the existing and potential archeological and paleontological resources will be reduced to a less than significant level.

### 5.8 Public Services and Utilities

### 5.8.1 Police Service

#### Existing Conditions

The City of Rancho Cucamonga has contracted with the San Bernardino County Sheriff's Department (SBCSD) since 1978 for police service. The project area is currently located within SBCSD's service area and receives police protection per the City's contract with SBCSD. The project site is proposed to be annexed into the City of Rancho Cucamonga and police service will continue to be provided by SBCSD under the existing City contract. Currently the City of Rancho Cucamonga is served by 93 uniformed officers including 11 sergeants, 2 lieutenants and 1 captain). With a population of approximately 146,700 people (January 2003 California Department of Finance estimate), the current ratio of officers to residents is approximately 0.63 officers for every 1,000 residents. The projected average response time to an emergency call for service within the project vicinity is approximately five (5) minutes (D.waters, pers. com.). The police station located nearest the project site is at 10510 Civic Center Drive, five miles from the project site. The project site is currently undeveloped, requiring only minimal existing police service except in the case of calls for trespassing (e.g., offroad vehicle use).

#### **Thresholds of Significance**

Per the City of Rancho Cucamonga General Plan EIR, a project is considered to have a significant impact on police services if the project will result in a substantial need for such services that cannot be adequately met by available Police Department personnel or equipment. The City does not have a policy establishing a specific ratio of officers to citizens but does have an established emergency response time of 5 minutes for emergency calls. Therefore the police service threshold is based on a project's effect on existing police service.

#### Project Impacts

Police service calls will increase due to the population increase caused by the proposed project. The service calls expected to be created will be typical to suburban areas and are likely to include vandalism, theft, and domestic disputes. The San Bernardino Sheriff's Office currently provides the City of Rancho Cucamonga with approximately 0.63 police officers for every 1,000 residents. The proposed project will increase the population in the project vicinity by 1,238 residents thus creating the need for approximately 0.8 additional police officer if the current officer/resident ratio is maintained. The funds for additional police officers are provided as part of the City's General Fund. Each year, the City's annual budget negotiation with the Sheriff's Department results in additional officers to be added to the City Police force. Response times to the project site for emergency calls are not expected to exceed current calls for emergency service in the vicinity. Therefore, the project will not result in a significant impact on police services.

#### **Cumulative Impacts**

Future growth in the project vicinity will include the introduction of new structures, thus increasing the risk of incidences requiring police service in the arca. Future growth will result in the development of new streets that would provide improved access within the project vicinity, allowing police service and other emergency response vehicles greater access. Future growth from residential subdivisions proposed in the project vicinity is expected to require a substantial increase in police services, thereby resulting in significant cumulative impacts on existing police services. However, rhe proposed project would nominally contribute to the significant cumulative impact on police services.

#### **Mitigation Measures**

No measures are required.

#### Level of Significance after Mitigation

Implementation of the project would not result in significant impacts to police services.

### 5.8.2 Fire Services

#### **Existing Conditions**

The Rancho Cucamonga Fire District (RCFD) provides fire protection and emergency medical response services to approximately 50 square miles, which includes the project area. Five fire stations and one temporary station are currently located and operational within City limits. There are 0.18 firefighters provided per 1,000 residents. The goal of RCFD is to provide a 5 minute response time for 90 percent of emergency calls placed within the City. Currently the City is providing 5 minute service for 85 percent of the emergency calls placed. Existing fire stations 173 and 175 will serve the project area. In addition to these two fire stations, another fire station (station 176) is operational from temporary quarters at Etiwanda and Wilson Avenues. The permanent station is under construction at East Avenue and 23rd Street. The permanent facility is expected to be occupied by early 2004. The fire stations that will serve the project site are located within the City limits at the following addresses:

- Fire Station 173: 12158 Baseline Road, equipped with 3 firefighters
- Fire Station 175: 111108 Banyan, equipped with 6 firefighters
- (Proposed) Fire Station 176: East Avenue and 23rd Street, will be staffed by 3 firefighters

The project site is currently within the California Department of Forestry and Fire Protection (CDF) "State Responsibility Area" (SRA) for wildland fires. Additional fire support is provided through a cooperative agreement by the San Bernardino County Fire Department based in the City of Fontana. Land areas north of the City limit and in close proximity to the project site, are dominated by steep foothills and undeveloped chaparral vegetation, the potential exists for a fast moving wildland fire to reach existing and potential structures. The project lies within an area designated by the City as a high hazard fire zone and is susceptible to wind-driven fire within the Urban Wildland Interface according to the Fire District Strategic Plan. The United States Forest Service and the California Department of Forestry in conjunction with RCFD, currently respond to situations on land immediately north of the City limits. The City is currently constructing Fire Station 176, and it is expected to be completed by early 2004. The completion of this fire station would substantially reduce response times to the project site.

#### **Thresholds of Significance**

A project is considered to have a significant impact on fire and emergency services if the project will result in a substantial need for fire and medical emergency assistance that cannot be adequately met by available Fire Department personnel or equipment.

#### **Project Impacts**

The project will increase the population in the project vicinity by 1,238 residents thus creating the need for 0.22 additional fire protection persons in order to maintain the current fire person/resident ratio. The additional demand of 0.22 fire protection persons is not considered to be significant because the temporary facilities for the new Fire Station 176 are currently operational adjacent to the project site at Etiwanda Avenue and Wilson Avenue. The permanent fire station is under construction at East Avenue and 23rd Street which is within one mile of the project site. Current and future response times to the project site will be less than 5 minutes which is the minimum response time required for adequate response time for fire services. Furthermore, with the proposed annexation of the project site into the City, the project site would be removed from the CDF SRA for wildland fires. The implementation of the proposed project would result in less than significant impacts on fire services is operational from temporary quarters at Etiwanda and Wilson Avenues and the future station will operate at the East Street and 23rd Street.

The proposed project includes a fuel modification plan which includes long-term vegetation treatment and maintenance along the project perimeter. The fuel modification plan for the project has been reviewed by the RCFD and has determined the plan to be adequate.

#### **Cumulative Impacts**

Currently, the staffing and equipment are adequate for the demand on services. However, with the rapid development occurring in the northern region of the City, the RCFP will reach maximum capacity in the near future. Future growth in the vicinity of the project area will include the introduction of new structures, thus increasing the public's risk to fire hazards in the area. Future growth will result in the development of new streets that would provide improved access within the project vicinity, allowing fire service emergency response vehicles greater access throughout the City. Overall, future growth under the proposed General Plan will result in significant cumulative impacts on fire protection. However, the implementation of the proposed project will nominally contribute to

impacts on fire services due to the new temporary fire station that is operational near the project site and eventually a permanent fire station located south of Wilson Avenue at 23rd Street.

#### **Mitigation Measures**

Although no significant fire service impacts will occur with project implementation, the following meaure will reduce potential impacts.

**F-1** Prior to the issuance building permits, the project applicant shall obtain approval from RCFD of the designs for the fire flow and proposed fire resistant structural materials.

### Level of Significance after Mitigation

No significant impacts to fire services would occur with project implementation.

### 5.8.3 Water Service

#### **Existing Conditions**

The Cucamonga County Water District (CCWD) covers approximately 50 square miles, and provides water treatment, storage, and distribution of domestic water to all of Rancho Cucamonga, adjacent unincorporated County areas, and portions of the Cities of Ontario, Fontana, and one tract in Upland. CCWD derives water from three sources comprised of groundwater (43%), surface water (12%) and imported water (45%). Groundwater is derived primarily from the Cucamonga basin. Groundwater may also be pumped from the Chino basin, but must be replenished through purchases of State Water Project (imported)water. Canyon water is derived from surface and subsurface water from Cucamonga, Deer, Day and East Etiwanda Canyons. CCWD also purchases water from northern California via the State Water Project. The current daily water usage in the CCWD service area is approximately 42 million gallons per day.

Residential water use amounts to 60 percent of the total water consumed, followed by landscaping at 20 percent. CCWD's master plan estimates demand needs through the year 2030. Residential water demand is expected to continue to be the greatest source of water demand for CCWD. CCWD expects to anticipate growth by ensuring that adequate facilities are available to meet water demand as it arises. CCWD is also one of seven member agencies that operate under the umbrella of the Inland Empire Utilities Agency (IEUA). The IEUA had adopted a 10-year growth or capital improvement program that is based upon growth projections provided by the member agencies. CCWD is responsible for collecting developer fees for the construction and operation of water facilities.

The City of Rancho Cucamonga, in cooperation with CCWD, has undertaken actions to extend available water supplies. Most notable of these actions is Ordinance No. 42 which establishes a water conservation measure in their General Plan for new development.

There is presently no water demand associated with the vacant project site. Water lines have been installed by CCWD along the southern project boundary, on the Wilson Avenue alignment. CCWD currently supplies water to residential areas immediately west and also south of the project site.

#### Thresholds of Significance

• A project is considered to have a significant inpact on water service if existing or planned facilities and supplies are not adequate to serve proposed land uses or existing water service is significantly disrupted.

#### **Project Impacts**

The proposed project would involve the connection of 358 single-family residential units to the CCWD's domestic water system. Single-family residential units have a daily water demand of 640 gallons per day (GPD). Thus, the project will result in an increased water demand on CCWD's domestic water system of 220,760 GPD. This represents a 0.7 percent increase in water currently demanded from existing development within the City's General Plan Planning Area.. This is not considered a significant increase and is within CCWD's daily and projected capacity.

#### **Cumulative Impacts**

The proposed development project will result in the use of additional water resources. CCWD collaborates with the Inland Empire Utilities Agency to estimate and fund projected water and facilities through the preparation of a 10-year capital improvement plan. This plan, in conjunction with the CCWD master plan, has considered the potential needs of future users. However, the potential demand for water will rise as additional developments are constructed and occupied. This increase in demand will result in the need for additional facilities. The proposed project will contribute to the potential significant cumulative impacts on water services.

#### Mitigation Measures

- W-1 Prior to the issuance of building permits, the project applicant will be required to submit a water services development fee to ensure that adequate water supplies and facilities are available to meet the project demand.
- W-2 Prior to the issuance of a building permit for each phase, the project applicant shall submit a landscaping and irrigation plan for common areas to the City for approval. Landscaping and irrigation within common areas shall be designed to conserve water through the principles of Xeriscape as defined in Cahapter 19.16 of the Rancho Cucamonga Municipal Code.

#### Level of Significance after Mitigation

With the implementation of the above mitigation measures, impacts to water services would be less than significant.

### 5.8.4 Wastewater Service

#### **Existing Conditions**

The Inland Empire Utilities Agency (IEUA) currently covers over 240 square miles and operates four (4) wastewater treatment facilities that serve the cities of Rancho Cucamonga, Fontana, Ontario, Upland, Montclair, Chino, Chino Hills, and a portion of the Chino Dairy Preserve. An additional treatment facility is currently planned. Two of these treatment plants, Regional Plants 1 and 4, serve development within the City of Rancho Cucamonga. Cucamonga County Water District provides conveyance facilities to these treatment plants. The project site is within the service area of the regional Plant 4 facility (RP-4). The RP-4 is located at Fourth Street and Etiwanda Avenue in the City of Rancho Cucamonga. RP-1 treats approximately 37.9 million gallons per day (mgd) of wastewater and has a capacity of 44 mgd. The wastewater treatment facilities cleanse the treated water to a tertiary level and is then used for irrigation purposes. Development fees are collected by member agencies for wastewater treatment facilities and passed through to the IEUA to use for new treatment plant construction.

According to the Rancho Cucamonga General Plan Update (2001), wastewater generation within the City's Planning Area (i.e., City limits and Sphere of Influence) is approximately 13 million gallons per day. The project site does not currently contain any uses that generate wastewater.

#### Thresholds of Significance

A project is considered to have a significant impact on wastewater service if existing or planned facilities and supplies are not adequate to serve proposed land uses or existing wastewater service is significantly disrupted.

#### **Project Impacts**

Based on the CCWD Master Plan and IEUA estimates, wastewater generation in the project area is 270 gallons of wastewater per unit per day. Therefore, the 358 residential units proposed will generate approximately 96,930 gallons of wastewater per day. This represents less than one-percent of current wastewater generation in the City's Planning area and will not exceed capacity of the RP-4 facility.

The IEUA will continue to expand their treatment capacity consistent with growth projections and associated increased demand and Agency funding mechanisms. Conservation methods and the increased use of reclaimed water will decrease the need for treatment capacity and provide a beneficial reuse of water resources.

#### **Cumulative Impacts**

As future development occurs within the service area of RP-4, additional demand for treatment would occur. The potential future development within the service area could require new facilities, and

therefore, result in significant cumulative impacts on wastewater treatment. The proposed project will contribute to the significant cumulative demand.

#### **Mitigation Measures**

**WW-1** Prior to the issuance of occupancy permits, the applicant shall provide funding to the Cucamonga County Water District for sewer service.

#### Level of Significance after Mitigation

Implementation of the above measure will reduce potential impacts to wastewater services to less than significant.

### 5.8.5 Schools

#### **Existing Conditions**

The Etiwanda School District (Kindergarten-8th grade) and the Chaffey Joint Union High School District (grades 9-12) serve the proposed project site. Both of these districts are currently at capacity enrollment at each school facility. The proposed project would increase the enrollment of both school districts by increasing the number of students in the project area vicinity. The proposed project would increase the enrollment at local schools by approximately 238 K-8 level students and 72 students between the 9-12 levels for an overall total of 309 students. Table 5.8-1 lists each school district and corresponding enrollment figures.

SB 50 mandates that complete mitigation of school related impacts are covered by lawful payment of required school impact fees. Necessary mitigation fees have been established and discussed through the General Plan and will be based on square foot measurements.

	Chaffey Joint Union High School District	Eliwanda School District
Grades Served	9-12	Kindergarten-8
Total Enroliment	20,738	10,300
Total Design capacity	15,749	12,960
Number of Permanent Classrooms	635	249
Projected Enrollments		
2003	21,650	11,000

#### Table 5.8-1: Current Enrollment and Capacity of School Districts Serving the Project Area

#### Table 5.8-1 (Cont.): Current Enrollment and Capacity of School Districts Serving the Project Area

	Chaffey Joint Union High School District	Etiwanda School District
2004	22,700	12,000
Student Generation Factor	.20 students per unit	K-5 = 0.66 students per unit
Anticipated Student Generation From TT 16072 Development Project	72	238
Anticipated Schools	2 High schools	t Elementary 1 Intermediate

#### Thresholds of Significance

A project is considered to have significant impact on the school districts and schools if the capacity of the existing or planned facilities and supplies are exceeded.

#### Project Impacts

Currently, the school facilities within the Chaffey Joint Union High School District servicing the proposed project area are at or over capacity. This is usually known as a significant impact; however the state mandated developer impact fee will meet full mitigation standards required by CEQA regardless of the enrollment capacity conditions of the affected schools. Per the Chaffey Joint Union High School District, 2 additional school sites are anticipated, thus relieving the projected impact on school facilities.

The proposed project will not have a significant impact on K-8 level students. The available capacity at Etiwanda School District facilities allows for the additional 238 students that would be generated.

Density at buildout is consistent with the City's General Plan and Specific Plan, including projected demand on schools (i.e., a fee mitigation and development fee is appropriate and adequately addresses additional demand on the existing system.)

#### **Cumulative Impacts**

Future growth in the vicinity of the project area will result in an increased student population and substantially contribute to a significant cumulative impact on public school facilities.

#### **Mitigation Measures**

S-1 Prior to the issuance of building permits, the project applicant shall pay developer impact fees to the Etiwanda School District and Chaffey Joint Union High School District in accordance with Section 65995 of the Government Code for the proposed residences.

#### Level of Significance after Mitigation

The assessment of development fees to provide a fair-share contribution for expansion of school facilities in compliance with State of California laws and regulations will assure adequate school funding. Impacts to public schools will be less than significant with the implementation of the above mitigation measure.

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### SECTION 6 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Section 5 of this EIR provides a description of the potential environmental impacts from the implementation of the proposed residential project, as well as measures proposed to reduce the environmental impacts to the maximum extent feasible. After implementation of the proposed mitigation, the following impacts associated with the proposed project would remain significant: geology and soils (seismic ground shaking), air quality (short-term and long-term emissions), aesthetics/visual (cumulative views).

These significant unavoidable adverse impacts would occur if the development objectives identified in Section 3.4 of this Draft EIR are met.

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### SECTION 7 OTHER LONG-TERM CONSIDERATIONS

### 7.1 Growth Inducing Impacts

This section evaluates the potential of the proposed project to affect "economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment" (CEQA Guidelines, 15126.2[d]).

There are two types of growth inducing impacts, direct and indirect. To assess the potential for growth inducing impacts, the project characteristics that may encourage and facilitate activities that may individually or cumulatively affect the environment must be evaluated.

Growth-inducing impacts can occur when the development of a project imposes new burdens on a community by directly inducing population growth, or by leading to the construction of additional developments in the same area of the proposed project. Also included in this category are projects that would remove physical obstacles to population growth (such as a new road into an undeveloped area or a wastewater treatment plant with excess capacity that could allow additional new development in the service area). Construction of these types of infrastructure projects cannot be considered isolated from the development they facilitate and serve. Projects that physically remove obstacles to growth or projects that indirectly induce growth are those which may provide a catalyst for future unrelated development in the area (such as a new residential community that requires additional commercial uses to support residents).

The project will result in direct population growth due to construction of the proposed 359 residential units. However, this will not result in an undue burden to the community or region since the applicant will be required to ensure that no significant and unavoidable adverse impacts to utilities and public services will occur. This will be ensured through the payment of mitigation fees to the various agencies and service providers. The project will also require extension of some utilities and services to the project site from nearby connections. The project does not remove substantial obstacles to population growth by extending facilities and infrastructure into an undeveloped area. It will be an extension of existing residential development to the west. Etiwanda Avenue will be extended only as far as the northern project boundary. Since the project will be consistent with development contemplated in the 2001 General Plan update as well as the Etiwanda North Specific Plan approved in 1991, and for the reasons outlined above, no significant growth inducing impacts would occur as a result from project implementation.

## 7.2 Irreversible and Irretrievable Commitment of Resources

The environmental effects of the proposed General Plan are discussed in Section 5 of this EIR and summarized in Section 2, Executive Summary. Implementation of the proposed project would require the long-term commitment of natural resources and land.

Approval and implementation of actions related to the proposed project would result in an irretrievable commitment of non-renewable resources such as energy supplies and other construction-related resources. The energy resource demands would be used for construction, heating and cooling of buildings, transportation of people and goods from the project site, heating and refrigeration for food preparation and water, as well as lighting and other associated energy needs.

Nonrenewable resources would be committed primarily in the form of fossil fuels and would include fuel, oil, natural gas, and gasoline used by vehicles and equipment associated with implementation of the proposed project. The consumption of other non-renewable or slowly renewable resources would result from the development of the proposed project. These resources would include, but not be limited to, lumber and other forest products, sand and gravel, asphalt, photochemical construction materials, steel, copper, lead, and water. Because alternative energy sources such as solar or wind energy are not currently in widespread local use, it is unlikely that real savings in non-renewable energy supplies (i.e. oil and gas) could be realized in the immediate future.

### SECTION 8 ALTERNATIVES TO THE PROPOSED PROJECT

Section 15126(d)(2) of the state CEQA Guidelines, as amended, mandates that an EIR include a comparative evaluation of the proposed project with alternatives to the project, including the No Project Alternative. As described in Section 3, Project Description, the proposed project is the development of 359 detached single-family housing units on approximately 150.8 acres. This section focuses on alternatives to the proposed project capable of avoiding or substantially lessening any significant adverse impact associated with the proposed project even if these alternatives would impede to some degree the attainment of project objectives or be more costly. Additionally, alternatives are discussed in the terms of achieving the project objectives.

Section 15126.6(a) of the state CEQA Guidelines requires a discussion of reasonable alternatives to the proposed project, or to the location of the project, which would feasibly obtain most of the objectives of the project but would reduce, avoid, or substantially lessen the significant effects of the project, and evaluate the comparative merits of the project. Further, the criteria for selecting the scope and nature of the alternatives is based upon the "rule of reason" and includes site suitability, economic viability, availability of infrastructure, general plan consistency and other regulatory limitations. The No Project/ No Development Alternative was selected to comply with Section 15126 of the State CEQA Guidelines. Retention of the Riversidian Alluvial Fan Sage Scrub was selected to reduce impacts to sensitive plant communities. Finally, the Less Intense Development Alternative was selected to eliminate significant long-term air emission impacts.

The alternatives are as follows:

- No Project/ No Development Alternative
- Retention of Riversidian Alluvial Fan Sage Scrub Alteruative
- Less Intense Development Alternative

The following are the objectives of the proposed project.

- To provide single-family housing units consistent with the intent of the City's General Plan and the Etiwanda North Specific Plan.
- To annex the proposed tentative tract into the City of Rancho Cucamonga.
- To create a project that is generally consistent and compatible with other existing and proposed uses in the vicinity of the project and community of Etiwanda in general.

- To provide project infrastructure including streets, water and sewer mains, and flood control consistent with City and regional plans related to these services.
- To phase the development of the proposed project to ensure adequate utilities are provided.
- To design and landscape the proposed project to create an aesthetically pleasing living environment.

The Environmentally Superior Alternative will be selected from among these alternatives and the proposed project. An alternative that is environmentally superior will result in the fewest or least significant environmental impacts. Based on the evaluation of the three alternatives in this section, implementation of the No Project/No Additional Development Alternative would result in no impacts and would be environmentally superior to the proposed project. CEQA states that if the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative from the other alternatives. Since the remaining two alternatives were determined to not be feasible because they did not meet the project objective, the proposed project is considered the environmentally superior alternative.

Following are descriptions of each alternative and a comparative environmental evaluation of potential impacts with those identified in the proposed project.

### 8.1 No Project/No Development

### 8.1.1 Description

The No Project/No Development alternative assumes that no new land uses would be constructed on the project site. Therefore, the site would remain vacant and undeveloped.

### 8.1.2 Impact Evaluation

The No Project/No Development Alternative would result in no additional environmental impacts relative to the proposed project. The significant unavoidable seismic ground shaking, loss of Riversidian alluvial fan sage scrub, short-term construction air emissions, long-term mobile emissions, and cumulative aesthetic/visual impacts associated with the proposed General Plan would not occur under this alternative.

Furthermore, traffic, noise, and cultural impacts associated with the proposed project would also not occur under this alternative.

### 8.1.3 Conclusions

This alternative is considered environmentally superior to the proposed project. However, this alternative would not meet any of the project objectives set forth in Section 3.4. Furthermore, the elimination of future development within a previously approved Specific Plan is not considered feasible. Therefore, this alternative is rejected.

#### 8.2 Retention of Riversidian Alluvial Fan Sage Scrub Alternative

The Retention of Riversidian Alluvial Fan Sage Scrub (RAFSS) Alternative assumes that all vegetation classified as RAFFS are not affected by development. The project site contains approximately 10.6 acres of disturbed or ornamental woodland. In accordance with this alternative, development would only occur on the 10.6 acres. Based on the same residential density as the proposed project (i.e., 2.4 units per acre), 25 single-family housing units would be constructed. Although this level of development could eliminate the potential significant unavoidable effects associated with RAFFS, this alternative would not meet the objectives of the proposed project and is not considered economically feasible to provide infrastructure for only 25 units.

#### 8.3 Less Intense Development

The intent of this alternative is to avoid all significant, unavoidable, adverse long-term, air emission impacts. The long-term significant and unavoidable adverse impact associated with the proposed project is the potential generation of carbon monoxide (CO), oxides of nitrogen (NOx), and reactive organic compounds (ROC). To reduce long-term air emissions, approximately 104 residential units that are part of the proposed project would need to be eliminated for this alternative to reduce longterm air emissions to less than significant after the implementation of the mitigation measures identified for the proposed project. This would result in the development of approximately 255 residential units on the project site. With the development of approximately 255 residential units the dwelling units per acre would be approximately 1.7 units per acre compared to 2.4 units per acre identified in the proposed project. This alternative would not be consistent with the development level contemplated in the Etiwanda North Specific Plan. This alternative also does not meet many of the objectives of the proposed project. Therefore, this alternative is not considered feasible.

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### SECTION 9 ORGANIZATIONS AND PERSONS CONSULTED

### 9.1 Public Agencies

#### City of Rancho Cucamonga

Planning Department	Larry Henderson, AICP
	Debra Meier
Public Works Department	Betty Miller
	Rene Guerrero
Police Department	Pete Ortiz
	Dan Waters
Fire Department	John Thomas
	Mike Bell

### **Special District**

Etiwanda School District	Douglas Claflin
Chaffey Joint Union High School District	Susan Sundell
Metropolitan Water District	Laura Simonek

### 9.2 Private Organizations

MDS Consultants	Stan Morse
Burrtec Waste	Trevor Scrogins

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### SECTION 10 REPORT PREPARATION PERSONNEL

### Michael Brandman Associates

Project Director	
Project ManagerMid	chael E. Houlihan, AICP
Environmental AnalystsCh	ristine Jacobs-Donoghue
	David Merriman
	Jackie O'Day
Biologist	Nina Jimerson
Archaeologists	Michael Dice
	Marnie Aislin Kay
	Dustin Kay
Architectural Historian	Christine Taniguchi
Air Quality Specialist	Michael Hendrix
Geographic Information Systems	Mike Serrano
Graphic Artist	Karlee Haggins
Word Processor	Angel Penatch
Publications Coordinator	Sandra Tomlin
Reprographics	Joshua Ballard

### **Technical Consultants**

Noise Study (RK Engineering Group, Inc.)	Mike Rosa
Biological Resources Assessment (PCR Services Corporation)	Kristen Szabo
Traffic Study (RK Engineering Group, Inc.)	Frank Yeh
Geologic and Hydrologic Background Report (Earth Consultants Int'l, Inc.)	Tania Gonzalez

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# Draft Environmental Impact Report

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City of Rancho Cucamonga Tentative Tract Map Number 16072 (State Clearinghouse 2002091053)



## Volume II Technical Appendices

November 2003



### VOLUME II Technical Appendices for

7-10

### DRAFT

## Environmental Impact Report

Rancho Cucamonga Tentative Tract Map Number 16072

Prepared for:

### City of Rancho Cucamonga Community Development Department 10500 Civic Center Drive Rancho Cucamonga, CA 91729

Contact: Debra Meier

Prepared by:

Michael Brandman Associates 621 E. Carnegie Drive, Suite 100 San Bernardino, CA 92408 909.884.2255

Contact: Thomas J. McGill, Ph.D., Project Director Patricia Gallagher, Project Manager



November 25, 2003

### LIST OF APPENDICES

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Appendix B: Geologic and Hydrologic Technical Background Reports

Appendix C: Biological Resources Assessment and Focused Surveys

Appendix D: Traffic Impact Study

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### Rancho Cucamonga Tentative Tract Map Number 16072 - Draft EIR

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### Appendix A Notice of Preparation and Correspondence

### Appendix A Notice of Preparation and Correspondence

### CITY OF RANCHO CUCAMONGA INITIAL STUDY FOR TENTATIVE TRACT MAP NUMBER 16072

7-10

#### **Prepared for:**

City of Rancho Cucamonga P.O. Box 807 Rancho Cucamonga, California 91729

Contact: Catherine Johnson, AICP Associate Planner

#### Prepared by:

Michael Brandman Associates 621 E. Carnegie Drive, Suite 100 San Bernardino, CA 92408 (909) 884-2255

Contact: Thomas J. McGill, Ph.D. Regional Manager



September 2002

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I.

### 1.0 INTRODUCTION

This form and the descriptive information in the application package constitute the contents of an Initial Study pursuant to Section 15063 of the State of California Environmental Quality Act (CEQA) Guidelines and Appendix G (1998). The environmental checklist is located in Chapter 2, and the evaluation of environmental impacts is located in Chapter 3.

1	Draject Title:	Initial Study for Tentative Tract Map Number 16072
<u> </u>	Froject file:	City of Develop Content of the Conte
2. Lead Agency Name and Address:		R O Box 807
	Auuress.	Panaha Cucamanga California 01730
		(000) 477 1700
		(909) 477-2700
		Orthogies Jahore AIOP
3.	Contact Name and Phone	Catherine Johnson, AICP
	NUMBER:	Associate Planner
		DO Des 207
		P.U. BOX 807
		(000) 477 7700
		(909) 4/7-2/00
		Cathy.joinison@ci.rancho-cucamonga.ca.us
4.	Project Location:	Inomas Bros. Map: 5/3
		Cucamonga Peak, California USGS Quadrangle Map (1996)
5.	Project Sponsor:	Richland Pinchurst, Inc.
	-	5 Imperial Promenade, Suite 150
		Santa Ana, California 92/0/
6.	Existing General Plan	L, VL, FZ (Low, Very Low Density Residential and Fault
	(Specific Plan) Designation:	Zone– Eliwanda North Specific Plan)
7.	Existing Zoning:	L, VL, FZ (Very Low and Low Density Residential and
		Fault Zone, Etiwanda North Specific Plan)
8.	Description of Project:	See Following
9.	Surrounding Land Uses and	See Following
	Setting:	
10.	Other Public Agencies Whose	May include, but not be limited to:
	Approval May Be Required:	U.S. Fish and Wildlife Service
		California Department of Fish and Game
		California Regional Water Quality Control Board,
		Santa Ana Region
		San Bernardino County Local Agency Formation
		Commission (LAFCO)
		San Bernardino County Flood Control District

### 1.1 BACKGROUND

In 1992, the City of Rancho Cucamonga Etiwanda North Specific Plan (Specific Plan) established a master plan for the area that focused on maintaining the community's fural atmosphere by preserving historic ranchos, orchards, and wineries. Many of the features discussed in the Specific Plan are now incorporated in the City's recently updated General Plan.

The Specific Plan is currently the guiding document for planned development within the northern portion of the community of Etiwanda. The Specific Plan focuses on a development plan that preserves the area's qualities through distinctive architectural styling and low density housing to protect the area's rural, small community quality. Key guidelines within the Specific Plan include mixed use and low-density development balanced with recreational and open space areas. The City General Plan adds conservation areas in the North Etiwanda area to protect its unique natural resources and to provide buffer areas between urban communities and the San Bernardino National Forest.

### 1.2 **PROJECT DESCRIPTION**

The proposed project site is located on 150.8 acres north of Wilson Avenue and east of Etiwanda Avenue in unincorporated San Bernardino County and within the City's Sphere of Influence (Exhibits 1 and 2). This area is currently identified in the Specific Plan for Low-Density (fewer than two dwelling units to no more than four dwelling units per acre) to Very Low-Density honsing (one to two dwelling units per acre). The project, Tentative Tract Map Number 16072, will allow up to 359 detached single-family housing units on minimum lot sizes of 8,400 square feet. The net density of the project is expected to equal 2.38 dwelling units per acre. The proposed project would include annexation of Tentative Tract 16072 to the City of Rancho Cucamonga and inclusion into the City's General Plan.

The project site is currently vacant. It is divided by the Red Hill Fault, which is proposed as a landscaped, open space trail connecting the Etiwanda Avenue Community Trail to East Avenue. Street patterns will be designed following the naturally trending terrain, which slopes at about 6 percent from the northwest to the southeast. In addition, the circulation system would provide for improvements to the existing streets along the perimeter of the project site, thereby serving as a link for the existing and proposed streets in the County and the City. Internal landscaped slopes will be designed at various slope inclinations (2:1 maximum) to provide meandering of the tops and toes of the slopes. Flood protection will be provided by the construction of the 25<sup>th</sup> Street Diversion Channel (providing flood proofing for downstream parcels including onsite interim detention basins until improvements are complete adjacent to the Interstate 210 freeway). Exhibit 3 depicts the project site plan as proposed.

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Exhibit 1 Regional Location Map

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

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Michael Brandman Associates 00180027 • 09/20025 | 2\_Vicinity Location Map.cdr

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Michael Brandman Associates

00180027 • 09/2002 | 3\_Site Plan.cdr

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

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Wastewater from the proposed project would be conveyed via the Etiwanda Avenue Trunk Sewer and the future East Avenue Trunk Sewer to the Inland Empire Utilities Agency wastewater treatment facilities. Domestic water would be provided to the project site by the Cucamonga County Water District (CCWD). Solid waste collected from the proposed project would likely be disposed of at the Mid-Valley Landfill in the City of Rialto, the closest landfill to the project site. Table 1 below provides a statistical summary of the proposed project.

Although the proposed project could be developed in one large phase, there is the potential for development to occur in phases. Regardless of whether the proposed project occurs in one or more phases, site preparation and earthwork would occur at one time, with appropriate storm drainage facilities installed to protect the graded areas until construction is completed. Construction grading would follow the general form of the existing topography. Earthwork cut and fill are anticipated to balance onsite, with total raw cut of approximately 1,000,000 cubic yards (cy).

#### Table 1

Land Use	Acreage	Percent
Single-family Detached Residential	94.18	62.5
Fault Zone/Open Space	13.24	8.78
Manufactured Open Space	8.31	5.45
City Flood Channel	3.10	2.06
Public Streets	31.97	21.21
Total	150.8	100

#### **Project Statistical Summary**

### 1.3 SETTING AND SURROUNDING LAND USES

The project site is within the City's Sphere of Influence, within the Specific Plan, adopted in 1992. The most prominent feature of the Etiwanda North area is open space, comprised of about 3,000 acres of gently sloping relatively undisturbed, mature Riversidean alluvial fan sage scrub (RAFSS) dominated by white sage. The lower slopes of the San Gabriel Mountain foothills, approximately 1,700 acres, support primarily chaparral habitat. Drainage courses throughout the Etiwanda North area support a variety of habitats including oak, sycamore, walnut, and other woodlands. A unique feature of the area is an approximately 11-acre freshwater marsh located in the northwesterly portion of the area. Open space is expected to remain a prominent feature of the Etiwanda North area, even after development occurs and is supported by a low-density residential land use pattern.

The 150.8 project site is relatively flat, sloping to the southeast at an approximately six percent grade. Elevations range from approximately 1,800 feet above mean sea level (msl) at the northern boundary to approximately 1,600 feet above msl at the southeastern corner of the project site. There are two ephemeral drainages on the site that convey water flows from the northwest to the southeast and merge with a defined flood control channel offsite to the east (East Etiwanda Creek). There are three other minor drainages on the project site. The site is currently vacant.

Four potential historic resources have been previously identified on the project site. They include a power generation facility, a water system, and an abandoned residence and the remains of low stone walls in the northwest portion of the site. A cultural resources assessment will be conducted to assess their significance. The findings will be included in the EIR.

Primary existing vehicular access to the project site is provided via Etiwanda Avenue, which runs along the western boundary, East Avenue to the east and Wilson Avenue along the southern boundary (Exhibit 2).

Existing surrounding land uses include a residential development and Etiwanda Avenue to the immediate west, the CCWD treatment facility to the south and the Southerly Southern California Edison (SCE) power line corridor to the immediate north. North of SCE power line corridor and proposed project site is the location of a proposed 168.8-acre Tracy residential development site. Vacant land and the East Etiwanda Creek are located to the east.

### 1.4 **PURPOSE OF THE INITIAL STUDY**

This Initial Study was prepared as the first step in the environmental documentation process for the proposed project. The purpose of the Initial Study is to identify the appropriate issues that will be addressed in detail in the subsequent project EIR. To accomplish this, the Initial Study evaluates the extent to which the project will produce potentially significant impacts in accordance with the California Environmental Quality Act (CEQA). The objective of the Initial Study is to identify both: 1) those environmental issues that need not be further evaluated; and 2) those key environmental issues for which further analysis in the project EIR is necessary. The subsequent project-specific EIR that will be prepared for this project can be used by the City of Rancho Cucamonga not only for approval of the project but also for the adoption of a development agreement and to support the annexation process with the Local Agency Formation Commission (LAFCO).

#### 1.5 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving impacts that are "Potentially Significant" as indicated by the checklist in Chapter 2.

Aesthetics 

- Agricultural Resources
- **Biological Resources**
- **Cultural Resources**
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- **Public Services**
- Utilities and Service Systems
- Mandatory Findings of Significance

- Air Quality
- Geology and Soils
- Land Use and Planning
- Population and Housing
- Transportation and Traffic

Noise Recreation

- **Mineral Resources**

### 1.6 **DETERMINATION**

On the basis of this initial evaluation:

- □ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☐ I find that although the proposed project could have a significant effect on the environment, there will 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 will be prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT will be prepared.
- □ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment. But at least one effect (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) 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 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 project, nothing further is required.

Signature	Date
Catherine Johnson, AICP	City of Rancho Cucamonga
Printed Name	For

### 2.0 ENVIRONMENTAL CHECKLIST

ENVIR	ONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Minganon	Less Than Significant Impact	No Impact
I. AE	STHETICS Would the project:				
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?				
с)	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?	•			
II. AGI	ICULTURE RESOURCES Would the project:				
[In detern the Califo Conservat	ining whether impacts to agricultural resources are signification and Site Assessment I and Evaluation and Site Assessment I ion as an optional model to use in assessing impacts ou agric	ant environmen Model (1997) sulture and farm	tal effects, lead prepared by t nland].	d agencies may he California I	refer to Dept. of
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?				
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?				
c)	Iuvolve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				

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ENVIR III, Ai [Where a district m	CONMENTAL ISSUES RQUALTIX: Would the project: vailable, the significance criteria established by the application ay be relied upon to make the following determinations].	Potentially Significant Impact ble air quality	Less Than Significant With Mitigation management C	Less Thun Significant Impact	No Luapact
a)	Conflict with or obstruct implementation of the applicable air quality plan?	•	D		D
b)	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	•			D
с)	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 (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	•			
d)	Expose sensitive receptors to substantial pollutant concentrations?			D	
е)	Create objectionable odors affecting a substantial number of people?	-	Ð		
IV. B10	LOGICAL RESOURCES Would the project:				
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?	•			

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ENVIR	ONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	Ne Impact
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, 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?			•	
е)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?		■		
ſ)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	•			
V. CI	LTURAL RESOURCES Would the project:	· · · · · · · · · · · · · · · · · · ·			
a)	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	•			
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	•			Ω
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	•		۵	
d)	Disturb any human remains, including those interred outside of formal cemeterics?	•	Ω	۵	

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ENVIR VL GI	CONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a)	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	<ul> <li>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 know fault? Refer to Division of Mines and Geology Special Publication 42.</li> </ul>				
	ii) Strong seismic ground shaking?		D	Ľ	
	iii) Seismic-related ground failure, including liquefaction?	<b>I</b>	D		
	iv) Landslides?				
b)	Result in substantial soil crosion or the loss of topsoil?	•			
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-site or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	•			
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?	E2			
с)	Have soils incapable of adequately supporting the use of septic tanks of alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	0			

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ENVIR	ONMENTAL ISSUES	Potentially Significant Impact	Loss Than Significant With Miligation	Less Thun Significant Impact	No Impact
VIL E	ZARDS AND HAZARDOUS MATERIALS Would	the project:			
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?		۵		
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			•	
d)	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, would it create a significant hazard to the public or the environment?			-	
е)	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, 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 where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			•	

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ENVIR	ONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant Wath Mitigation	Less Than Significant Impact	No Impact
a)	Violate any water quality standards or waste discharge requirements?			0	
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)?			-	
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-site or off-site?			•	
d)	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 which would result in flooding on- site or off-site?			•	
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?		<b>•</b>		
f)	Otherwise substantially degrade water quality?				D
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?		•		
h)	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?				

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ENVII	RONMENTAL ISSUES	Potentially Significan Impact	Less Than Significant t With Mitigation	i ess Than Significant Impact	No Impact
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?				
Ĵ	Inundation by seiche, tsunami, or mudflow?			•	
1X. L	AND USE AND PLANNING Would the project:	<u>_</u>			
a)	Physically divide an established community?				
b)	Conflict with any 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?			•	
Х. М	INERAL RESOURCES Would the project:				
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?			•	
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?			•	
XI. NO	DISE, Would the project result in:				
a)	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	•			
b)	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	•			

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ENVIR	ONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Thuo Significant Impact	No Impact
с)	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				ם
d)	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	•			ם
e)	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, would the project expose people residing or working in the project area to excessive noise levels?				5
f)	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				
ХН. Ре	PULATION AND HOUSING Would the project:				
a)	Induce substantial 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)?	-			
b)	Displace substantial numbers of existing housing, uccessitating the construction of replacement housing elsewhere?				•
c)	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				
			<u> </u>		

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Thun Significant Impact	No Impact
XIII. PUBLIC SERVICES Would the project:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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 public services:				
Fire protection?				
Police protection?				
Schools?	•			
Parks?				
Other public facilities?				
XIV. RECREATION				
a) Would the project 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?			•	
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				

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ENVIR XV. Ti	CONMENTAL ISSUES CANSPORTATION/TRAFFIC Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
a)	Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?				
b)	Exceed, either individually or cumulatively, a level of service standard 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 results 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?				
ſ)	Result in inadequate parking capacity?				
g)	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?			•	
XVI.	UTILITIES AND SERVICE SYSTEMS Would the	project:	· · · · · · · · · · · · · · · · · · ·		· . ·
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 expansion of existing facilities, the construction of which could cause significant environmental effects?			•	

ENVIR	ONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c)	Require or result in the construction of new storm water drainage facilities or 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 resource, or are new and expanded entitlements needed?			•	
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 the provider's 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?	0			0
	AANDATORY FINDINGS OF SIGNIFICANCE				
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, 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?	•			

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ENVIR	ONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant With Miligation	Less Than Significant Impact	No Impaci
ь)	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)?				
с)	Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	•			

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#### 3.0 EVALUATION OF ENVIRONMENTAL IMPACTS

An Environmental Checklist Form is used to evaluate the potential environmental impacts associated with a project. A brief explanation is provided for all answers except No Impact answers that are adequately supported by the information sources. A *No Impact* answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A No Impact answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

Once the City of Rancho Cucamonga (lead agency) has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. *Potentially Significant Impact* is appropriate if there is substantial evidence that an effect may be significant. If there are one or more potentially significant impacts, a detailed analysis is required to determine if there are feasible mitigation measures to reduce the potentially significant impact to less than significant. If the impact cannot be reduced to less than significant, an unavoidable significant impact would occur and an environmental impact report (EIR) would be required.

Less Than Significant with Mitigation applies where the incorporation of mitigation measures has reduced an effect from a potentially significant impact to a less than significant impact. The City must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level.

The Environmental Checklist Form has been used to assist in the review of environmental effects of the proposed project with respect to the following resources:

- Aesthetics;
- Agriculture Resources;
- Air Quality;
- Biological Resources;
- Cultural Resources;
- Geology and Soils;
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;

- Land Use and Planning;
- Mineral Resources;
- Noise;
- Population and Housing;
- Public Services;
- Recreation;
- Transportation and Traffic; and
- Utilities and Service Systems.

Responses to the checklist questions are provided in the following sections.

#### 3.1 DISCUSSION OF ENVIRONMENTAL CHECKLIST

#### L AESTHETICS

- a: **Potentially Significant Impact.** Panoramic views of the San Bernardino National Forest and the San Gabriel Mountains to the north and Etiwanda Creek to the east of the site represent scenic vistas. The San Gabriel Mountains are recognized within the General Plan as the City's most prominent feature and provides a scenic backdrop to the community. Scenic views might be obstructed by the proposed development. This site also provides panoramic views of the City and valley. Effects of visual impacts will be further evaluated in the EIR.
- b: No Impact. The proposed project site is located approximately 1.5 miles from the Interstate 15 freeway and the new Interstate 210 freeway. Neither one of these roadways is designated as a scenic highway in the area. No significant effects will, therefore, occur to scenic resources within a state scenic lighway.
- c: **Potentially Significant Impact.** The proposed project is located within the North Etiwanda Open Space and Habitat Preservation Program (NEOSHPP) area. The NEOSHPP area was established by the County of San Bernardino to encourage retention of open space and protect sensitive biological resources. Although the NEOSHPP is a voluntary program that has never been fully implemented, it does establish guidelines to conserve scenic and valuable habitat in a region considered to be one of the nation's fastest growing housing markets.

The visual character of the site is of a gentle slope from the northwest to the southeast at an approximate grade of six percent, on the Etiwanda Alluvial Fan on the southern slope of the San Gabriel Mountains. The site is covered with native vegetation and a blue line stream traverses the site from the northwest corner to the southwest corner. A prominent ridge, known as the Etiwanda Avenue Scarp, traverses the project site in a northeasterly to easterly direction. The proposed project has the potential to alter the visual character of the site by development of residential housing in an otherwise undisturbed area. The EIR will examine the significance of changes to the visual character of the site and surrounding properties as well as consistency with the visual goals of the NEOSHPP, Specific Plan and City General Plan.

d: **Potentially Significant Impact.** The proposed project consists of up to 359 single-family detached houses on 150.8 gross acre site. Street lights will be installed on the new streets. Street lights in combination with residential lighting and lights from nighttime vehicular travel will create a new source of light in the area. Potential significant effects from new sources of light and glare will be further evaluated in the EIR.

#### II. AGRICULTURE RESOURCES

- a, c: No Impact. The project site is located within the Low to Very Low Density Residential Districts within the Etiwanda North Specific Plan, which does not permit agricultural uses. The project site has not been identified as, and will not convert prime farmland, unique farmland, or farmland of statewide importance to non-agricultural use. No impact on agriculture resources will occur.
- b: No Impact. Williamson Act contracts have not been executed for lands surrounding the project; no conflicts with a Williamson Act contract will occur.

#### III. AIR QUALITY

Potentially Significant Impact. According to the General Plan EIR, the City is located in an a-e area where ozone levels exceed state and federal standards, and where PM10 (particulate matter less than 10 microns in size) frequently exceed state standards (54.6 %) and occasionally exceed federal standards (3.3%). An additional 359 single-family residential units will be added as a result of this project. This increased land use intensity will result in additional vehicle trips as well as stationary source emissions. Air quality impacts will be evaluated in the EIR based on significance criteria provided hy the South Coast Air Quality Management District. Emissions from construction activities, including dust from grading, and from operational emissions generated by the proposed land use revision will be evaluated in an air quality study conducted for the proposed project. Minor quantities of other emissions associated with the use of natural gas for space and water heating and the production of electricity for onsite use, as well as landscape maintenance emissions and consumer aerosol products will also be included. The air quality analysis included in the EIR will also provide a consistency review against the General Plan as well as the goals of the Air Quality Management Plan.

#### IV. BIOLOGICAL RESOURCES

a: Potentially Significant Impact. The project site is within the known range of the federallylisted threatened coastal California gnatcatcher (CAGN) (*Polioptila californica californica*) and the federally-listed eudangered San Bernardino kangaroo rat (SBKR) (*Dipodomys* merriami parvus). Focused surveys were conducted to ascertain the presence or absence of the CAGN by PCR Services Corporation in 2001 and 2002. Both CAGN surveys were negative. Focused surveys for the SBKR will be conducted in Summer 2002. A sensitive plant survey was also conducted by PCR in 2001. The findings of the surveys will be incorporated into the EIR, the technical reports will be included in their entirety in the EIR

Appendices. If any listed species are found to be present onsite, the EIR will identify the appropriate mitigation necessary to satisfy both CEQA and State and Federal Endangered Species Act (ESA) regulations.

Other resources that may suffer a significant impact are birds of prey, which are protected under California Department of Fish and Game (CDFG) codes 3503 and 3503.5. The project site contains several large trees for nesting as well as foraging habitat for several species of raptors, including, but not limited to, red-tailed hawk\* (*Buteo jamaicensis*), ferruginous hawk (*Buteo regalis*), Cooper's hawk\* (*Accipiter cooperii*), golden eagle (*Aquila chrysaetos*), redshouldered hawk\* (*Buteo lineatus*), northern harrier\* (*Circus cyaneus*) and American kestral\* (*falco sparverius*). (\*Denotes these species were observed onsite.)

CDFG has listed some species as "species of concern" in California. Some of these species were observed on the project site. These include: logger-headed shrike (*Linius ludovicianus*), Cooper's hawk (nesting), northern harrier (nesting), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), Bell's sage sparrow (*Amphispiza belli belli*), Plummer's mariposa lily (*Calochortus plummerae*), and California black walnut (*Juglans californica*). A large population of Plummer's mariposa lily occurs on the project site and development of this site could significantly impact that species.

Potential impacts to biological resources will also be balanced against the Specific Plan Development Framework, City of Rancho Cucamonga's General Plan Conservation Element as well as the goals and policies of the County's General Plan Natural Resources Element, the County's North Etiwanda Preserve and its NEOSHPP conservation/open space program.

b, c: Potentially Significant Impact. The project site and vicinity supports relatively undisturbed, mature Riversidean alluvial fan sage scrub (RAFSS) dominated by white sage. This plant community is considered sensitive by the CDFG. The EIR will provide further evaluation of the impacts associated with the direct loss of 100+ acres of RAFSS on the project site, the indirect impacts expected to occur from extending infrastructure onto the project site and the cumulative loss of RAFSS based on the approval of the project as well as other projects in the vicinity (e.g., the Tracy Development, the Rancho Etiwanda Estates Development and the University/Crest Project).

The project site was once an active alluvial fan receiving flow from upstream water sources as well as providing natural watercourses during flood events. Flood control facilities constructed by the County have eliminated most of the previously occurring natural watercourses onsite and in the vicinity. A jurisdictional delineation was conducted on the project site by PCR in September 1998 to determine the U.S. Army Corps of Engineers (USACE) and CDFG

jurisdictional areas. Two jurisdictional drainages were found. The 1998 jurisdictional delineation report will be updated and included in the EIR Appendices. The findings will be incorporated into the EIR's biological resources section.

- d: Less Than Significant Impact. The project site does not contain watercourses that support fish. Although the vicinity of the project site is adjacent to undeveloped areas to the north, areas east, south and west of the project site are developed. The project site, therefore, does not provide regional movement for wildlife species and does not link large open space areas for wildlife species. No significant impacts to the movement of any fish or wildlife species and wildlife corridors, therefore, would occur. However, localized wildlife movement may be impeded by the development. The project will not impede the use of native wildlife nursery sites.
- e: Less Than Significant with Mitigation. Trees that have been identified on sit include blue gum Eucalyptus, Peruvian pepper tree, olive tree, silk tree and Southern California black walnut. The City of Rancho Cucamonga has a local tree preservation ordinance that requires a City permit to remove any tree over 15-feet high and 15-inches in circumference. Any trees that meet these specifications will be identified during the biological studies conducted for the proposed project, and mitigated according to City requirements.

Section 89.0510 of the County of San Bernardino Development Code has a native plant protection ordinance, that provides "The removal of any vegetation within two hundred (200) feet of the bank of a stream or in an area indicated as a protected riparian area on an overlay map or Specific Plan, shall be subject to a tree or plant removal permit ..." The ordinance further provides that "... streams include those shown on United States Geological Survey Quadrangle topographic maps as perennial or intermittent, blue or brown lines (solid or dashed), and river wash areas."

The Cucamonga Peak USGS Map identifies the area as having a blue line stream traversing the project site. However, flood control facilities constructed subsequent to the preparation of the USGS map, have changed the area's drainage course and restricted it to the new channels. As a result, the vegetation in the area has been affected due to the removal of the upstream water source and represents a clear exception to the ordinance. In addition, the change in the historic drainage course has modified existing vegetation from riparian to RAFSS dominated by white sage. Therefore, the removal of the existing vegetation is not expected to result in a significant impact to riparian vegetation.

f: **Potentially Significant Impact.** In 1992, the Etiwanda North Specific Plan (Specific Plan) established a master plan for the project area that focused on maintaining the community's rural atmosphere by preserving its historic ranchos, orchards, and wineries. Many of the features discussed in the Specific Plan are now incorporated in the City's recently updated General Plan.

The Specific Plan is currently the guiding document for planned development within the northern portion of the community of Etiwanda. Key guidelines within the Specific Plan include mixed use and low-density development balanced with recreational and open space areas. The City General Plan adds conservation areas in the North Etiwanda area to protect its unique natural resources and to provide buffer areas between urban communities and the San Bernardino National Forest.

The North Etiwanda area is also recognized as a vital resource for the preservation of native plant and animal species through the guiding principles stated in the County of San Bernardino's North Etiwanda Open Space Habitat Preservation Program (NEOSHPP). The NEOSHPP's main focus is on the preservation of rare and endangered species. It also addresses concerns with providing visually pleasing natural open spaces and recreational opportunities to the surrounding community. Although the NEOSHPP is a voluntary program that has never been fully implemented, it does establish guidelines to conserve scenic and valuable habitat in a region considered to be one of the nation's fastest growing housing markets.

The EIR will provide further analysis to assess the project's consistency with the Specific Plan and NEOSHPP in terms of habitat conservation/preservation.

#### V. CULTURAL RESOURCES

a-c: Potentially Significant Impact. Known archaeological sites have been recorded in the vicinity of the project site. The Gabrielino Indiaus were also known to occupy the Etiwanda area, hence, Native American artifacts could be present onsite. The project is located in Etiwanda, a community formed in the late 1800s when water rights were developed. George and William Chaffey purchased land and water rights and established the "Etiwanda Colony Lands," a planned colony consisting of approximately 1,900 acres of agricultural land. The Colony was subdivided into 10 acres lots and a flume and clay pipe system distributed water to the individual landowners from Day and East canyons. Four potential historic resources have been previously identified on the project site. They include a power generation facility, a water system, and an abandoned residence and the remains of low stone walls in the northwest portion of the site. A thorough record review and site reconnaissance will be conducted to

identify and evaluate the potential for cultural resources to occur. The findings will be included in the EIR. The EIR will provide a complete discussion of the findings of the cultural assessment and the technical report will be included in its entirety in the EIR Appendices.

Should no visible historical, cultural and/or paleontologic resources be observed as a result of site surveys, the EIR will still identify measures to be followed should sub-surface resources be discovered during construction activities. These procedures may include, but not be limited to stopping work and diverting earth-disturbing activities elsewhere, and retaining a qualified archaeologist or paleontologist to assess and recover the resources.

d: **Potentially Significant Impact.** The potential presence of burial sites will be assessed during the cultural assessment. Should the project site contain human remains, the EIR will include the appropriate mitigation to ensure that no impacts occur to these resources. Further, the EIR will identify measures to be taken in the event human remains are encountered during construction. These measures will be consistent with the State Health and Safety Code 7050.5.

#### VI. GEOLOGY AND SOILS

a-d: **Potentially Significant Impact.** The 150.8-acre site is bisected in a northeasterly to easterly direction by the Red Hill/ Etiwanda Avenue fault, which in this area is known to be active. This portion of the fault corresponds with a prominent scarp in the alluvial fan, known as the Etiwanda Avenue Scarp, which is the result of the displacement of recent alluvial deposits, and is included in an Alquist-Priolo Special Studies Zone. The site is also located near the Cucamonga and San Jacinto faults, both active and capable of generating moderate to large-sized earthquakes that would cause strong ground shaking in the area. Other faults nearby also have the potential to cause strong ground shaking. Given its location at the base of the San Bernardino Mountains, the project site is also susceptible to debris flows and flooding during intense precipitation events. Oversized materials (boulders) will also be exposed during grading which will need to be buried under engineering controls or otherwise disposed of appropriately. Other geologic issues include, but are not limited to, earthquake-induced liquefaction and slope instability, soils, and wind erosion.

A Geologic/Fault Investigation was conducted for the proposed project site by GeoSoils, Inc. in October 1998 and updated in November 2000 and July 2002. A review of other pertinent, readily available reports and maps on the geology and seismicity of the area, including the Technical Background Report to the City's General Plan Safety Element will also be conducted for the preparation of the EIR. An analysis will be included in the EIR of the

estimated magnitude and duration of strong ground shaking that can be expected at the site from the largest earthquake caused by each of the major active and potentially active faults within a 60-mile radius. In addition, data obtained by reviewing stereoscopic aerial photographs for landforms that may be indicative of faulting, and evidence of historic floods that may have previously impacted the site will be discussed. The data obtained from the literature, map and photo review will be compiled onto a baseline map and included in the EIR.

The compiled seismic, geologic and flooding data will be analyzed to assess which portions of the site are at risk from the hazards identified, and to evaluate the potential constraints that these hazards may pose on the proposed project. Where appropriate, remedial measures that could be implemented to mitigate the hazards and constraints will be identified in the EIR. At a minimum, the project proponent will be required to include the direction and setback distance of the building setback line on the site grading plan(s). Final project plans should also be reviewed by GeoSoils, Inc. prior to construction, in order to assure construction is in accordance with the geologic/fault investigation report.

e: No Impact. The proposed project does not involve the use of septic tanks or alternative wastewater disposal systems. No impacts associated with these facilities will, therefore, occur.

#### VII. HAZARDS AND HAZARDOUS MATERIALS

a-b: Less Than Significant Impact. There are no existing Superfund sites within the City. There are 24 large quantity (greater than 1,000 kilograms per month) generators within the City including chemical manufacturers, electroplating companies, or petroleum refineries. There are 74 small quantity (between 100 and 1,000 kilograms per month) generators within the City including dry-cleaning, auto repair shops, and photo processing centers. There are two potentially un-remediated leaking underground storage tanks in the City.

The transportation of hazardous wastes/materials on freeways and major arterial roadways poses flash point (fire) and explosive potential. In addition, trucks using these roadways may transport solid, hquid, and/or gaseous material of varying toxicity. Restrictions placed on the transport of hazardous waste/materials include the avoidance (unless no other satisfactory route exists) of heavily populated areas, limitations on access to bridges and tunnels, and a 1-mile-wide zone limitation along freeways for access to fuel and services. The disposal of hazardous waste is also highly regulated. The project does not include uses which are likely to create any health hazards, or result in accidental explosions or release of hazardous substances. Exposure to people of hazards associated with hazardous materials is therefore less than significant.

Some hazardous materials, such as asphalt and paint, will be used during the residential construction process. However, ordinary quantities of these materials, stored in accordance with City Fire Department requirements, will not pose a significant risk to the public.

- c: Less Than Significant Impact. The nearest school is located on the northeast corner of Summit Avenue and East Avenue, approximately half a mile from the project site. As explained above, the project does not include uses which are likely to create any health hazards. Therefore, impacts related to schools and hazardous materials are less than significant.
- d: Less Than Significant Impact. According to the U.S. Environmental Protection Agency, there are no existing Superfund sites within the City. The proposed project is not located on a site that is included on a list of hazardous materials sites pursuant to Government Code Section 65962.5 and therefore would not create a hazard to the public or the environment.
- e, f: No Impact. The Rialto Municipal Airport is located approximately 7 miles to the east. The Ontario International Airport is located approximately 10 miles to the southwest of the project site. There is a direct correlation between potential hazard and distance to an airport. Given the large distance between the proposed project and the respective airports, the airports do not represent a hazard for construction workers or people residing in the project area.
- g: No Impact. The City of Rancho Cucamonga General Plan provides that "Primary and secondary routes should be designated for evacuation and access by emergency services. Different routes may need to be identified for different natural disasters". Through the environmental review process, consistency with the City's General Plan will be ensured.
- h: Less Than Significant Impact. The proposed project is located at the interface of the City of Rancho Cucamonga's designation of Hazardous Areas and Non-hazardous Areas for wildland fires. The General Plan provides that "In areas designated as high fire hazard, the City and County should undertake or continue programs to minimize fuel buildup around residences and other occupied structures." The Plan further specifies programs to reduce hazards, including "Fire buffers along heavily traveled roads should be created by thinning, discing, or controlled burning subject to air quality restrictions."

The project site does not contain a roadway designated as an emergency route. Compliance with emergency access requirements of the County and City Fire Departments and the City's

Police Department will ensure that emergency response to the site will not be affected. Emergency fire response may also be served by the California Department of Forestry Etiwanda Fire Station located approximately 1.5 miles south of the project site. Construction operations may temporarily impede traffic flow during construction activities of the project. Detours and lane closures, if required, will be provided to maintain adequate access during any construction activities, including notification of lane restrictions and detours to adjacent users. Given these factors, no significant impact is anticipated.

#### VIII. HYDROLOGY AND WATER QUALITY

a, e: Less than Significant with Mitigation. The proposed project is located on the foothills of the San Gabriel Mountains, on the Etiwanda alluvial fan which is characterized by a fairly steep 6 percent grade. Etiwanda Creek is less than 1/4 mile to east of the proposed project. Day Creek Channel is over 1 mile to the west. A prominent fault scarp trends northeast across the project site. A blue line stream trends south, southeast across the project site.

The proposed project would result in the alteration of exiting drainage patterns and the amount and quality of surface runoff on the project site due to grading construction of impervious surfaces, irrigation of landscaped areas and the addition of residential and open space uses.

The project includes a proposed storm drain system that will connect to the existing channel west of the project site to the Etiwanda Regional Spreading Grounds located east of the project site. The storm drain system has been designed to accommodate storm flow requirements. A series of interim onsite detention basins is also proposed in the fault zone open space area. These temporary facilities are required until the San Bernardino County Flood Control District completes planning and construction of the San Sevaine Regional Mainline Channel, regional flood control facilities for Etiwanda Creek outlined in the County Master Drainage Plan.

Proposed residential uses would have the potential to create contaminated runoff containing compounds such as landscape chemicals and automotive fluids. Since the area of disturbance is greater than 5 acres, the project will require the preparation of a Storm Water Pollution Protection Plan (SWPPP) and the filing of a Notice of Intent with the Regional Water Quality Control Board (RWQCB). As part of standard construction practices, the City and RWQCB will require compliance with best management practices (BMPs) to ensure potentially harmful chemicals or pollutants are not discharged from the site. Such measures may include sandbags, temporary drainage diversion and temporary containment areas.

b: Less Than Significant Impact. The proposed project does not include the injection into or the extraction of groundwater. Domestic water supply will he provided by the Cucamonga Cuunty Water District. Project construction will not require substantial subsurface cuts which may impede groundwater movement.

The amount of impervious features included in the proposed project (e.g., foundations, sidewalks, streets, etc.) construction will not significantly affect groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. Open space areas will continue to allow for onsite recharge and storm flows collected within the storm drain system will be directed to the Etiwanda Spreading Grounds which will also allow for storm flow percolation to occur.

c-d: Less Than Significant Impact. The project site contains two ephemeral drainages. The largest drainage begins at the confluence of the concrete flood control channel (located at the northern end of the property, adjacent to the residential development west of the project site), and a natural channel that flows from the northwest. The natural portion of the drainage flows to the southeast and merges with a defined flood control channel that parallels the southern boundary of the project site. The second drainage is located on the east side of the project site. It flows from the northwest to southeast and offsite, eventually merging with the flood control channel on the southern boundary.

The proposed project would result in the alteration of the existing drainage patterns and the amount and rate of surface runoff due to grading, construction of impervious surfaces, irrigation of landscaped areas, and the addition of residential and open space uses. To compensate for the additional runoff from the development area, drainage facilities would be provided as part of the proposed project to direct runoff to storm drainage facilities. The proposed storm water drainage/detention basin system would replace the existing drainages on the project site. These engineered control systems are designed as to reduce any potential of substantial erosion, siltation, or flooding on- or offsite.

f: Less than Significant with Mitigation. Implementation of the proposed project would result iu grading of up to approximately 150.8 acres. The proposed project has the potential to cause changes in the quality of surface water. Construction of the proposed development would require grading and excavation activities that may allow eroded soils and other pollutants to enter the storm drain system. Storm water runoff from roadway surfaces may be contaminated by sediment, petroleum products, and commonly utilized construction materials. The mass grading of 150.8 acres could have a significant impact on water quality and result in substantial erosion. Grading activities associated with the implementation of the proposed project could result in sediment being released into area storm drains. Therefore, the project

will require the preparation of a Storm Water Pollution Protection Plan (SWPPP) and the filing of a Notice of Intent with the Regional Water Quality Control Board. As part of standard construction practices, the City of Rancho Cucamonga will require compliance with best management practices (BMPs) to ensure potentially harmful chemicals or pollutants are not discharged from the site. Such measures include sandbags, temporary drainage diversion and temporary containment areas. The project proponent will also have to apply for grading permits and supply an erosion control plan. A construction permit must he obtained from the California Regional Water Quality Control Board, Santa Ana Region, for grading activities.

Once construction is completed, residential uses could have the potential to create contaminated runoff containing constituents such as landscape chemicals and petroleum products. The EIR will provide further analysis of the effects to hydrology and water quality that could potentially occur with project implementation. A hydrological study for the proposed project is currently being prepared. The findings will be included in the project EIR.

- g: No Impact. The proposed project site lies on an alluvial fan. The upstream watershed of the property is currently undeveloped and supports a series of drainages, several of which continue across the alluvial fan onto the project site. The project site lies within Zone "D" of the Flood Insurance Rate Map, indicating that the flood hazards are currently undetermined. Episodic flooding has occurred as a result of generalized flows from direct rainfall to the area. General flood protection would be provided by the construction of the 25<sup>th</sup> Street Diversion Channel, when completed. Interim flood control would be provided through on site detention basins until flood control improvements are complete adjacent to the Interstate 210 freeway. A Federal Emergency Management Agency (FEMA) study would be required, along with a letter of map revision through FEMA. The study would identify any necessary mitigation measure, if any portion of the project area is determined to be within Zone "A," which would indicate a serious potential risk from flooding.
- h, i: No Impact. According to the City General Plan, the project site is not located within the 100-year floodplain. Therefore, implementation of the proposed project would not place housing in a 100-year hazard area or place structures within a 100-year hazard area which would impede or redirect flood flows.
- j: Less Than Significant Impact. The geographic location and elevation of the project site precludes effects from tsunamis. The proposed project does not include the construction of reservoirs or other large water storage facilities that could cause a seiche. The project site lies at the base of the San Gabriel Mountain foothills. Although the site could be impacted by mudflows or landslides caused by extreme environmental conditions and downslope grading activities, the risk of loss due to mudflows will be reduced with the addition of the proposed

storm drainage system and the incorporation of Best Management Practice into the design of the project. The potential of mudflow or landslide impacts will be further addressed in the EIR. Development standards will be imposed on the applicant and other special requirements including a detailed slope analysis, grading plan, geologic report, and a soils erosion control plan. All reports/studies/plans will be reviewed and addressed in the EIR.

#### IX. LAND USE AND PLANNING

- a: No Impact. The project site is located in an unincorporated area of the County and within the City's Sphere of Influence. There is currently no established community that will be affected by this project. Land uses in close proximity to the project site include an SCE powerline and vacant land to the north, vacant land and the County flood control channel to the east, a residential development to the west and the Cucamonga County Water District treatment plant to the immediate south. The project site is currently vacant. Implementation of the proposed project will, therefore, not physically divide an established community. This project is consistent with newly constructed and proposed housing projects within the immediate area.
- b: **Potentially Significant Impact.** The proposed project is a residential development of up to 359 detached single-family homes with a density of approximately 2.4 dwelling units per acre. The land is currently in the unincorporated area of San Bernardino County but lies within the City of Rancho Cucamonga Sphere of Influence. Annexation into the City is being proposed as part of the project. The City's General Plan currently designates the southern portion of the project site as Low Medium density residential housing (4 to 8 dwelling units per acre) and the northern portion of the site as Low Density (2 to 4 dwelling units per acre). The proposed development will require annexation into the City, but is consistent with the City's current General Plan.

The project is also part of the City's Etiwanda North Specific Plan (Specific Plan). Under the Specific Plan, the current land use designations are Low Density Residential (2 to 4 dwelling units per acre) for the southern portion of the project site and Very Low Density Residential (less than two dwelling units per acre) for the northern portion of the site. Though the southern portion of the project site is consistent with the Specific Plan, an amendment of the City's Specific Plan may be required for the northern portion of the project site.

c: Less than Significant Impact. The North Etiwanda area is recognized as a vital resource for the preservation of native plant and animal species through the guiding principles stated in the County of San Bernardino's North Etiwanda Open Space Habitat Preservation Program (NEOSHPP). The NEOSHPP's main focus is on the preservation of rare and endangered species. However, the NEOSHPP is a voluntary program that has never been fully

implemented. Therefore, the proposed project will not conflict with an adopted conservation plan.

#### X. MINERAL RESOURCES

- a, b: Less Than Significant Impact. Based on a review of the County of San Bernardino General Plan Mineral Resources Overlay map, the project site is classified MRZ-2. This category describes areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood for this presence exists. Mining activities do not presently occur on the site; but active aggregate mining operations presently occur tbroughout the area. The City General Plan also notes that the extraction of aggregate impacts the surrounding environment and can adversely impact adjacent planned land uses. Consequently, certain land use patterns in proximity to resource extraction areas are generally incompatible. Because the site may contain some mineral resources, a soil study will be conducted to evaluate soil test results to confirm that the potential of incremental loss of any aggregate resources present on the project site will be considered less than significant. The findings of the study will be included in the project EIR.
- XI. NOISE
- a, d: **Potentially Significant Impact.** The nearest noise sensitive receptors in proximity to the project site include single-family residences located directly to the west and southwest; and Etiwanda Creek Park, a community park located approximately one-third of a mile southeast of the project site. An analysis of the potential noise impacts of the proposed project will be documented in a technical report and included in the project EIR. The noise assessment will analyze construction-related noise levels and future noise levels form vehicle-generated noise both with and without the proposed project. The County and City Noise Ordinance standards will be used in the analysis of construction- and traffic-related noise levels.
- b: No Impact. The proposed project consists of a residential development that would not require the use of pile drivers or other high vibration generation equipment. Therefore, construction activities are not anticipated to cause excessive groundborne vibration or groundborne noise levels.
- c: Potentially Significant Impact. The development of new housing and subsequent increases in traffic would increase ambient noise levels above existing levels. The City of Rancho Cucamonga has specified Land Use Noise Standards for residential, commercial/office and industrial land uses. Noise impacts related to this project and their consistency with the City's

Land Use Noise Standards will be assessed in the noise study conducted for the project. The findings of the study and the technical report will he included in the EIR.

e, f: No Impact. The project site is not located within an airport land use plan, nor is it located within two miles of a public airport, public use airport or in the vicinity of a private airstrip. The closest airport to the project site is the Rialto Municipal Airport located approximately six miles to the east. No impact associated with airport-related noise would, therefore, occur.

#### **XII. POPULATION AND HOUSING**

a: Potentially Significant Impact. The proposed project is included in the planning area of the City's General Plan. Future development under the General Plan is expected to result in a population of 156,778 people within the General Plan, planning area. This future population represents an increase of 31,178 people, or a 25% increase from the current population under General Plan estimated baseline conditions in 2000. Future development is expected to result in 55,612 housing units throughout the planning area. This future housing represents an increase of 13,500 new housing units, or a 32% increase from the current population under General Plan estimated baseline conditions in 2000.

According to SCAG, future growth is expected to continue to be concentrated in the southwestern portion of the County, particularly with the stimulation of employment growth resulting from the Ontario Airport expansion and other rapidly developing industry in the area.

The project proposes development of 359 dwelling units, which would provide residence for approximately 1,238 people, based on the average household size of 3.48 people per household. Thus, the proposed project will provide 2.7% of the City's future housing needs, for 4% of the City's future population.

The installation of new roadways and utility lines serving the new residential development could potentially induce the continuation of an urban development trend occurring within the area. The EIR will provide a detailed analysis of projected growth and indirect impacts.

b, c: No Impact. The proposed project is located on undeveloped property and would not result in displacement of substantial numbers of existing housing or people.

#### XIII. PUBLIC SERVICES

a: The City proposes annexation of the site as part of the proposed project. Providing services to a new residential community of approximately 359 single-family homes will result in an

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increased demand for various public services, including police, fire, schools, parks, etc. Funding for expanded public services may be fully or partially offset through development fees, however the impacts to existing public services will be assessed in the EIR.

Fire protection. Potentially Significant Impact. Fire protection services would be provided the by the Rancho Cucamonga Fire District. Fire Station 173 would be the first due, with a response time of approximately five minutes. Stations 175 and 174 would provide additional fire protection support. A new Fire Station, 176, will open in late 2003 at East Avenue and 23<sup>rd</sup> Street. The Rancho Cucamonga Fire District has an automatic aid agreement with all surrounding fire agencies. The California Department of Forestry Etiwanda Fire Station, located approximately 1.5 miles south of the project site, would provide added service for tbose emergencies involving wildland fires. Fire protection services may be particularly significant given the project site's location within a high probahility, high consequence fire hazard area. Upon development the project would become part of the Very High Fire Severity Zone subject to specific Health and Safety Code requirements. The project would also be subject to the requirements of the San Bernardino County Fire Safety Overlay District. The project would also be located within Community Facilities District 88-1. The revenue from the CFD is intended to mitigate the impact of development on Fire District services.

Police protection. Potentially Significant Impact. The City of Rancho Cucamonga currently contracts with the San Bernardino County Sheriff's Department for police protection services. The City's General Plan identifies the potential for locating a Sheriff's Substation in the North Etiwanda area to provide effective service to the developing community. The impacts for providing police protection services to the proposed project will be analyzed and addressed in the EIR.

Schools. Potentially Significant Impact. The City's General Plan identifies a potential shortage of schools within the community due to anticipated growth. The proposed project is located within the Etiwanda School District Extension Area. According to the General Plan, as of early 2001, three of the five school districts serving the City have no additional student capacity.

Of the four elementary school districts, only the Etiwanda School District reports being below capacity, but only as a result of new school construction. In the next five-years, the Etiwanda School District anticipates a significant increase in enrollment and has been building new schools to accommodate that growth. As most of the vacant land available for residential development is located within the Etiwanda area, the Etiwanda School District will be most impacted by future development.

The Chaffey Joint Union High School District extends throughout the city. A new high school was constructed in 1993 to provide for additional capacity during the 1994-95 school year. An additional high school may also be necessary to provide adequate resources for projected growth.

Development fees to support expanded school services are authorized under the California Educational Code. Currently, new development is assessed a fee of \$1.93 per square foot for residential development and \$0.31 per square foot of commercial/industrial development. The impacts for providing additional classroom capacity will be evaluated in the EIR.

*Parks.* Less Than Significant Impact. The proposed project will increase demand on public parks. The City maintains a park standard of five acres of parkland for every 1,000 residents. The project will provide approximately 13 acres of new recreational land as part of the project. This recreational space will provide the community with hiking and biking opportunities along a multi-purpose trail and open-space paseos which will ultimately connect to the regional trail network along East Avenue.

Other public facilities. Potentially Significant Impact. The increased population caused by the addition of 359 new single-family homes will place additional demands on a variety of public services including hospitals, medical offices, public transportation, libraries, etc. the significance of these impacts will be evaluated and discussed in the EIR.

#### XIV. RECREATION

a, b: Less Than Significant Impact. The addition of 359 new single-family residences will likely require additional maintenance of existing recreational facilities and/or the construction of additional facilities due to increased demand. This demand will be offset by the construction of the multi-purpose recreational trail and open-space paseos that will provide an additional source of recreation to the local community. No additional sources of revenue will be necessary to maintain existing facilities other than local assessments and taxes currently in place.

#### XV. TRANSPORTATION/TRAFFIC

a, b: Potentially Significant Impact. The site is currently accessed along unimproved dirt roads. The addition of 359 new single-family homes will require improvements to these existing access roads, including the construction of new paved roadways at Etiwanda and East Avenues north of Wilson Avenue, as well as construction of a paved roadway at Wilson Avenue. The Congestion Management Plan (CMP) (Government Code §65088 and §65089) and the San Bernardino County Congestion Management Program, 1999 Update require the preparation of a CMP traffic impact analysis report for all projects that meet the local criteria for preparing a traffic impact study in the City of Rancho Cucamonga. A traffic study conducted for the proposed project will be reviewed by an independent traffic consultant to ensure that CMP guidelines have been met. The results of the traffic study results will be incorporated into the EIR along with any mitigation measures required to reduce impacts to less than significant levels.

- c: No Impact. The closest airport to the project site is the Rialto Municipal Airport located approximately six miles to the east. No change associated with air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks would occur.
- d: Less Than Significant Impact. Project roadways will need to reflect the designs and standards in full compliance with applicable City of Rancho Cucamonga requirements. No sharp turns or dangerous corners will be allowed. Incompatible uses, such as with farm equipment, will also be prohibited. A complete analysis of roadway improvements will be evaluated in the EIR to determine whether any potential hazards are included in the current project design.
- e: Less Than Significant Impact. The County General Plan indicates that the Interstate 15 freeway is designated as an emergency evacuation route in the County. The onsite circulation system and the access roads to the project site would be constructed consistent with the City's Development Code and applicable City Fire Department requirements related to emergency access. The proposed project includes the construction of East Avenue south of Wilson Avenue, providing additional emergency access to the area. Proposed streets and improvements will be evaluated in the EIR in terms of their impacts on emergency access and consistency with City regulations.
- f: Less Than Significant Impact. The proposed project will provide for adequate parking capacity as part of its design. Single-family homes will include garages, driveway and street parking as part of its design features. Consistency with the City's Development Code standards will be evaluated in the EIR.

g: Less Than Significant Impact. The consistency of the project with the area's adopted policies, plans or programs supporting alternative transportation will be evaluated in the project EIR. Implementation of the proposed project would provide multi-purpose trails within and adjacent to the development designed consistent with the City's Development Code.

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#### XVI. UTILITIES AND SERVICE SYSTEMS

Natural gas would be provided by Sempra Energy, which has a six-inch gas main in Wilson Avenue, along the southern project boundary. According to Sempra Energy connection of the proposed project to this gas main would not adversely effect the operation of the gas main. Each household is expected to use approximately 2,400 cubic feet per day of natural gas. Total daily consumption of natural gas is expected to be 861,600 cubic feet.

a, b: Less Than Significant Impact. The proposed project lies within two sewer drainage areas: the existing Etiwanda Avenue Trunk Sewer: and the proposed East Avenue Trunk Sewer. The two Trunk Sewers connect to the Inland Empire Utilities Agency (IEUA) wastewater treatment facilities.

Wastewater from the proposed project would not be anticipated to exceed current and planned treatment capacity. Construction of new wastewater treatment facilities or expansion of the existing facilities above those already planned would not be anticipated. It is not anticipated that the proposed project would exceed the wastewater treatment requirements of the RWQCB.

- c: Potentially Significant Impact. Interim storm water retention basins will be installed onsite as part of the project until improvements to the existing storm water drainage system can be completed. New storm drainage facilities for the proposed project would be constructed as an integral part of the proposed project. Interim basins are not consistent with the Etiwanda/San Sevaine Area Drainage policy. A preliminary drainage study would be required to determine the appropriate size of flood protection and identification of appropriate mitigation measures. The project's inconsistency with local drainage policies, and other impacts related to drainage facilities will be further assessed in the EIR.
- d: **Potentially Significant Impact.** Domestic water will be supplied by the Cucamonga County Water District. Existing entitlements and resources will be reviewed to determine whether the existing project will impact current resources. Both short-term (construction) and long-term impacts of increased water demand will be assessed in the EIR.

- e: Potentially Significant Impact. Wastewater treatment services are provided by the Inland Empire Utilities Agency. The agency currently owns and operates four wastewater treatment facilities with a fifth facility under construction. Existing capacity and the ability to meet projected demands will be evaluated in the EIR to determine whether this project may have a significant impact on wastewater treatment capacity.
- f, g: Less Than Significant Impact. Solid waste disposal is provided by Burrtec Waste Industrices, Inc. (Burrtec) through a contract with the City. Refuse from the proposed project would be taken to the West Valley Material Recovery Facility (MRF), a fully permitted transfer station and material recovery facility. The West Valley MRF is permitted to accept 5,000 tons per day of municipal solid waste and mixed recyclables. Non-recyclable solid waste would be transferred to a County landfill served by the County of San Bernardino Solid Waste Management Division. The closest landfill to the project area is the Mid-Valley landfill located in the City of Rialto. The facility currently receives approximately 1,000 tons per day and is permitted for up to 7,500 tons per day. The site has sufficient remaining capacity for the region through 2033. Burrtec has indicated that they do not expect any long-term inpacts associated with solid waste disposal at the MRF or in the County. The project will comply with federal, state and local statutes and regulations related to solid waste.

#### XVII MANDATORY FINDINGS OF SIGNIFICANCE

- a. **Potentially Significant Impact.** Based on possible habitat on the project site, the project could have the potential to affect sensitive wildlife species. Jurisdictional drainages also occur on the site. The EIR will provide a comprehensive analysis of the potential effects to biological resources, as well as, mitigation measures necessary to reduce impacts to below the threshold of significance. Historical resources could also potentially exist onsite, however, no known prehistoric resources have been recorded. Subsurface cultural and paleontologic resources could exist therefore, mitigation measures will be recommended in the EIR to reduce potential impacts to subsurface cultural and paleontologic resources to less than significant.
- b,c: Potentially Significant. Several of the potential impacts identified in this Initial Study could degrade the quality of the environment if they were not avoided or sufficiently mitigated. The proposed Tentative Tract Map Number 16072 and annexation project could affect aesthetics, air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, land use and planning, noise, population and housing, public services, transportation/traffic, and utilities and service systems. At this point, a final determination cannot be made. Additional studies or information is required for the above listed resource arcas. The cumulative effects of these changes may be significant if not mitigated. Several of

the potential impacts identified in this Initial Study could have substantial adverse effects on humans if not mitigated. An EIR will, therefore, be prepared for the proposed project. The EIR will provide analysis of potential impacts and consider direct and indirect effects, and shortterm and long-term effects and cumulative effects.

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#### 4.0 **REFERENCES**

#### California Department of Conservation

San Bernardino County Important Farmland 1996, Western Sheet.

#### City of Rancho Cucamonga

Etiwanda North Specific Plan, adopted April 1, 1992.

General Plan, adopted October 17, 2001.

City of Rancho Cucamonga Web Site, www.ci.rancho-cucamonga.ca.us

#### Federal Emergency Management Agency

Flood Rate Insurance Map, Map Number 06071C7895 F, effective March 18, 1996.

#### GeoSoils, Inc.

Addendum to Preliminary Geotechnical Investigation, Tentative Tract No. 16072, Rancho Cucamonga, San Bernardino County, California. July 26, 2002. Prepared for Hill Country.

Preliminary Geotechnical Investigation 132<u>+</u> Acre Parcel, Northeast Corner of Wilson and Etiwanda Avenues, Rancho Cucamonga San Bernardino County, California. November 11, 1998. Prepared for Richland Ventures.

Supplemental Geologic/Fault Investigation Tentative Tract Map No. 16072 Rancho Cucamonga San Bernardino County, California. November 30, 2000. Prepared for Richland Ventures.

#### PCR Services Corporation

Focused Coastal California Gnatcatcher Survey Report for the Etiwanda Project Site, San Bernardino County, California, August 9, 2001.

Focused Coastal California Gnatcatcher Survey Report for the Etiwanda Project Site, San Bernardino County, California, July 15, 2002.

Focused Sensitive Plant Survey Report for the Etiwanda Project Site, San Bernardino County, California. September 20, 2001

Initial Study Etiwanda Subdivison, March 2001. Prepared for Hill Country, S.A., Ltd.

#### RK Engineering Group, Inc.

Etiwanda Properties (Revised) Traffic Impact Analysis, San Bernardino County, California. January 10, 2002. Prepared for Richland Communities.

#### San Bernardino County

General Plan, Revised August 1991.

Flood Control District General Information. N.d.

Flood Plain Safety (FP) Overlay District, San Bernardino County Development Code.

Floodway (FW) District Land Use, San Bernardino Development Code.

South Coast Air Quality Management District SCAQMD CEQA Air Quality Handbook. 1993

#### The Keith Companies

Tracey Development North Etiwanda Area Tentative Tract Map 14749 Project Environmental Impact Report, September 10, 2001. Prepared for County of San Bernardino.

#### **US Geological Survey**

Cucamonga Peak, California quadrangle map, revised 1996

### COMMENT LETTERS RECEIVED ON NOTICE OF PREPARATION

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Attachment 3, Page 58 of 608 Board of Trustees

Shawn JU/25/2024 Board Meeting Superimendent Douglas M. Claftin Assistant Superimendent of Businges Services Robecca M. Lawrence Assistant Superimendent of Instruction/Pupil Services Heidi M. Soehnot Assistant Superimendent of Personnel Syfvia Kordich Marinistratur of Special Programs



Boărd of Trüstees Brynna R. Cadman David W. Long Mark H. Murphy Cecilia L. Solario Mondi M. Taylor

6061 East Avenue, Etiwanda, California 91739 (909) 899-2451 FAX (909) 899-9463

October 11, 2002

Thomas J. McGill, Ph.D. Michael Brandman Associates 621 East Carnegie Drive, Suite 100 San Bernardino, CA 92408

Re: MBA TT16072 Richland Wilson

Dear Thomas J. McGill,

The following is in response to your letter dated August 15, 2002.

 John L. Golden Elementary (K-5) 12400 Banyan St. Etiwanda, CA 91739 Is approximately 1.0 mile from the project area.

Summit Intermediate (6-8) 5959 East Ave. Etiwanda, CA 91739 Is approximately 1.0 mile from the project area.

- 2. There are no known special service requirements for the project area.
- 3. 359 dwellings will generate approximately 162 elementary and 76 intermediate students. Current populations at the serving schools will be impacted by this project in conjunction with other projects in the same service area.
- 4. The proposed project will require the addition of both elementary and intermediate classroom spaces. This will include the classroom facilities and the staffing associated with the classroom. The project impact will also result in support staff and auxiliary support facilities such as buses / drivers, maintenance staff, clerical staff and more facilities for the new staff.

- 5. Problems with service could be related to the schedule of development. Access to the development, improvement of surrounding support structure and availability of funds for the new service requirements.
- 6. We recommend funds and facilities to fulfill the need of the school district. This can be through mitigation funds per household, land for schools and/or other contributions.
- 7. K-5 0.45 / per household 6-8 0.21 / per household
- 8. School fees: \$2.66 per sq. ft. plus a voter approved special tax of \$2,358.94 per unit.
- 9. Students in K-8 will attend the Etiwanda School District and 9-12 will attend Chaffey Joint Union High School District.
- 10. The contact name is Douglas M. Claflin Etiwanda School District 6061 East Ave. Etiwanda, CA 91739 (909) 899-2451 ext. 124 doug. claflin@ctiwanda.k12.cuus

1 OTK Sincerely.

Douglas M. Claflin / Assistant Superintendent of Business Services

DMC/fm

STATE OF OR A BARANCAL SHORES TEAMS PORTATION AND HOUSING AGENCY-10

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Attachment 3 Page 60 of 608



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DEPARTMENT OF TRANSPORTATION

DISTRICT 8 454 W Fourth Street, 6<sup>th</sup> Floor MS 726 San Bernardino, CA 92401-1400 PHONE (909) 363-6327 FAX (909) 383-5890

October 9, 2002

08-SBd-15-9.665 SCH# 2002091053 са с с **с с с** 

OCT 10 2002

STOTICE - PLATING

Ms. Catherine Johnson City of Rancho Cucamonga P.O. Box 807 Rancho Cucamonga, CA 91729

Dear Ms. Johnson:

Notice of Preparation-Draft Environmental Impact Report, Tentative Tract Map 16072, Michael Brandman Associates, Applicant

We have received the above notification relevant to Tentative Tract 16072, proposing development of 359 single-family lots on 150.8 acres of property located north of Wilson Avenue between Etiwanda Avenue and East Avenue in the city of Rancho Cucamonga. Because this project is located some distance from Interstate 15 and State Route 210, we are concerned with future "cumulative" impacts to State facilities resulting from continued growth in this area.

With this in mind, we recommend that the project EIR include discussion of policies outlined in the Congestion Management Plan of the San Bernardino County Transportation Commission, and pertinence thereof to TTM 16072. EIR discussion should also include a method for determining cumulative project impacts to area transportation facilities as well as a formula for calculating "fair-share" contributions to a local fund designated for use in building or upgrading area transportation infrastructure.

Thank you for providing us this opportunity to review the Environmental Initial Study for Tentative Tract Map 16072. If you have any questions regarding this letter, please contact Mr. Kee T. Ooi zt\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (909) 383-4149 for assistance.

Sincerely,

Sude Kimes

LINDA GRIMES, Chief Office of Forecasting/IGR-CEQA Review Transportation Planning Division

cc: B. Frank - State Clearinghouse

## <sup>1/9/2024</sup> California Regional Water Quality Control Board of 60

Santa Ana Region

Winston JL. Ilickox Secretary for Environmental Frotection

Internet Address: http://www.swrcb.ca.gowrwqcb8 3737 Main Street, Suite 500, Riverside, California 92501-3348 Phone (909) 782-4130 - FAX (909) 781-6288



The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at move-sweed-ca.gov/requbb.

October 2, 2002

Ms. Catherine Johnson City of Rancho Cucamonga P.O. Box 807 Rancho Cucamonga, CA 91729

OCT 07 2002

#### DRAFT ENVIRONMENTAL IMPACT REPORT (DEIR) FOR TENTATIVE TRACT MAP 16072/ STATE CLEARING HOUSE NUMBER 2002091053

Dear Ms. Johnson:

Staff of the Regional Water Quality Control Board, Santa Ana Region (RWQCB), has reviewed the Draft Environmental Impact Report for the above referenced project. The proposed project is a Residential Development that includes the development of up to 359 single-family residential units, on a total of 150.8 acres. The project is located in southwestern San Bernardino County, in the City of Rancho Cucamonga.

There is widespread experience that urban development activity impacts water quality. There is the potential that the development of this area will substantially impact the water quality and the associated beneficial uses. Therefore, to lessen impacts to water quality standards and protect beneficial uses, the following principals and policies should be considered for the project:

- Avoid disturbance to any natural water bodies and drainage systems; protect slopes and conserve natural areas. Natural drainage systems and water bodies reduce impacts to water quality standards and will improve impacted waters. In addition, they support beneficial uses for wildlife and recreation. Encourage riparian vegetation in drainage systems, if feasible. Provide adequate vegetated buffer areas to capture storm flows, to lessen erosion, and protect water quality. All disturbances to natural waters and drainages require mitigation.
- 2. Please be advised that any impacts to Waters of the United States/State require a Section 401 Water Quality Standards Certification from the Regional Board. Impacts to these waters should first and foremost be avoided. Where that is not practicable, impacts to these waters should be minimized. Mitigation of unavoidable impacts must replace the full function and value of the impacted waterbody. Information concerning Section 401 certification can be found at the Regional Board's website, <u>www.swrcb.ca.gov/rwgcb8/hcm1/401.htm1</u>. Impacts to the waters of the United States also require a Clean Water Act Section 404 permit from the United States Army Corps of Engineers and a Streambed Alteration Agreement from the California Department of Fish and Game.
- Development in this area will increase the amount of area covered with pavement or structures. This will alter the rate and volumes of groundwater recharge and surface water runoff. We encourage the use of pervious materials to retain absorption and allow more

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Ms. Catherine Johnson City of Rancho Cucamonga 2

October 2, 2002

percolation of storm water into the ground within the site. The use of pervious materials, such as vegetated basins, permeable/porous pavement, etc., for all development is strongly encouraged. Any increase in runoff due to development should be mitigated to prevent damage to water quality and beneficial uses downstream.

Biological/vegetated treatment basins reduce the concentration of pollutants in storm or urban water runoff by filtering the runoff through the vegetation and the soil matrix and/or allowing infiltration into the underlying soils. Studies have shown that these wetlands and biolilters remove many of the harmful pollutants found in urban runoff, and also help mitigate the increased volume of runoff.

Porous pavement is an alternative to standard impervious pavement and should be considered for use in parking areas of the project. One type of porous pavement contains an underlying stone reservoir to temporarily store surface runoff allowing it to infiltrate into the subsoil.

- 4. Construction of detention basins or holding ponds and/ or constructed wetlands within a project site to capture and treat dry weather urban runoff and the first flush of rainfall runoff should be utilized. These basins should be designed to detain runoff for a minimum time (e.g., 24 hours) to allow particles and associated pollutants to settle and to provide for natural treatment.
- 5. Consider retaining areas of open space to aid in the recharge and retention of runoff. Native plant materials should be used in replanting and hydroseeding operations. Native plants provide effective slope soil retention, help filter and clean runoff, maintain habitat for native animal species, and have other water quality benefits.
- Post-development storm water runoff flow rates (Q) should not differ from the pre-development. Q. Changes in Q, either in a positive or negative manner can lead to erosion or sedimentation. Such a change in Q may create potential downstrearn impacts affecting 303 (d) listed water bodies, as well as flood control facilities.
- 7. This project should be designed and constructed to protect, and if possible, improve the quality of underlying groundwater. Incorporating the principals and policies mentioned above will help protect the underlying groundwater basin.
- 8. No waste material may be discharged to any drainage areas, channels, streambeds, or streams. Spoil sites must not be located within any streams or areas where spoil material could be washed into a water body.
- 9. As a result of the proposed construction activity occurring in an area over five acres, a General Construction Activity Storm Water Runoff Permit must be obtained by the project proponent. A Notice of Intent (NOI) with the appropriate fees for coverage of the project under the General Construction Activity Storm Water Runoff Permit must be submitted to the State Water Resources Control Board at least 30-days prior to the initiation of construction

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#### 1/9/2024 Board Meeting LOCAL AGENCY FORMATION COMMISSIOn Attachment 3, Page 63 of 608

175 West Fifth Street, Second Floor San Bernardino, CA 92415-0490 • (909) 387-5866 • FAX (909) 387-5871 E-MAIL: latco@lafco.sbcounty.gov www.sbclatco.org

Sciablished by the Since of California to serve the Citizens, Citize, Special Districts and the County of San Bernardino

October 8, 2002

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#### STAFF

JANES M. ROCKY Exclusion Officer

KATHLEEN ROLLINGS-MODONALO Ombry Encoder Officer

DEEBY CHARTERS IN Climits to the Commission

ANDELA M. POE UNPCO Secretary

#### LEGAL COUNSEL

CLARK H. ALSOP

Ms. Catherine Johnson, AICP City of Rancho Cucamonga Post Office Box 807 Rancho Cucamonga, CA 91729 OCT 10 2002

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Dear Ms. Johnson:

1.

RE: NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR TENTATIVE TRACT MAP NUMBER 16072

The Local Agency Formation Commission received the Notice of Preparation for the Draft EIR, as outlined above, on September 26. 2002. A copy of this information has also been forwarded to the Commission's Environmental Consultant, Tom Dodson & Associates, who will also respond by separate correspondence. The following are our comments; concerns, or questions regarding the project identified;

Project description (page 1-2): The description, as listed on the Notice of Preparation, does not clearly identify all the actions to be undertaken. The description relates to the tentative tract while the actions that are contemplated by this document would need to include the pre-zoning of the area and the annexation to the City, and would appear to need to include an amendment to North Eliwanda Specific Plan.

The pre-zoning of the area proposed for annexation is now a requirement of LAFCO law (Government Code Section 56375(e). Therefore, we believe these actions need to be clearly described at the outset of the review and addressed in the various elements within the document.

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Attachment 3, Page 64 of 608 Response to City of Rancho Culdenarge NOP for Tenleting Tract 16072 October 8, 2002

- Item 1.4 Purpose of the Initial Study (page 1-7) The narrative indicates that the subsequent project-specific EIR can be used by the City for approval of the project, and also the adoption of development agreement. The project description should identify that an additional element of the project, as contemplated, is a Development Agreement.
- 3. Item IV Biological Resources Item (f) (page 3-6): In the third paragraph a discussion of the North Ethwanda Open Space Habitat Preservation Program (NEOSHPP) guided by the County of San Bernardino is provided. It should be noted that the annexation of this area to the City will detach the area from County Service Area 70 improvement Zone OS-1 which is the overseer of the NEOSHPP. The removal of this regional agency should be addressed.
- 4. Item VII Hazards and Hazardous Materials –Item (h) (page 3-9) there is no discussion of the removal of the State Responsibility Area (SRA) designation for wildland fire protection included in the document. A map of SRA designated land is attached. Removal of this designation occurs upon annexation to the City as outlined in State law.
- 5. IX Land Use and Planning Item (b) (page 3-13) as outlined in point #1, the second paragraph indicates that "an amendment of the City's Specific Plan may be required for the northern portion of the project site". If it is determined necessary, it should be included in the project description and the changes anticipated defined and addressed in the EIR document.
- 6. Item XIII Public Services Fire Protection (page 3-16) The narrative indicates that the California Department of Forestry Etiwanda Fire Station is located 1.5 miles south of the project and would provide added service for those emergencies involving wildland fires. With the removal of the SRA designation from these lands, the financial responsibility for State support in a wildland fire situation is transferred to the City. The study should indicate whether or not the City contracts with the State Department of Forestry for retention of their services in a wildland fire situation, or if other financial arrangement is made.
- Item XVI --- Utilities and Service Systems Item (a & b) (page 3-19) The narrative should clarify that the wastewater collection system is provided by the Cucamonga County Water District and treatment is provided by Inland Empire Utilities Agency facilities.
- 8. Item XVI -- Utilities and Service Systems, Item (c) (page 3-19) Will the use of interim storm water retention basins require the creation of an operation and maintenance entity (such as assessment district)? If such is required, it too should be outlined in the project description.

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Should you need additional information regarding the comments, concerns, or questions outlined above, please do not hesitate to contact me at (909) 387-5869. We look forward to working with the City on its future processing of this project.

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Sincerely, 1.1.1

KATHLEEN ROLLINGS MCDONALD Deputy Executive Officer

/km Attachment (1)

cc: Tom Dodson, Tom Dodson & Associates. Brad Butler, City Planner



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1/9/2024 Board Meeting

STATE OF CALIFORNIA - THE RESOURCES ACOUST

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DEPARTMENT OF FISH AND GAME Eastern Sterra - Indend Desorts Region 4775 Blid Farm Road Chino Halls, California 91709 (909) 597-5043





October 17, 2002

Ms. Catherine Johnson, AICP City of Rancho Cucamonge P.O. Box 607 Rancho Cucamonga, CA 91729 Phone: (909) 477-2700 Fec: (909) 477-2847

Re: Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) Tentative Tract Map No. 16072 SCH # 2002091033

#### Dear Ms. Johnson:

The Department of Fish and Game (Department) appreciates this opportunity to comment on the above-referenced project with regards to impacts to biological resources. The project proposes development of 359 detached single-family housing units on minimum lot sizes of 8,400 square feel. The net density of the net project is expected to equal 2.38 dwelling units per acre. The proposed project would include annexation of Tentative Tract Map No. 16072 to the City of Rancho Cucamonga. The project also includes interim flood control features pending the completion of permanent flood control facilities. The proposed project site is located north of Wison Avenue between Etiwanda Avenue and East Avenue, within the City of Rancho Cucamonga's Sphere of Influence, in the northern Etiwanda Area of unincorporated San Bernardino County, California.

The Department is responding as a Trustee Agency for fish and wildlife resources (Fish and Gama Code sections 711.7 and 1802 and the California Environmental Quelity Act Guidelines (CEQA) section 15380] and as a Responsible Agency regarding any discretionary actions (CEQA Guidelines section 15381).

A review of records from the California Natural Diversity Database and other area recources indicate that the following sensitive species and habitat types occur in the project vicinity and may be affected by the proposed project: coastal California gnaticatcher (Polioptile californica californica), California mastiff bat (Europs perotis californicus), Netson's bightom sheep (Ovis canadansis netsoni), San Bernsrdino kangaroo rat (Dipodomys meniami pervus, SBKR), mountain yallow-legged frog (Rana muscorea), San Diego homed lizard (Phymosoma coronatum bleinville), San Gabriel stander salamander (Babachoseps gabriel), Johnston's buckwheat (Enlogorum microthecum var. Johnstonii), Peirson's spring beauty (Claytonia lanceolate var. pelrsonii), Partst's desent-thom (Lyckm perishii), Plummer's mariposa lity (Calochortus plummerae). San Gabriel linanthus concinnus), California Wainut Woodland, Coastal and Valley Freshwater Marsh, Riversideen Alixitel Fan Segaro Scub, and Southern Sycamore Alder Ripatan Woodland habitats. The Department recommends that the potential direct and indirect impacts to the above-mentioned species be analyzed in the DEIR.

Page 2 NOP, DEIR - TTM No. 16072 SCH# 2002091053

This particular project has the potential to have significant environmental impacts on sensitive fauna resources, including State and/or Federally listed threatened or endangered species. Therefore, critical aspects of the DER should include an attentativos analysis which focuses on environmental resources and measures to avoid, minimize, and compensate for impacts identified as significant. To enable Department staff to adequately review and commant on the proposed project, we suggest that updated biological studies be conducted prior to any environmental or discretionary approvals. The following information should be included in any focused biological report or supplemental environmental report.

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## Page 3 NOP, DEIR - 177M No. 18072 SCH # 2002091053

 A thorough discussion of direct, indirect, and cumulative impacts expected to edversely affect biological resources, with specific measures to offset such impacts.

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- a. CEQA Guidelines, 15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.
- b. Project impacts should be analyzed relative to their effects on off-site habitats. Specifically, this should include nearby river, streams, or lakes located downstream of the project, public lands, open space, adjacent natural habitats, and riparian ecosystems. Impacts to and maintenance of wildlife comidor/movement areas, including access to undisturbed habitat in adjacent areas, should be fully evaluated and provided.
- 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 roduce these conflicts should be included in the environmental document.
- d. A cumulative effects analysis should be developed as described under CEQA Guidelines, 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.
- e. The DEIR should include an analysis of the effect that the project may have on completion and implementation of regional and/or subregional conservation programs. Under 2800-2840 of the Fish and Game Code, the Department, through the Natural Communities Conservation Planning (NCCP) program is coordinating with local jurisdictions, landowners, and the Federal Government to preserve local and regional biological diversity. Coastal sage scrub is the first natural community to be planned for under the NCCP program. The Department recommends that the lead agency ensure that the development of this and other proposed projects does not preclude long-term preserve planning options and that projects conform with other requirements of the NCCP program. Jurisdictions participating in the NCCP should assess specific projects for consistency with the NCCP Conservation Guidelines.
- 3. A range of alternatives should be analyzed to ensure that alternatives to the proposed project are fully considered and evaluated. A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resources should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.
  - a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts. Off-site compensation for unavoidable impacts through acquisition and protection of high-quality habitat elsewhere should be addressed.
  - b. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts.

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Page 4 NOP, DEIR - TTM No. 16072 SCH # 2002091053

- The Department generally does not support the use of relocation, salvage, and/or C. transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.
- A California Endangered Species Act (CESA) Incidental Take Permit must be obtained, if the 4. project has the potential to result in "take" of species of plants or animals listed under CESA, either during construction or over the life of the project. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to the proposed project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, require that the Department issue a separate CEQA. document for the issuance of a CESA permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a CESA permit. For these reasons, the Department recommends including the following information:
  - Biological mitigation monitoring and reporting proposals should be of sufficient detail and 8. resolution to satisfy the requirements for a CESA Permit.
  - Þ. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act.
- The Department opposes the elimination of watercourses and/or their channelization or 5. conversion to subsurface drains. 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.
  - a. Under Section 1800 of seg of the Fish and Game Code, the Department requires the project applicant to notify the Department of any activity that will diven, obstruct or change the natural flow of the bed, channel, or bank (which includes associated riparian resources) of a river, stream or lake, or use material from a streambed prior to the applicant's commencement of the activity. Streams include, but are not limited to, intermittent and ophomoral streams, rivers, creeks, dry washes, sloughs, blue-line streams, and watercourses with subsurface flow. The Department's issuance of a Lake and Streambed Alteration 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 EIR for the project. However, if the CEQA document does not fully identify potential impacts to lakes, streams, and associated resources (including, but not limited to, riparian and alluvial fan sage scrub habitat) and provide adequate avoidance, mitigation, monitoring and reporting commitments, additional CEQA documentation will be required prior to execution (signing) of the Streambed Alteration Agreement. In order to avoid delays or repetition of the CEQA process, potential impacts to a lake or stream, as well as avoidance and mitigation measures need to be discussed within this CEQA document. The Department recommends the following measures to avoid subsequent CEQA documentation and project delays:

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Page 5 NOP, DEIR - TTM No. 16072 SCH # 2002091053

- (1) Incorporate all information regarding impacts to lakes, streams and associated habitat within the DEIR. Information that needs to be included within this document includes: (a) a delineation of lakes, streams, and associated habitat that will be directly or indirectly impacted by the proposed project; (b) details on the biological resources (flora and fauna) associated with the lakes and/or streams; (c) identification of the presence or absence of sensitive plants, animals, or natural communities; (d) a discussion of environmental alternatives; (e) a discussion of avoidance measures to reduce project impacts; and (f) a discussion of potential mitigation measures required to reduce the project impacts to a level of insignificance. The applicant and lead agency should keep in mind that the State also has a policy of no net loss of wetlanda.
- (2) Include in the DEIR a discussion of potential adverse impacts from any increased runoff, sedimentation, soil erosion, and/or urban pollutants on streams and watercourses on or near the project site, with mitigation measures proposed to alleviate such impacts must be included.
- (3) The Department recommends that the project applicant and/or lead agency consult with the Department to discuss potential project impacts and avoidance and mitigation measures. Early consultation with the Department is recommended, since modification of the proposed project may be required to avoid or reduce impacts to fish and widtife resources. Pre-project meetings are held every week at the Department's Chino Hills office. To schedule a pre-project meeting or to obtain a Streambed Alteration Agreement Notification package, please call (562) 590-5680.

Thank you for this opportunity to comment. Questions regarding this letter and further coordination on these issues should be directed to Ms. Leslie MacNair, Staff Environmental Scientist, at (949) 458-1754.

Sincerely,

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Jeff Drongesen Staff Environmental Scientist -- Supervisor Habitat Conservation - Southwest Region 6

cc: Jeff Newman, USFWS, Carlsbad State Clearinghouse, Sacramento

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## MWD

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

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September 30, 2002

Ms. Catherine Johnson City of Rancho Cucamonga P.O. Box 807 Rancho Cucamonga, CA 91729

Dear Ms. Johnson:

Notice of Preparation and Initial Study for the Draft Environmental Impact Report for Tentative Tract Map Number 16072

The Metropolitan Water District of Southern California (Metropolitan) has received a copy of the Notice of Preparation and Initial Study (NOP/IS) for the Draft Environmental Impact Report for Tentative Tract Map Number 16072 in an unincorporated area of San Bernardino County within the sphere of influence of the city of Rancho Cucamonga (City). The proposed project site consists of a vacant lot located north of Wilson Avenue and east of Etiwanda Avenue. The City proposes to develop 359 detached single-family housing units with a minimum lot size of 8,400 square feet per unit. The proposed project would also include annexation of Tentative Tract 16072 to the City and inclusion into the City's General Plan. This letter contains Metropolitan's response to the NOP/IS as a potentially affected agency.

Our review of the proposed project indicates that Metropolitan owns and operates a facility adjacent to the south boundary of the project site. Metropolitan's Foothill Feeder-Rialto Pipeline, which is a 98-inch diameter pipeline extending in a generally cast-west direction in the vicinity of the project site, is located within the southern half of Wilson Avenue within a strip of fee property of varying width.

Based on review of the NOP/IS, the Foothill Feeder-Rialto Pipeline is not specifically identified within the document. Metropolitan is concerned with potential impacts to this facility associated with future excavation and new construction that may occur a result of the proposed project. Metropolitan requests that the City consider the Foothill Feeder-Rialto Pipeline in its project planning and identify potential impacts to the facility that may occur as a result of project implementation. The City should also identify whether protection or relocation of the pipeline would he required as a result of the proposed project.

700 N. Alameda Street, Los Angeles, California 90012 • Mailing Address: Box 54153, Los Angeles, California 90054-0153 • Telephone (213) 217-6000

Ms. Catherine Johnson Page 2 September 30, 2002

In order to avoid potential conflicts with Metropolitan's rights-of-way, we require that any design plans for any activity in the area of Metropolitan's pipelines or facilities be submitted for our review and written approval.

Mctropolitan must also be allowed to maintain its right-of-way and access to the Foothill Feeder-Rialto Pipeline at all times in order to repair and maintain the current condition of those facilities.

The applicant may obtain detailed prints of drawings of Metropolitan's pipelines and rights-ofway by ealling Metropolitan's Substructures Information Line at (213) 217-6564. To assist the applicant in preparing plans that are compatible with Metropolitan's facilities and easements, we have enclosed a copy of the "Guidelines for Developments in the Area of Facilities, Fee Properties, and/or Easements of The Metropolitan Water District of Southern California." Please note that all submitted designs or plans must clearly identify Metropolitan's facilities and rightsof-way.

Additionally, Metropolitan encourages projects within its service area to include water conservation measures. Water conservation, reclaimed water use, and groundwater recharge programs are integral components to regional water supply planning. Metropolitan supports mitigation measures such as using water efficient fixtures, drought-tolerant landscaping, and reclaimed water to offset any increase in water use associated with the proposed project.

We appreciate the opportunity to provide input to your planning process and we look forward to receiving future environmental documentation on this project. If we can be of further assistance, please contact William Fong of the Environmental Planning Team at (213) 217-6899.

Very truly yours,

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Laura J. Simonek Manager, Asset Management and Facilities Planning Unit

JAII/rdI (Public Folders/HPU/Leners/30-SEP-02E.doc - Catherine Johnson) Enclosure: Planning Guidelines '÷

## 1/9/2024 Board Meeting

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## Guidelines for Developments in the Area of Pacilities, Fee Properties, and/or Easements of The Metropolitan Water District of Southern California

## 1. Introduction

a. The following general guidelines should be followed for the design of proposed facilities and developments in the area of Metropolitan's facilities, fee properties, and/or easements.

b. We require that 3 copies of your tentative and final record maps, grading, paving, street improvement, landscape, storm drain, and utility plans be submitted for our review and written approval as they pertain to Metropolitan's facilities, fee properties and/or easements, prior to the commencement of any construction work.

## 2. Plans, Parcel and Tract Maps

The following are Metropolitan's requirements for the identification of its facilities, fee properties, and/or easements on your plans, parcel maps and tract maps:

a. Metropolitan's fee properties and/or easements and its pipelines and other facilities must be fully shown and identified as Metropolitan's on all applicable plans.

b. Metropolitan's fee properties and/or easements must be shown and identified as Metropolitan's with the official recording data on all applicable parcel and tract maps.

c. Metropolitan's fee properties and/or easements and existing survey monuments must be dimensionally tied to the parcel or tract boundaries.

d. Metropolitan's records of surveys must be referenced on the parcel and tract maps.

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e. Metropolitan's pipelines and other facilities, e.g. structures, manholes, equipment, survey monuments, etc. within its fee properties and/or easements must be protected from damage by the easement holder on Metropolitan's property or the property owner where Metropolitan has an easement, at no expense to Metropolitan. If the facility is a cathodic protection station it shall be located prior to any grading or excavation. The exact location, description and way of protection shall be shown on the related plans . for the easement area.

## 4. Easements on Metropolitan's Property

a. We encourage the use of Metropolitan's fee rightsof-way by governmental agencies for public street and utility purposes, provided that such use does not interfere with Metropolitan's use of the property, the entire width of the property is accepted into the agency's public street system and fair market value is paid for such use of the right-of-way.

b. Please contact the Director of Metropolitan's Right of Way and Land Division, telephone (213) 250-6302, concerning easements for Landscaping, street, storm drain, sewer, water or other public facilities proposed within Metropolitan's fee properties. A map and legal description of the requested easements must be submitted. Also, written evidence must be submitted that shows the city or county will accept the easement for the specific purposes into its public system. The grant of the easement will be subject to Metropolitan's rights to use its land for water pipelines and related purposes to the same extent as if such grant had not been made. There will be a charge for the easement. Please note that, if entry is required on the property prior to issuance of the easement, an entry permit must be obtained. There will also be a charge for the entry permit.

#### 5. Landscaping

Metropolitan's landscape guidelines for its fee properties and/or easements are as follows:

a. A green belt may be allowed within Metropolitan's fee property or easement.

b. All landscape plans shall show the location and size of Metropolitan's fee property and/or easement and the location and size of Metropolitan's pipeline or other facilities therein.

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Potholing of Metropolitan's pipeline is required j. if the vertical clearance between a utility and Metropolitan's pipeline is indicated on the plan to be one foot or less. If the indicated clearance is between one and two feet, potholing is suggested. Metropolitan will provide a representative to assists others in locating and identifying its pipeline. Two-working days notice is requested.

k. Adequate shoring and bracing is required for the full depth of the trench when the excavation encroaches within the zone shown on Figure 4.

The location of utilities within Metropolitan's 1. fee property and/or easement shall be plainly marked to help prevent damage during maintenance or other work done in the area. Detectable tape over buried utilities should be placed a minimum of 12 inches above the utility and shall conform to the following requirements:

Water pipeline: A two-inch blue warning 1) tape shall be imprinted with:

"CAUTION BURIED WATER PIPELINE"

Gas, oil, or chemical pipeline: 2) A two-inch yellow warning tape shall be imprinted with:

"CAUTION BURIED PIPELINE"

Sewer or storm drain pipeline: A 3) two-inch green warning tape shall be imprinted with:

"CAUTION BURIED PIPELINE"

Electric, street lighting, or traffic signals conduit: A two-inch red warning tape shall be imprinted with:

"CAUTION BURIED CONDUIT"

5} Telephone, or television conduit: A two-inch orange warning tape shall be imprinted with:

"CAUTION BURIED \_\_\_\_\_ CONDUIT"

o. Control cables connected with the operation of Metropolitan's system are buried within streets, its fee properties and/or easements. The locations and elevations of these cables shall be shown on the drawings. The drawings shall note that prior to any excavation in the area, the control cables shall be located and measures shall be taken by the contractor to protect the cables in place.

p. Metropolitan is a member of Underground Service Alert (USA). The contractor (excavator) shall contact USA at 1-800-422-4133 (Southern California) at least 48 hours prior to starting any excavation work. The contractor will be liable for any damage to Metropolitan's facilities as a result of the construction.

## 8. Paramount Right

Facilities constructed within Metropolitan's fee properties and/or easements shall be subject to the paramount right of Metropolitan to use its fee properties and/or easements for the purpose for which they were acquired. If at any time Metropolitan or its assigns should, in the exercise of their rights, find it necessary to remove any of the facilities from the fee properties and/or easements, such removal and replacement shall be at the expense of the owner of the facility.

## 9. Modification of Metropolitan's Facilities

When a manhole or other of Metropolitan's facilities must be modified to accommodate your construction or reconstruction, Metropolitan will modify the facilities with its forces. This should be noted on the construction plans. The estimated cost to perform this modification will be given to you and we will require a deposit for this amount before the work is performed. Once the deposit is received, we will schedule the work. Our forces will coordinate the work with your contractor. Our final billing will be based on actual cost incurred, and will include materials, construction, engineering plan review, inspection, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount. - 11 -

imposes loads no greater than AASHTO H-10. If the cover is between two and three feet, equipment must be restricted to that of a Caterpillar D-4 tract-type tractor. If the cover is less than two feet, only hand equipment may be used. Also, if the contractor plans to use any equipment over Metropolitan's pipeline which will impose loads greater than AASHTO H-20, it will be necessary to submit the specifications of such equipment for our review and approval at least one week prior to its use. More restrictive requirements may apply to the loading guideline over the San Diego Pipelines 1 and 2, portions of the Orange County Feeder, and the Colorado River Aqueduct. Please contact us for loading restrictions on all of Metropolitan's pipelines and conduits.

b. The existing cover over the pipeline shall be maintained unless Metropolitan determines that proposed changes do not pose a hazard to the integrity of the pipeline or an impediment to its maintenance.

### 13. Blasting

a. At least 20 days prior to the start of any drilling for rock excavation blasting, or any blasting, in the vicinity of Metropolitan's facilities, a two-part preliminary conceptual plan shall be submitted to Metropolitan as follows:

b. Part 1 of the conceptual plan shall include a complete summary of proposed transportation, handling, storage, and use of explosions.

c. Part 2 shall include the proposed general concept for blasting, including controlled blasting techniques and controls of noise, fly rock, airblast, and ground vibration.

### 14. CEQA Requirements

## a. When Environmental Documents Have Not Been Prepared

1) Regulations implementing the California Environmental Quality Act (CEQA) require that Metropolitan have an opportunity to consult with the agency or consultants preparing any environmental documentation. We are required to review and consider the environmental effects of the project as shown in the Negative Declaration or Environmental Impact Report (EIR) prepared for your project before committing Metropolitan to approve your request. ons as so perces

- 13 -

giving Metropolitan's comments, requirements and/or approval that will require 8 man+hours or less of effort is typically performed at no cost to the developer, unless a facility must be modified where Metropolitan has superior rights. If an engineering review and letter response requires more than 8 man-hours of effort by Metropolitan to determine if the proposed facility or development is compatible with its facilities, or if modifications to Metropolitan's manhole(s) or other facilities will be required, then all of Metropolitan's costs associated with the project must be paid by the developer, unless the developer has superior rights.

b. A deposit of funds will be required from the developer before Metropolitan can begin its detailed engineering plan review that will exceed 8 hours. The amount of the required deposit will be determined after a cursory review of the plans for the proposed development.

c. Metropolitan's final billing will be based on actual cost incurred, and will include engineering plan review, inspection, materials, construction, and administrative overhead charges calculated in accordance with Metropolitan's standard accounting practices. If the cost is less than the deposit, a refund will be made; however, if the cost exceeds the deposit, an invoice will be forwarded for payment of the additional amount. Additional deposits may be required if the cost of Metropolitan's review exceeds the amount of the initial deposit.

#### 16. Caution

We advise you that Metropolitan's plan reviews and responses are based upon information available to Metropolitan which was prepared by or on behalf of Metropolitan for general record purposes only. Such information may not be sufficiently detailed or accurate for your purposes. No warranty of any kind, either express or implied, is attached to the information therein conveyed as to its accuracy, and no inference should be drawn from Metropolitan's failure to comment on any aspect of your project. You are therefore cautioned to make such surveys and other field investigations as you may deem prudent to assure yourself that any plans for your project are correct. 1



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Rancho Cucamonga Tentative Tract Map Number 16072 – Draft EIR

# Appendix B Geologic and Hydrologic Technical Background Reports

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# 1/9/2024 Board Meeting

Attachment 3, Page 85 of 608

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# Appendix B Geologic and Hydrologic Technical Background Reports

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# TRANSMITTAL

Date: November 12, 2002

- To: Michael Brandman Associates 621 E. Carnegie Drive, Suite 260 San Bernardino, California 92408
- Attention: Ms. Christine Jacobs-Donaghue
- Subject: Report Submittal, Geologic and Hydrologic Sections of Technical Background Report for Environmental Impact Report for Tentative Tract 16072, City of Rancho Cucamonga, San Bernardino County, California

7-10

- From: Tania Gonzalez Project Consultant Earth Consultants International
- **Comments:** Enclosed, please find two (2) copies of the above-mentioned report for your use. The text was previously forwarded to you via e-mail. If you have any questions please call Tania Gonzalez at (714) 282-6123.



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# Geologic and Hydrologic Sections of the Technical Background Report of the Environmental Impact Report for TENTATIVE TRACT 16072, Northeast of Etiwanda and Wilson Avenues, City of Rancho Cucamonga, San Bernardino County, California

7-10

November 12, 2002 Project No. 2122-01

Prepared for:

Michael Brandman & Associates 621 E. Carnegie Drive, Suite 260 San Bernardino, California 92408

Prepared by:

Earth Consultants International, Inc. 2522 North Santiago Boulevard, Suite B Orange, California 92867 7-10

Project No. 2122.01 November 12, 2002

Earth Consultants International Michael Brandman & Associates To: 621 E. Carnegie Drive, Suite 260 San Bernardino, California 92408 Attention: Ms. Christine Jacobs-Donoghue Geologic and Hydrologic Sections of the Technical Background Report for Subject: the Environmental Impact Report for Tentative Tract 16072, Northeast of the Etiwanda and Wilson Avenues Intersection, City of Rancho

Dear Ms. Jacobs-Donoghue,

In accordance with your request and authorization, Earth Consultants International (ECI) has completed the accompanying report summarizing the geologic and hydrologic conditions in the Tentative Tract 16072 area. The project site is located in the northeastern part of the City of Rancho Cucamonga, approximately 2 miles west of the Interstate 15 Freeway in San Bernardino County, California. Proposed development of the site includes 359 single-family residential lots, as well as open space, interim detention basins, and future streets. Our study was based on the 100-scale Site Plan prepared by MDS Consulting for the 150.8-acre site.

Cucamonga, San Bernardino County, California

This report was prepared to assist you in preparing the Environmental Impact Report for the proposed project. To that end, we describe the potential geotechnical and hydrologic impacts specific to the site and the proposed development, and provide alternative mitigation measures for the potentially adverse impacts identified.

The results of our study indicate the following:

- An active fault, known as the Etiwanda Avenue Scarp, crosses the site. The fault has been zoned by the State as an Alguist-Priolo Earthquake Fault Zone, thereby requiring detailed geological studies. Several fault trenching investigations have been performed on the site, resulting in the delineation of the active fault traces and recommended building setback zones. These setback zones have been incorporated into the project design by MDS Consulting.
- Portions of the site may experience potentially significant to significant impacts from earthquake-induced ground shaking, seismically induced settlement, ground lurching, slope instability (in the designed slopes), compressible and collapsible soils, oversize rock, erosion, and flooding. With the exception of ground shaking, all of these impacts can be mitigated to a less-than-significant level by project design and geotechnical engineering measures. Design and construction of structures to current building standards is expected to reduce the effects of ground shaking to an acceptable level.

- During construction, short-term impacts associated with slope instability, trench-wall instability, and erosion of surficial soils, are expected to be potentially significant to significant.
- Hazards associated with ground water, liquefaction, subsidence, expansive soils, rippability, tsunami, seiche, dam inundation, and volcanism are considered less-than-significant at the site.

Each one of the above issues is described in detail in the following report.

We have evaluated the potential constraints to development of the Site Plan for Tract 16072 by means of a desktop study that relied on a review the available geological and geotechnical studies performed on the property as well as a review of geological data that in many cases is not site-specific. We used experience and professional judgement when applying regional data to anticipate the geotechnical conditions at the site. This is generally adequate for most EIR studies, unless feasibility-threatening issues, such as active faults that have to be considered in the design, impact the site. In this case, geological studies are necessary to guide the design of the project, such as those performed for Tract 16072.

We appreciate the opportunity to work on this project. If you have any questions regarding this report, please do not hesitate to call us.

Respectfully submitted,

EARTH CONSULTANTS INTERNATIONAL, Inc.

Tania Gonzalez, CEG 1859 Project Geologist/Project Manager

Distribution: (3) Addressee



Project No. 2122.01 November 2002

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## 1.0 INTRODUCTION

## 1.1 Purpose and Scope of Work

The purpose of this study was to provide an assessment of the potential geologic, seismic, and hydrological impacts or constraints that may affect the development proposed for Tract 16072. The Site Plan for Tentative Tract No. 16072 (scale 1' = 100'), prepared by MDS Consulting, was used as a basis for the analysis.

The scope of work performed included the following tasks:

- Task 1, Data Compilation Information summarized in the following sections was acquired largely from the geological, geotechnical, and hydrological reports prepared specifically for this property by Geosoils, Inc. and MDS Consulting. These, as well as other references utilized, are listed in Appendix A.
- Task 2, Data Analysis and Report Preparation The collected data was analyzed, potential impacts or constraints to development were identified, and possible mitigation measures were developed to reduce hazards to a non-significant level. The results of this work is summarized in the following report and accompanying illustrations.

## 1.2 Site Location and Description

Tract 16072 encompasses 150.8 acres in the northeastern part of the City of Rancho Cucamonga, San Bernardino County, California. Located northeast of the intersection of Etiwanda Avenue and Wilson Aveune (24<sup>th</sup> Street), the project is situated in an area that is not yet highly developed. Residential tracts are present along the west boundary, but mostly vacant land lies to the north, south and east.

Geographically, the site is located in the upper part of the Santa Ana River Valley, slightly more than one mile south of the steeply rising range front of the eastern San Gabriel Mountains. Several major streams, as well as smaller tributary streams, emanate from the mountains and flow southward through this portion of the valley. North of the site, East Etiwanda Creek emerges from the mountains and continues southward along the eastern side of the property, where it enters the East Etiwanda Spreading Grounds. West of the project, levees and flood control channels contain most of the Day Canyon Wash tributaries. Except for the Santa Ana River, most of the streams in the valley have significant flow only during the wet winter months, when they carry large amounts of runoff, usually for short periods of time. Drainage across the project site is generally by sheet flow to the southeast, and within a small, unnamed stream channel that flows southward across the western part of the site.

Terrain at the site is subdued in relief. Elevations vary from about 1,855 feet above mean sea level at the northwest corner of the site to slightly less than 1,635 feet above mean sea level at the southeast corner. Most of the site slopes to the southeast at a gentle gradient of about 5 to 7 percent. This gently sloping surface is disrupted by a 10-foot (maximum) high topographic break in slope that trends across the central part of the property in a southwest to northeast direction. Named the Etiwanda Avenue Scarp, this feature is related to active faulting in the area (see Section 2.4).

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Technical Report for EIR Tract 16072, Rancho Cucamonga



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# 1.3 Proposed Development

The site is to be developed as a residential community. The Site Plan reviewed indicates the property will be divided into 401 lots, 359 of which will be residential homesites. The remainder of the lots will be developed as open space, interim detention basins, new flood control channel, and future streets. The plan will require 1 million cubic yards of cut and fill grading (excluding remedial grading) to create terraced building pads. Graded slopes up to approximately 40 feet high are planned. Slopes will have variable gradients ranging up to 2:1 (horizontal:vertical). The proposed cuts and fills are generally less than 30 feet thick, although remedial grading may result in deeper cuts and fills locally. Entry points to the project will be located on the west, south, and east boundaries.



# 2.0 GEOLOGIC CONDITIONS

# 2.1 Regional Geologic Setting

The region surrounding the project straddles the junction between two major southern California geologic provinces, the Transverse Ranges to the north, and the Peninsular Ranges to the south, with the base of the San Gabriel Mountains and the Sierra Madre-Cucamonga fault system marking the boundary. The San Gabriel Mountains are part of the Transverse Ranges, a province defined by a series of predominantly east-west trending mountain ranges and their intervening valleys. The ranges stretch across the northern part of San Bernardino County, as well as parts of Riverside, Los Angeles, Ventura, and Santa Barbara counties. The Santa Ana River Valley is considered to be part of the Peninsular Ranges, a province characterized by a northwest-trending geologic and structural grain aligned with the San Andreas fault system, and represented by northwest-trending mountains and valleys extending all the way to the Mexican border.

The eastern San Gabriel Mountains are located in the central part of the Transverse Ranges, where they abruptly rise to heights of more than 6,000 feet above the valley floor. Bounded by the San Andreas fault zone on the northeast and the Cucamonga fault zone on the south, the mountains are essentially a large block of the earth's crust that has been squeezed up and thrust over the valley floor by north-south compression along the San Andreas tectonic plate boundary. Along the mountain front, the Santa Ana River Valley is shaped by coalescing alluvial fans that have a range of ages coincident with the rise of the San Gabriel Mountains. The project site is situated on geologically young alluvium that blankets fans emanating from Day and East Etiwanda Canyons to the north. These young sediments are underlain by older alluvial fan deposits, and at great depth, by crystalline bedrock similar to that exposed in the nearby mountains.

# 2.2 Geologic Units

The site is underlain by alluvial fan sediments estimated to be several hundred feet thick. Locally, these sediments are covered by surficial deposits, including uncompacted artificial fill and colluvium. These are described in more detail below.

# 2.2.1 Artificial Fill

Minor deposits of uncompacted artificial fill occur locally throughout the site, usually associated with dirt roads. However, larger deposits consisting of backfilled test pits and exploratory fault trenches are present. These trenches were as much as approximately 1,130 feet in length, and ranged in depth from about 6 to almost 30 feet (GeoSoils, 1998a, 2000). The locations of these trenches are illustrated in the November 11, 1998 GeoSoils report (Geotechnical Map – Plate 1) and additional fault trenches are shown on Plate 1 of the November 30, 2000 GeoSoils report. The trench backfill is composed of native soils in a dry and loose condition; consequently the sites of these excavations are not currently suitable for support of fill embankments or building foundations.



# 2.2.2 <u>Colluvium</u>

GeoSoils (1998a, 1998b) reports that colluvium mantles the alluvial fan deposits described in the following section. Colluvium typically consists of silty, fine- to coarsegrained sand with scattered cobbles, and locally abundant cobbles. These materials are dry to damp, of low density, and are porous, especially near the surface. Because of these characteristics, colluvium is also unsuitable for the support of foundations and fill embankments.

# 2.2.3 <u>Alluvial Fan Deposits</u>

The site is underlain by a thick section of Quaternary-age (deposited in the last two million years) alluvial fan deposits. The near-surface deposits, as observed in exploratory trenches, consist predominantly of silty sand or sand with pebbles, gravel, and cobbles, to sandy gravel/gravelly sand with cobbles and boulders. These materials are typically yellowish brown and brownish gray, dry to damp, and medium dense. The stratigraphic sequence is medium- to thick-bedded, with bedding gently inclined to the south (GeoSoils, 1998b). Because the fan surfaces in this area are moderately dissected by streams and have moderate (Stage S5) soil development, Morton and Matti (1987) classified these deposits as latest Pleistocene (between 11,000 and 2 million years old) and Holocene (less than 11,000 years old).

# 2.3 Regional Faulting and Seismicity

The project site it located in an area of large-scale seismic activity, as the Transverse Ranges province collides with terrain of the Peninsular Ranges province to the south. As mentioned above, the Sierra Madre-Cucamonga fault system delineates the boundary of these two provinces. This fault system was responsible for the destructive M6.4 San Fernando earthquake in 1971 and for the M5.8 Sierra Madre earthquake in 1991. In addition, evidence for prehistoric earthquakes along this fault system has been uncovered in numerous exploratory excavations in recent years. Consequently, most of this fault system has been assigned to an Alquist-Priolo Earthquake Fault Zone by the California Division of Mines and Geology (now called the California Geological Survey). Displacements on faults within this system are mainly of the thrust or thrust-oblique type, causing older geologic units to be pushed up along a series of faults that dip northward beneath the San Gabriel Mountains. In the Rancho Cucamonga area, this activity is represented by the Cucamonga fault zone, which has thrust ancient crystalline rocks over younger sediments filling the valley.

Major active strike-slip faults are also present in the region, where they have deformed the landscape and altered drainage patterns. Examples of this type of faulting in the Rancho Cucamonga area are the San Andreas fault and the San Jacinto fault, two of the most active fault systems in California. These structures are predominantly right-lateral faults and are responsible for creating linear valleys and ridges, as well as offset stream channels.

The faults mentioned above have the potential to generate strong ground motions at the project site. Other regional faults that could also produce significant ground shaking at the site include the San Jose fault and the Chino-Elsinore system (see Figure 1 - Regional Fault Map). These faults are described in the following paragraphs, and are summarized in Table 1. Other



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faults within approximately 60 miles (100 km) of the site are listed in Appendix B. The anticipated ground accelerations at the site were calculated using the EQFAULT computer program developed by Blake (2000), and the most recent fault parameters issued by the California Division of Mines and Geology in 1996.

The intensity of ground shaking at a given location depends primarily on the earthquake magnitude, the distance from the epicenter to the site of interest, the type of fault that causes the earthquake, and the response characteristics of the soils or bedrock units underlying the site. Given its proximity to the site, the Cucamonga fault zone is potentially capable of producing intense ground accelerations at the site. A maximum magnitude earthquake on this fault could produce seismic shaking at the site with peak horizontal ground accelerations estimated at between 0.72g and 0.97g, depending on the attenuation relation used (g is the acceleration of gravity, equal to 32 feet per second squared). Earthquakes on other faults and fault segments farther away from the site could be expected to produce lower peak horizontal ground accelerations at the site (see Table 1 and Appendix B). The site is located within Seismic Zone 4 of the 1997 Uniform Building Code (UBC).

# 2.3.1 <u>San Andreas Fault</u>

As the principal boundary between the Pacific and North American tectonic plates, the San Andreas is considered the "master fault" that controls seismic activity in southern California. The fault extends over 750 miles (1,200 km) from near Cape Mendocino in . northern California to the Salton Sea region in southern California. Its activity is known from historic earthquakes (some of which have caused rupture of the ground surface), and from many fault studies that have shown that the San Andreas fault offsets or displaces recently deposited sediments.

Large faults, such as the San Andreas fault, are often divided into segments in order to evaluate their future earthquake potential. The segmentation is based on physical characteristics along the fault, particularly discontinuities that may affect the rupture length. In central and southern California, the San Andreas fault system is divided into several segments and each segment is assumed to have a characteristic slip rate (rate of movement averaged over time), recurrence interval (time between moderate to large earthquakes), and displacement (amount of offset during an earthquake). While this methodology has some value in predicting earthquakes, historical records and studies of prehistoric earthquakes show it is possible for more than one segment to rupture during a large quake or for ruptures to overlap into adjacent segments.

The last major earthquake on the southern portion of the San Andreas fault was the 1857 Fort Tejon (Mw 7.8) event. This is the largest earthquake ever reported in California. The 1857 surface rupture has been identified in the Cholame, Carrizo, and Mojave segments, and displacement along the rupture has been measured as high as 9 meters. The recurrence intervals calculated for these segments of the fault range from 104 to 296 years.



Technical Report for EIR Tract 16072, Rancho Cucamonga



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The closest segments of the San Andreas fault to the project site are the San Bernardino Mountains and Coachella Valley segments, which are located at their closest approach, about 9 miles (15 km) to the northeast. The Coachella Valley segment is thought capable of producing a maximum magnitude earthquake of magnitude 7.4. Such an event would generate peak horizontal ground accelerations at the site of about 0.43g to 0.54g. A maximum magnitude earthquake of magnitude 7.3 on the San Bernardino Mountains segment would generate very similar peak horizontal ground accelerations at the site. The San Andreas is classified as a Type A fault under the 1997 UBC.

# 2.3.2 Cucamonga Fault

At a distance of little more than a mile, the Cucamonga fault zone is the closest known active fault to the project site capable of producing an earthquake (the Etiwanda Avenue scarp that extends through the site is an active fault, but it is not thought capable of generating an earthquake on its own). Extending from the Lytle Creek area to San Antonio Canyon, the Cucamonga fault zone consists of several discontinuous fault strands in the eastern part, merging in the central part, and forming a single strand to the west. The Red Hill fault and the Etiwanda Avenue Scarp are secondary faults that are thought to represent the southernmost of these fault strands.

The relationships between faulted geologic units, alluvial stratigraphy, soil ages, and fault scarp morphology have been studied in an attempt to estimate how large an earthquake the Cucamonga fault zone is capable of generating, the slip rate, and how often a large earthquake will occur (Matti, et al, 1982; Morton and Matti, 1987; Morton and Matti, 1991). Researchers found that where the fault zone consists of multiple strands, the oldest faulting occurs in the crystalline rock at the base of the mountains, with fault strands becoming increasingly younger as they step out onto the alluvial Repeated ground rupturing events have occurred throughout the latest plain. Pleistocene and into the Holocene, with the earliest recognizable event occurring about 13,000 years ago and the youngest event occurring about 1,000 to 1,750 years ago. Based on the cumulative surface displacement in scarps across the fault zone, Morton and Matti (1987) calculated a slip rate of about 4.5 to 5.5 mm/yr. From scarp profiles, they estimated that a typical ground-rupturing earthquake creates a surface displacement of about 2 meters (6 feet) and the average recurrence interval for moderate to large earthquakes is about 625 years. Considering uncertainties inherent in dating methods, the Working Group on California Earthquake Probabilities (WGCEP, 1995) lowered the estimated a slip rate to  $4.0\pm2.0$  mm/yr. Thus, if the Cucamonga fault were to break along its entire length, it is thought capable of a magnitude 7.0 earthquake. Such an event could produce peak horizontal ground accelerations estimated at 0.72g to 0.97g at the site.

# 2.3.3 San Jacinto Fault

The San Jacinto fault system has been a significant source of moderate- to largemagnitude earthquakes in southern California, having generated about ten earthquakes greater than magnitude 6.0 in the last century (WGCEP, 1995). The San Jacinto fault is divided into five segments. The two closest segments of the San Jacinto fault to the site



include the San Bernardino segment, located about 5 miles (8 km) away, and the San Jacinto Valley segment, located 19 miles (30 km) away.

Of these, the San Bernardino segment is potentially capable of producing the most intense ground accelerations at the site as a result of an earthquake on the San Jacinto fault. This segment is estimated to have slip rate of about  $12\pm6$  mm/yr ( $4.7\pm2.3$  inches/yr), and is thought capable of producing displacements of  $1.2\pm0.3$  meters ( $4\pm1$  feet) during a characteristic earthquake. A magnitude 6.7 earthquake would generate estimated peak horizontal ground accelerations at the site of about 0.51g to 0.55g. The San Jacinto fault classified as a Type A fault under the 1997 UBC.

# 2.3.4 San Jose Fault

The San Jose fault is an 11-mile (18-km) long fault splay that branches southwestward from the Cucamonga-Sierra Madre fault system in the Upland area. The two Upland earthquakes of 1988 and 1990 have been attributed to this fault (Hauksson and Jones, 1991). A worst-case scenario earthquake on this fault, rupturing the entire length of the fault, would result in a magnitude 6.5 earthquake that could cause peak horizontal ground accelerations at the site of about 0.34g to 0.38g. The San Jose fault is located at its closest point about 10 miles from the subject site.

# 2.3.5 Sierra Madre Fault

The Sierra Madre fault is the continuation of the Cucamonga fault to the west. This fault zone includes several fault segments that flank the southern margin of the western San Gabriel Mountains, and are responsible for uplifting the mountains as a result of north-south compression. Portions of this fault system are known to be active. For example, the San Fernando segment of the Sierra Madre fault caused the 1971 San Fernando earthquake of magnitude 6.4. The closest segment of the Sierra Madre fault to the site is located about 13 miles (20 km) from the site. This fault segment is thought capable of producing an earthquake of up to magnitude 7.0, which would generate peak horizontal ground accelerations at the site of about 0.32g to 0.39g.

# 2.3.6 Chino Fault

The Chino fault is the northward extension of the Elsinore fault zone north of the Puente Hills (the Whittier fault is the continuation of the Elsinore fault zone south of the Puente Hills). The Chino and Whittier faults serve as major sources of slip transfer from predominantly strike-slip rigid block tectonics on the Elsinore fault in the south to folding and oblique-slip in the Los Angeles basin to the north. Based on geomorphic evidence, the Chino fault is buried along most of its length and is presumed to have less seismic activity than the Whittier fault. However, right-deflected stream channels and apparent offsets of older alluvium and relict soils suggest that the Chino fault has had relatively recent movement, probably in the last 11,000 years (Gray, 1961; Weber, 1977). Based on its length, the Chino fault is thought capable of generating a maximum magnitude earthquake of magnitude 6.7. Such an earthquake could cause peak horizontal ground accelerations at the site of about 0.25g to 0.28g. The Chino fault is located at its closest about 15 miles (24 km) from the subject site.



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Table 1:				
Summary of the Major Known Active Faults				
with the Potential to Cause Severe Seismic Shaking at the Site				
(also see Appendix B)				

Seismic Source	Magnitude of the	Peak Ground	Approx.
(Name of fault or	Maximum	Accelerations from	Distance to Site
fault segment)	Magnitude Event	Maximum Magnitude	(miles)
		Event (g)	
Cucamonga	7.0	0.72-0.97	<2
San Andreas			
San Bernardino	7.3	0.42-0.51	9
Coachella Valley	7.4	0.43-0.54	9
Mojave	7.1	0.35-0.41	11
1857 Rupture	7.8	0.44-0.57	11
San Jacinto			
San Bernardino	6.7	0.51-0.55	5
San Jose	6.5	0.34-0.38	10
Sierra Madre	7.0	0.32-0.39	13
Chino	6.7	0.25-0.28	15

# 2.4 Faulting Onsite

Active faulting has been identified within the project boundaries, and it has deformed the gently sloping fan surface as represented by the low escarpment trending northeasterly across the site. This feature was named the Etiwanda Avenue Scarp by Morton and Matti (1987), and is thought by many researchers to be an extension of the Red Hill fault, a groundwater barrier that extends to the southwest across the City of Rancho Cucamonga. Because the deformation was thought to be fault-related, the State assigned the scarp to an Alquist-Priolo Earthquake Fault Zone in 1981 (see Figure 2). Exploratory fault trenching was performed at the site in 1986, and the presence of active faulting was confirmed (Richard Mills Associates, 1986). Subsurface studies (fault trenches) were conducted again at the site by GeoSoils in 1998 and 2000. They reported that the fault is of the reverse/thrust type, and has offset young alluvium and colluvium. Thus, in accordance with the requirements of the Alquist-Priolo Act, these investigations provided further confirmation that the fault is active, delineated the traces of the fault, and provided recommendations for structural setbacks. Further, GeoSoils indicates that based on their background review, trenching, and observations of soil stratigraphy, active faulting is not likely to occur within the remainder of the site (1998a). The Red Hill fault and the Etiwanda Avenue Scarp are thought to be structurally related to the Cucamonga fault zone, moving co-seismically with an earthquake on the main Cucamonga fault. The height of the scarp suggests that the Etiwanda Avenue Scarp has ruptured repeatedly and is therefore capable of moving again in the future.

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#### 2.5 Slope Stability

Slope instability is a rare occurrence on gently sloping sites like the project area, and is usually limited to the banks of incised stream channels. Evidence for existing slope instability was not found during analysis of stereoscopic aerial photographs, or during site investigations (GeoSoils, 1998b). Seismic hazards maps issued by the State in accordance with the Seismic Hazards Mapping Act have not yet been prepared for this area. However, because of the nearly flat gradient, in its existing condition the site would not likely be susceptible to seismically induced landsliding.

#### 2.6 Ground Water

Ground water in this area typically occurs in excess of 100 feet below the ground surface. Because of the nature of the alluvial fan deposits, it is possible for localized lenses of shallow perched water to occur; however, springs, seeps, and other indicators of shallow, perched ground water were not observed during geologic investigations of the site (GeoSoils, 1998b).

#### 2.7 Surface Water

Natural surface drainage in the area is toward the south and southeast. There is one shallow, unnamed drainage course in the western part of the property. This stream contains water intermittently and flows to the south. Sporadic flow was noted in this channel during geologic investigations (GeoSoils, 1998b).

#### 2.8 Engineering Characteristics

#### 2.8.1 Soil Engineering Conditions

The upper 2 to 4 feet of native soils at the site are in a relatively dry, loose and porous condition, and therefore are considered to be highly compressible. In addition, in its upper few feet, the soil at the site typically contains roots and other organic matter. Scattered artificial fills, present as a result of previous land uses or as backfill of exploratory excavations, are also highly compressible. Beneath the upper few feet, the underlying alluvial fan materials, while having a low moisture content, are reportedly in a moderately dense condition (GeoSoils, 1998b). Permeability of the onsite materials is generally high.

Because of the granular nature of the onsite materials, expansion characteristics will generally be in the low range. Preliminary results of laboratory testing by GeoSoils (1998b) indicates that soil in the low expansion range is present, and that sulfate attack on concrete, or corrosion of ferrous metals in contact with the soil is not likely.

The granular, non-cohesive nature of the native soils indicates they will have poor sidewall stability for steep-sided temporary excavations (such as utility trenches). Finished slopes constructed with non-cohesive soils may vulnerable to surficial instability.



## 2.8.2 <u>Suitability as Fill Material</u>

The geologic units onsite, including existing fills, colluvium, and older alluvium, are suitable as compacted fill material, provided that they are first mixed, moisture-treated as necessary, and organics and other deleterious materials are removed. Natural moisture content of the native materials onsite is typically below the optimum amount needed for proper compaction (GeoSoils, 1998b); consequently, most of these soils will require the addition of water during compaction operations. Oversize materials are commonly described as rocks larger than 12 inches in diameter, but the actual size limit should conform to the grading standards set by the City or reviewing agency, and to recommendations of the project's soil engineer.

## 2.8.3 <u>Rippability</u>

Hard bedrock is not present in the shallow subsurface in this area. The older fills, colluvium, and alluvium at the site can be easily excavated (ripped) with conventional grading equipment in good working order.

### 2.9 Mineral Resources

Construction aggregate is the principal type of mineral resource obtained from alluvial sites. For many years, aggregate has been mined in the Lytle Creek area to the east, and in the San Antonio and Cucamonga Creek areas to the west. The alluvial fan materials in these areas reportedly yield construction materials consisting of high quality, durable rocks that are relatively free of reactive and weak fragments, and in a wide variety of particle sizes (Evans et al., 1979). Although the geology at the site is similar, this type of mining operation has not occurred at the project site.

### 2.10 Volcanic Events

No volcanic flows or ash-fall deposits have been mapped in the site vicinity. The closest volcanic dome, of Quaternary or possibly Pliocene age, is located approximately 50 miles to the southeast, in the Temecula area of southern California.



#### 3.0 POTENTIAL HAZARDS, SIGNIFICANCE, AND POSSIBLE MITIGATION MEASURES

This section summarizes the principal geologic conditions that occur in the study area. The potential impact that each of the conditions identified may have on the site is rated using a qualitative scale as **less-than-significant**, **potentially significant** or **significant**. This assessment was conducted by comparing the severity of a given impact at the site with the range of hazard severity generally representative of southern California.

#### 3.1 Seismic Hazards

The two principal seismic hazards to properties in southern California are damage to structures and foundations due to strong ground motions generated during earthquakes, and surface rupturing of earth materials along fault traces.

#### 3.1.1 Seismic Ground Shaking

An earthquake occurs when the elastic strain energy that has accumulated in the bedrock adjacent to a fault is suddenly released. The released energy propagates in the form of seismic waves that radiate great distances in all directions from the earthquake epicenter. The strong ground motion or shaking produced by these seismic waves is the primary cause of earthquake damage. How much the ground shakes at any one point depends primarily on the earthquake magnitude, distance from the earthquake source, and the local geologic conditions, which can either amplify or attenuate the earthquake waves.

The severity of potential seismic ground shaking at the site can range from low to high, depending primarily on three conditions - magnitude, distance and geology. The most severe shaking would be caused by an earthquake on the Cucarnonga, San Andreas, or San Jacinto faults, all three of which have the potential of generating peak horizontal ground accelerations at the site greater than about 0.5g. In fact, an earthquake on the Cucarnonga fault has the potential of generating strong ground motions of nearly 1.0g. Rupture of other, more distant faults could also result in ground shaking at the site, albeit of lower intensity. Estimated ground motion intensities at the site from selected earthquakes are presented in the Seismic Parameters Tables (EQFAULT results - Appendix B), and in Section 2.3 above. Given the potentially high accelerations that could occur at this site, the impact of strong ground motion is considered a significant impact.

#### Mitigation Measures:

Designing and building structures in accordance with the Uniform Building Code (ICBO, 1997) is the minimum standard used to mitigate the effects of seismic shaking. The intent behind the code is to reduce major structural failure and loss of life – not to prevent damage to property. Seismic performance goals generally expect that some property damage will be incurred in a moderate to large earthquake, but the damage



should be repairable and not life threatening. For residential development, structures should be able to:

- Resist minor earthquakes with no damage.
- Resist moderate earthquakes with some non-structural damage.
- Resist major earthquakes with some structural damage, but without collapse.

Damage from a local, strong earthquake is likely to be widespread throughout the region. While it is unrealistic to try to build homes and other structures to resist strong ground motions without sustaining damage, the design of a building and the strengthening of its structural elements can help to reduce the effects of a moderate to large earthquake. For instance, single-family, wood-frame structures generally perform well during an earthquake. However, asymmetrical floor plans should be avoided because these kinds of buildings tend to twist in addition to shake laterally. Wings on a building tend to act independently during an earthquake, resulting in differential movements and cracking. Split-level foundations are also not likely to perform well during a near-source earthquake. As an added safety measure, homes should be equipped with automatic seismic shut-off valves for gas lines.

### 3.1.2 Lifelines

Lifelines are those services that are critical to the health, safety and functioning of the community, such as distribution lines for water, gas, sewers, communications, and storm drains. They are particularly essential for emergency response and recovery after an earthquake. These structures are vulnerable to the effects of seismic shaking, and some, out of necessity, will cross the active fault that trends northeasterly across the site. Therefore, loss of lifeline services in the event of a moderate to large earthquake at or near the site is considered to be a significant impact.

### Mitigation Measures:

New lifelines, particularly those that cross the Etiwanda Avenue Scarp, should be designed to remain operational after the anticipated ground deformation, and/or be fitted with emergency shut off valves. Locations at risk should also be designed for easy access and repair. Other mitigation measures for pipelines and related facilities include built-in redundancy in the systems, flexible joints and connections, strengthening of support structures, securing and/or anchoring pipes and valves, and bracing pipelines.

### 3.1.3 Secondary Ground Effects of Seismic Shaking

Several secondary phenomena are generally associated with strong seismic shaking, especially in areas characterized by a relatively shallow ground water table, and underlain by loose, cohesionless deposits. These phenomena are discussed below:



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Liquefaction: Liquefaction occurs when loose, cohesionless, water-saturated soils (generally fine-grained sands) are subjected to strong seismic ground motion of significant duration. These soils essentially behave like liquids, losing all bearing strength. Structures built on these soils tilt or sink when the soils liquefy. Liquefaction more often occurs in earthquake-prone areas underlain by young alluvium where the ground water table is less than 50 feet below the ground surface.

In general, the likelihood of liquefaction occurring in most of the Rancho Cucamonga area is low to non-existent (ECI, 2000). In their preliminary investigation, GeoSoils (1998b) reviewed the potential for liquefaction at the subject property. They reported that liquefaction is unlikely since the sediments that underlie the area are coarse grained, ground water is in excess of 50 feet below the surface, and the sediments become dense with depth. Loose surficial soils will be removed and replaced with compacted fill as part of normal grading activities, and this will further reduce the potential for liquefaction occurring at this site. Because of the relatively high permeability of the alluvial fan sediments, in addition to the required drainage control for the developed site, the probability of the water table at the site rising in the future to within 50 feet of the ground surface is low. The hazard of liquefaction is therefore considered **less-than-significant**.

#### Mitigation Measures:

None required.

/ Seismically Induced Slope Instability: Strong ground motions can worsen unstable conditions in natural and man-made slopes. Factors controlling the stability of slopes include 1) slope height and inclination, 2) engineering characteristics of the earth materials comprising the slope, and 3) the intensity of ground shaking. There are no natural slopes that pose a hazard to the proposed development. There will be, however, graded slopes ranging up to about 40 feet in height at gradients of 2:1 or flatter. Consequently, seismically induced slope instability is considered a potentially significant impact.

#### Mitigation Measures:

Engineered slopes should be designed to resist seismically induced failures. Slope design for the project should be based on pseudo-static stability analyses using soil-engineering parameters established for the site, based on subsurface soil sampling and laboratory testing. When slopes are designed and constructed in accordance with current UBC and soil engineering standards, the potential for seismically induced slope failure can be greatly reduced.

Seismically Induced Settlement: Strong ground shaking can cause settlement by allowing sediment particles to become more tightly packed, thereby reducing pore space. Unconsolidated, poorly packed surficial deposits are especially susceptible to this phenomenon. Artificial fills, if not adequately compacted, may also experience seismically induced settlement. Given that there are loose surficial soils and several



areas of uncontrolled artificial fill, seismically induced settlement at the site is considered a **potentially significant** impact.

*Mitigation Measures*: Native surficial soils and artificial fills currently at the site are of low density and are therefore susceptible to settlement. These areas have been identified, and the low density materials should be removed and recompacted (the soil fraction), or exported offsite (the plant debris and trash). Although not likely to occur at the site, if deeper alluvial deposits prone to settlement are identified, potential mitigation alternatives could include deeper overexcavation and recompaction, foundations on piles or caissons driven into deeper subsurface materials that are not settlement-prone, or in-situ densification of the near-surface soil materials to decrease their susceptibility to settlement.

**Ground Lurching:** Certain soils have been observed to move in a wave-like manner in response to intense seismic ground shaking, forming ridges or cracks on the ground surface. At present, the potential for ground lurching to occur at a given site can be predicted only generally. Areas underlain by thick accumulations of colluvium appear to be more susceptible to ground lurching than bedrock. Under strong seismic ground motion conditions, lurching can be expected within loose, cohesionless soils, or in clay-rich soils with a high moisture content. Generally, only lightly loaded structures such as pavement, fences, pipelines and walkways are damaged by ground lurching; more heavily loaded structures appear to resist such deformation. Colluvial soils, and loose conhesionless soils are present at the surface of the site. Therefore, ground lurching due to seismic shaking is considered to pose a **potentially significant** impact at the site in its present condition.

#### Mitigation Measures:

Loose, cohesionless soils that may be susceptible to ground lurching will require removal and recompaction as part of the normal grading operations. This is expected to reduce the hazard of ground lurching to a less-than-significant impact for the graded site.

**Earthquake-induced Dam/Reservoir Failure:** Historically, dam failures have been caused by severe floods that overtopped the reservoirs, and geotechnical flaws not recognized in the feasibility studies, design or construction phases of the project. In southern California, four dam failures have occurred: two by seismic shaking, and two by geotechnical flaws not recognized in the design (Proctor, 1992).

No large-capacity reservoirs or water tanks that could fail during an earthquake are located upgradient from the site, and none are planned as part of the project. Therefore, at present, the hazard of earthquake-induced inundation at the site is considered less-than-significant.

#### Mitigation Measures:

None required.

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**Tsunami:** A tsunami, or seismically generated sea wave, is generally created by a large earthquake occurring near a deep ocean trough. Damage from tsunamis is confined to near-shore, low-lying areas. Tract 16072 is located at a minimum elevation of 1,635 feet above mean sea level, and more than 45 miles inland. The risk of inundation from a tsunami at this inland site is considered nil. This is a **less-than--significant** impact.

#### Mitigation Measures:

None required.

Seiche: A seiche is an earthquake-induced wave in a confined or partially confined body of water, such as a lake, reservoir, river, or harbor. The Site Plan indicates no large bodies of water are planned for the development. This impact is therefore considered less-than-significant.

#### Mitigation Measures:

None required.

### 3.1.4 Fault-Induced Ground Rupture

Surface slip along a fault plane can severely damage structures built across a fault. To protect structures from the hazard of surface ground rupturing, the California Division of Mines and Geology, under the State-mandated Alquist-Priolo Act of 1972, has delineated special study zones along active or potentially active faults (Hart and Bryant, 1999). The Alquist-Priolo Act prohibits the siting of structures designed for human occupancy (defined as an occupancy of more than 2,000 man-hours per year) on top of an active fault. An active fault, as defined by State law, is a fault which has been proven by direct geologic evidence (such as trenching) to have offset sediments that are 11,000 years or younger.

As discussed in section 2.4, an Alquist-Priolo Earthquake Fault Zone has been delineated across the project site to encompass the Etiwanda Avenue Scarp. A common misconception about the zoning is that it represents the area of faulting and potential damage. The actual purpose of the zone is to delineate the portion of the property that must undergo the required geologic studies needed to evaluate the faulting prior to approval of the project by the local agency. Several subsurface fault studies have been conducted within the project boundaries and active fault traces have been mapped. Therefore, the potential for fault-induced ground rupture at the site is considered a significant impact.

#### Mitigation Measures:

Because it is impractical to reduce the damage potential from fault rupture to acceptable levels by engineering design, the most appropriate mitigation measure is to simply avoid placing structures on or very near active fault traces. To this end, and in accordance with the requirements and intent of the Alquist-Priolo Earthquake Fault Zoning Act, a building setback has been established for the active traces of the

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Etiwanda Avenue Scarp thrust fault. The fault setback zone is shown on the Site Plan for the project, and it corresponds to that recommended by GeoSoils (2000). According to GeoSoils, the boundaries of the setback zone have been conservatively placed, with a wider setback placed north of the faulted zone (100 feet) and a smaller setback (50 feet) to the south. This is because the hanging wall (overthrust block) of the fault is more likely to have a wider spread of ground deformation than the footwall (block below the thrust). Most of the setback zone will be occupied by a 30- to 40-foot high 3:1 slope, along with open space and interim detention basins. The remainder of the setback zone will encroach onto the rear yard of approximately 47 residential lots.

Setback zones are frequently used for non-habitable structures and other types of uses, including trails, parks, recreational facilities such as golf courses, and roads. For homesites, common backyard amenities can legally be placed in the setback zone, such as pools, patios, gazebos, etc. However, these structures may be damaged if the fault were to rupture.

#### 3.2 Slope Stability

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There are no existing landslides on or near the site that would threaten the stability of the proposed development. In addition, there are no natural slopes nearby that pose a hazard to the project.

Graded slopes are proposed for the project, and gradients for the slopes will be variable in order to the give the project a more natural appearance. According to the Site Plan, cut and fill slopes up to approximately 40 feet high will be constructed. The highest proposed slope that will be constructed at a 2:1 gradient will be about 30 feet high. Slopes higher than 30 feet, as well as many smaller slopes, will be constructed at a 3:1 gradient. However, slope design recommendations in the preliminary geotechnical investigation (GeoSoils, 1998b) indicate that graded slopes should not exceed  $15\pm$  feet in height. This is due primarily to the granular, non-cohesive nature of the onsite soils. Further, they indicate that due to these conditions, remedial slope measures may be needed for cut slopes. Consequently, instability of graded slopes is considered a significant impact.

During grading, unstable slope conditions can also occur in exploratory excavations, utility trench walls, and in temporary cut slopes made for removals or slope backcuts. The short-term impact of temporary slope instability at the site is considered significant.

#### Mitigation Measures:

The proposed slope designs should be analyzed by the engineering geologist and soil engineer for the project. This should include additional soil sampling and laboratory testing to develop strength parameters for slope stability calculations. If the proposed slopes are found to be grossly or surficially unstable as designed, the soil engineer should provide recommendations for redesign of the unstable slopes (such as laying back to a flatter gradient) or for the addition of stabilization measures. Such measures may include buttressing cut slopes with compacted fill, adding geogrid reinforcement to fill slopes, using a higher compaction standard, and/or using retaining walls.





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Exploratory trenches excavated as part of the geotechnical investigations, and temporary excavations, such as utility trenches excavated during grading, should be evaluated, cut, benched and/or shored in accordance with requirements set by Cal-OSHA. The soil engineer for the project should provide recommendations for slope stabilization backcuts, if such temporary cuts are needed.

#### 3.3 Shallow Ground Water

The presence of localized shallow perched groundwater that could impact the site is unlikely due to the granular, highly permeable nature of the alluvium underlying the site. Consequently, the impact of shallow ground water is considered **less-than-significant**.

#### Mitigation Measures:

None required.

#### 3.4 Foundation Stability

#### 3.4.1 Compressible Soils

The native soil onsite, in its upper few feet, is potentially compressible. In addition, uncontrolled fills, present as old road fills and as backfill in exploratory trenches, are also compressible. These materials are of low density and will settle under the weight of the proposed fills and structures. This is considered a **significant** impact.

#### Mitigation Measures:

Where compressible soils are removed by design grading cuts, no further mitigation is needed. However, where fills or shallow cuts are planned, removal and recompaction of these deposits will be required during grading operations in accordance with standard grading procedures and the recommendations provided by the project's soil engineer. According to GeoSoils (1998b), removal of compressible soils could extend down 30 feet deep in localized areas, however removals over most of the site should be in the range of 2 to 4 feet.

#### 3.4.2 <u>Collapsible Soils</u>

Soil collapse (also called hydroconsolidation) most often occurs in young sediments deposited in an arid or semi-arid environment. The soils are typically dry in their natural state and contain minute pores and voids. The granular particles may be partially supported by weak bonds of clay, silt, or carbonate. When saturated, collapsible soils undergo a rearrangement of their grains and a loss of cementation, resulting in rapid settlement under relatively light loads. Saturation is usually due to an increase in surface infiltration of landscape water.

Although low in moisture content, the alluvium that underlies this area is generally not susceptible to collapse due to the lack of clay that is needed to form the dry strength bonds between grains. However, variation is grain size is common in alluvial fan



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deposits; consequently, localized areas could support the conditions needed for collapse to occur. Collapse is considered a **potentially significant** impact.

#### Mitigation Measures:

The potential for soils to collapse should be evaluated by the project's soil engineer. If the soils are determined to be collapsible, the hazard can be mitigated by several different measures or combination of measures, including excavation and recompaction, or presaturation and pre-loading of the susceptible soils in-place to induce collapse prior to construction. After construction, infiltration of water into the subsurface soils can be minimized by proper surface drainage design, which directs excess runoff to catch basins and storm drains.

#### 3.4.3 Expansive Soils

Expansive soils, if left untreated, can cause damage to structures, including cracking, heaving and buckling of foundations. Because the soil onsite is granular in nature, the expansion characteristics are in the low range. Thus, the potential for native soils to cause structural damage from expansion is considered a **less-than-significant** impact.

#### Mitigation Measures:

Soils with very low to low expansion potential typically do not require mitigation.

If fill soils are imported to the site, these should be evaluated for their expansion qualities. Moderately expansive soils are generally treated by presaturation of the building pad prior to construction of the foundation, and by strengthening the design of the foundation. Highly expansive fill soils should be placed, at a minimum, in fills several feet deeper than the bottom of the foundation footings. If this is not feasible, the buildings pads may be presaturated to a moisture content and depth specified by the soil engineer for the project, and the foundations strengthened to resist the deformation. Walls, pools, pavements and concrete flatwork will require similar ground preparation and design, based on parameters supplied by the soil engineer.

### 3.4.4 Ground Subsidence

Regional ground subsidence is the gradual sinking of the ground surface with little or no horizontal movement. Surface effects can include earth fissures, depressions, and disruption of surface and subsurface drainage systems. Most ground subsidence is man-induced and can cause extensive damage to buildings, streets, subsurface utility lines, and other man-made structures. In southern California, subsidence and fissures related to man's activities have been mainly attributed to withdrawal of subsurface fluids (ground water or oil) in valleys underlain by unconsolidated sediments. However, good management of local oil reserves and water supplies has largely brought subsidence under control in affected areas.

The project straddles the eastern parts of the Cucamonga and Chino Groundwater Basins (the Red Hill fault/Etiwanda Avenue Scarp marks the boundary, with the



Cucamonga Basin on the north, and the Chino Basin on the south). Subsidence and ground fissuring have occurred in the western part of the Chino Basin (in the City of Chino), however no damaging regional subsidence as a result of groundwater pumping has been reported in the project area. In the year 2000, a program was adopted for the Chino Groundwater Basin (Optimum Basin Management Program), with the goal of insuring a low-cost, sustainable supply of quality water for the future (the smaller Cucamonga Basin is generally operated as part of the Chino Basin). The program includes recommendations for technical studies and monitoring of ground water levels in the basin, as well as monitoring of ground elevations for subsidence. There are no oil extraction operations near the Rancho Cucamonga area. Consequently, the hazard posed by land subsidence is considered a **less-than-significant** impact at the site.

Mitigation Measures: None required.

#### 3.4.5 <u>Rippability and Oversize Rock</u>

If not properly addressed, rippability of bedrock units and improper rock disposal during grading can create construction delays, increase construction costs, and cause foundation problems. Given that there is no bedrock at or below the site to hundreds of feet, rippability is a **less-than-significant** impact at this site.

Because large cobbles and boulders are present in the alluvium underlying the site, special handling of oversize rock will be required during grading. In addition, the presence of boulders in cut lots and in utility alignments can make excavation for footings and trenches difficult. Removal of substantial amounts of oversize rock from the site can create a deficiency of fill materials in a balanced cut and fill grading design. Consequently, oversize rock is considered a **potentially significant** impact.

#### Mitigation Measures:

None required for rippability.

Oversize rock will need to be placed according to recommendations by the soil engineer or removed from the site. Oversize rocks are typically placed in deeper portions of the fills according to accepted methods of windrowing. Based on observations during grading, the soil engineer should provide recommendations regarding overexcavation of lots and utility alignments if it appears boulders may substantially hinder footing and trench excavation.

#### 3.5 Erosion and Flooding

#### 3.5.1 <u>Erosion</u>

The erosion potential of the underlying alluvial deposits is considered moderate to high. However, these materials will be exposed and most prone to erosion during the construction phases of the development, and especially during periods of heavy rains. After construction, these deposits will be covered by impervious surfaces, such as concrete or asphalt, or with landscaping that provides protection from erosion. Therefore, the potential hazard due to erosion is considered low for the developed site.



Technical Report for EIR Tract 16072, Rancho Cucamonga Given the above, the **short-term** impact of erosion is considered **significant**, and the **long-term** impact of erosion is considered **less-than-significant**.

#### Mitigation Measures:

Temporary erosion control measures should be provided during the construction phase, as required by current City of Rancho Cucamonga grading codes. In addition, a permanent erosion control program should be implemented for the development. This program should include proper care of drainage control devices, proper irrigation, rodent control, and landscaping. Erosion control devices should be field-checked following heavy rainfall periods to confirm that they are performing as designed.

#### 3.5.2 Flooding

The project site is located on the outwash plain for Day and East Etiwanda Canyons, two of the larger drainages emanating from the mountains in this area. Young alluvial sediments that represent deposition in active and intermediately active washes, stream channels, and sheet flow from these canyons over the last few thousand years blanket the area, including the project site. In recent years, however, flood control structures have greatly reduced the areas of the plain that receive significant amounts of water and sedimentation. In fact, flood control projects have been so effective in removing storm water run-off from the area, that the natural recharge of the groundwater basin that formerly took place has been substantially reduced (Tom Dodson and Associates, 2001). The problem was so severe that it is now necessary to implement groundwater recharge through management programs that utilize the existing flood control facilities to capture and direct storm water to spreading grounds and conservation ponds in the area.

Run-off from East Etiwanda Canyon flows to the East Etiwanda Spreading Grounds, located a few hundred feet east of the project. Outwash from Day Canyon is largely captured by levees and a flood control channel (Day Creek Channel) located about one mile to the west and southwest of the project. The small tributary stream channel that crosses the western part of the site originates on the eastern side of Day Canyon, at the edge of the mountains. This channel also receives flow from an offsite interceptor channel at the northwest corner of the project. Other existing flood control structures include a large (84-inch diameter) storm drain under Wilson Avenue, and a smaller storm drain (24-inch diameter) below Etiwanda Avenue (MDS Consulting, 2002b). The Flood Insurance Rate Map for this area indicates the project lies within Zone D, a region in which FEMA has not yet determined the flood hazards (Federal Emergency Management Agency, 1996).

Nevertheless, every few years the region is subjected to major storms having intense rainfall that results in flooding. Due to the rapid ascent of the mountains and the impervious nature of the bedrock forming the mountains, floods that impact properties near the range front are typically of the flash flood type, with high peak volumes, short duration, and high velocity. In addition to the potential for flooding of the site during infrequent intense and prolonged winter storms, development will create an increase in

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impervious surfaces, resulting in an increase in runoff to downstream areas. The hazard of flooding is therefore considered a **significant** impact.

#### Mitigation Measures:

It is essential that hydrologic impacts, including flooding from offsite areas, increased runoff to downstream regions as a result of site development, and alterations to natural stream channels, be analyzed and mitigated in the design of a project. A hydrology study prepared for Tract 16072 analyzed upstream stormflow for the undeveloped condition, as well as the need for storm water detention basins within the developed site (MDS Consulting, 2002b). Based on their hydrology calculations, MDS Consulting concluded that several flood control facilities will need to be constructed as part of the project. An open channel is proposed along the northern edge of the property, extending through the tract the interceptor channel currently present at the northwest corner, and continuing it eastward to the Etiwanda Spreading Grounds. In addition, the onsite storm drain system designed to capture runoff within the project will require the inclusion of two interim detention basins. These basins will temporarily detain water during storms so that the existing storm drain system downstream will not be overburdened. Once the offsite downstream system has been upgraded, the onsite detention basins can be permanently converted to usable open space (MDS Consulting, 2002b). Storm water mitigation measures should be reviewed by the local agency (City of Rancho Cucamonga), and the San Bernardino County Flood Control District in order to assure compatibility with the local and regional flood control network.

#### 3.6 Potential Loss of Mineral Resources

Mining operations have occurred on alluvial fans in the region, therefore, it is possible that construction quality aggregate is present at the project site. Because of the rapid urbanization in this area however, it is unlikely this resource would be developed on a commercial scale even if laboratory tests showed good quality aggregate were available in sufficient quantities. Consequently, the loss of mineral resources as a result of the proposed development is considered a less-than-significant impact.

#### Mitigation Measures:

None required.

#### 3.7 Volcanic Hazards

No volcanic deposits or events have been documented in the site vicinity in at least the last one million years. Therefore, the potential for volcanic flows or ash deposits to impact the proposed development is considered low to nil. This is a less-than-significant impact.

#### Mitigation Measures:

None required.



### 4.0 SUMMARY OF GEOLOGIC AND HYDROLOGICAL HAZARDS AND POTENTIAL MITIGATION MEASURES

Portions of the site may experience potentially significant to significant impacts from seismically induced ground shaking, surface fault rupture, seismically induced settlement, slope instability, compressible and collapsible soils, oversize rock, and erosion and flooding. The most significant of these hazards affecting the proposed development is seismic shaking.

The Cucamonga fault zone is located slightly more than one mile to the north of the site. Mean horizontal peak ground accelerations of 0.72g to 0.97g have been estimated for the site if this fault were to rupture along its entire length. Peak ground accelerations in excess of 1.0g could occur as a result of local site conditions, and proximity to the fault. The site is also near the San Andreas and San Jacinto faults, which could also produce strong ground shaking at the site. These ground motions are not typical of all of southern California, and are therefore considered significant at the site. To minimize the hazard of structural damage, and reduce the threat to life, limb and property, structures should be designed following at least the most current building and grading codes considering near-source effects.

An active fault, the Etiwanda Avenue Scarp, crosses the central part of the site in a northeasterly direction. Site-specific studies have delineated the active fault traces and recommended building setbacks from the faults. These setbacks have been incorporated into the design of the project.

The existing artificial fills and near-surface native soils are moderately to highly compressible if subjected to structural loads. Removal and recompaction of compressible soils will be required in the development areas.

Because of the dry, granular nature of the alluvium onsite, there is a potential for slope instability in temporary and permanent graded slopes. Additional soil sampling, laboratory testing and geotechnical analysis (slope stability calculations) are needed to assure this impact is reduced to non-significant levels.

The site has a potential for flooding from infrequent but intense and prolonged winter storms. In addition, development of the site will create impervious surfaces that will lead to additional runoff to properties located down-gradient. These conditions have been analyzed by the civil engineer, MDS Consulting. As a result, several flood control measures will need to be constructed within the project.

Oversize rock (large cobbles and boulders) will impact grading operations, as they require special handling and burial. Oversize rock, if left at the graded surface, can hamper trenching operations for foundations and utility lines.

Impacts associated with liquefaction, tsunami, seiche, flooding (due to dam, water reservoir or levee failure), rippability, subsidence and differential settlement, loss of mineral resources, and volcanism are considered less-than-significant at the site.





Table 2 summarizes the geotechnical impacts discussed in this report, and shows at a glance, which impacts are considered less-than-significant, potentially significant, or significant to the project.



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(M	odified fro	om CDA	AG Note	e 46)		icasui cs			
	DI HAZA OF DEV	EGREE ( RD PRI( RD URI! ELOPM	OF OR TO NG IENT	PC MIT M	DTENTI FIGATI EASUR	AL ON ES	DEGREE OF HAZARD AFTER DEVELOPMEN1		
GEOTECHNICAL HAZARDS	Less-Than-Significant Impact	Potentially Significant Impact	Significant Impact	Code Conformance	Code Conformance and Special Work	Do Nothing, Advanced Planning, Avoidance, or Restrictions	Less-than Significant Impact	Potentially Significant Impact	Significant Impact
Seismic Hazards			1						
Seismic Ground Shaking			<u> </u>	<u>x</u>	ļ	4		X	 
Liquefaction	<u> </u>			NA			<u>X</u>	Į	<b> </b>
Seismically Induced Settlement		X		X		↓	<u> </u>	<u></u>	<u> </u>
Seismically Induced Slope Instability		<u> </u>		<u>x</u>			<u> </u>	· · · · ·	<u></u>
Ground Lurching		<u> </u>	ļ	<u> </u>			<u> </u>	ļ	
Flooding (Due to dam or levee failure)	X			NA			X	{	
Surface Fault Rupture		<u> </u>	X	<u> </u>	}	<u> </u>	<u> </u>		<u> </u>
Tsunami	<u> </u>		<u> </u>	NA		4	<u> </u>		
Seiches	<u> </u>	<u> </u>	<u> </u>				<u> </u>		<u> </u>
Slope Stability							v	1	1
Landslides and Slope Instability		/	<u> </u>	<u> </u>		· · · · ·	<u> </u>		
Trench-Wall Stability			<u> </u>	<u>x</u>			<b>⊢</b>		<u> </u>
Shallow Ground Water			1						
Change in Ground Water Level		}		NA	<u> </u>		<u> </u>		
Foundation Stability					1				
Compressible Soils			<u> </u>	<u> </u>	<u>}</u>				
Collapsible Soils		<u>X</u>	-	<u>X</u>					
Expansive Soils	X	<u>X</u>		<u>X</u>		_	<del>X</del>	<u> </u>	<b>-</b> ]''
Oversize Rock		X				1			
Rippability	<u> </u>			NA		┦────			+
Subsidence and Differential Settlement	<u> </u>				<u> </u>	- <u> </u>	X		
Erosion	X	<u> </u>	·	<u> </u>	ļ		<u> </u>	<u>  </u>	
Flooding			X	X			X		
Loss of Mineral Resources	X			NA			X	<u> </u>	
Volcanic Hazards									
Lava Flow	x			NA			<u> </u>	_	
Ash Fail	X		1	NA		1	X	1	

#### Table 2 Checklist of Costochnical In note and D tontial Mitigation Moneuros

NA = Not Applicable because it is a less-than-significant impact



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APPENDIX A: REFERENCES REVIEWED



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Project No. 2122.01 November 2002

APPENDIX B: SEISMIC ANALYSES



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E Q F A U L T Ver. 2.20 (Estimation of Peak Horizontal Acceleration From Digitized California Faults)

DETERMINISTIC SITE PARAMETERS

Page 1

		IMAX. (	CREDIBLE	EVENT	MA )	(. E	ROBABLE	EVENT
ABBREVIATED FAULT NAME	DISTANCE	MAX.  CRED.   MAG.	PEAK     SITE    ACC, g	SITE INTENS MM	M2   PRC    M2	4X.  )B.  4G.	PEAK ( SITE ( ACC. g)	SITE   INTENS  MM
SAN ANDREAS - San Bernardi	9 (15)	7.30	0.443	X	117.	.301	0.4431	XI
SAN ANDREAS - Coachella	9 (15)	7.40	0.463	X	7.	30	0.443	X
SAN ANDREAS - Mojave	11 ( 18)	7.10	0.349	IX	7.	.10	0.349	IX
SAN ANDREAS - 1857 Rupture	11 ( 18)	1 7.80	0.486	X	117.	.50	0.427	X [
SAN JACINTO-AN2A	45 (72)	7.20	0.069	I VI	6.	.90	0.056	VI ł
SAN JACINTO-SAN JACINTO VA	19 ( 30)	1 6.90	0.180	VIII	1   6	. 80	0.168	VIII
SAN JACINTO-SAN BERNARDINO	5 (8)	6.70	0.508	X	6.    6.	70	0.508	X
ELSINORE-JULIAN	61 ( 98)	7.10	0.039	V	6.     6.	.40	0.023	
ELSINORE-TEMECULA	36 ( 58)	6.80	0.071	VI	11 [  6.	. 30	0.049	VI
ELSINORE-GLEN IVY	21 ( 34)	1 6.80	0.143	VIII	11 6	. 30	0.101	VII
WHITTIER	21 ( 34)	6.80	0.144	VIII	11 5	. 90	0.087	VII
CHINO-CENTRAL AVE. (Elsino)	15 ( 24)	6.70	0.248	IX	11 5	.50	0.122	VII
NEWPORT-INGLEWOOD (Offshor)	45 ( 72)	6.90	0.056	VI	11 5	. 80	0.028	V
CLAMSHELL-SAWPIT	19 ( 31)	6.50	0.161		11 5	.00	0.062	VI
CUCAMONGA	2 ( 3)	7.00	0.911	×1	1 6	.10	0.884	XI I
HOLLYWOOD	41 ( 65)	6.40	0.055	VI	11 5	.30	0.027	
HOLSER	61 ( 99)	6.50	0.030	v	11	. 90	0.010	III
MALIBU COAST	58 ( 94)	6.70	0.038	V	    4	.90	0.011	III
NEWPORT~INGLEWOOD (L.A.Bas	43 ( 69)	6.90	0.060	VI	    5	. 60	0.026	
PALOS VERDES	51 ( 82)	7.10	0.052	   V1	11 6	. 20	0.026	l V
RAYMOND	28 ( 44)	6.50	0.103	VII	11 5	.00	0.039	

Technical Report for EIR Tract 16072, Rancho Cucamonga

Page B-1



Project No. 2122.01 November 2002

DETERMINISTIC SITE PARAMETERS

Page 2

		MAX. (	CREDIBLE	E EVENT	MAX. PROBABLE EVENT				
ABBREVIATED FAULT NAME	DISTANCE	MAX.	PEAK     SITE  ACC.g	SITE INTENS	MAX.   PROB.   MAG.	PEAK   SITE  ACC. g	SITE ( INTENS) MM		
SAN GABRIEL	45 (72)	7.00	0.060	VI	1 5.60	0.024	IV		
ISAN JOSE	10 (16)	6.50	0.33B	IX	1 5.00	0.131	VIII		
SANTA MONICA	51 ( 82)	1 6.60	0.044	VI	1 5.50	0.022	IV		
SANTA SUSANA	57 ( 91)	6.60	0.037	( V	6.30	0.029	 V		
SIERRA MADRE (San Fernando	45 (72)	6.70	0.059	VI VI	5.60	0.029			
SIERRA MADRE	13 ( 20)	7.00	0.361	IX	6.20	0.219	IX I		
VERDUGO	36 (58)	6.70	0.082	VII	1 5.20	0.030	I		
COMPTON THRUST	44 (71)	6.80	0.097	VII	5.80	0.052	VI		
ELYSIAN PARK THRUST	31 ( 50)	6.70	0.154	VIII	1 5.80	0.091	VII		
NORTHRIDGE (E. Oak Ridge)	51 ( 83)	6.90	0.082	VII	1 5.80	0.040	V I		
CLEGHORN	12 ( 19)	6.50	0.236	IX I	6.00	0.193	VIII		
GRAVEL HILLS - HARPER LAKE	60 ( 97)	6.90	0.034	 V	5.40	0.012	III		
HELENDALE - S. LOCKHARDT	37 ( 60)	7.10	0.084	VII (	[ 5.40	0.027	I V [		
JOHNSON VALLEY (Northern)	55 ( BB)	6.70	0.034	V	5,20	0.012	III		
LANDERS	58 ( 94)	7.301	0.0491	VI	1 5.20	0.011	III I		
LENWOOD-LOCKHART-OLD WOMAN	51 ( 83)	7.301	0.0601	VI [	1 5.501	0.017	IV		
NORTH FRONTAL FAULT ZONE (	43 ( 70)	6.70	0.062	VI [	5.20	0.023	IV (		
NORTH FRONTAL FAULT ZONE (	18 ( 28)	7.00	0.255	IX	1 5.601	0.110	VII		
PINTO MOUNTAIN	46 ( 74)	7.00	0.057	 VI	6.101	0.033	l V l		
		 ******			1(		 *****		

-END OF SEARCH- 40 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE CUCAMONGA FAULT IS CLOSEST TO THE SITE. IT IS ABOUT 1.6 MILES AWAY.

LARGEST MAXIMUM-CREDIBLE SITE ACCELERATION: 0.911 g LARGEST MAXIMUM-PROBABLE SITE ACCELERATION: 0.884 g



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E Q F A U L T Ver. 2.20 (Estimation of Peak Rorizontal Acceleration From Digitized California Faults)

SEARCH PERFORMED FOR: Michael Brandman Associates
JOB NUMBER: 2122
JOB NAME: Rancho Cucamonga Etiwanda -Wilson
SITE COORDINATES: LATITUDE: 34.1503N LONGITUDE: 117.5225W
SEARCH RADIUS: 62 mi
ATTENUATION RELATION: 18) Idriss (1994) Horiz. - Deep Soil
 UNCERTAINTY (M=Mean, S=MeanSigma): S
FAULT-DATA FILE USED: CDMGSCE.DAT

DETERMINISTIC SITE PARAMETERS

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<b>I</b>		(MAX. )	CREDIBLE	EVENT	MAX. PR	OBABLE	EVENT
ABBREVIATED FAULT NAME	DISTANCE	I MAX. ICRED. I MAG.	PEAK   SITE  ACC.g	SITE INTENS MM	MAX.    PROB.     MAG.   A	PEAK SITE   ICC. g	SITE   INTENS  MM
SAN ANDREAS - San Bernardi	9 (15)	1 7.30	0.419	X	7.30	0.4191	X
SAN ANDREAS - Coachella	9 (15)	7.40	0.431	X	1 7.30	0.419	x
SAN ANDREAS - Mojave	11 ( 18)	7.10	0.3621	IX	7.10	0.362	IX
SAN ANDREAS - 1857 Rupture	11 ( 18)	1 7.80	0.442			0.404	x
SAN JACINTO-ANZA	45 (72)	7.20	0.115	VII	6.90	0.097[	VII
SAN JACINTO-SAN JACINTO VA	19 ( 30)	6.90	0.231	IX	6.80	0.223	IX
SAN JACINTO-SAN BERNARDINO	5 (8)	6.70	0.513	x	6.70	0.513	×
ELSINORE-JULIAN	61 ( 98)	7.10	0.078	VII	6.40	0.047	VI
ELSINORE-TEMECULA	36 ( 58)	6.80	0.116	VII	<b>-</b>  -  ] 6.30	0.087	VII
ELSINORE-GLEN IVY	21 ( 34)	6.80	0.198	VIII	6.30	0.160	VIII
WHITTIER	21 ( 34)	6.80	0.198	VIII	1 5.901	0.126	VIÍI
CHINO-CENTRAL AVE. (Elsino)	15 ( 24)	6.70	0.260	IX	5.50	0.179	VIII
NEWPORT-INGLEWOOD (Offshor)	45 ( 72)	6.90	0.090	VII	-	0.0461	VI
CLAMSHELL-SAWPIT	19 ( 31)	6.50	0.192	VIII	5.001	0.103	VII
CUCAMONGA	2 ( 3)	7.00	0.7201	XI	6.10	0.703	XI
HOLLYWOOD	41 ( 65)	6.40	0.0801	VII	5.30	0.046	VI
HOLSER	61 ( 99)	6.50	0.0501	VI	4.90	0.017	IV
MALIBU COAST	58 ( 94)	6.70	0.062	VI [	4.90	0.018	IV
NEWPORT-INGLEWOOD (L.A.Bas	43 ( 69)	6.90	0.103	VII	1 5.601	0.043	VI
PALOS VERDES	51 (82)	7.10	0.095	VII	6,201	0.051	VI
RAYMOND	28 ( 44)	6.50	0.1341	VIII	1 5.001	0.065	ví
					1		

DETERMINISTIC SITE PARAMETERS

Page	2
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		MAX.	CREDIBLE	EVENT		MAX, F	ROBABLE	EVENT
ABBREVIATED FAULT NAME	APPROX.   DISTANCE   mi (km) 	MAX.	PEAK     SITE    ACC. g	SITE INTENS MM		MAX. PROB. MAG.	PEAK SITE ( ACC. g)	SITE INTENS MM
SAN GABRIEL	45 (72)	7.00	0.103	VII		5.60	0.040	v
SAN JOSE	   10 ( 16)	6.50	0.339	IX		5.00	0.197	VIII
SANTA MONICA	51 (82)	1 6.60	0.069	   VI		5.50	0.038	v
SANTA SUSANA	57 ( 91)	6.60	1 0.060	   VI		6.30	0.048	VI
SIERRA MADRE (San Fernando	45 (72)	6.70	0.086	   VII		5.60	0.049	VI
SIERRA MADRE	13 ( 20)	7.00	0.324	IX	1	6.20	0.259	1X
VERDUGO	36 ( 58)	6.70	0.110	VII		5.20	0.051	
COMPTON THRUST	44 ( 71)	1	0.093	 ! VII		5.80	0.086	VII
ELYSIAN PARK THRUST	31 ( 50)	1 6.70	0.132	VIII		   5.80	0.141	VIII
NORTHRIDGE (E. Oak Ridge)	51 ( 83)	1 1 6.90	0.083	VII		5.80	0.069	VI
CLEGHORN	12 ( 19)	6.50	{ { 0.304	IX	{   	6.00	0.231	IX
GRAVEL HILLS - HARPER LAKE	60 ( 97)	6.90	0.070	VI		5.40	0.022	IV
HELENDALE - S. LOCKHARDT	37 ( 60)	   7.10	0.132	VIII	 	5.40	0.046	VT
JOHNSON VALLEY (Northern)	55 ( 88)	<b></b>   6.70	0.068	vî		5.201	0.022	Iv
LANDERS	58 (94)	7.30	   0.093	VII		5.20	0.0201	IV
LENWOOD-LOCKHART-OLD WOMAN	51 ( 63)	7.30	   0.107	VII		5.501	0.0301	1 V I
NORTH FRONTAL FAULT ZONE (	43 ( 70)	   6.70	   0.090	VII		I 5.201	0.0391	۱
NORTH FRONTAL FAULT ZONE (	18 ( 28)	7.00	0.253	X		l 5.60	0.162	VIII
PINTO MOUNTAIN	46 (74)	   7.00	   0.100	VII		 6.10	0.055	VI
-END OF SEARCH- 40 FAUI	TS FOUND	WITH]	I	SPECIF		ED SEA	RCH RA	DIUS.

THE CUCAMONGA FAULT IS CLOSEST TO THE SITE. IT IS ABOUT 1.6 MILES AWAY.

LARGEST MAXIMUM-CREDIBLE SITE ACCELERATION: 0.720 g LARGEST MAXIMUM-PROBABLE SITE ACCELERATION: 0.703 g



Technical Report for EIR Tract 16072, Rancho Cucamonga 1

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#### E Q F A U L T Ver. 2.20 (Estimation of Peak Horizontal Acceleration From Digitized California Faults)

SEARCH PERFORMED FOR: Michael Brandman Associates
JOB NUMBER: 2122
JOB NAME: Rancho Cucamonga Etiwanda -Wilson
SITE CODRDINATES: LATITUDE: 34.1503N LONGITUDE: 117.5225W
SEARCH RADIUS: 62 mi
ATTENUATION RELATION: 1) Campbell & Bozorgnia (1994) Horiz. - Ailuvium
UNCERTAINTY (M=Mean, S=MeanSigma): S
FAULT-DATA FILE USED: CDMGSCE.DAT

DETERMINISTIC SITE PARAMETERS

Page 1

1		MAX. C	CREDIBLE	EVENT	MAX. F	ROBABLE	EVENTI
ABBREVIATED FAULT NAME	APPROX. =  DISTANCE   mi (km) 	MAX.	PEAK SITE ACC. g	SITE	MAX.   PROB.    MAG.	PEAK   SITE   ACC. g	SITE INTENS MM
SAN ANDREAS - San Bernardi	9 ( 15)	7.30	0.513	X (	1 7.301	0.513	X
SAN ANDREAS - Coachella	9 (15)	7.40	0.535	X	7.30	0.513	x
SAN ANDREAS - Mojave	11 ( 10)	7.10	0.414	X (	7.10	0.414	x
SAN ANDREAS - 1857 Rupture	11 ( 18)	7.80	0.572	x	1 7.50	0.506	X
SAN JACINTO-ANZA	45 (72)	7.20	0.115	VII	6.90	0.088	VII
SAN JACINTO-SAN JACINTO VA	19 ( 30)	6.90	0.229	IX	6.80	0.214	VIII
SAN JACINTO-SAN BERNARDINO	5 ( 8)	6.70	0.549	   X	6.70	0.549	. x
ELSINORE-JULIAN	61 ( 98)	7.10	0.071	VI	6.40	0.038	v
(ELSINORE-TEMECULA	36 ( 58)	6.80	0.106	VII (	6.30	0.068	VI
ELSINORE-GLEN IVY	21 ( 34)	6.80	0.187	VIII	6.30	0.131	VIII
NHITTIER	21 ( 34)	[	0.188	VIII	5.90	0.095	1 VII
CHINO-CENTRAL AVE. (Elsino	15 ( 24)	6.70	0.275	IX	5.50	0.127	VIII
NEWPORT-INGLEWOOD (Offshor	45 (72)	6.90	0.089	VII	5.80	0.033	
CLAMSHELL-SAWPIT	19 ( 31)	6.50	0.185	VIII	[] [] 5.00	0.061	I
	2 ( 3)	7,00	0.969	XI XI	[ б.10	0.919	XI
HOLLYWOOD	41 ( 65)	6.40	0.068	   VI	{ <b></b>  [ 5.30	0.028	I
HOLSER	61 ( 99)	   6.50	0.041	   V	    4.90	0.011	[   III
MALIBU COAST	58 ( 94)	6.70	0.051	(  ( VI	4.90	0.012	1 III
NEWPORT-INGLEWOOD (L.A.Bas	43 ( 69)	[    6.90	   0.094.	   VII	5.60	0.030	<b>-</b>   V
PALOS VERDES	51 ( 82)	7.10	0.089	VII	- <b></b>    6.20	[   0.040	1 1 V
RAYMOND	28 (44)	6.50	( 0.124	   VII	{  { 5.00	1	l I V
SAN GABRIEL	45 (72)	7.00	0.096	   VII	    5.60	0.028	
				[	!	[	1~



Technical Report for EIR Tract 16072, Rancho Cucarnonga

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# DETERMINISTIC SITE PARAMETERS

			MAX. CREDIBLE EVENT   MAX. PROBABLE EVENT							
DIS1 mi	1A7 ()	NCE (m)	MAX. CRED. MAG.	PEAK   SITE  ACC. g	SITE    INTENS    MM	M. (PRO	AX. DB. AG.	PEAK   SITE !ACC. g	SITE  INTENS   MM	
10	(	16)	1 6.50	0.379	I X I	1 5	.00	0.138	VIII	
51	(	82}	1 6.60	0.057	VI I	1 5	.50	0.024	IV	
57	(	91)	6.60	0.049	1 VI	1 6	. 30	0.039	v	
45	(	72)	6.70	0.074	VII	1 5	. 60	0.031	i v	
1 13	(	20)	1 7.00	0.393	X	1 6	. 20	0.248	IX	
36	(	58}	6.70	0.100	VII	1 5	. 20	0.030	i v	
44	{	71)	1 6.80	0.122	VII	1 5	.80	0.056	I VI	
31	(	50)	6.70	0.176	VIII	1 5	. 80	0.093	VII	
51	{	83)	6.90	0.108	VII (		. 80	0.045	VI	
12	(	19)	6.50	0.277	IX	6	.00	0.199	VIII	
60	(	97)	6.90	0.060	VI (	1 5	.40	0.016	IV	
37	(	60)	7.10	0.130	VIII	5	. 40	0.029	v	
55	(	88)	6.70	0.057	VI	1 5	. 20	( 0.015)	τv	
58	(	94)	7.30	0.089	VII	1 5.	.20	0.014	III	
51	ł	83)	7.30	0.105	VII	1 5.	50	0.021	IV	
43	(	70)	6.70	0.078	VII	1 5.	20	0.023	IV	
18	(	28)	7.00	0.2791	IX I	1 5.	60	0.114	VII	
46	(	74)   	7.001	0.0931	VII {		10	0.0421	VI	
	API DIS7 mi 51 57 45 13 36 45 13 36 45 13 57 55 51 55 58 51 43 16 46	APPRC DISTAN mi (1) 10 ( 51 ( 57 ( 45 ( 13 ( 36 ( 44 ( 31 ( 51 ( 51 ( 55 ( 55 ( 55 ( 58 ( 55 ( 58 ( 18 ( 18 ( 18 ( 44 (	APPROX. DISTANCE mi (Km) 10 (16) 51 (82) 57 (91) 45 (72) 13 (20) 36 (58) 44 (71) 31 (50) 51 (83) 12 (19) 60 (97) 37 (60) 55 (88) 58 (94) 51 (83) 18 (28) 43 (70) 16 (28)	Imax.       (MAX.         APPROX.	(MAX. CREDIBLI         APPROX.         DISTANCE       MAX.   PEAK         mi (km)   CRED.   SITE           MAG.   ACC. g         10 (16)   6.50   0.379         51 (82)   6.60   0.049         57 (91)   6.60   0.049         45 (72)   6.70   0.074         13 (20)   7.00   0.393         36 (58)   6.70   0.100         44 (71)   6.80   0.122         31 (50)   6.70   0.176         51 (83)   6.90   0.108         12 (19)   6.50   0.277         60 (97)   6.90   0.060	[MAX. CREDIBLE EVENT]         APPROX.         DISTANCE   MAX.   PEAK   SITE   INTENS         mi (km)   CRED.   SITE   INTENS           MAG.   ACC. g  MM	[MAX. CREDIBLE EVENT] [MA]         APPROX.         DISTANCE   MAX.  PEAK   SITE   INTENS  [PROMINED   MAG.  ACC. g]         mi (km)  CRED.  SITE   INTENS  [PROMINED   MAG.  ACC. g]         MAG.  ACC. g]       MM   M	MAX. CREDIBLE EVENT   MAX.         APPROX.         DISTANCE   MAX.   PEAK   SITE   MAX.         mi (km)   CRED.   SITE   INTENS   [PROB.           MAG.   ACC. g          MMG.   ACC. g          MMG.   ACC. g          MMG.   ACC. g          MMG.   ACC. g          MAG.   ACC. g          MMG.   ACO. g	(MAX. CREDIBLE EVENT   [MAX. PROBABLI         APPROX.	

-END OF SEARCH- 40 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE CUCAMONGA FAULT IS CLOSEST TO THE SITE. IT IS ABOUT 1.6 MILES AWAY. LARGEST MAXIMUM-CREDIBLE SITE ACCELERATION: 0.969 g LARGEST MAXIMUM-PROBABLE SITE ACCELERATION: 0.919 g



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1/9/2024 Board Meeting

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Offices bacased in Irvino and to Galam

March 7, 2003

Mr. Paul McCloy GeaSails, Inc. 24590 Madison Avanue Munieta, CA 92562

#### Tract 16072 Richland Etiwanda Gity Comments

Ocor Poul;

We received comments from the City recently and were going to have the City's EIR consultants respond, but after some thought, decided that the project geotechnical consultant would be better able to address the comments and have the EIR geotechnical consultant review. The three areas of concern are as follows:

- Will the water perceluting into the detention basin in the fault zone lubricate or adversely
  affect the fault? The maximum period of water detention in a one hundred-year storm is
  less than twenty-four hours, which includer the entire reinfall period.
- Are the 3:1 slopes that come down into the north side of the fault zone stable in continguate events?
- 3. When the detention basin in the fault zone has been full of water, is the adjacent 3:1 slope on the north side of the basin stable in an earthquake event?

We have enclosed a hydrology plate of the detention basin that reflects the location as well as the maximum depth of water.

Please call me to discuss this further.

Sincerely,

More /p ĮLU. Stonley C. Marse

Stanley C. Marse Principal

SCM:(r

cc: Tam Sanhamel John Schafer

GARANJACONOTICOMADOC

Stanley C. Morse Onry W. Dekich J.R. "Skip" Schultz 87320 Aveldin Average Solve 330 Irolae, CA 42612 VQ1CF: 441-251-8621 F48c 944-251-8614 HVM.mitrimedrift(199)

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## RESPONSE TO THIRD PARTY REVIEW TENTATIVE TRACT NO. 16072, RICHLAND ETIWANDA CHO CUCAMONGA, SAN BERNARDINO COUNTY, CALIF

FOR

## RICHLAND PROPERTIES 3 IMPERIAL PROMENADE, SUITE 150 SANTA ANA, CALIFORNIA 92707

W.O. 2381-44-SC APRIL 10 2003



oard Meeting

Geotechnical • Geologic • Environmental

ttachment 3, Page 134 of

#### Attachment 3, Page 135 of 608

## .

## RESPONSE TO THIRD PARTY REVIEW TENTATIVE TRACT NO. 16072, RICHLAND ETIWANDA RANCHO CUCAMONGA, SAN BERNARDINO COUNTY, CALIFORNIA

### FOR

## RICHLAND PROPERTIES 3 IMPERIAL PROMENADE, SUITE 150 SANTA ANA, CALIFORNIA 92707

W.O. 2381-A4-SC APRIL 10, 2003

Attachment 3, Page 136 of 608





Geotechnical · Geologic · Environmental

26590 Madison Avenue · Murrieta, California 92562 · (909) 677-9651 · FAX (909) 677-9301

April 10, 2003

7-10

W.O. 2381-A4-SC

## **Richland Properties**

3 Imperial Promenade, Suite 150 Santa Ana, California 92707

Attention: Mr. John Schafer

# Subject: Response to Third Party Review, Tentative Tract No. 16072, Richland Etiwanda, Rancho Cucamonga, San Bernardino County, California.

Dear Mr. Schafer:

In accordance with the request of MDS Consulting, and your authorization, GeoSoils, Inc. (GSI), is providing this response to the City's third party review of our reports for the subject site (see Appendix A). The scope of our services has included a review of the referenced plans and letter by MDS Consulting, project design civil engineers, a review of the referenced technical data and previous reports by GSI, preparation of geologic cross sections and slope stability analyses, analysis of data, and preparation of this summary response. Unless specifically superceded herein, the conclusions and recommendations contained in the referenced GSI reports remain pertinent and applicable, and should be appropriately implemented during planning, design, and construction.

## **REVIEW RESPONSE**

For ease of review, the comments indicated by the City's reviewer are repeated below in bold, followed by GSI's response.

## Review Comment No. 1

Will the water percolating into the detention basin in the fault zone lubricate or adversely affect the fault? The maximum period of water detention in a one hundred-year storm is less than twenty-four hours, which includes the entire rainfall period.

## Response No. 1

In most cases of reservoir-induced seismicity, seismicity follows the impoundment, <u>large</u> lake-level changes, or filling at a later time above the highest water level achieved until then (Talwani, 1997). The location of seismicity is governed by the nature of faulting below and near the reservoir. Reservoir-induced seismicity is considered to have occurred at only four sites in California (Allen, 1982). GSI would like to point out that the proposed <u>detention</u> basin is not a reservoir, and will only hold water (up to about 8 feet deep, or an average of  $4\frac{1}{2}$  feet) for less than 24 hours.

The seismic response of a reservoir is classified into two temporal categories: initial seismicity, which is associated with the initial impoundment or large lake-level changes, and; protracted seismicity, rarely observed, and which is believed to occur because of pore pressure changes. Since the detention basin would be emptied relatively quickly, protracted seismicity because of impoundment within the "reservoir" is of no concern, from a geologic and geotechnial viewpoint.

Under the first category, the "poroelastic" response of the reservoir is a coupled response. Initially and occurring simultaneously with the impoundment, is the undrained response. This occurs because of an increase in pore pressure in the closed pores (by fault gouge and clay). As the increased pore pressure is diffused to the surrounding regions, there is a decrease in pore pressure (drained response). With the arrival of a diffusive pore pressure front, the pore pressure increases and causes seismicity. For shallow reservoirs, the response may take a few weeks to a few months. The initial seismicity is characterized by a general lack of seismicity beneath the deepest part of the reservoir and activity on the periphery of the reservoir. The seismicity increases after the impoundment is completed, and the largest earthquake usually occurs after that. Then there is a decay in seismicity (over 5-10 years) to pre-impoundment levels (Talwani, 1997).

Based on the available data, there was no fault gouge nor clay associated with the onsite fault, and thus no significant preferential path for water infiltration into the fault zone or country sediments. Further, the proposed detention basin is very small compared to reservoirs which have exhibited initial seismicity. Thirdly, the average depth of water during impoundment is minor in nature, and equivalent to adding about 2 to 4 feet of surcharge fill. Fourthly, the impoundment would be of a limited transient nature. Based on all of the above, there is no data to indicate that the proposed detention basin, and any water emanating or percolating from it, would lubricate or adversely affect the fault, from a geologic or geotechnial viewpoint.

## Review Comment No. 2.

Are the 3:1 slopes that come down into the north side of the fault zone stable in earthquake events?

# Response No. 2.

GeoSoils, Inc. performed a slope stability analysis (static, seismic, and rapid drawdown) on the detention/retention basin 3:1 slope presented on Section C-C' (see the attached Figure 1). The location of this cross section is presented on Plates 1 and 2.

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## Fill and Cut Slope Stability Analysis

Analyses were performed utilizing the two dimensional slope stability computer program "GSTAB7." The program calculates the factor of safety for specified circles or searches for a circular, block, or irregular slip surface having the minimum factor of safety using the modified Bishop Method, Janbu or general limit equilibrium (Spencer). Additional information regarding the methodology utilized in these programs are included in Appendix B. Our slope stability analysis was performed with respect to static conditions, and when subject to seismic shaking (pseudo-static or seismic) conditions, and under rapid drawdown conditions.

## Gross Stability

Based on the available data, the constraints outlined above, and our stability calculations shown in Appendix B, a calculated factor-of-safety greater than 1.5 (static) and 1.15 (pseudo-static or seismic) has been obtained for the proposed detention/retention basin, and proposed fill (see the attached Figure 2 and Plate 3) and cut (see the attached Figure 3 and Plate 3) slopes. Factors of safety of 1.5 (static case) and 1.15 (seismic case) are the currently accepted minimum safety factors applied to slope stability analysis for the construction industry and used by local governing agencies. Our analysis assumes that the slopes are designed and constructed in accordance with guidelines provided by the City of Rancho Cucamonga, the Uniform Building Code and recommendations provided by this office. While cut slopes appear to be stable based on our current analysis, the inability to obtain site specific structural data in some areas may not preclude the need for stabilization/buttress fills during site construction due to unforseen adverse conditions exposed during site grading. Although unlikely, if significant undocumented fill is encountered during cut slope excavation, stabilization fills or retaining walls may be necessary.

## Surficial Stability

An analysis of surficial stability was performed for graded slopes constructed of compacted fills and/or bedrock material. Our analysis indicates that slopes exhibit an adequate factor of safety against surficial failure (i.e., > 1.5), provided that the slopes are properly constructed and maintained.
As can be seen by the extremely high factors-of-safety, the proposed detention/retention basin and other cut and fill slopes should be stable. Accordingly, it is GSI's opinion that the detention/retention basin and project, as proposed, are satisfactory from a geotechnical viewpoint.

# **Review Comment No. 3.**

When the detention basin in the fault zone has been full of water, is the adjacent 3:1 slope on the north side of the basin stable in an earthquake event?

## Response No. 3.

See Response No. 2 above. Accordingly, it is GSI's opinion that the detention/retention basin and 3:1 slope, as proposed, are satisfactory from a geotechnical viewpoint.

The opportunity to be of service is sincerely appreciated. If you should have any questions, please do not hesitate to contact our office.

Respectfully submitted ERED GA Reviewed by: h. RCE 4785 GeoSolls, Inc. NO. 1340 Contilied Escineering Geologist Op John P. Franklin David W. Skellv Civil Engineer, RCE 47857 Engineering Geologist, CEG JPF/DWS/jh Attachments: Figure 1 - Geologic Cross Section C-C' Figure 2 - Geologic Cross Section A-A' Figure 3 - Geologic Cross Section B-B' **Appendix A - References** Appendix B - Slope Stability Analyses Plate 1 through 3 - Geologic Cross Section Location Maps Distribution: (3) Addressee (3) MDS Consulting, Attention: Mr. Stan Morse



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# LEGEND

 

 af
 Artificial fill

 Qf
 Quaternary alluvial fan deposits

 \_\_\_\_\_\_
 Existing grade

 \_\_\_\_\_\_
 Riverside co. ORANGE CO. SWIDEGO CO.

 \_\_\_\_\_\_
 Existing grade

 \_\_\_\_\_\_
 Recolding CROSS SECTION A - A'

 \_\_\_\_\_\_\_
 Figure 2

 W.O. 2381-A4-SC DATE 4/03



W.O. 2381-A4-SC DATE 4/03 SCALE 1"=40"

Rancho Cucamonga Tentative Tract Map Number 16072 - Draft EIR

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# Appendix C Biological Resources Assessment and Focused Surveys

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# Appendix C Biological Resources Assessment and Focused Surveys

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September 3, 2003

Mr. Mike Hoolihan MICHAEL BRANDMAN ASSOCIATES 220 Commerce, Suite 200 Irvine, CA 92602

#### Re: Etiwanda Subdivision, Tentative Tract 16072, San Bernardino County, California

Dear Mr. Hoolihan:

This letter is being provided as an addendum to PCR Services Corporation's (PCR) Biological Resources Assessment for the Etiwanda Subdivision Tentative Tract 16072 located in San Bernardino County, California dated December 20, 2002. Specifically, this addendum addresses potential impacts to off-site areas resulting from the following project features:

- Etiwanda Avenue extension to the north
- Drainage outlet extension under Etiwanda Avenue
- East Avenue extension to the north
- East Avenue extension (south of Wilson Avenue)
- Wilson Avenue improvements
- Trapezoidal channel and energy dissipator

The revised study area, which includes the areas to be impacted by the above off-site features, is shown in the attached figure. Potential impacts to sensitive biological resources in these off-site areas are addressed in detail below.

- Coastal California Gnatcatcher: Focused surveys for the coastal California gnatcatchet (CAGN) were conducted on-site in 1998, 2001 and 2002 with negative results. The methodology used for the surveys included broadcasting taped CAGN vocalizations outward from the property boundary. Since the tape is audible for at least 300 feet and potentially farther due to the flat topography, the revised and expanded study area is considered to have been surveyed during each of the three previous survey efforts. Due to the multiple years of negative survey results the CAGN is not expected to occut within the study area and our conclusions remain the same as identified in the December 20, 2002 Biological Resources Assessment.
- San Bernardino Kangatoo Rat: Focused trapping surveys were conducted for the San Bernardino kangaroo rat (SBKR) in 2001 within the Etiwanda property. In 2002, SBKR focused surveys were conducted within the Etiwanda property and within the off-site areas

## Mr. Mike Hoolihan MICHAEL BRANDMAN ASSOCIATES September 3, 2003 - Page 2



comprising the revised study area (with the exception of the Etiwanda Spreading Grounds). No SBKR were detected during either trapping bout. A small portion of the Etiwanda Spreading Grounds will be impacted by the construction of a trapezoidal channel and energy dissipatot. According to Dr. Michael O'Farrell (personal communication September 2, 2003), SBKR are unlikely to occur there due to the negative results of trapping west of the spreading grounds and the increased disturbance within the spreading grounds. Additionally, Dr. O'Farrell has conducted SBKR trapping studies elsewhere on the Etiwanda Fan, including the nearby Day Creek alluvial wash, and he did not find the species in the area. It is his opinion that the species is likely to have been extirpated from most of the fan area. Therefore, our conclusions remain the same as written in the December 20, 2002 Biological Resources Assessment.

- Sensitive Plants: Although focused surveys for sensitive plants were not conducted in portions of the larger study area, there is a high likelihood of Plummer's mariposa lily (*Calochortus plummerae*) to occut based upon the similarity and contiguity of the habitat. Impacts to this species have been determined to be potentially significant and the potential presence of additional individuals within the larger study area would not change the findings of the December 20, 2002 Biological Resources Assessement.
- Trees: All jurisdictional trees within the study area were addressed in the December 20, 2002 tree report.
- Jurisdictional Delineation: All jurisdictional areas within the study area were addressed in the delineation report dated December 20, 2002. The placement of the energy dissipatot structure within the spreading grounds does not appear to impact an area that would be regulated by rhe U.S. Army Corps of Engineers (ACOE). Nevertheless, all temporary and permanent impacts related to the placement of this structure will be addressed during the regulatory permit process with the ACOE and Regional Water Quality Control Board under Sections 404 and 401 of the Clean Water Act, respectively.

If you have any questions regarding the contents or findings in this letter, please do not hesitate to contact Kristin Szabo at (949) 753-7001.

Sincerely, PCR SERVICES CORPORATION

Kristin Szabo Senior Biologist

cc: Tom Sanhamel

Attachment





# BIOLOGICAL RESOURCES ASSESSMENT ETIWANDA SUBDIVISION TENTATIVE TRACT 16072







December 2002

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# BIOLOGICAL RESOURCES ASSESSMENT ETIWANDA SUBDIVISION TENTATIVE TRACT 16072



Prepared For:

Richland Pinehurst, Inc. 3 Imperial Promenade, Suite 150 Santa Ana, California 92707 Contact: Mr. John Schafer

Prepared By:

PCR Services Corporation One Venture, Suite 150 Irvine, California 92618 Contacts: Steven G. Nelson, Director of Biological Services Kristin Szabo, Senior Biologist

# San Bernardino County, California

December 2002

413

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# **Biological Resources Assessment**

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Etiwanda Subdivision Tentative Tract 16072 San Bernardino County, California

The Undersigned Certify That this Report Is a Complete and Accurate Account of the Findings and Conclusions of a Biological Assessment for the Above-referenced Project.

PCR Services Corporation

Aman Herman

for Steve Nelson, Director of Biological Services

Kristin Szabo, Project Manager

December 20, 2002

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#### EXECUTIVE SUMMARY

#### BACKGROUND

Richland Pinehurst, Inc. is requesting administrative and discretionary action approval for the implementation of the Etiwanda Subdivision, Tentative Tract 16072, a proposed residential development in southwestern San Bernardino County, California. The site is currently undeveloped and covers approximately 150 acres on the Etiwanda alluvial fan in the foothills of the San Gabriel Mountains. The property is located northeast of the intersection of Wilson Avenue and Etiwanda Avenue. As proposed, 150 acres would be converted into residential use consisting of 359 single-family homes.

#### SCOPE AND METHODOLOGY

The scope of this assessment includes a description of all methods employed, survey results, and documentation of existing biological resources on the property, and the determination of potential impacts associated with the proposed land use plan for the purpose of complying with the California Environmental Quality Act. Methods of study include a review of relevant literature, field surveys, and an impact analysis. This report is consistent with accepted scientific and technical standards and the requirements of the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). While general biological resources are discussed in summary manner, the focus of this assessment is those resources considered to be sensitive.

#### **EXISTING CONDITIONS**

The project site consists of approximately 150 acres within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. Topographically, the project site is characterized by an alluvial fan formed through the crosion and transport of materials from the San Gabriel Mountains. Surrounding land uses include vacant land to the north, a County flood control channel to the east, sparse residential development to the southeast, a water treatment plant to the south, and residential development to the west. A utility corridor with overhead power lines is adjacent to the northern property boundary.

Scrub communities cover most of the site and there are various levels of disturbance onsite from a previous residence, historical fires, and current recreational activities (paintball, OHV use). Dominant scrub communities include California buckwheat-white sage scrub, white sage scrub, and scalebroom scrub. Remnant ornamental landscaping occurs in the form of eucalyptus windrows in the center of the property and planted trees in association with the previous residence. The property supports U.S. Army Corps of Engineers (ACOE) and CDFG jurisdictional "Waters of the U.S." and a substantial population of Plummer's mariposa lily. The property also lies within critical habitat designated for the coastal California gnatcatcher and San Bernardino kangaroo rat.

#### ΙΜΡΑϹϓ

Project implementation will cause the loss of 137.8 acres of scrub communities including 44.1 acres of California buckwheat-white sage scrub, 82.5 acres of white sage scrub, and 11.2 acres scalebroom scrub. These communities are considered high-priority inventory communities by the CDFG because they are experiencing a decline throughout their range.

The removal of the scrub communities above will contribute to the loss of a substantial population of Plummer's mariposa lily on-site.

Although no coastal California gnatcatchers or San Bernardino kangaroo rats were observed on-site during focused surveys, the proposed project is within designated critical habitat for these species.

During the course of field surveys on the project site, active bird nests were observed. Disturbing or destroying active nests is a violation of the Migratory Bird Treaty Act. In addition, nests and eggs are protected under Fish and Game Code Section 3503.

Approximately 1.13 acres of ACOE and CDFG jurisdictional waters on-site and 0.98 acre off-site will be impacted by the proposed project.

A total of 213 cucalyptus, pepper, sycamore, and walnut trees under the jurisdiction of the City of Rancho Cucarnonga will be impacted by the proposed project.

#### **MITIGATION**

Measures to mitigate impacts to nesting birds will be accomplished by removing vegetation outside of the breeding season or having all habitat removal monitored by qualified biologists if during the breeding season.

Measures to mitigate impacts to ACOE and CDFG jurisdictional areas will occur in accordance with the permitting process and will consist of on- or off-site creation, restoration, or enhancement of ACOE jurisdictional waters of the U.S. and/or wetlands at a ratio no less than 2:1; on- or off-site creation, restoration, or enhancement of CDFG jurisdictional waters of the State at a ratio no less than 2:1; and, the incorporation of design features into the proposed project that will avoid or minimize impacts to drainages on-site.

Impacts to trees will be mitigated in one of two ways: (1) in accordance with the City of Rancho Cucamonga Tree Preservation Guidelines a total of 213 spotted gum or other City approved tree species will be planted; or, (2) 213 trees such as coast live oak, interior live oak, southern California black wahut, and western sycamore will be planted within the greenbelt area bisecting the development.

Impacts to 44.1 acres of California buckwheat-white sage scrub and 82.5 acres of white sage scrub will be mitigated at a 1:1 ratio. The scalebroom scrub on-site is floristically the most similar to alluvial fan sage scrub (which is the focus of many conservation efforts. Therefore, mitigation for 11.2 acres of scalebroom scrub will be at a ratio of at least 2:1. Under this strategy, 149.0 acres of habitat of similar floristics and value to those impacted will be acquired and preserved.

Prior to issuance of a grading permit, focused surveys for Plummer's mariposa lily shall be conducted by a qualified biologist. Surveys shall be conducted within the flowering period (May to July) in all portions of the project site which provide potentially suitable habitat. If present, the number and location(s) will be documented and the resource agencies will be notified for consultation and possible collection and relocation.

Impacts within the coastal California gnatcatcher and SBKR critical habitat units are not expected to compromise the long-term survival of the species; therefore, no mitigation for impacts to critical habitat are proposed. However, due to inherent fact that impacts would occur within designated critical habitat the ACOE will consult with the USFWS under Section 7 of the FESA.

#### UNAVOIDABLE SIGNIFICANT ADVERSE IMPACTS

The proposed project, inclusive of all proposed mitigation measures will reduce all potentially significant impacts to nesting birds, ACOE and CDFG jurisdictional areas, jurisdictional trees, sensitive plant communities, sensitive plants, and sensitive wildlife to less than significant.

#### **1.0 INTRODUCTION**

#### 1.1 BACKGROUND AND PURPOSE

This report presents the findings of a general biological resources assessment for the Richland Communities Etiwanda Subdivision, Tentative Tract 16072, San Bernardino County, California. The purpose of this study, conducted by PCR Services Corporation (PCR), is to document the existing biological resources, and assess the potential biological and regulatory impacts associated with development of the project site. The submittal of this report is intended to satisfy documentation required by the California Environmental Quality Act (CEQA) implementation process.

The project site consists of approximately 150 acres and is located in an unincorporated portion of southwestern San Bernardino County (County) (Figure 1-1, *Regional Map*, on page 2) north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue north of the City of Rancho Cucamonga (City). The project site is contained on the United States Geological Survey (USGS) 7.5' Cucamonga Peak Quadrangle, in Section 21, T. 1 N., R. 6 W., as shown in Figure 1-2, *Vicinity Map*, on page 3. The project site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. The elevation of the project site is approximately 1,600 to 1,800 feet above mean sea level (msl).

#### 1.2 SCOPE OF STUDY

The scope of this assessment encompasses the methods, survey results, and comprehensive documentation of existing biological resources on the project site. In addition, this assessment incorporates the findings of an extensive literature review, a general biological survey, a detailed investigation of jurisdictional "Waters of the U.S." and wetlands, a habitat assessment and subsequent focused coastal California gnatcatcher (gnatcatcher) surveys, and focused sensitive plant surveys. This documentation is consistent with accepted scientific and professional standards pursuant to CEQA and, as appropriate, is congruent with technical requirements of the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG). While general biological resources are discussed in a comprehensive manner, the focus of this assessment is on those biological resources considered to be sensitive by the County and State and/or Federal agencies.

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#### 2.0 METHODS OF STUDY

#### 2.1 APPROACH

This assessment of biological resources is based on information compiled through field reconnaissance, focused surveys, previous documentation, and appropriate reference materials. The project site was first visited by PCR biologists in 1998 to conduct a biological and jurisdictional constraints analysis. As a result, focused surveys for the coastal California gnatcatcher (*Polioptila californica californica*) and a jurisdictional delineation were conducted. In 2000, PCR revisited the project site to conduct a general biological study and constraints analysis for the purposes of an Initial Study. As a result, focused surveys were conducted in 2001 and 2002 for the gnatcatcher, San Bernardino kangaroo rat (*Dipodomys merriami parvus*) (SBKR), and sensitive plants. In addition an inventory of the trees on-site was conducted in 2002. All work was performed by PCR, Cadre Environmental (Cadre), and Natural Resources Assessment, Inc (NRA).

#### 2.2 LITERATURE REVIEW

The assessment was initiated with a review of relevant literature on the biological resources on the project site and in the vicinity. Federal register listings, protocols, and species data provided by the USFWS were reviewed in conjunction with anticipated Federally-listed species potentially occurring in the vicinity of the project site. The California Natural Diversity Database (CNDDB), a CDFG (Natural Heritage Division) species account database, was reviewed for all pertinent information regarding the locations of known occurrences of sensitive species in the vicinity of the project site. Other CDFG reports and publications which were consulted include the following:

- State and Federally Listed Endangered and Threatened Animals of California, October 2002;
- Special Animals, July 2002;
- Endangered, Threatened, and Rare Plants of California, October 2002; and
- Special Plants, July 2002.

Numerous regional floral and faunal field guides were utilized in the identification of species and suitable habitats known to exist in the vicinity of the project site. These and other references are listed in Section 7.0, References, of this document. Combined, the sources reviewed provided a baseline from which to inventory the biological resources potentially occurring on the project site and in the surrounding area.

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#### 2.3 FIELD INVESTIGATIONS

Field surveys were conducted from February to September 1998, December 2000, March to August 2001, and March to October 2002. Surveys were conducted by PCR, Cadre, and NRA. The PCR survey team included Steve Nelson, Mark Sudol, Jenni Snibbe, Ken Halama, Jason Berkeley, Kristin Szabo, Marc Blain, Stephanie Seapin, Susan Erickson, and Ryan Roberts. Karen Kirtland of NRA conducted focused SBKR surveys in 2001. Ruben Ramirez, Jr. of Cadre conducted surveys for the SBKR in 2002. Survey coverage of the project site, with special attention to aquatic resources and sensitive habitats including those areas potentially supporting sensitive flora or fauna, was ensured using a color aerial photograph (1"=400') and topographic maps (1"=100'). Resumes of PCR team members are included in Appendix A, *Resumes*.

#### 2.3.1 Plant Community/Habitat Classification and Mapping

Plant communities were mapped with the aid of a 1"=400' scale color aerial photograph and a 7.5-minute USGS topographic map. The topographic map was used as a guide to delineate the project site boundaries onto the aerial photograph. Plant community boundaries were delineated directly onto the aerial photograph while in the field. Sensitive or unusual biological resources observed in the field were noted on the aerial photograph. Plant community names and hierarchical structure follows the CDFG *List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base* (CDFG 2002). Scientific names are employed upon initial mention of each species; common names are employed thereafter.

#### 2.3.2 Regional Connectivity/Wildlife Corridor Assessment

The analysis of wildlife movement corridors associated with the project site and its immediate vicinity was based on information compiled from the literature, input from wildlife agency personnel, analysis of the aerial photograph and topographic map, and direct observations inade in the field during survey work. The relationship of the study area to large open space areas in the immediate vicinity was also evaluated in terms of connectivity and habitat linkages. The discussions in this report of corridor issues are intended to focus on wildlife inovement associated with the project site and immediate vicinity.

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#### 2.3.3 General Plant Inventory

All plants observed during surveys were either identified in the field or collected and later identified using taxonomic keys. General plant surveys were completed in combination with other surveys. All plant species observed on the project site were recorded in field notes and included in the Plant and Wildlife Species Compendia provided in Appendix B to this document. Plant taxonomy follows Hickman (1993). Common plant names, when not available from Hickman, were taken from Munz (1974) and McAuley (1996). Scientific names are included only during the first mention of a species. Thereafter, common names alone arc used.

#### 2.3.4 Tree Study

An inventory of all trees on the project site was conducted in accordance with guidelines set forth by the City of Rancho Cucamonga Tree Preservation Guidelines (Municipal Code Chapter 19.08). The guidelines require that all woody plants in excess of fifteen feet in height and having a single trunk circumference of fifteen inches or more and/or any multi-trunk tree(s) having a total circumference of thirty inches or more, as measured twenty-four inches from ground level be surveyed by a "qualified" arborist. In accordance with these guidelines, a survey of all trees within the proposed development envelope was conducted. Trees meeting the criteria outlined in the Tree Preservation Guidelines were located, mapped using a Trimble Global Positioning System, measured, and assessed by a certified arborist. For additional details regarding the tree inventory, refer to the Tree Survey and Report in Appendix C, *Tree Survey Report*, (PCR 2002).

#### 2.3.5 General Wildlife Inventory

Animals identified during the field surveys by sight, call, tracks, scat, or other sign were recorded. In addition to species actually detected, expected use of the project site by other wildlife was derived from the analysis of potential habitats combined with known habitat preferences of regionally-occurring wildlife species. Survey methods for sensitive faunal species are discussed in the Sensitive Wildlife Surveys subsection below.

Vertebrate taxonomy followed in this assessment is according to Stebbins (1985) for amphibians and reptiles, the American Ornithologists' Union (1983 and supplemental) for birds, and Jameson and Peeters (1988) for mammals. Scientific names are used during the first mention of a species; common names only are used in the remainder of the text. A complete list of all species observed on the project site are included in the Plant and Wildlife Species Compendia provided in Appendix B to this document.

#### 2.3.6 Sensitive Plant Surveys

The Etiwanda property was thoroughly searched for sensitive plant species during the spring and summer of 2001 and 2002. Survey dates encompass the flowering periods of all sensitive plants potentially occurring in the vicinity. Methods used included slowly walking over all portions of the site. These methods were intensified within suitable habitat areas. If detected, the locations of sensitive plants were mapped on a 1"=400' scale aerial photograph. These surveys were conducted in accordance with survey guidelines published in the Inventory of Rare and Endangered Vascular Plants of California (CNPS 2001). Sensitive plants include those listed by the USFWS, the CDFG, and the California Native Plant Society (CNPS), particularly lists 1A, 1B, and 2. Close attention was paid to those sensitive plant species reported in the CNDDB from the vicinity such as Robinson's pepper-grass (Lepidium virginicum var. robinsonii), many-stemmed dudleya (Dudleya multicaulis), Southern California black walnut (Juglans californica var. californica), Hall's monardella (Monaredella macrantha ssp. hallii), Pringle's monardella (Monardella pringlei), pygmy poppy (Canbya candida), Santa Ana River woollystar (Eriastrum densifolium ssp. sanctorum), Parry's spineflower (Chorizanthe parryi var. parryi), sleuder-homed spineflower (Dodecahema leptoceras), Plummer's mariposa lily (Calochortus plummerae), intermediate mariposa lily (Calochortus weedii var. intermedius), thread-leaved brodiaea (Brodiaea filifolia), and California muhly (Muhlenbergia californica). Additional plant species which typically occur at elevations above 4,500 feet were reported in the CNDDB within the Cucamonga Peak quad. These species are not expected to occur on-site due to their elevational range: Laguna mountains jewel-flower, (Streptianthus bernardinus) San Gabriel linanthus (Linanthus concinnus), Johnston's buckwheat (Eriogonum microthecum var. johnstonii), and Peirson's spring beauty (Claytonia lanceolata var. peirsonii).

Surveys for sensitive plants in 2001 were conducted by PCR biologists Jenni Snibbe, Kristin Szabo, and Marc Blain on April 12, 17, 24, May 7, 30, June 1, 13, 20, and 27, 2001. Surveys in 2002 were conducted by PCR biologists Kristin Szabo, Marc Blain, and Betty Fetscher, Ph.D. on May 23, 30, June 6 and 25, 2002. All plant species observed were recorded in field notes or collected and later identified using taxonomic keys. All sensitive plant species observed are provided in Appendix B, *Plant and Wildlife Species Compendia*.

It should be noted that the species accounts presented in this document reflect available information and the findings of focused plant surveys contributing to this report. It is acknowledged that plant population numbers (particularly among annual species) do vary from year to year depending on environmental factors (e.g., rainfall, temperatures), other natural phenomena (e.g., wild fires) and physical features (e.g., elevational ranges, aspect). Therefore, some sensitive plant populations may vary in their detectability from season to season. From a purely scientific standpoint this potential for variation may seem problematic. From a practical standpoint and pursuant to CEQA, however, biological assessments are based on the best available information including reasonable field study efforts. In the case of this assessment,
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every effort was made to conduct surveys for sensitive plants during the peak flowering periods and varying habitat associations for these species.

# 2.3.7 Sensitive Wildlife Surveys

The assessment of habitat on the project site indicated that there is potential habitat for the Federally-threatened and CDFG Species of Special Concern gnatcatcher and the Federallyendangered and CDFG Species of Special Concern SBKR. These species are discussed below.

## Coastal California Gnatcatcher

The project site is located within the boundary of critical habitat designated by the USFWS for the gnatcatcher (USFWS October 24, 2000). Due to the presence of suitable habitat on-site, focused surveys were performed. Surveys were conducted in accordance with USFWS *Coastal California Gnatcatcher Presence/Absence Survey Guidelines*, revised July 28, 1997. Accordingly, six surveys were performed no less than seven days apart, between the hours of 6:00 A.M. and 12:00 P.M., within all portions of the project site containing potentially suitable habitat.

The permitted investigators walked transects, stopping at approximately 200-foot intervals, uttering pishing sounds, and playing a tape of recorded gnatcatcher vocalizations. The tape was played for several seconds at each interval, followed by a brief pause to listen for a response. Surveys in 1998 were conducted by Steve Nelson (Permit No. 782272) on March 24, April 3, 10, 17, 24, May 7, 30, June 1, 13, 20, 27, and July 4, 1998. Surveys in 2001 were conducted by Steve Nelson, Kristin Szabo (Permit No. TE016487-0) and Marc Blain (Permit No. TE001075-0) on March 28, April 12, 25, May 24, June 12, and 28, 2001. Surveys in 2002 were conducted by Kristin Szabo, Marc Blain, Jenni Snibbe (Permit No. TE044520-0) and James Mazza (Permit No. TE032728-0) on March 26, April 11, May 1, 23, 30, and June 6, 2002.

# San Bernardino Kangaroo Rat

In February 1998, PCR biologists conducted a habitat evaluation for the SBKR on the project site. The results of the evaluation concluded that the project site does not support suitable SBKR habitat. Recent studies related to the proposed and final designation of critical habitat for the SBKR have indicated that SBKR occupies a wider range of soil and vegetation types than previously thought. Consequently, the Etiwanda Alluvial Fan and Wash, which includes the project site, were included in the critical habitat designation (USFWS April 23, 2002).

Focused surveys for SBKR were conducted in 2001 by NRA. The surveys consisted of a literature review, habitat evaluation to determine trap placement, one trapping session. The trapping session consisted of five nights and was conducted from July 30 to August 4, 2001. Six trap lines/grids of thirty traps each were placed for a total of 900 trap nights for this session. Each trap was baited with a seed/oatmeal mix, set at dusk, checked once during the night, and at dawn. All animals captured were identified and released at the point of capture.

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Focused surveys in 2002 were conducted by Cadre biologist Ruben Ramirez (Permit No. 780566). To determine presence/absence of the SBKR within and adjacent to those areas potentially impacted by the proposed project, two separate trapping bouts were conducted, August 27 to 31 and September 24 to 28, 2002. Seven trap lines of 60 traps each, one trap line of 40 traps and one trap line of 20 traps were placed within and adjacent to the property for a total of 2,400 trap nights. Traps were baited with an oatmeal/seed mix, set at dusk and check at dawn. All animals captured were identified and released.

## 2.3.8 Jurisdictional Wetlands, Waters, and Streambeds

An assessment of jurisdictional wetlands and "Waters of the U.S." on the project site was conducted by PCR Senior Ecologist Mark Sudol and Wildlife Biologist Ken Halama on September 2, 1998 to determine whether or not on-site drainages are subject to the jurisdiction of the U.S. Army Corps of Engineers (ACOE) and/or the CDFG. Subsequent field assessments were conducted in 2002 by PCR biologists Kristin Szabo and Ryan Roberts to address new parcels added to the study area and any off-site areas that would be potentially impacted by the proposed project.

Prior to visiting the project site, a review of historic and current aerial photographs, a USGS topographic map, and the San Bernardino County soil survey map was conducted. The purpose of this review was to identify current drainage features in the vicinity of the project site and unake preliminary determinations on their jurisdictional status based on historic, natural drainage patterns. Drainage features were then "ground-truthed" during field observations to obtain characteristic measurements and detailed descriptions. The entire project site was evaluated and all areas which fall under the jurisdiction of the ACOE and/or the CDFG were identified. Each area was examined for evidence of an "ordinary high water mark" (OHWM) and for wetland vegetation. ACOE jurisdictional wetlands were delineated using a routine determination according to the methods outlined in the Corps of Engineers *Wetland Delineation Manual* (1987) based on hydrologic and edaphic features, and on the vegetation composition of the project site.

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## 3.0 EXISTING CONDITIONS

#### 3.1 CHARACTERISTICS OF THE PROJECT SITE AND SURROUNDING AREA

The project site consists of approximately 150 acres of undeveloped land in an unincorporated area of the County located north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue just north of the City of Rancho Cucamonga. The project site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. The project site is contained on the USGS 7.5' Cucamonga Peak Quadrangle, in Section 21, T. 1 N., R. 6 W.

Topographically, the project site is characterized by an alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. There are two primary drainages found on the project site that convey flows from the northwest to the southeast and merge with a defined flood control channel. Channelization of Etiwanda and Day Creeks has resulted in the cessation of flooding in most of this area. Flood flows from these drainages are now collected behind debris basins and levees and diverted into concrete diversion channels. These alterations were completed in 1969 and have eliminated sheet and debris flows on-site (Safford and Quinn 1998).

Scrub communities cover most of the site and are discussed in detail in Section 3.2. Elevation on the project site ranges between 1,600 and 1,800 feet above msl. Surrounding land uses include vacant land to the north, a County flood control channel to the east, sparse residential development to the southeast, a water treatment plant to the south, and residential development to the west. A utility corridor with overhead power lines is adjacent to the northern property boundary.

## **3.2 PLANT COMMUNITIES/HABITATS**

The classification of plant communities follows the CNPS Manual of California Vegetation (Sawyer and Keeler-Wolfe 1995), the CDFG's Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986), and the CNDDB List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base (CDFG 2002). The CNPS classification provides the most precise system for labeling scrub

dominated communities on-site. Greater precision results from the consistent use of floristics<sup>1</sup> in distinguishing between homogenous plant communities. The CNPS classification contrasts with the more commonly used Holland classification, which defines plant communities based on location, structure, or floristics. Descriptions of Holland plant communities indicate dominant and characteristic species; however, these accounts are general and tend to overlap (Sawyer and Kceler-Wolf 1995). This floristic overlap combined with the use of factors other than floristics (e.g., location and structure) results in a lack of clarity when distinguishing between vegetation types. Therefore, for the purposes of this assessment, the Holland classification was used only for the non-native grassland community.

Table 3-1, *Plant Communities*, on page 12 provides a summary of the plant communities on-site and their respective acreages. Descriptions of plant communities and are provided below along with their respective CNDDB codes and on-site acreage.

The majority of the Etiwanda property supports a low-growing scrub community. Previous classifications and mappings on or near the Etiwanda property use the category alluvial scrub or Riversidean alluvial fan sage scrub (RAFSS) (Hanes et al., 1989, Safford and Quinn 1998) due to the site's location within an alluvial fan. Alluvial scrub has been further refined to include several subtypes including the Etiwanda group, the prickly group, and the riparian group (Safford and Quinn 1998). As stated above, this assessment has mapped the scrub communities according to CNPS and CDFG classifications.

## 3.2.1 California Buckwheat-White Sage Scrub (32.100.00) (44.1 acres)

California buckwheat - white sage scrub covers 44.1 acres on-site as shown in Figure 3-1, *Plant Communities*, on page 13. Species that characterize this plant community are white sage (*Salvia apiana*), California buckwheat (*Eriogonum fasciculatum*) and pinebush (*Ericameria pinifolia*). Sub-dominant species include deerweed (*Lotus scoparius*).

The category California buckwheat – white sage scrub is the most precise option for classifying much of the vegetation on-site. In contrast the categories RAFSS intermediate alluvial fan scrub-prickly group (prickly group) or Riversidean upland sage scrub (RUSS) exhibit a great degree of floristic overlap and are consequently imprecise. Representative species that would differentiate much of this plant community as prickly group are either absent or not significant in terms of abundance. Typical prickly group species that are absent from this community include scalebroom (*Lepidospartum squamatium*), prickly pear or cholla cactus (*Opuntia* spp.) and California juniper (*Juniperus californicus*). Typical prickly group species

The study of the number, distribution, and relationships of plant species in one or more areas.

#### Table 3-1

#### **Plant Communities**

Plant Community	Total Acres
Scrub Communities	
California Buckwheat-White Sage Scrub	44.1
White Sage Scrub	82.5
Scalebroom Scrub	11.2
Non-native Grassland	2.1
Disturbed	6.0
Ornamental Landscaping	4.1
TOTAL	150.0
Source: PCR Services Corporation, 2002.	

present on-site but that are not significant include our Lord's candle (Yucca whipplei), California croton (Croton californica), green bark (Ceanothus spinosus), and hoaryleaf ceanothus (Ceanothus crassifolius).

A cluster of approximately seven green bark ceanothus individuals occurs adjacent to the ephemeral wash and scalebroom scrub near the northwest corner of the site. In addition a few individuals of green bark ceanothus and hoaryleaf ceanothus were observed at disparate locations within this vegetation type. Approximately eleven individuals of our Lord's candle were observed just north of the easternmost disturbed area. California croton occurs in low abundance throughout this vegetation type.

## 3.2.2 White Sage Scrub (32.030.00) (82.5acres)

White sage scrub covers 82.5 acres on-site. Species that characterize this vegetation type include white sage, California sagebrush (*Artemisia californica*), California buckwheat, and deerweed. White sage scrub on the eastern half of the site is dominated by white sage and deerweed with California buckwheat as a sub-dominant in some areas. Dominants on the western half of the site include California sagebrush and white sage.

Other species observed include California croton, pinebush, bush mallow (Malacothamnus fasciculatus), green bark ceanothus, yerba santa (Eriodycton trichocalyx ssp. trichocalyx), rabbitbrush (Chrysothamnus naseosus ssp. hololeucus), California everlasting (Gnaphalium californica), southern California black walnut (Juglans californica var. californica), our Lord's candle, and holly-leafed cherry (Prunus ilicifolia). One southern

Richland Pinehurst Inc. PCR Services Corporation



California black walnut individual occurs within this vegetation type near the center of the site. Our Lord's candle occurs occasionally in the northern and eastern portions of the site. Yerba santa grows in coarser substrates near the banks of the large ephemeral wash and is absent from the rest of this vegetation type. Two rabbitbrush individuals were observed at disparate locations. California croton is found occasionally throughout the white sage scrub on-site. Three green bark ceanothus clusters ranging from approximately 5-10 individuals are considered inclusions within the white sage scrub. These clusters are included because they occupy relatively small areas and are interspersed with white sage scrub dominants. An inclusion of approximately 13 clustered holly-leafed cherry individuals occupying 0.4 acre occurs near the center of the site. This cluster is interspersed with white sage scrub dominants. Two additional holly-leafed cherry individuals occur within this vegetation type at disparate locations.

White sage scrub on-site has been termed by previous mapping efforts in the Etiwanda-Day Canyon drainage system as RAFSS intermediate alluvial scrub-Etiwanda alluvial fan group (Etiwanda group) (Safford and Quinn 1998).

# 3.2.3 Scalebroom Scrub (32.070.00) (11.2 acres)

Scalebroom scrub occupies approximately 11.2 acres on-site within the major ephemeral drainage that bisects the project site flowing northwest to southeast (referred to as Drainage 1 in Section 3.7 Jurisdictional Waters, Wetlands, and Streambeds). Species that characterize this vegetation type are scalebroom, green bark ceanothus, California sagebrush, California buckwheat, yerba santa, white sage, and deerweed. Other species observed include mule fat (*Baccharis salicifolia*), needlegrass (*Achnatherum coronatum*), California sycamore (*Platanus racemosa*), mugwort (*Artemisia douglasiana*), California aster (*Lessingia filaginifolia*), hoaryleaf ceanothus, California croton, our Lord's candle, black sage (*Salvia apiana*), and bush mallow.

Scalebroom scrub on-site is analogous to RAFSS intermediate alluvial fan scrub-riparian group.

## 3.2.4 Non-native Grassland (42.000.00) (2.1 acres)

Non-native grassland covers approximately 2.1 acres near the center of the site in previously disturbed or developed areas. Non-native grassland on-site is dominated by wild oats (Avena sp.).

#### 3.2.5 Disturbed (N/A) (6.0 acres)

Disturbed areas on the project site include cleared land, geotechnical trenching areas, and dirt access roads covering 6.0 acres. Vegetation has re-established in some previously disturbed areas and these areas have been included in the aforementioned vegetation types. Disturbed areas on the project site may be devoid of vegetation or may include grasses and forbs typical of ruderal and non-native grassland communities. Species observed on-site include castor bean (*Ricinus communis*), filaree (*Eriodium spp.*), telegraph weed (*Heterotheca grandiflora*), black mustard (*Brassica nigra*), red brome (*Bromus madritensis*) and wild oats (*Avena spp.*). There are also eight Southern California black walnut trees among castor bean and Oleander (*Nerium spp.*) in the vicinity of the abandoned residence.

#### 3.2.6 Ornamental Landscaping (99.900.06) (4.1 acres)

Ornamental species cover approximately 4.1 acres on-site. Eucalyptus (*Eucalyptus globulus*) windrows occur in the center of the site and several ornamental species occur scattered throughout the site and in association with the remnant foundation including pepper tree (*Schinus molle*), olive tree (*Olea europaea*), oleander, and an unidentifiable ornamental tree near the southern property boundary.

#### 3.3 PLANT POPULATIONS

The plant communities discussed above are composed of numerous plant species. Plant species observed on the project site during all field visits are indicated in the Plant and Wildlife Species Compendia in Appendix B of this document. Sensitive plant species potentially occurring on the project site are discussed in the Sensitive Resources subsection of this document.

#### 3.4 WILDLIFE POPULATIONS

While a few wildlife species are entirely dependent on a single vegetation community, the mosaic of the vegetation communities that exist on the project site and within adjoining areas constitutes a functional ecosystem for a variety of wildlife species. However, the plant communities found on the project site only provide for some local foraging and wildlife habitat. The following discusses the wildlife populations, segregated by taxonomic group, either observed or expected to occur on the project site. Wildlife species expected to occur in the vicinity of the project site are indicated in the Plant and Wildlife Species Compendia provided in Appendix B of this document. Sensitive wildlife species potentially occurring within the project site are discussed in the Seusitive Resources subsection of this document. It should be noted that no sensitive wildlife species were observed on the project site during the field surveys.

# 3.4.1 Invertebrates

No directed surveys for common invertebrates were performed.

# 3.4.2 Amphibians

The potential presence of amphibians varies greatly between habitats within the project site. Terrestrial species may or may not require standing water for reproduction. Terrestrial species avoid desiccation by burrowing underground; within crevices in trees, rocks, and logs; and under stones and surface litter during the day and during dry seasons. Due to their secretive nature, terrestrial amphibians are rarely observed, but may be quite abundant if conditions are favorable. Aquatic amphibians are dependent on standing or flowing water for reproduction. Such habitats include fresh water marshes and open water (reservoirs, permanent and temporary pools and ponds, and perennial streams). Focused amphibian surveys were not conducted, however brief searches were conducted during other surveys. As a result, no amphibians were observed during project site visits. Common amphibian species potentially present on-site are included in the Plant and Wildlife Species Compendia in Appendix B of this document.

# 3.4.3 Reptiles

Reptilian diversity and abundance typically varies with habitat type and character. Although some species prefer only one or two plant communities, most will forage in a variety of communities. A number of reptile species prefer open habitats that allow free movement and high visibility. Most species occurring in open habitats rely on the presence of small mammal burrows for cover and escape from predators and extreme weather.

Reptiles observed on-site include the sagebrush lizard (*Sceloporus graciosus*), western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), western rattlesnake (*Crotalus viridus*), and red coachwhip (*Masticophis flagellum piceus*). Additional reptile species potentially occurring on the project site are included in the Plant and Wildlife Species Compendia in Appendix B to this document.

## 3.4.4 Birds

Upland Birds: The ornamental landscaping and scrub habitats provide foraging and cover habitat for year-round residents, seasonal residents, and migrating song birds. The overall condition of these communities on-site is generally good. The combination of these resources

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provides for a high diversity of bird species. Representative, common upland species observed on-site include western scrub jay (Aphelocoma californica), wrentit (Chamaea fasciata), California towhee (Pipilo crissalis), spotted towhee (P. maculatus), mourning dove (Zenaida macroura), house finch (Carpodacus mexicanus), lesser goldfinch (Carduelis psaltria), yellowrumped warbler (Dendroica cornata), and Anna's hummingbird (Calypte anna). Upland avian species observed or expected to occur on the project site are included in the Plant and Wildlife Species Compendia in Appendix B to this document.

**Raptors:** Trees within the project site could have the potential to provide foraging opportunities and breeding areas for raptors. Trees found near the perimeter of the project site and in the approximate center of the project site have the potential to provide suitable perches for foraging over the scrub communities. These areas provide habitat for small birds and mammals resulting in a potentially large prey population on the project site. Representative raptor species observed on-site included the American kestrel (*Falco sparverius*), turkey vulture (*Cathartes avra*), and red-tailed hawk (*Buteo jamaicensis*). Additional raptor species potentially occurring on the project site are included in the Plant and Wildlife Species Compendia in Appendix B of this document.

# 3.4.5 Mammals

The diversity of habitat observed on-site is anticipated to support a wide variety of mammal species. During field surveys, mammal species were either directly observed or their presence was deduced by diagnostic signs (track, scat, burrows, etc.). Representative mammals observed on-site include Dulzura kangaroo rat (*Dipodomys simulans*), cactus mouse (*Peromyscus eremicus*), California mouse (*P. californicus*), deer mouse (*P. maniculatus*), coyote (*Canis latrans*), and mule deer (*Odocoileus hemionus*). All mammals observed as well as those potentially occurring on the project site are included in the Plant and Wildlife Species Compendia in Appendix B to this document.

# 3.5 WILDLIFE MOVEMENT

# 3.5.1 Overview

Wildlife corridors link together areas of suitable habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, studies have concluded that some wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new individuals and

genetic material (Soulé 1987). Corridors effectively act as links between different populations of a species. A group of smaller populations (termed "demes") linked together via a system of corridors is termed a "metapopulation." The long-term health of each deme within the metapopulation is dependent upon its size and the frequency of interchange of individuals (immigration/emigration). The smaller the deme, the more important immigration becomes, because prolonged inbreeding with the same individuals can reduce genetic variability. Immigrant individuals that move into the deme from adjoining demes mate with individuals and supply that deme with new genes and gene combinations that increases overall genetic diversity. An increase in a population's genetic variability is generally associated with an increase in a population's health.

Corridors mitigate the effects of habitat fragmentation by: (1) allowing animals to move between remaining habitats, which allows depleted populations to be replenished and promotes genetic diversity; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (such as fires or disease) will result in populatiou or local species extinction; and (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs (Noss 1983, Fahrig and Merriam 1987, Simberloff and Cox 1987).

Wildlife movement activities usually fall into oue of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas, individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover). A number of terms have been used in various wildlife movement studies, such as "wildlife corridor," "travel route," "and "wildlife crossing" to refer to areas in which wildlife move from one area to another. To clarify the meaning of these terms and facilitate the discussion on wildlife movement in this study, these terms are defined as follows:

<u>Travel Route</u>: A landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another; it contains adequate food, water, and/or cover while moving between habitat areas; and/or provides a relatively direct link between target habitat areas.

<u>Wildlife Corridor</u>: A piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by urban land areas or other areas uusuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species. <u>Wildlife Crossing</u>: A small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are engineered and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These are often "choke points" along a movement corridor.

#### 3.5.2 Wildlife Movement Within the Project

The Etiwanda project site is likely to be utilized by a variety of species. The location of the site allows easy access for many species. There are no physical barriers preventing access to the site by wildlife traveling from the north or the east. Development along the western and southern edges of the site; however, prevent wildlife movement to continue through the site. Adjacent properties to the east and north are mostly undeveloped and part of the much larger natural open space for flood control and within the San Bernardino National Forest and North Etiwanda Preserve. This expanse of undisturbed open space surrounding much of the site harbors an abundance of wildlife which may, in turn, facilitate a substantial amount of wildlife movement onto and off of the study area. Therefore, the project site is considered to be in an area of potentially moderate value with regards to local wildlife movement and is likely to be used by a number of wildlife species as part of a travel route. The project site is relatively undisturbed state and has the potential to yield food and breeding resources. Limited vestige of human impact remain on the property outside of the abandoned residence, dirt roads, and geotechnical trenching areas. The extant habitat is in a natural state and still part of a larger functioning ecosystem. Species most likely to be using the project site include local residents such as opossum, raccoon, skunk, coyote, cottontail rabbit, black-tailed jackrabbit, mule deer, and gray fox.

Due to its location at the edge of urban areas, however, the site does not function within larger, regionally important corridors. That is, the site is not a critical connection between larger habitat blocks.

#### 3.6 **REGIONAL BIOLOGICAL VALUE OF THE SITE**

As previously described, the project site is adjacent to an open space area designated for flood control purposes. This open space is contiguous with the San Gabriel Mountains, contains habitat for a variety of species, and is protected from development. Due to the intact habitat on the project site, the project site contributes incrementally to region wide foraging habitat and other resources. PCR conducted an assessment of the impacts to raptor foraging habitat within the southwestern San Bernardino county region (PCR Services, letter report, October 5, 2000). The assessment concluded that approximately 43,100 acres of suitable raptor foraging habitat occurs within the region. The approximate 150-acre project site represents 0.3 percent of the total raptor foraging habitat mapped within the region.

# 3.7 JURISDICTIONAL WATERS, WETLANDS, AND STREAMBEDS

As shown in Figure 3-2, ACOE and CDFG Jurisdictional Drainages, on page 21 the project site contains three jurisdictional drainages, labeled Drainage 1, 2, and 3. The drainages total 6,335 linear feet and support 1.13 acres of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State." None of the drainages meet the criteria of a jurisdictional wetland. All drainages are ephemeral in nature and support scrub vegetation. The site investigation also identified other very minor drainages which exhibited indications of water flow. However, after consultation with the ACOE, these minor drainages were not considered jurisdictional because their width was less than one foot, the OHWM was not distinctive over the entire length, and there was no riparian or wetland vegetation present in or around the area.

Jurisdictional determinations were also made for off-site portions of these drainages to the extent they may be impacted by activities associated with the Etiwanda Subdivision (Tentative Tract 16072) development project. Drainages measured adjacent to the site include approximately 4,342 linear feet and 0.98 acre of ACOE and CDFG jurisdictional streambed. None of the areas meet the ACOE definition of a jurisdictional wetland due to the lack of hydrophytic vegetation and hydric soils. Table 3-2, *Etiwanda Subdivision Summary of Jurisdictional Area*, on page 22 summarizes the jurisdictional drainages. A copy of the delineation report is included in Appendix D, *Jurisdictional Delineation Report.* 

## 3.8 TREE SURVEY

A total of 213 trees have been surveyed and evaluated as meeting the City's "heritage tree" criteria. In general, trees within the project boundary were found to be in fair to poor condition physiologically, structurally, and aesthetically. Approximately 175 eucalyptus trees, 11 unidentifiable ornamental trees, 14 pepper trees, 9 walnut trees, and 4 sycamore trees occur on-site as shown in (Figure 3-3, *Tree Locations*, on page 23). The details of the tree survey can be found in Appendix C, *Tree Survey Report*.

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#### Table 3-2

#### Etiwanda Subdivision Summary of Jurisdictional Area

	On-site Length (ft.)	Off-site Length (ft.)	On-site ACOE (acres)	Off-site ACOE (acres)	On-site CDFG (acres)	Off-site CDFG (acres)	Nature
Drainage 1	3,300	865	0.72	0.28	0.72	0.28	Ephemeral
Drainage 2	1,310	1,747	0.09	0.41	0.09	0.41	Ephemeral
Drainage 3	1,725	1,731	0.32	0.29	0.32	0.29	Ephemeral
Total	6,335	4,343	1.13	0.98	1.13	0.98	
Source: PC	R Services Cor	poration 1998 a	nd 2002				

All eucalyptus windrow trees are in extremely poor condition. Ninety-nine percent of the eucalyptus trees are multi-trunked and have mass sprouting due to fire damage from two fires that burned the site in 1988 and 1989. In addition to fire damage, all the eucalyptus trees show signs of beetle and/or redgum lerp psyllid damage to the leaves, trunks, and limbs of the trees. The pepper trees, sycamores, walnuts, and other unknown trees are all in fair health or aesthetics with poor structure. The pepper and walnut trees in particular, as well as some of the eucalyptus trees, have severe injury due to painthall activities on the property.

# 3.9 SENSITIVE BIOLOGICAL RESOURCES

The following discussion describes the plant and wildlife species present or potentially present within the project site and vicinity, that have been afforded special recognition by local, State, or Federal resource conservation agencies and organizations, principally due to the species' declining or limited population sizes usually resulting from habitat loss. Also discussed are habitats that are unique, of relatively limited distribution, or of particular value to wildlife.

Protected sensitive species are classified by either State or Federal resource management agencies, or both, as threatened or endangered, under provisions of the State and Federal Endangered Species Acts (FESA) described below. The USFWS, CDFG, and special groups like CNPS, maintain watch lists of such resources. Vulnerable or "at-risk" species which are proposed for listing as threatened or endangered (and thereby for protected status) are categorized administratively as "candidates" by the USFWS. The CDFG uses various terminology and classifications to describe vulnerable species. There are additional sensitive species classifications applicable in California which are described below.



# 3.8.1 Explanation of Sensitive Resource Classification

# Federal Protection and Classifications

The Federal Endangered Species Act of 1973 defines an "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range." "Threatened species" are defined as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under provisions of Section 9(a)(1)(B) of FESA it is unlawful to "take" any listed species, where "take" is defined as "…harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (FESA Section 3(18)). Further, the USFWS, through regulation, has included certain types of habitat modification in their interpretation of the terms "harm" and "harass" as a form of take. This interpretation, however, is generally considered and applied on a case-by-case basis and often varies from species to species. In a case where a property owner seeks permission from a Federal agency for an action which could affect a Federally-listed plant or animal species, the property owner and agency are required to consult with USFWS. Section 9(a)(2)(b) of FESA addresses the protections afforded to listed plants.

Within the last few years, the USFWS instituted changes in the listing status of former candidate species. Former C1 (candidate) species are now referred to simply as candidate species and represent the only candidates for listing. Former C2 species (for which the USFWS had insufficient evidence to warrant listing at this time) and C3 species (either extinct, no longer a valid taxon, or more abundant than was formerly believed) are no longer considered as candidate species. Therefore, Former C2 and C3 species are no longer maintained in list form by the USFWS, nor are they formally protected. However, former C2 species have been designated, for informational purposes only, as *Federal Species of Concern*. This term is employed in this document, but carries no official protections. All references to Federally protected species in this report (whether listed, proposed for listing, or candidate) include the most current published status or candidate category to which each species has been assigned by USFWS.

For purposes of this assessment, the following acronyms are used for Federal status species:

- FE Federal Endangered
- FT Federal Threatened
- FPE Federal Proposed Endangered
- FPT Federal Proposed Threatened
- FC --- Federal Candidate for Listing
- **FSC** Federal Species Concern (former C2 or C3 species)

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# State of California Protection and Classifications

California's Endangered Species Act (CESA) defines an "endangered species" as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." The State defines a "threatened species" as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the [Fish and Game] commission as rare on or before January 1, 1985 is a threatened species." "Candidate species" are defined as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the [Fish and Game] commission has published a notice of proposed regulation to add the species to either list." Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike FESA, CESA does not include listing provisions for invertebrate species.

Article 3, Sections 2080 through 2085, of CESA addresses the taking of threatened or endangered species by stating "no person shall import into this state, export ont of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided." Under CESA, "take" is defined as "…hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Exceptions authorized by the state to allow take require "…permits or memorandums of understanding…" and can be authorized for "…endangered species, threatened species, or candidate species for scientific, educational, or management purposes." Sections 1901 and 1913 of the California Fish and Game Code provide that notification is required prior to disturbance.

Additionally, some sensitive mammals and birds are protected by the State as Fully Protected Mammals or Fully Protected Birds, as described in the California Fish and Game Code, Sections 4700 and 3511, respectively. California Species of Special Concern ("special" animals and plants) listings include special status species, including all State and Federal protected and candidate taxa, Bureau of Land Management and U.S. Forest Service sensitive species, species cousidered to be declining or rare by the CNPS or National Audubon Society, and a selection of species which are considered to be under population stress but are not formally proposed for listing. This list is primarily a working document for the CDFG's CNDDB. Informally listed taxa are not protected, but warrant consideration in the preparation of assessments. For some species, the CNDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nest sites.

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For the purposes of this assessment, the following acronyms are used for State status species:

- SE State Endangered
- ST State Threatened
- SCE State Candidate Endangered
- SCT -- State Candidate Threatened
- SFP --- State Fully Protected
- SP State Protected
- SR State Rare
- CSC California Species of Special Concern

# California Native Plant Society

The CNPS is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in the state. This organization has compiled an inventory containing information focusing on geographic distribution and qualitative characterization of rare, threatened, or endangered vascular plant species of California (Skinner and Pavlik, 1994). The list serves as the candidate list for listing as threatened and endangered by CDFG. The CNPS has developed five categories of rarity:

- List 1A: Presumed extinct in California.
- List 1B: Rare, threatened, or endangered throughout their range.
- List 2: Rare, threatened, or endangered in California, but more common in other states.
- List 3: Plant species for which additional information is needed before rarity can be determined.
- List 4: Species of limited distribution in California (i.e., naturally rare in the wild), but whose existence does not appear to be susceptible to threat.

Determinations of sensitive species that could potentially occur on the project site are based on a record reported in the CNDDB, and/or the project site is located within the known distribution of a species and contains suitable habitat.

# Multi-Species Habitat Conservation Plan

The project site falls within the boundary of the San Bernardino Valley-wide Multispecies Habitat Conservation Plan (MSHCP), an established subregional planning area under the State Natural Community Conservation Planning Act (NCCP). The NCCP is a voluntary approach to protect wildlife before it becomes fragmented or degraded by development or other

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land uses to the degree that listing is required under the Federal and State ESAs. The County is currently in the process of preparing the San Bernardino Valley MSHCP.

# 3.8.2 Sensitive Plant Communities/Habitats

The project site supports 137.8 acres of plant communities considered sensitive by the CDFG, including 44.1 acres of California buckwheat-white sage scrub, 82.5 acres of white sage scrub, and 11.2 acres of scalebroom scrub. These communities are considered highest priority inventory communities by the CDFG, indicating that they are experiencing decline throughout their range.

# 3.8.3 Sensitive Plant Species

Sensitive plants include those listed or candidates for listing by USFWS, CDFG, and CNPS (particularly list 1A, 1B, and 2). Two sensitive plants, Plummer's mariposa lily and southeru California black walnut, were observed on-site. These and several additional sensitive plant species reported in the CNDDB are discussed in more detail in Table 3-3, *Sensitive Plant Species*, on page 28. As discussed previously in Section 2.3.6, plant species reported in the CNDDB which typically occur at elevations above 4,500 are not expected to occur on-site due to their elevational range and are not address further in this document. These species include the Laguna mountains jewel-flower, San Gabriel linanthus Johnston's buckwheat, and Peirson's spring beauty.

## 3.8.4 Sensitive Wildlife Species

Sensitive wildlife includes those species listed as endangered or threatened under FESA or CESA, candidates for listing by USFWS or CDFG, and species of special concern to USFWS or CDFG. Several sensitive wildlife species that have the potential to occur in the vicinity of the project site were reported in the CNDDB. A discussion of each sensitive species potentially present on the project site is provided in Table 3-4, *Sensitive Wildlife Species*, on page 32.

## Table 3-3

# Sensitive Plant Species

Scientific Name	Common Name	Flowering	Federal	State	CNPS	Profoured Unbitat	Distribution	Occurrence
ANGIOSPERMS (DICOTY	LEDONS)	Tenou	A COULT	JOLAIC		i fleieneu nabitat	Distribution	On-site
Brassicaceae	Mustard Family	[	1	1	· · · · · ·		1	
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	Jan-Jul	NONE	NONE	18	Chaparral, coastal sage scrub. This species typically occurs at elevations above 1,500 feet.	Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties, Santa Cruz Island, Baja California.	FN, PT
Juglandaceae	Walnut Family						· · · · · · · · · · · · · · · · · · ·	
Juglans californica vat. californica	Southern California black walnut	Mar-May	NONE	NONE	4	Sage scrub, chaparral, cismontane woodland; often in association with oaks/oak woodland; frequently found on steep hillsides with northern exposures; deep alluvial soils.	Ventura, LA, Orange, Riverside, San Bernardino, San Diego Counties – foothills. Especially abundant in Santa Monica Mountains (center of dispersal for species).	OB
Comments: The tree survey	determined that 9 waln	ut trees occur	on-site in	a disturb	ed area ir	the eastern portion of the s	ite.	-y
Lamiaceae Monardella macrantha ssp. hallii	Mint Family Hall's monardella	Jun-Aug	NONE	NONE	IB	Lower montane coniferous forest, valleys and foothill grassland; broadleaf upland forest, chaparral, cismontane woodland. This species typically occurs at elevations between 1,800	Orange, Riverside, San Bernardino, and San Diego Counties.	FN, PT

OB = Observed; FN = Focused surveys performed, species not observed; NE = Species not expected to occur on-site due to the lack of suitable habitat; PT = Due to: (1) the inherent difficulty in observing 100 percent of the property at close range, (2) the population fluctuation of the species from year to year, and/or (3) the small stature of the species, there remains a low potential for this species to occur on-site.

Richland Pinehurst Inc. PCR Services Corporation

3.0 Existing Conditions

# Table 3-3 (Continued)

#### Sensitive Plant Species

VAOUULAN FLANIS					<del>,</del>			
Scientific Name	Common Nomo	Flowering	177. Jan 1	0	CNPS			Occurrence
Monardella principi	Delegister	Feriod	reaeral	State	List	Preferred Habitat	Distribution	On-site
	monardella	May-Jun	NONE	NONE		Coastal sage scrub. This species typically occurs at elevations between 900 and 1,500 feet.	Riverside, San Bernardino Counties.	FN, PT
Papaveraceae	Poppy Family			ĺ				
Canbya candida	pygmy poppy	Mar-Jun	NONE	NONE	4	Joshua tree woodland, Mojavean desert scrub. Sandy places. This species typically occurs at elevations between 1,800 and 4,000 feet.	Kern, Los Angeles, San Bernardino Counties.	FN, PT
Polemoniaceae	Phlox Family		1	· · · · · · · · · · · · · · · · · · ·	·			
Eriastrum densifolium ssp. sanctorum	Santa Ana River woollystar	Jul-Aug	FE	SE	lв	Chaparral, sage scrub on alluvial fans.	San Bernardino County (formerly Orange County; presumed extirpated).	FN, NE
Polygonaceae	Buckwheat Family							
Chorizanthe parryi var. parryi	Parry's spineflower	Apr-Jun	NONE	NONE	3	Occurs in alluvial chaparral, openings in coastal or desert scrub, chaparral, dry slopes or flat ground. Often in sandy soils.	Known from San Bernardino and Riverside Counties. May be extripated from Los Angeles County.	FN, PT

OB = Observed; FN = Focused surveys performed, species not observed; NE = Species not expected to occur on-site due to the lack of suitable habitat; PT = Due to: (1) the inherent difficulty in observing 100 percent of the property at close range, (2) the population fluctuation of the species from year to year, and/or (3) the small stature of the species, there remains a low potential for this species to occur on-site.

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3.0 Existing Conditions

#### Table 3-3 (Continued)

Sensitive Plant Species

		Flowering			CNIDE			Occurrence
Scientific Name	Common Name	Period	Foderal	State	Liet	Destarred Habitat	Distribution	Occur rence On-site
Dodecahema leptoceras	slender-horned spineflower	Apr-Jun	FE	SE	1B	Scrub vegetation on sandy flood-deposited rivers and washes.	Los Angeles, Riverside and San Bernardino counties: San Gabriel, San Bernardino and San Jacinto Mountains; reported from Lake Elsinore and Hemet.	FN, NE
Solanaeceae	Nightshade Family					••••••••••••••••••••••••••••••••••••••		
Lycium parishii	Parish's desert- thorn	Mar-Apr	NONE	NONE	2	Coastal scrub, Sonoran desert scrub. Sandy to rocky slopes; canyons. From 1,000 to 3,280 feet.	San Diego, Imperial, San Bernardino, and Riverside Counties.	FN, NE
ANGIOSPERMS (MONO	COTYLEDONS)					·······		
Liliaceae	Lily Family							
Calochortus plummerae	Plummer's mariposa lily	May-Jul	NONE	NONE	18	Variety of southern California plant communities, including sage scrub, valley and foothill grassland, yellow pine forest; dry, rocky or sandy sites, granitic or alluvial soil; to 4,800 feet	Ventura, Los Angeles, Riverside and San Bernardino Counties,	OB

 $OB \neq Observed$ ; FN = Focused surveys performed, species not observed; NE = Species not expected to occur on-site due to the lack of suitable habitat; FT = Due to: (1) the inherent difficulty in observing 100 percent of the property at close range, (2) the population fluctuation of the species from year to year, and/or (3) the small stature of the species, there remains a low potential for this species to occur on-site.

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## Table 3-3 (Continued)

#### Sensitive Plant Species

Scientific Name	Common Name	Flowering Period	Federal	State	CNPS List	Preferred Habitat	Distribution	Occurrence On-site
Brodiaea filifolia	thread-leaved brodiaea	Mar-Jun	FT	SE	18	Occurs on gentle hillsides, valleys, floodplains, semi- alkaline mudflats, vernal pools, and grasslands. Grows in clay, loamy sand and alkaline soils.	Known from Los Angeles, San Bernardino, Orange, Western Riverside and San Diego Counties.	FN, NE
Poaceae	Grass Family							
Muhlenbergia californica	California muhly	Jul-Sep	NONE	NONE	4	Coastal sage, chaparral, meadows, lower montane coniferous forest. Usually found near streams or seeps. From 1,300 to 6,500 feet.	From San Bernardino vicinity to the edge of deserts.	FN, PT
Key to Species Listing Statu FE Federally Listed as End FT Federally Listed as Thr FSC Federal Special Concer FPE Federally Proposed as FPT Federally Proposed as	is Codes langered SE Stat eatened ST Stat rn Species SCE Stat Endangered SCT Stat Threatened SP Stat	te Listed as Er te Listed as Th te Candidate J te Candidate J te Protected	idangered ireatened for Endany for Threat	gered ened	SFP Sta CSC Ca	ate Fully Protected Ilifornia Special Concern Sp	pecies	
California Native Plant Socie List 1A: Presumed ext List 1B: Rare, threater List 2: Rare, threater List 3: Plant species	ity (CNPS) inct in California. ned, or endangered thr ned, or endangered in ( for which additional in	oughout their California, bu Iformation is t	range. 1 more com needed bej	nmon in ( ore rarit) are in the	other stat y can be c y wild) - by	es. letermined. 1 whose eristence does not	annear to be susceptible i	to threat.

OB = Observed; FN = Focused surveys performed, species not observed; NE = Species not expected to occur on-site due to the lack of suitable habitat; PT = Due to: (1) the inherent difficulty in observing 100 percent of the property at close range, (2) the population fluctuation of the species from year to year, and/or (3) the small stature of the species, there remains a low potential for this species to occur on-site.

3.0 Existing Conditions

#### Table 3-4

#### Sensitive Wildlife Species

VERTEBRATES						······································
Scientific Name	Common Name	Federal	State	Preferred Habitat	Distribution	Occurrence On-site
REPTILES						
Iguanidae	Iguanid Lizards					
Phrynosoma coronatum blainvillei	San Diego horned lizard	NONE	CSC	Valley-foothill hardwood, conifer, and riparian habitats, pine-cypress, juniper and annual grassland habitats below 6,000 feet, open country, especially sandy areas, washes, flood plains, and windblown deposits.	Coastal ranges from south Ventura, Los Angeles, San Bernardino counties, Orange, western Riverside and western San Diego counties.	PT
Teiidae	Whiptail lizards					-
Cnemidophorus hyperythrus beldingi	orange-throated whiptail	NONE	CSC	Found in chaparral, non-native grassland, Riversidian sage scrub, and juniper and oak woodlands. Associated with riparian areas and alluvial fan scrub habitats.	Southwestern California and Baja California. Mainly in western Riverside County.	PT
Cnemidophorus tigris multiscutatus	coastal western whiptail	NONE	NONE	Arid and semi-arid desert to open woodlands, where vegetation is sparse.	Baja California; California to eastern Oregon and southern Idaho. South to west Texas and Mexico.	OB
Colubridae	Colubrid Snakes					
Diadophis punctatus modestus	San Bernardino ringneck snake	NONE	NONE	Open, relatively rocky areas within valley-foothill, mixed chaparral, and annual grass habitats.	San Bernardino, Riverside and Orange counties.	PT

FO = Focused surveys performed - species observed on-site; FN = Focused surveys performed - species not observed on-site; EX = Focused surveys not performed - species expected to occur on-site; PT = Focused surveys not performed - species has potential to occur on-site; NE = Focused surveys not performed - species not expected to occur on-site; B = Raptors: if present, would utilize the site for both foraging and nesting; F = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors : \* ... **\* v** 

#### Table 3-4 (Continued)

## Sensitive Wildlife Species

Scientific Name	Common Name	Federal	State	Preferred Habitat	Distribution	Occurrence On-site
BIRDS	Common rame	1 Cuti Mi	Orace			
Accipitridae	Hawks					
Elanus leucurus	white-tailed kite	FSC	SFP	(Nesting) Grasslands with scattered trees, near marshes, along highways.	Length of state; breeding in lowlands from Sacramento to San Diego Cos.	РТ, В
Cirus cyaneus	northern harrier	NONE	CSC	(Nesting) Coastal salt marshes, freshwater marshes, grasslands, and agricultural fields; occasionally forages over open desert and brushlands,	Alaska, Canada, south U.S.	OB, B
Accipiter cooperii	Cooper's hawk	NONE	CSC	(Nesting) Open woodlands, especially riparian woodlands.	Entire state.	ов, в
Accipiter striatus	sharp-shinned hawk	NONE	CSC	(Nesting) Woodlands; forages over chaparral and other scrublands; prefers riparian habitats and north-facing slopes, with plucking perch sites.	Entire state, although only winters in most of So. Cal.	PT, B
Buteo swainsoni	Swainson's hawk	FSC	ST	(Nesting) Open desert, scrub, grassland, cropland and other agricultural areas with sparse trees.	Uncommon migrant and resident but may occur in west-central Riverside County during migration.	PT, F
Aquila chrysaetos	golden eagle	NONE	CSC, SFP	(Nesting and wintering) Mountains, deserts, and open country; prefer to forage over grasslands, deserts, savannahs and early successional stages of forest and shrub habitats.	Throughout Cal. with the exception of the center of the central valley.	PT, F

FO = Focused surveys performed – species observed on-site; FN = Focused surveys performed – species not observed on-site; EX = Focused surveys not performed – species expected to occur on-site; PT = Focused surveys not performed – species not expected to occur on-site; B = Raptors: if present, would utilize the site for both foraging and nesting; F = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for both foraging and nesting; F = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for nesting only.

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3.0 Existing Conditions

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#### Table 3-4 (Continued)

#### Sensitive Wildlife Species

VERTEBRATES						· · ·
Scientific Name	Common Name	Federal	State	Preferred Habitat	Distribution	Occurrence On-site
Falconidae	Falcons					
Falco mexicanus	prairie falcon	NONE	CSC	(Nesting) Grasslands, savannahs, rangeland, agricultural fields, and desert scrub; often uses sheltered cliff ledges for cover.	Southeastern deserts northwest along the inner Coast Ranges and Sierra Nevada.	РТ, F
Trochilidae	Hummingbirds	<u> </u>				
Calypte costae	Costa's hummingbird	FSC	NONE	(Nesting) Occurs in desert and scrub habitats that are more arid than what most CA hummingbirds inhabit.	Summer resident of So. California, Uncommon in winter.	OB
Tyrannidae	Tyrant Flycatchers					
Contopus cooperi	olive-sided flycatcher	FSC	NONE	(Nesting) A variety of forest and woodland habitats below 9,000 feet. Prefers conifer forest for nesting habitat.	Throughout California except deserts and central valley.	OB
Empidonax difficilis	Pacific-slope flycatcher	FSC	NONE	(Nesting) Cismontane California in woodlands and foothills.	West of California deserts. Sierra Nevada, Cascades, and other interior mountain ranges	PT
Alaudidae	Larks		·			
Eremophila alpestris actia	California horned lark	NONE	CSC	Open habitats, grasslands along the coast, deserts near sea level to alpine dwarf shrub habitat, uncommonly in coniferous and chaparral habitats.	Throughout the state, less common in mountain regions.	PT

FO = Focused surveys performed - species observed on-site; FN = Focused surveys performed - species not observed on-site; EX = Focused surveys not performed - species expected to occur on-site; PT = Focused surveys not performed - species has potential to occur on-site; NE = Focused surveys not performed - species not expected to occur on-site; B = Raptors: if present, would utilize the site for both foraging and nesting; F = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging on the site for fo • • • • •

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#### Table 3-4 (Continued)

#### Sensitive Wildlife Species

VERTEBRATES			··· <u>··</u>	······································	· · · · · · · · · · · · · · · · · · ·	
Scientific Name	Common Name	Federal	State	Preferred Habitat	Distribution	Occurrence On-site
Sylviidae	Old World Warblers, Gna	tcatchers				
Polioptila californica californica	coastal California gnatcatcher	FT	CSC	Coastal sage scrub vegetation below 2,500 feet elevation in Riverside County and generally below 1,000 feet elevation along the coastal slope; generally avoids steep slopes and dense vegetation for nesting.	Southern Ventura County, southward through Los Angeles, Orange, Riverside, San Bernardino counties, and south through the coastal foothills of San Diego county.	FN
Comments: Focused surveys w	vere conducted in 1998, 2001, a	nd 2002. 7	This spec	ies was not observed on-site.	······	· · · · · · · · · · · · · · · · · · ·
Mimidae	Thrashers				Į	
Toxostoma redivium	California thrasher	FSC	NONE	Common resident in cicmontane California in moderate to dense cover. Montane chaparral in So. California.	Coastal California and the central valley.	OB
Laniidae	Shrikes					
Lanius ludovicianus	loggerhead shrike	FSC	CSC	(Nesting) Open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	Common resident and winter visitor in lowlands and foothills throughout CA.	OB
Emberizidae	Emberizids					
Aimophila ruficeps canescens	southern California rufous- crowned sparrow	NONE	CSC	Grassy hillsides, coastal sage scrub and chaparral; often near steep, rocky slopes.	Cismontane So. California.	OB
Chondestes grammacus	lark sparrow	FSC	NONE	(Nesting) Frequents hardwoods, chaparral, and grasslands with scattered trees.	Resident of lowlands and foothills of CA.	OB

FO = Focused surveys performed – species observed on-site; FN = Focused surveys performed – species not observed on-site; EX = Focused surveys not performed – species bas potential to occur on-site; NE = Focused surveys not performed – species not expected to occur on-site; B = Raptors: if present, would utilize the site for both foraging and nesting; F = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging on the site f

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3.0 Existing Conditions

#### Table 3-4 (Continued)

#### Sensitive Wildlife Species

VERTEBRATES			- <del>**</del>			
Scientific Name	Common Name	Federal	State	Preferred Habitat	Distribution	Occurrence On-site
Amphisipiza belli belli	Bell's sage sparrow	FSC	CSC	(Nesting) Chapatral and coastal sage scrub in lowlands and foothills.	Western Riverside County.	OB
Spizella atrogularis	black-chinned sparrow	FSC	NONE	(Nesting) Found on slopes in chaparral, sagebrush and other brushy habitats, including conifer habitats,	In California foothills around the central valley and on mountain slopes in southern California.	OB
Carduelis lawrencei	Lawrence's goldfinch	FSC	NONE	(Nesting) Oak, woodland, and chapartal near water.	Coastal slopes south from Monterey, Co., CA.	РТ
MAMMALS					<u> </u>	· · · · · · · · · · · · · · · · · · ·
Vespertilionidae	Evening Bats					
Antrozous pallidus	pallid bat	NONE	CSC	Wide variety of habitats but most common in open, dry habitats with rocky areas for roosting.	Throughout Cal. except the high Sierra and NW corner of the state.	PT
Molossidae	Free-tailed Bats					
Eumops perotis californicus	California mastiff bat	FSC	CSC	Primarily arid lowlands, especially deserts. Open, semiarid to arid habitats including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban.	Uncommon resident of lower elevations in southeastern San Joaquin Valley and Coastal Ranges from Monterey County southward through southern California from the coast eastward to the Colorado desert.	PT
Leporidae	Hares and Rabbits				· · · · · · · · · · · · · · · · · · ·	· · · ·
Lepus californicus bennettii	San Diego black-tailed jackrabbit	NONE	CSC	Open brushlands and scrub habitats between sea level and 4,000 feet elevation.	Coastal southern California from Ventura County into northern Baja California.	РТ

FO = Focused surveys performed - species observed on-site; FN = Focused surveys performed - species not observed on-site; EX = Focused surveys not performed - species has potential to occur on-site; NE = Focused surveys not performed - species not expected to occur on-site; B = Raptors: if present, would utilize the site for both foraging and nesting; F = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for section of the site for section of the site for nesting only.

Richland Pinehurst Inc. PCR Services Corporation . . .. . . ...

# Table 3-4 (Continued)

Sensitive Wildlife Species

Scientific Name	Common Name	For	loral	State	Dusformed II-Lited	Distribution	Occurrence
Heteromyidae	Pocket Mice and K	angaroo Raf		State	rreierrea Habitat	Distribution	Un-site
Perognathus longimembris brevinasus	Los Angeles pocket	mouse No	ONE	CSC	Coastal sage scrub, and grass- lands, desert cactus, creosote bush and sagebrush habitats.	Common to year-long resident of the Los Angeles Basin.	OB
Chaetodipus fallax fallax	Northwestern San Di pocket mouse	ego N	DNE	CSC	Sandy herbaceous areas, usually in association with rocks or coarse gravel, sagebrush, scrub, annual grassland, chaparral and desert scrubs.	Common resident in southwestern California; arid coastal areas of Orange, San Bernardino, and Riverside counties extending south into Baja California.	OB
Dipodomys merriami parvus	San Bernardino kang	aroo rat I	FE	CSC	Alluvial fan scrub.	Throughout arid regions of the western United States and northwestern Mexico.	FN
Comments: Focused surveys w	ere conducted in 1998,	2001, and 20	02. Th	is speci	ies was not observed on-site.		
Muridae	Mice, Rats, and Vol	es					
Neotoma lepida intermedia	San Diego desert woo	odrat NC	ONE	CSC	Chaparral, coastal sage scrub, and pinyon - juniper woodland.	Southern California.	OB
Key to Species Listing Status C	lodes						
FEFederally Listed as EndarFTFederally Listed as ThreadFSCFederal Special ConcernanceFPEFederally Proposed as EndFPTFederally Proposed as ThFPDFederally Proposed for Data	gered ST tened SCE Species SCT dangered SP reatened SFP elisting CSC	State Listed of State Candid State Candid State Protect State Fully P California Sp	as Thre late for late for led Protecte pecial (	atened Endang Threate ed Concern	gered ened Species		

FO = Focused surveys performed – species observed on-site; FN = Focused surveys performed – species not observed on-site; EX = Focused surveys not performed – species expected to occur on-site; PT = Focused surveys not performed – species not expected to occur on-site; B = Raptors: if present, would utilize the site for both foraging and nesting; F = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for foraging only; N = Raptors: if present, would utilize the site for nesting only.

Etiwanda Subdivision Tentative Tract 16072 December 20, 2002

# 4.0 PROJECT IMPACTS

#### 4.1 APPROACH

The following discussion examines the potential impacts to plant and wildlife resources that may occur as a result of implementation of the proposed project. For the purpose of this assessment project-related impacts take two forms, direct and indirect. Direct impacts are considered to be those that involve the loss, modification or disturbance of natural habitats (i.e., vegetation or plant communities), which in turn, directly affect plant and wildlife species dependent on that habitat. Direct impacts also include the destruction of individual plants or wildlife, which is typically the case in species of low mobility (i.e., plants, amphibians, reptiles, and small mammals). The collective loss of individuals in these manners may also directly affect regional population numbers of a species or result in the physical isolation of populations thereby reducing genetic diversity and, hence, population stability.

Indirect impacts are considered to be those that involve the effects of increases in ambient levels of sensory stimuli (e.g., noise, light), unnatural predators (e.g., domestic cats and other non-native animals), and competitors (e.g., exotic plants, non-native animals). Indirect impacts may be associated with the construction and/or eventual habitation/operation of a project; therefore, these impacts may be both short-term and long-term in their duration. These impacts are commonly referred to as "edge effects" and may result in changes in the behavioral patterns of wildlife and reduced wildlife diversity and abundance in habitats adjacent to project sites.

The determination of impacts in this analysis is based on both the features of the proposed project and the biological values of the habitat and/or sensitivity of plant and wildlife species to be affected. Relevant project features (e.g., limits of grading) were supplied by the project engineer. Much of this information was supplied in digital format and impacts were calculated using GIS technology in order to maximize the accuracy of the assessment. Project design features that avoid, preserve, or restore biological resources are taken into consideration and specifically described below prior to the assessment of potential adverse impacts.

The biological values of resources within, adjacent to, and outside the area to be affected by the project were determined by consideration of several factors. These included the overall size of habitats to be affected, the site's previous land uses and disturbance history, the site's surrounding environment and regional context, the on-site biological diversity and abundance, the presence of sensitive and special-status plant and wildlife species, the site's importance to regional populations of these species, and the degree to which on-site habitats are limited or restricted in distribution on a regional basis and, therefore, are considered sensitive in

themselves. Whereas this assessment is comprehensive, the focus is on sensitive plant communities/habitats, resources that play an important role in the regional biological systems, and special-status species.

# 4.2 THRESHOLDS OF SIGNIFICANCE

The environmental impacts relative to biological resources are assessed using impact significance threshold criteria which mirror the policy statement contained in CEQA, Section 21001(c) of the California Public Resources Code. Accordingly, the State Legislature has established it to be the policy of the State to:

"Prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities..."

Determining whether a project may have a significant effect, or impact, plays a critical role in the CEQA process. According to CEQA, Section 15064.7, Thresholds of Significance, each public agency is encouraged to develop and adopt (by ordinance, resolution, rule, or regulation) thresholds of significance that the agency uses in the determination of the significance of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant. In the development of thresholds of significance for impacts to biological resources CEQA provides guidance primarily in Section 15065, Mandatory Findings of Significance, and the CEQA Guidelines, Appendix G, Environmental Checklist Form. Section 15065(a) states that a project may have a significant effect where:

"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 wildlife community, reduce the number or restrict the range of an endangered, rare, or threatened species,..."

Appendix G of the CEQA Guidelines is more specific in addressing biological resources and encompasses a broader range of resources to be considered, including: candidate, sensitive, or special status species; riparian habitat or other sensitive natural communities; Federally protected wetlands; fish and wildlife movement corridors; local policies or ordinances protecting biological resources; and, adopted habitat conservation plans. This is done in the form of a
checklist of questions to be answered during the Initial Study leading to the preparation of the appropriate environmental documentation for a project (i.e., Negative Declaration, Mitigated Negative Declaration, or EIR). Because these questions are derived from standards in other laws, regulations, and other commonly used thresholds, it is reasonable to use these standards as a basis for defining significance thresholds in an EIR. Therefore, for the purpose of this analysis, impacts to biological resources are considered potentially significant (before considering offsetting mitigation measures) if one or more of the following conditions would result from implementation of the proposed project.

- 1. A direct loss of any individuals or any habitat occupied by a State or Federal-listed threatened or endangered plant or animal species.
- 2. A substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate for listing, sensitive, rare, or otherwise special status plant or animal species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.
- 3. Conflict with any adopted local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- 4. A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS.
- A substantial adverse effect on State or Federal-protected wetlands as defined by Section 1600 of the California Fish and Game Code or Section 404 of the Clean Water Act (CWA) through direct removal, filling, hydrological interruption, or other means.
- 6. 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 on linkages/connectivity between populations of plants and animals, or impede the use of native wildlife nursery sites.
- 7. Conflict with the provisions of an adopted Habitat Conservation Plan, NCCP, or other approved local, regional, State, or Federal habitat conservation plan.

For the purposes of this impact analysis the following definitions apply:

• "Substantial adverse effect" means loss or harm of a magnitude which, based on current scientific data and knowledge would: (1) substantially reduce population uumbers of a species; (2) substantially reduce the distribution of a natural community/habitat type; or (3) eliminate the functions and values of a biological resource (e.g., streams, wetlands, or woodlands) in a geographical area defined by interrelated biological components and systems. In the case of this analysis the prescribed geographical area is considered to be the region including the San Gabriel River to the west, the foothills of the San Gabriel Mountains to the north, Cajon Wash to the west and the Jurupa Hills to the south.

- "Conflict" means contradiction of a magnitude which, based on foreseeable circumstances would preclude or prevent substantial compliance.
- "Rare" means that the species exists in such small numbers throughout all, or a significant portion of, its range that it may become endangered if its environment worsens.

## 4.3 **PROJECT DESCRIPTION**

The Etiwanda Subdivision, Tentative Tract 16072, proposes a total of 359 single-family homes on the entire 150-acre property as shown in Figure 4-1, *Proposed Project*, on page 42. This residential development will include a combination of estate residential, low-density residential, and very low-density residential areas. A greenbelt area will bisect the development in a southwest-northeast direction.

# 4.4 STANDARD CONDITIONS

As part of the proposed project's review and approval, there are a number of performance criteria and standard conditions that must be met. These include compliance with applicable laws that relate to Federal, State, and local regulating agencies regarding potential impacts to sensitive plant and wildlife species, trees, and stream courses.

### 4.4.1 Federal Clean Water Action, Section 404

Section 404 of the CWA regulates the discharge of dredged material, placement of fill inaterial, or excavation within "Waters of the U.S." and authorizes the Secretary of the Army, through the Chief of Engineers, to issue permits for such actions. "Waters of the U.S." are defined by the CWA as "rivers, creeks, streams, and lakes extending to their headwaters and any associated wetlands". Wetlands are defined by the CWA as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions." The permit



review process entails an assessment of potential adverse impacts to ACOE jurisdictional "Waters of the U.S." and wetlands. In response to the permit application, the ACOE will also require conditions amounting to mitigation measures. Where a Federally-listed species may be affected, they will also require Section 7 consultation with the USFWS under the FESA. Through this process, potentially significant adverse impacts within the Federal jurisdictional limits could be mitigated to a level that is less than significant.

# 4.4.2 Federal Clean Water Act, Section 401

The mission of the California Regional Water Quality Control Board (RWQCB) is to develop and enforce water quality objectives and implement plans which will best protect the beneficial uses of the State's waters, recognizing local differences in climate, topography, geology, and hydrology. Section 401 of the CWA requires that:

"any applicant for a Federal permit for activities that involve a discharge to waters of the State, shall provide the Federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the Federal Clean Water Act."

Therefore, before the ACOE will issue a Section 404 permit, applicants must apply for and receive a Section 401 water quality certification from the RWQCB. A complete application for 401 Certification will include a detailed Water Quality Management Plan that will address the key water quality features of the project to ensure the integrity of water quality in the area during and post-construction.

Under separate authorities granted by State law (i.e., the Porter-Cologne Water Quality Control Act), a RWQCB may choose to regulate discharges of dredge or fill materials by issuing or waiving (with or without conditions) Waste Discharge Requirements (WDRs), a type of State discharge permit, instead of taking a water quality certification action. Processing of a WDR is similar to that of a Section 401 certification; however, the RWQCB has slightly more discretion to add conditions to a project under the Porter-Cologne Act than under the Federal CWA.

# 4.4.3 State of California Fish and Game Code, Section 1603

Section 1603 of the California Fish and Game Code requires any person who proposes a project that will substantially divert or obstruct the natural flow; or substantially change the bed, channel, or bank of any river, stream, or lake; or use materials from a streambed, to notify the CDFG before beginning the project. Similarly, under Section 1601 of the Fish and Game Code, before any State or local governmental agency or public utility begins a construction project that will: (1) divert, obstruct, or change the natural flow of the bed, channel, or bank of any river,

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stream, or lake; (2) use materials from a streambed; or (3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake, it must first notify the CDFG of the proposed project. In the course of this notification process, the CDFG will review the proposed project as it affects streambed habitats within the project area. The CDFG may then place conditions on the Section 1603 clearance to address the potentially significant adverse impacts within CDFG jurisdictional limits.

### 4.4.4 City of Rancho Cucamonga Tree Preservation Guidelines

The City of Rancho Cucamonga Tree Preservation Guidelines (Municipal Code Chapter 19.08) require that all woody plants in excess of fifteen feet in height and having a single trunk circumference of fifteen inches or more and/or any multi-trunk tree(s) having a total circumference of thirty inches or more, as measured twenty-four inches from ground level be surveyed by a qualified arborist. If existing eucalyptus windrows, individual heritage trees, or any dead, diseased, or dying trees are impacted by a proposed project they shall be replaced at a 1:1 ratio with spotted gum (*Eucalyptus maculata*) along the established grid pattern in fifteen-gallon size minimum spaced at eight feet on center and properly staked, unless otherwise specified by a specific plan or community plan. In addition, the City Planner requires a tree removal permit application to be submitted with any application for tentative subdivision maps or other proposals for urban development.

### 4.5 IMPACTS FOUND TO BE INSIGNIFICANT

Those impacts determined to be less than significant include impacts to biological resources that are relatively common or exist in a degraded or disturbed state, rendering them less valuable as habitat, or impacts which do not meet or exceed the significance thresholds defined above. The potential impacts of the proposed project that were found to be insignificant are summarized below.

### 4.5.1 Insignificant Impact to Plant Communities

Implementation of the proposed project would result in the direct removal of nonsensitive plant communities including 2.1 acres of non-native grassland, 6.0 acres of disturbed areas, and 4.1 acres of disturbed area containing ornamental tree species (see Table 4-1, *Impacts* to Plant Communities, on page 45). Due to the existing disturbed condition of these portions of the project site, the removal of the non-sensitive plant communities within these areas on the project site would be considered less than significant.

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### Table 4-1

### Impacts to Plant Communities

Plant Community	Total Acres On-site	Proposed Impacts
Scrub Communities		
California Buckwheat-White Sage Scrub	44.1	44.1
White Sage Scrub	82.5	82.5
Scalebroom Scrub	11.2	11.2
Non-native Grassland	2.1	2.1
Disturbed	6.0	6.0
Ornamental Landscaping	4.1	4.1
TOTAL	150.0	150.0

## 4.5.2 Insignificant Impact to Plant Species

Implementation of the proposed project would result in the direct removal of non-native common plant species on the project site. Common plant species present on the project site occur in large numbers throughout the region. As these plant species are not sensitive, their removal would not be considered significant. Therefore, with implementation of the proposed project, no significant impact to common plant species would occur.

### 4.5.3 Insignificant Impact to Wildlife

The determination of the effect on wildlife is generally associated with the degree of habitat loss from the standpoint of physical character, quality, diversity, and abundance of vegetation. Implementation of the proposed project would result in the direct removal of existing wildlife habitat and the potential mortality of common wildlife species existing on the project site. Additionally, indirect effects would include increased human activity, increased ambient noise, higher nighttime light levels, and increased threat of road kill by traffic.

Elimination or disruption of habitat for the common wildlife species on the project site would not represent a significant effect either locally or regionally. Therefore, with implementation of the proposed project, no significant impact on common wildlife species would occur.

## 4.5.4 Insignificant Impacts to Regional Wildlife Movement Corridors

The project site does not currently function as a regional wildlife corridor as it is bordered by existing residential development to the south and west. This acts an impasse for animals coming from open space areas. The open space to the north has been approved for planned residential development. The open space designated as a flood control area located to the south and east would remain undisturbed and serve as a local wildlife corridor. Therefore, the implementation of the proposed project will not interfere substantially with the inovement of wildlife species or a migratory wildlife corridor. Therefore, no significant impact would occur.

### 4.5.5 Insignificant Impacts to Sensitive Biological Resources

### Sensitive Plant Species

Several sensitive plant species mentioned in the Sensitive Plant Species section of this document may occur within the region but are not expected to occur within the proposed development envelope of the Etiwanda Subdivision project. These include Santa Ana River woollystar, slender-horned spineflower, Parish's desert-thorn, and thread-leaved brodiaea. As such, no impacts are expected to occur to these species.

Other sensitive plant species not detected on the site but retaining a low potential to occur include Robinson's peppergrass, Hall's monardella, Pringle's monardella, pygmy poppy, Parry's spineflower and California muhly. As these species are not protected by Federal or State listings as threatened or endangered, and any loss of individuals would not threaten the regional population, removal of their habitat represents an adverse, but less than significant impact to regional populations of these species.

Nine southern California black walnut trees were mapped on-site during the tree survey. All nine trees were located within the disturbed area in the eastern portion of the site and are assumed to have been planted as landscaping trees. Because these trees were planted and the species is a CNPS List 4 (watch list) species, their removal is not considered significant. Nonetheless, the removal of these trees will be mitigated through the City of Rancho Cucamonga Tree Preservation Guidelines as discussed in the Mitigation Measures section of this document.

### Sensitive Wildlife Species

Several sensitive wildlife species (detailed by taxonomic group below) were observed or have at least a low potential to occur on the site, as previously mentioned in the Sensitive Wildlife Species Table in Section 3. These species will potentially be impacted by the proposed project. These species are not protected by Federal or State listings as threatened or endangered, and any loss of individuals would not exceed significance threshold number 1. In addition, potential impacts would not threaten the regional populations of these species and would not exceed significance threshold number 2; therefore, removal of their habitat represents an adverse, but less than significant impact.

One sensitive reptile was observed on-site: the **coastal western whiptail**. Several others have at least a low likelihood of occurring on-site including the **San Diego horned lizard**, **orange-throated whiptail**, and **San Bernardino ring-neck snake**. As stated above, these species are not protected by Federal or State listings as threatened or endangered, and loss of individuals would not threaten the regional populations; therefore, removal of their habitat represents an adverse but less than significant impact to regional populations of these species.

Ten sensitive bird species were observed on-site: the Cooper's hawk, northern harrier, Costa's hummingbird, olive-sided flycatcher, California thrasher, loggerhead shrike, southern California rufous-crowned sparrow, lark sparrow, Bell's sage sparrow, and blackchinned sparrow. Several other sensitive avian species not observed on-site but which have at least a low likelihood of occurrence include the white-tailed kite, sharp-shinned hawk, Swainson's bawk, golden eagle, prairie falcon, Pacific slope flycatcher, California horned lark, and Lawrence's goldfinch. As stated above, these species are not protected by Federal or State listings as threatened or endangered, and loss of individuals would not threaten the regional populations; therefore, removal of their habitat represents an adverse but less than significant impact to regional populations of these species.

Three sensitive mammal species were observed on-site: the Los Angeles pocket mouse, northwestern San Diego pocket mouse, and San Diego desert woodrat. Several others potentially occurring on-site but not observed include the pallid bat, California mastiff bat, and San Diego black-tailed jackrahbit. As stated above, these species are not protected by Federal or State listings as threatened or endangered, and loss of individuals would not threaten the regional populations; therefore, removal of their habitat represents an adverse but less than significant impact to regional populations of these species.

# 4.6 IMPACTS FOUND TO BE POTENTIALLY SIGNIFICANT

The following is a discussion of impacts to biological resources which meet the significance thresholds defined above.

# 4.6.1 Potentially Significant Impact to Nesting Birds

Implementation of the proposed project would result in the removal of trees and omamental landscape vegetation within the center of the project site and near the abandoned residence. Several mature eucalyptus, sycamore, walnut, and pepper trees are located throughout the project site. Although most of the trees on-site are exotic and not regulated by resource agencies, they could harbor raptor nests. As such, impacts may occur to nesting birds as a result of project implementation. This is considered a potentially significant impact as disturbing or destroying active nests is a violation of the Migratory Bird Treaty Act. In addition, nests and eggs are protected under Fish and Game Code Section 3503. The removal of mature trees has the potential to result in a significant impact during the breeding season.

# 4.6.2 Potentially Significant Impacts to ACOE and CDFG Jurisdictional Waters

Project implementation would impact approximately 1.13 acres of ACOE and CDFG jurisdictional areas within Drainages 1, 2, and 3 on the property and potentially impact 0.98 acre of ACOE and CDFG jurisdictional areas within off-site reaches of these drainages. As outlined in the Standard Conditions section of the document, the ACOE and CDFG have a "no net loss" policy requiring that all jurisdictional areas impacted be created, enhanced, or restored elsewhere. The loss of jurisdictional drainages on-site exceeds significance threshold number 5 and is considered potentially significant.

# 4.6.3 Potentially Significant Impacts to Jurisdictional Trees

Project implementation would result in the loss of 213 eucalyptus, pepper, walnut, and sycamore trees, including eucalyptus windrows. The removal of the trees would exceed significance threshold number 3 by conflicting with the City of Rancho Cucamonga's Tree Preservation Guidelines. Therefore, impacts to trees are considered potentially significant. In accordance with the Standard Conditions outlined in this document, impacts to trees will require a tree removal permit from the City.

# 4.6.4 Potentially Significant Impacts to Sensitive Biological Resources

### 4.6.4.1 Sensitive Plant Communities

Project implementation would remove three plant communities considered sensitive by the CDFG including 44.1 acres of California buckwheat-white sage scrub, 82.5 acres of white sage scrub, and 11.2 acres of scalebroom scrub. Due to the sensitivity of these communities, impacts would exceed significance threshold number 4 and are considered potentially significant.

## 4.6.4.2 Sensitive Plant Species

Several thousand Plummer's mariposa lily individuals were observed on-site in 2001 and approximately 1,200 were estimated to be blooming in 2002. Due to year-to-year population fluctuations, it is difficult to determine precisely how many individuals would be impacted; however, it can be stated that approximately 126.6 acres of habitat (44.1 acres of California buckwheat-white sage scrub and 82.5 acres of white sage scrub) potentially supporting this species would be impacted. Although not listed as threatened or endangered, this species is considered rare throughout its range. Project implementation would be removing a substantial population of this species exceeding threshold number 2 and is considered potentially significant.

## 4.6.4.3 Sensitive Wildlife Species

## Coastal California Gnatcatcher

The USFWS has designed critical habitat for the gnatcatcher including over 513,000 acres in five southern California counties (U.S. Department of the Interior, October 24, 2000). The project site is within the area designated as critical habitat (Unit 11: San Bernardino Valley MSHCP) as shown in Figure 4-2, *Critical Habitat Designations*, on page 50.

The USFWS has adopted a "landscape approach" to its designation of critical habitat for the gnatcatcher which is not intended to highlight individual parcels of private property (65 Federal Register 63682). Furthermore, the USFWS recognizes that "not all parcels of land within the areas designated will contain the habitat components essential to gnatcatcher conservation" (65 Federal Register 63692); and, the USFWS has noted that some gnatcatcher habitat loss within designated critical habitat is not likely to adversely modify or destroy critical habitat or appreciably reduce its value for the survival and recovery of the species (65 Federal Register 63697).

"Critical habitat" is a designation used by the USFWS in its administration of the FESA and applies only to the actions of Federal agencies. Specifically, Federal agencies, if conducting activities on lands designated as critical habitat, are to consult with the USFWS to ensure that their Federal actions do not "adversely modify" critical habitat. According to the USFWS, a critical habitat designation is not to have any impact on private property included within the designation, absent Federal activity on that property.

As the proposed project anticipates requiring a Federal CWA Section 404 permit from the ACOE, the ACOE can be expected to conduct any necessary Section 7 consultation with the USFWS under the FESA concerning the project site's location within an area designated as



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gnatcatcher critical habitat when the ACOE processes the Section 404 permit. The ACOE will be required to ensure that its actions would not adversely modify any gnatcatcher "critical habitat" designated on the project site should any such habitat ultimately be determined to exist by the USFWS.

Focused surveys in 1998, 2001, and 2002 did not detect the presence of the gnatcatcher on-site. However, the critical habitat designation for Unit 11 identifies the critical habitat unit as providing a critical linkage between western Riverside County and eastern Los Angeles County. Although the Etiwanda Subdivision property is within this linkage area, and could potentially support dispersing gnatcatchers at some point, proposed development to the north of the property will isolate the Etiwanda property from open space areas to the north. This will compromise the continuation of the Etiwanda property to possibly function as a meaningful part of this linkage. In summary, although the proposed project will occur within designated critical habitat, it is not expected to provide the function necessary to contribute to the long-term survival of the gnatcatcher due to the future presence of surrounding development.

### San Bernardino Kangaroo Rat

The project site also lies within designated critical habitat for the SBKR (USFWS April 23, 2002). The total critical habitat area for the SBKR covers approximately 33,000 acres in San Bernardino and Riverside Counties. The Etiwanda Subdivision property is within Critical Habitat Unit 4: Etiwanda Alluvial Fan and Wash, which encompasses approximately 4,800 acres in western San Bernardino County. This critical habitat unit contains the westernmost known population of SBKR and supports upland refugia from catastrophic flooding. Refugia is defined as occupied or potentially occupiable habitat which could support a founder population that could survive and reproduce after a flood event.

Focused trapping surveys in 2001 and 2002 did uot detect the presence of SBKR on-site, in fact suitable habitat on-site is limited to a few areas of less-dense vegetative cover. Due to the absence of a founder population, the habitat on-site is uot considered refugia or a critical habitat constituent element and impacts to the property are not expected to compromise the long-term survival of the SBKR or adversely modify critical habitat.

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## 5.0 MITIGATION MEASURES

### 5.1 APPROACH

Mitigation measures are recommended for those impacts determined to be significant to sensitive natural resources. Mitigation measures for impacts considered to be "significant" were developed in an effort to reduce such impacts to a level of "insignificance," while at the same time allowing the project proponent an opportunity to realize development goals. As stated in CEQA Section 15370:

"Mitigation" includes:

- (a) Avoiding the impact altogether by not taking a certain action or parts of an action.
- (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.

The following mitigation measures address potential significant impacts on the Lake Mathews Golf and Country Club project.

### 5.2 MEASURE TO MITIGATE POTENTIALLY SIGNIFICANT IMPACTS

### 5.2.1 Measures to Mitigate Potentially Significant Impacts to Nesting Birds

Mitigation for impacts to nesting birds may be accomplished in two ways. First, efforts will be made to schedule all vegetation removal activities outside the nesting season. This would ensure that no active nests would be disturbed and that removal could proceed rapidly. Secondly, during the nesting season, all suitable habitat will be thoroughly surveyed for the presence of nesting birds by a qualified biologist prior to removal. If any active nests are detected, the area will be flagged, along with a 100-foot buffer (300 feet for raptors), and will be avoided until the nesting cycle is complete or it is determined that the nest has failed. In addition, a biologist will be present on the site to monitor the vegetation removal to ensure that nests not detected during the initial survey are not disturbed.

### 5.2.2 Measures to Mitigate Potentially Significant Impacts to Jurisdictional Waters

The proposed impacts will be subject to the regulations set forth by the agencies as outlined in the Standard Conditions section of this document. The ACOE and CDFG will require the project proponent to explore alternatives to avoid or reduce impacts and will also require mitigation for all unavoidable impacts. The ACOE has a "no net loss" policy which requires that any unavoidable impacts to stream values and functions be replaced. In addition, the RWQCB will add restrictions to control runoff from the site, require on the site treatment of runoff to improve water quality, and impose Best Management Practices on the construction. All of the features of the project that will address water quality issues will be explained within the Water Quality Management Plan and Stormwater Pollution Prevention Plan.

The following measures, if implemented, would reduce impacts to ACOE and CDFG jurisdictional areas:

- On- or off-site creation, restoration, or enhancement of ACOE jurisdictional waters of the U.S. and/or wetlands at a ratio no less than 2:1,
- Ou- or off-site creation, restoration, or enhancement of CDFG jurisdictional waters of the State at a ratio no less than 2:1,
- Incorporation of design features into the proposed project that will avoid or minimize impacts to drainages ou-site.

### 5.2.3 Measures to Mitigate Potentially Significant Impacts to Jurisdictional Trees

The City of Rancho Cucamonga requires that all trees meeting the City's "heritage tree" criteria and that are to be removed shall be replaced with spotted gum (*Eucalyptus maculata*) or a City approved tree species along the established City grid pattern or the boundaries of the project property. The replacement trees shall be fifteen-gallon size, minimum spaced at eight feet on center, and properly staked, unless otherwise specified by a specific plan or community plan. All removals shall be mitigated for at a 1:1 ratio.

PCR recommends that the 213 "heritage trees" be removed and replaced with native trees. We recommend replacing the 200 non-native/ornamental trees and 13 native trees with coast live oak, interior live oak, southern California black walnut and/or western sycamore at a 1:1 ratio. We believe sufficient mitigation can be successfully completed on-site through the planting of oaks and sycamores within the greenbelt of the residential development (see Appendix C, *Tree Survey Report*). According to the conceptual landscape plan an approximate 200 oaks and sycamores are planned within the greenbelt area of the development (Rainville Bye July 12, 2002).

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The incorporation of either mitigation strategy would reduce impacts to trees below a level of significance by complying with the City's Tree Preservation Guidelines.

# 5.2.4 Measures to Mitigate Potentially Significant Impacts to Sensitive Biological Resources

## 5.2.4.1 Sensitive Plant Communities

Mitigation for impacts to 137.8 acres of scrub communities will be accomplished by the off-site acquisition and preservation of similar habitat at a ratio of at least 1:1. None of the scrub communities on-site support the gnatcatcher, SBKR, or other listed species. Therefore, impacts to 44.1 acres of California buckwheat-white sage scrub and 82.5 acres of white sage scrub will be mitigated at a 1:1 ratio. The scalebroom scrub on-site is floristically the most similar to alluvial fan sage scrub (which is the focus of many conservation efforts). Therefore, mitigation for 11.2 acres of scalebroom scrub will be at a ratio of at least 2:1. Under this strategy, 149.0 acres of habitat of similar floristics and value will be preserved and will mitigate this impact to a level less than significant.

# 5.2.4.2 Sensitive Plant Species

Prior to issuance of a grading permit, focused surveys for Plummer's mariposa lily and shall be conducted by a qualified biologist. Surveys shall be conducted within the flowering period (May to July) in all portions of the project site which provide potentially suitable habitat. If present, the number and location(s) will be documented and the resource agencies will be notified for consultation and possible collection and relocation.

# 5.2.4.3 Sensitive Wildlife Species

As stated in Section 4.5.4.3, impacts within the gnatcatcher and SBKR critical habitat units are not expected to compromise the long-term survival of the species; therefore, no mitigation for impacts to critical habitat are proposed. However, due to inherent fact that impacts would occur within designated critical habitat the ACOE will consult with the USFWS under Section 7 of the FESA as outlined in the Standard Conditions section of this document.

### 6.0 IMPACTS AFTER MITIGATION

## 6.1 UNAVOIDABLE SIGNIFICANT ADVERSE IMPACTS

Proposed project, inclusive of all mitigation measures provided in Section 5.0 will reduce all potentially significant impacts to nesting birds, ACOE and CDFG jurisdictional areas, jurisdictional trees, sensitive plant communities, sensitive plants, and sensitive wildlife to a less than significant impact.

### 6.2 CUMULATIVE IMPACTS

Cumulative impacts are defined as the direct and indirect effects of a proposed project which, when considered alone, would not be deemed a substantial impact, but when considered in addition to the impacts of related projects in the area, would be considered significant. "Related projects" refers to past, present, and reasonably foreseeable probable future projects which would have similar impacts to the proposed project. CEQA deems a cumulative impact analysis to be adequate if a list of "related projects" is included in the EIR or the proposed project is consistent with an adopted general, specific, master, or comparable programmatic plan [Section 15130(b)(1)(B)]. CEQA also states that no further cumulative impact analysis is necessary for impacts of a proposed project consistent with an adopted general, specific, master, or comparable programmatic plan [Section 15130(d)].

Cumulative impacts for biological resources were analyzed in the context of the region defined by the foothills of the San Gabriel Mountains from the San Gabriel River east to the Cajon Wash/Lytle Creek area. The majority of the land south of the property is already densely urbanized. Several projects, including Lytle Creek North east of the property and several smaller Tentative Tracts both north and northeast of the property are considered in this cumulative impact analysis (TT14606 through 14612). Together with these projects, the Etiwanda Subdivision project will contribute to the loss of approximately 1,000 acres scrub habitat which supports raptor foraging, substantial numbers of individuals of Plummer's mariposa lily, and sensitive reptile, bird, and small mammal species. Due to the regionally restricted distribution of scrub communities and; therefore, the sensitive species within them, impacts to scrub are considered cumulatively significant.

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Etiwanda Subdivision Tentative Tract 16072

December 20, 2002

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1/9/2024 Board Meeting

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**APPENDIX A: RESUMES** 

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1/9/2024 Board Meeting

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# Steven G. Nelson, principal, director of biological services

#### Professional History

- M.B.A., California State Polytechnic University, Pomona, California, 1993
- M.A., Biology, University of California, Riverside, California, 1975
- B.S., Biology, University of California, Riverside, California, 1973
- Director of Resources Management, Michael Brandman Associates, Irvine, California, 1994 - 1996
- Vice President, CB Commercial Real Estate Group, City of Industry, California, 1983 - 1994
- Principal, EDAW, Inc., Irvine, California, 1979 - 1983
- Project Manager, PBR, Newport Beach, California, 1976 - 1979
- Principal, Englaud & Nelson, Environmental Consultants, Riverside, California, 1974 - 1976

#### Expertise

Steve Nelson is a biologist with expertise in the areas of wildlife biology, botany, and freshwater ecology. He has been a professional consultant for more than 28 years. During that time, he has been responsible for a wide variety of biological studies, ranging from technical wildlife and vegetation assessments to regionwide conservation planning. His broad education and professional experience in biology and business administration have given him a unique insight into resource identification, evaluation, planning, and management. As a result of his problemsolving orientation and approach to assignments, Steve is commonly sought out by public agencies, landowners/developers, attorneys, engineers and planners alike.

#### Experience

Regional Conservation Planning: Steve was one of the authors and principal investigators of the 1976 and 2000 Los Angeles County Significant Ecological Area Study for the County's General Plau Update aud has since been involved in several other regional resource planning efforts throughout southern California.

Biological Assessments: Steve was the Senior Biological Manager for technical studies within the 10,000-acre study area for the Foothill Transportation Corridor-South Natural Environment Study in southeru Orange County, which included the oversight of 29 biologists investigating 84 sensitive species and jurisdictional wetlands. He has also been responsible for the completion of over 700 biological assessments throughout the state of California.

Threatened And Endangered Species: Steve has served as the Senior Biological Manager for numerous informal and formal consultations with the U.S. Fish and Wildlife Service on 27 listed species as part of Endangered Species Act Sections 7 and 10(a) compliance. In the course of these consultations he has become very familiar with the Habitat Conservation Plan and Natural Community Conservation Program processes, including the application of Special Rule 4(d).

Regulatory Compliance/Habitat Restoration: Steve has been the director for U.S. Clean Water Act Section 404 and California Fish and Game Code Sections 1600-3 wetlands regulatory compliance for multiple projects throughout Southern California, and the director for oak woodland, ripariau, vernal puol and coastal sage scrub restoratiou plans.

Construction/Mitigation Monitoring: Steve has overseeu and participated in numerous construction and mitigation monitoring programs for projects ranging from community parks to resideutial development and road construction to utility installation.

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# Kristin Szabo, SENIOR BIOLOGIST

#### Professional History

- B.S., Ecology/Environmental Biology, California State University, Long Beach, California, 1997
- Biologist, PCR, Irvine, California, 1998

#### Expertise

Kristin Szabo is an environmental biologist with expertise in the areas ornithology, botany, and ecology. She has extensive knowledge in the identification and classification of the flora, fauna, and habitat communities of southern California, including sensitive species. Kristin has experience with regulatory compliance and permitting procedures, including field delineatious, under Sections 401 and 404 of the Clean Water Act, Section 1603 of the State Fish and Game Code, and Sections 7 and 10 of the Endangered Species Act.

#### Experience

Biological Resource Assessment: Kristin has performed numerous biological resource surveys and vegetation classification for projects within Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties and has applied her expertise in a wide range of upland, ripatian, and wetland habitats. Kristin is the project lead and project manager for several complex, multi-disciplinary projects in southern California and has completed several technical Biological Resource Assessments in accordance with the requirements of the California Environmental Quality Act (CEQA).

Habitat Evaluation and Vegetation Mapping: Kristin has applied various vegetation classification systems and standard field vegetation sampling protocols pursuant to identification of habitat type and percentage of vegetative cover. She has applied protocols within a range of southern California plant communities with emphasis on coastal sage scrub, native grasslands, and riparian forests. She has performed several habitat evaluations to determine the potential for sensitive species occupation.

Threatened and Endangered Species: Kristin is permitted through the U.S. Fish and Wildlife Service to perform focused protocol surveys for the Federally-threatened coastal California gnatcatcher. She has participated in habitat assessments and focused surveys for the Federally-endangered quino checkerspot butterfly and Pacific pocket mouse and the Federally- and Stateendangered southwestern willow flycatcher, and has conducted focused surveys for the Federally- and Stateendangered least Bell's vireo.

Wildlife Movement Corridor Analysis: Kristin has conducted wildlife movement analyses, focusing on medium to large mammals, utilizing aerial photography and topographic map review; automated, infrared, photographic trail monitors; and, wildlife track analysis to determine the presence of wildlife movement within the area, potential project related impacts, and mitigation measures.

Rare Plant Surveys: Kristin has conducted several rare plant surveys within Orange, Riverside, and San Bernardino Counties and has participated in the preparation of floral inventories of sites within the many southern California counties.

Regulatory Experience: Kristin has performed several wetland delineations and processed permits nuder Sections 401 and 404 of the Clean Water Act and Section 1603 of the California Fish and Game Code. Kristin completed Pre-Construction Notifications (PCN) and Biological Assessments for permits with the U.S. Army Corps of Engineers.

*Client Contact:* Kristin has worked closely with clients throughout project implementation including coordination of project plans, contract administration, and correspondence.

Permits: USFWS coastal California gnatcatcher permit number TE016487-1

# Marc Blain, SENIOR WILDLIFE BIOLOGIST

#### **Professional History**

- M.S., Applied Ecology and Conservation Biology, Frostburg State University, Frostburg, Maryland, 1997
- B.S., Environmental Biology, California State University, Northridge, California, 1994
- Herbarium Manager/Assistant Curator, Brooklyn Botanic Garden, Brooklyn, New York, 1996 - 1997
- Biological Technician, Southern California Edison, San Clemente, California, 1993 - 1994
- Laboratoty Instructor/Avian Curator, Frostburg State University, Frostburg, Maryland, 1994 - 1996

#### Expertise

Marc Blain is a biologist with training in a variety of areas in the field. His expertise lies in the biology and ecology of Southern California wildlife and includes the ability to identify and classify the plants, animals, and plant communities of the region. More specific areas of expertise include avian ecology, wildlife movement, and conservation biology. Marc is also well versed in the requirements for regulatory compliance including the ESA, CESA, CEQA, NCCP, CWA, MBTA, and other biological statutes of regional counties and cities.

#### Experience

Regional Resource Planning: As part of an update to the Los Angeles County General Plan, Marc managed a regional study of the biological resources within the County. The 14 volume conclusion of the study proposed Significant Ecological Areas (SEA) status for 443,000 acres of nn-incorporated County lands and recommended a variety of management practices designed to sustain the ecological functions of each SEA. In addition, Mr. Blain has performed numerous regional analysis of wildlife movement in the preparation of CEQA documents.

Biological Assessments: Masc has conducted biological resource assessments for projects located throughout Southern California as well as Kern and San Luis Obispo Counties of central California. He has applied his expertise in a wide range of upland and wetland habitat in the Santa Ana Mountains, San Gabriel Monntains, San Bernardino Mountains, Santa Monica Mountains, Santa Susana Mountains, Simi Hills, Chino/Puente Hills, and inland valleys. Representative projects Marc has either managed or contributed to include Coal Canyon, Porter Ranch, AERA Pricite Hills, and Audie Murphy Ranch.

Sensitive Species Surveys: Marc has conducted or assisted in focused surveys for a variety of listed faunal species including: the California gnatcatcher, California red-legged frog, quino checkerspot butterfly, Arroyo toad, San Bernardino kangaroo rat, San Joaquin kit fox, southwestern willow flycatcher, and least Bell's vireo. Mr. Blain has also conducted focused surveys for many listed plant species and numerons unlisted rare plants and animals. He currently holds a federal permit to conduct focused surveys for both the California gnatcatcher and the southwestern willow flycatcher.

Vegetation/Habitat Evaluations: Marc has identified and delineated the plant communities of project sites tanging from inland deserts to pine forests as well as the coastal strand. In doing so, he has applied a variety of vegetative classification systems and standard sampling protocols to determine species composition. The preciseness of Marc's mapping abilities have been essential to many large scale projects including the 576,000 acre mapping effort of the L.A. County SEA study.

Research: Marc was awarded a research grant from the Department of Fish and Game in Maryland and conducted a study to determine the taxonomic status of a rare lily of the Allegheny Mountains in western Maryland. The results of the study have been approved for publication in *Rhodora*.

# Jenni J. K. Snibbe, BIOLOGIST/ECOLOGIST

#### Professional History

- B.S., Ecology and Systematic Biology, California Polytechnic State University, San Luis Obispo, California, 1995
- Bíological Field Technician, USDA Forest Service, Pacific Southwest Research Station, Riverside, California, 1995 - 1999
- Field Botanist, USDA Forest Service, Sierra National Forest, California, 1995
- Research Technician I, U.S. Army Land Condition - Trend Analysis, Fort Hunter Liggett, California, 1995

#### Expertise

Jenni Snibbe has over 9 years of experience in field ecology and botany, ornithology tertestrial biology and laboratory techniques and research. Her knowledge encompasses a wide range of experience including knowledge of the flora and fauna of California, including sensitive species, and has experience in plant ecology, soil science, biochemistry, and conservation biology. She has conducted long-term research projects including data analysis and documentation.

#### Experience

Habitat Assessment: Jenni has applied standardized vegetation sampling

techniques and classification such as identification of community types, individual species, ecotones, biological diversity, and percent cover.

Habitat Restoration: Jenni has worked on several restoration projects in southern California with an emphasis on coastal sage scrub habitats. She participated in reference site selection and data collection, development of conceptual mitigation monitoring plan documents, and site preparation.

Biological Evaluation/Assessment: Based upon her field studies, Jenni assisted in the completion of biological evaluation document for the NEPA process. She also assisted in the completion of technical biological assessment reports in accordance with the California Environmental Quality Act (CEQA).

Field Surveys: Jenni has participated in numerous ecological studies throughout California and Arizona habitats. Her work included inventory and monitoring of project sites for species composition, including rare and endangered native plant species, and collected and identified plant specimens for a herbarium. Jenni is also permitted throngh the U.S. Fish and Wildlife Service (USFWS) to perform focused protocol surveys for the coastal California gnatcatcher. Research: Jenni has performed technical assignments as part of long-term research projects. Her work encompassed identifying and selecting tree species for specific physiological, morphological, and microsite attributes.

*Coastal Sage Scrub Genetics Research:* Jenni has provided biological support work using standardized laboratory and field ecology practices. Her work encompassed research on the long-term success of restored populations of coastal sage scrub species throughout California. She co-authored a poster presentation on Correlation Analysis of Floral Morphological, Environmental, Genetic, and Geographic Distances for twelve populations of *Lotus scroparius* at the Annual Meeting of The Society for The Study of Evolution, 1998.

Permits: USFWS California gnatcatcher permit number TE044520-0

# Stephanie A. Seapin, associate Biologist/Certified Arborist

#### **Professional History**

- B.A., Geography, emphasis in environmental analysis, California State University, Fullecton, California, 1998
- Naturalist/Intern, Ocean Institute, Dana Point, California, 1997 - 1999
- Project Manager Cooperative, U.S. Army Corps of Engineers, Regulatory Branch, San Diego Field Office, 1999
- Environmental Specialist Aide, California Department of Fish and Game, San Diego Office, 2000 -2001

#### Expertise

Stephanie is an environmental geographer with two years of experience in regulatory work and environmental impact assessments. Her work has included 1601/1603 Streambed Agreement process with the California Department of Fish and Game, as well section 404 of the Clean Water Act. She is familiar with the flora and fauna of southern California, including identification of wildlife and plant communities in this region.

#### Experience

U.S. Army Corps of Engineers: Stephanie has experience in evaluating Nationwide Permits pursuant to Section 404 of the Clean Water Act and has assisted in conducting jurisdictional wetland delineations.

California Department of Fish and Game: Stephanie's experience with the Department includes delineating Fish and Game jurisdictional areas and assessing impacts to these jurisdictional areas. Additionally, she has conducted mitigation compliance site visits.

Human Impact Surveys: Stephanie has conducted human impact surveys at the Dana Point Marine Life Refuge (DPMLR) for the Ocean Institute in Dana Point, California. She conducted surveys to assess the multiple activities occurring during low tide and how these activities affected the marine life in the refuge over time. Her surveying was a patt of au on-going 8-year study.

Arboriculture: Stephanie has successfully completed tree surveys, risk assessments, and mitigation plans pursuant to local ordinances throughout Southern California. This work has entailed the application of various criteria by which to evaluate the health and value of trees. Most of these assessments have focused on native tree species. Agency Contact: Stephanie has an excellent working relationship with the regulatory agencies and has worked closely with clients throughout project implementation, including coordination of project plans and correspondence.

Since Stephanie has worked for both Corps and Fish and Game she has built up a working relationship with the two, sharing a common objective of compromise, between both applicant and regulatory agencies.

*Certification*: Certified Arbotist, Certificate Number WE-5921A

# · Ryan Roberts, BOTANIST

#### **Professional History**

- B.S., Environmental Biology emphasizing Botany, California State University, Humboldt, 1997
- Botanist, EDAW Inc., San Diego, California, 2001 – 2002
- Botanist, AMEC Earth and Environmental Inc., San Diego, California, 1999 – 2001
- Botanist, The Nature Conservancy, Yosetnite National Park, California, 1998 – 1999
- Botanist, United States Geological Survey, The California Mojave Desert, California, 1997 – 1998
- Botanist, United States Forest Service, Quincy California, 1996 – 1997

#### Expertise

Ryan Roberts has over two years of experience as an environmental consultant and two years as a research vegetation ecologist and forest botanist. He has skills in vegetation mapping and classification, plant identification, rare plant surveys, botanical monitoring, botanical inventory, CEQA/NEPA compliance, HCP compliance, habitat assessment, plant taxonomy, quino checkerspot butterfly surveys, and restoration planning. Mr. Roberts is also competent in the identification, delineation and jurisdictional determination of ripatian and wetland communities.

#### Experience

Ryan managed the planning, evaluation, botanical transect monitoring, and reporting of 15 restoration projects in San Diego County. Contributed to the design of a 117-acre restoration project including wetland, riparian, coastal sage, and native grassland habitat at the Marine Corps Base, Camp Pendleton. Ryan conducted and coordinated biological field surveys at various locations throughout San Diego and Riverside Counties. Survey work included vegetation mapping, wetland, delineations, vernal pool mapping, vernal pool monitoring, hydrologic mapping, wildlife habitat assessment, wildlife corridor assessment, quino checkerspot butterfly surveys and sensitive plants surveys. Ryan presented results and analysis of numerous surveys in biotechnical reports in accordance with subregional and sub-area habitat conservation plans.

Ryan directed field operations and mapped vegetation on the 248,160 acre Callegus Watershed in southern Ventura County. Delineated color aerial photography and labeled vegetation polygons using a modified CNPS vegetation classification. Assisted in compiling vegetation polygons into a GIS data layer.

Ryan planned and organized field expeditions throughout the Mojave Desert and Yosemite National Park. Placed vegetation more than 800 releve vegetation plots using CNPS releve methods and protocols. Data from these vegetation plots has helped refine the National Vegetation Classification System and the CNPS vegetation classification. Data has also been used in the creation of a GIS regetation map of the Mojave Desert in California and Yosemite National Park. Prioritized work, trained personnel and coordinated with the National Park Service and University of California Reserve System.

Permits. Quino Checkerspot Butterfly. Wetland Delineation Certification.

# James C. Mazza, Associate Biologist/Restoration Specialist

#### Professional History

- B.S., Biological Sciences, specialization in ecology, University of California, Irvine, 1997
- Environmental Intern Specialist, Crystal Cove State Park, Laguna Beach, California, 1998 - 2000
- Biology Intern, USFWS, Kauai National Wildlife Refuge Complex, Kauai, Hawaii, 1999

#### Expertise

James Mazza is a biologist with four years of practical experience in ecological restoration and terrestrial biology. His knowledge encompasses avian monitoring, habitat conservation, and a wide range of techniques in ecological restoration of coastal sage scrub and wetland communities. James has worked extensively in the field and has managed and maintained a number of restoration sites. He has performed seabird reproductive success studies, monitoring and banding, waterbird population census, and avian habitat restoration. James also has experience in vegetation monitoring, surveys and mapping, as well as, non-native plant eradication and prescribed burns.

#### Experience

Habitat Restoration: James has worked on a number of restoration projects designed specifically for the creation and/or enhancement of avian habitat.

The focus species for the majority of the projects he has worked on has been the California gnatcatcher (Polioptila californica), which is found primarily in coastal sage scrub communities. James has been actively involved in site selection, site preparation, native vegetation planting, and continued site monitoring and maintenance. He has prepared mitigation and monitoring plans that focus on the restoration, enhancement and creation of riparian and upland habitat types. He also has experience in wedland restoration for endangered waterbird habitat on the island of Kauai.

Threatened and Endangered Species: James is permitted through the U.S. Fish and Wildlife Service (USFWS) to perform focused protocol surveys for the coastal California gnatcatcher. He has also conducted surveys for the least Bell's vireo.

Wildlife Field Surveys and Research: While employed by the California Department of Parks and Recreation at Crystal Cove SP, James performed presence/absence surveys for the Coastal cactus wren and the federally threatened California gnatcatcher in Orange County. As an intern for the USFWS, he was involved in the banding and monitoring of selected endangered and threatened waterbirds and seabirds at the Kilauea Point NWR, Kauai. James has also performed reproductive success studies on selected seabirds and has conducted nest searches of endangered Hawaiian geese (Nene).

Resource Management: James has worked with a number of riparian, upland, coastal terrace, and wetland habitats throughout Orange and northern San Diego counties. As an employee of the California Department of Parks and Recreation, he has been involved in a prescribed burn and trained on the use and application of herbicide treatments to be used in the eradication of nonnative plants from preserved lands and the subsequent restoration of those sites.

Permits: USFWS CAGN permit number TE032728-0

# Susan H. Erickson, Assistant WILDLIFE BIOLOGIST

#### **Professional History**

- Assistant Wildlife Biologist, PCR, Irvine, California, 2002
- Master of Environmental Science & Management (MESM), University of California, Santa Barbara, 2002
- B.S., Geography/Environmental Studies, University of California, Los Angles, 2000

#### Expertise

Susan Erickson has 2 years of experience in graduate courses involving field ecology and restoration, ornithology, terrestrial and marine biology and laboratory techniques and research. She has completed a year-long group master's thesis focusing on the California red-legged frog and the western spadefoot road. Her thesis involved the preparation of a restoration plan for the potential relocation of these protected amphibian species.

#### Experience

Habitat Restoration: As part of her master's thesis, Susan participated in reference site selection and data collection, development of a monitoring protocol, and creation of success criteria for the California red-legged frog and the western-spadefoot toad.

Biological Evaluation/Assessment: Susan has taken a number of professional workshops on Environmental Impact Assessment, focused on the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). She also has experience working with the California Coastal Act and the Endangered Species Act.

Field Surveys: Susan has participated in numerous ecological studies throughout California habitats. Her work included standardized vegetation sampling techniques and classification such as identification of natural community types, individual species, ecotones, biological diversity, and vegetative cover.

Research: Susan has performed technical assignments as part of long-term research projects. Her work encompassed extensive literature reviews, interviews and communication with biologists, experts, and agency representatives.

Resource Management: Her work involved the creation of an adaptive management plan following research on species-driven restoration for the California red-legged frog and the western-spadefoot toad.

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#### PCR Biography

# Oscar T. Uranga, GIS SPECIALIST

#### **Professional History**

- B.A., Geography, California State University Fullerton, California, 2001
- GIS Technician, City of Santa Ana, Public Works Agency, 1999 - 2002

#### Expertise

Oscar Uranga specializes in the use of Geographic Information Systems (GIS) and Global Positioning System (GPS) for the mapping and analysis of natural resources. Oscar has over three years experience using GIS, Graphics and CAD software packages. He has extensive experience using GIS for various environmental and planning related applications. He also has programming experience using Visual Basic and Avenue and is currently working towards earning a Microsoft Certificate as a Solutions Developer.

#### Experience

Geographic Information Systems: Oscar is skilled and has worked in a variety of different GIS projects dealing with Planning, Land Use, Transportation Modeling, Pavement Management, Traffic Signal inventory, Tree Inventory, Maintenance Tracking, Rolling Blackout Police Dispatch, Library Use Distribution and Demographics, Abatement Application, Crime analysis, Capitol Improvement Plans, Historic Registry and Resources, Noticing, Wetland Delineation, Sensitive Plant Locations, Tree Mapping, Endangered-Sensitive Species Location, Parcel level data, owner information, property information, census data, aerial photography, 3D modeling, and Traffic Accident Location.

GIS computer skills include: ArcView 3.x, Arc GIS 8, Spatial Analyst, 3D Analyst, Trimble GPS, Pathfinder software, Visual Basic 6.0, Avenue, Seagate Crystal Reports, Geomedia Professional 3.0 – 4.0, Geomedia Network, MGE, Smart Sketch, Aerial Imagery, Microstation SE-J and AutoCAD 2000. Municipality and

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## APPENDIX B: PLANT AND WILDLIFE SPECIES COMPENDIA

VASCULAR PLANTS		
Scientific Name	Common Name	
Angiosperms (Dicotyledons)		
Amaranthaceae	Amaranth Family	
* Amaranthus albus	tumbling pigweed	
Аласагдіасеае	Sumac or Cashew Family	
* Schinus molle	Peruvian pepper tree	
Аросупасеяс	Dogbane Family	
* Nerium oleander	oleander	
Asciepiadaceae	Milkweed Family	
Asclepias eriocarpa	Indian milkweed	
Asteraceae	Sunflower Family	
Ambrosia acanthicarpa	annual bur-sage	
Ambrosia psilostachya	western ragweed (sandbur)	
Artemisia californica	California sagebrush	
Artemisia douglasiana	mugwort	
Artemisia dracunculus	larragon	
Baccharis salicifolia	mule fat	
* Centaurea melitensis	tocalote	
* Centaurea solstitialis	yellow star-thistle	
Corethrogyne filaginifolia var. bernardina	corthrogyne	
Ericameria arborescens	golden-fleece	
Ericameria pinifolia	pinebush	
Erigeran foliosus	leafy daisy	
Helianthus annuus	common sunflower	
Heterotheca grandiflora	telegraph weed	
* Hypochaeris glabra	smooth cat's-car	
Lepidospartum squamatum	scale-broom	
Lessingia filaginifolia	California aster	
Boraginaceae	Borage Family	
Amsinckia menziesii	common fiddleneck	
Cryptantha intermedia	common forget-me-not	
Pectocarya linearis ssp. ferocula	slender pectocarya	
Plagiobothrys sp.	popcorn flower	
Plagiobothrys collinus	California popeorn flower	

VASCULAR PLANTS	
Scientific Name	Common Name
Brassicaceae	Mustard Family
* Brassica nigra	black mustard
Descurainia pinnata	western tansy-mustard
Erysimum capitatum	western wallflower
* Hirshfeldia incana	short-podded mustard
Lepidium nitidum	shining peppergrass
* Lobularia maritima	sweet-alyssum
* Sisymbrium altissimum	tumble mustard
* Sisymbrium írío	London rocket
Cactaceae	Cactus Family
Opuntia prolifera	coast cholla
Caprifoliaceae	Honeysuckle Family
Sambucus mexicana	Mexican elderbenry
Caryophyllaceae	Pink Family
Silene antirrhina	catchfly
* Silene gallica	common catchfly
Chenopodíaceae	Goosefoot Family
Chenopodium californicum	California goosefoot
Salsola tragus	Russian thistle
Convolvulaceae	Morning-Glory Family
Calystegia macrostegia	western bindweed
* Ipomoea purpurea	common morning-glery
Crassulaceae	Stonecrop Family
Crassula connata	pygmy-weed
Cucurbitaceae	Gourd Family
Marah macrocarpus	wild cucumber
Euphorbiaceae	Spurge Family
Croton californicus	California croton
* Ricinus communis	castor bean
Fabaceae	Legume Family
Astragalus spp.	milk-vetch
Astragalus pomonensis	Pomona rattleweed
Astragalus trichopadus	Santa Barbara locoweed
Lotus scoparius	decrweed
Geraniaceae	Geranium Family
Erodium sp.	filarec
* Erodium botrys	broad-lobed filaree

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VASCULAR PLANTS	
Scientific Name	Common Name
* Erodium cicutarium	red-stemmed filaree
Hydrophyllaceae	Waterleaf Family
Eriodictyon trichocalyx vas. trichocalyx	hairy yerba santa
Eucrypta chrysanthemifolia	common eucrypta
Phacelia distans	fern-leaf phacelia
Phacelia minor	wild canterbury-bell
Juglandaceae	Walnut Family
Juglans californica vat. californica	Southern California black walput
Lamiaceae	Mint Family
* Marrubium vulgare	horehound
Monardella lanceolata	mustang mint
Salvia apiana	white sage
Salvia columbariae	chia
Salvia mellifera	black sage
Malvaceae	Mallow Family
Malacothamnus fasciculatus	mesa bushmallow
Myrtaceae	Myrtle Family
* Eucalyptus sp.	gum tree
* Eucalyptus globulus	blue gum
Oleaceae	Olive Family
* Olea europaea	olive
Onagraceae	Evening Primrose Family
Camissonia bistorta	California sun cup
Orobanchaceae	Broom-rape Family
* Orobanche vallicola	broom-rape
Platanaceae	Sycamore Family
Platanus racemosa	western sycamore
Polemoniaceae	Phlox Family
Eriastrum sapphirinum	sapphire eriastrum
Polygonaceae	Buckwheat Family
Eriogonum elongatum var. elongatum	long-stemmed buckwheat
Eriogonum fasciculatum	California buckwheat
Eriogonum gracile	siender woolly buckwheat
Rumex hymenosepalus	desert rhubarb
Ranunculaceae	Buttercup Family
Delphínium cardinale	scarlet larkspur

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Appendix B: Plant and Wildlife Species Compendia

Scientific Name	Common Name	
Rhamnaceae	Buckthorn Family	
Ceanothus crassifolius	hoary leaf ceanothus	
Ceanothus cuneatus	buck brush	
Ceanothus megacarpus	big-podded ceanothus	
Ceanothus spinosus	green bark ceanothus	
Rosaceae	Rose Family	
Adenostoma fasciculatum	chamise	
Prunus ilicifolia	holly-leafed cherry	
Solanaceae	Nightshade Family	
Nicotiana attenuata	coyote tobacco	
Nicotiana glauca	tree tobacco	
Angiosperms (Monocotyledons)		
Liliaceae	Lily Family	
Calochortus plummerae	Plummer's mariposa lily	
Chlorogalum pomeridianum	soap plant	
Dichelostemma capitatum	blue dicks	
Muilla maritima	common muilla	
Yucca whipplei	our Lord's candle	
Poaceae	Grass Family	
* Avena barbata	slender wild oat	
* Avena fatua	wild oat	
* Bromus diandrus	ripgut grass	
* Bromus madritensis ssp. rubens	foxtail chess	
* Bromus tectorum	cheat grass	
Elymus glaucus	blue wildrye	
Hordeum murinum	glaucous foxtail barley	
Hordeum vulgare	barley	
* Lamarckia aurea	goldentop	
* Lolium perenne	perennial ryegrass	
Schismus arabicus	Arabian grass	
Schismus barbatus	Mediterranean schismus	

	REPTILES	
	Scientific Name	Common Name
	Iguanidae	Iguanid Lizards
?	Phrynosoma coronatum blainvillei	San Diego Horned lizard
	Sceloporus graciosus vandenburgianus	southern sagebrush lizard
?	Sceloporus occidentalis biseriatus	Great Basin fence lizard
?	Sceloporus orcutti	spiny granite lizard
?	Uta stansburiana	side-blotched lizard
	Teiidae	Whiptail lizards
?	Cnemidophorus hyperythrus beldingi	orange-throated whiptail
	Cnemidophorus tigris multiscutatus	coastal western whiptail
	Anguidae	Alligator Lizards
?	Elgaria multicarinatus webbi	San Diego alligator lizard
	Colubridae	Colubrid Snakes
?	Diadophis punctatus modestus	San Bernardino ringneck snake
?	Lampropeltis getulus californiae	California kingsnake
	Masticophis flagellum piceus	red coachwhip
?	Pituophis cantenifer annectens	San Diego gopher snake
	Viperidae	Vipers
	Crotalus viridis helleri	southern pacific rattlesnake
* ?	= Nan-native Species = Potentially Present	

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#### 7-10

Appendix B: Plant and Wildlife Species Compendia

BIRDS	
Scientific Name	Common Name
Ardeidae	Herons
Ardea alba	great egret
Апаtidae	Waterfowl
Anas platyrhynchos	mallard
Cathartidae	New World Vultures
Cathartes aura	turkey vulture
Accipitridae	Hawks
? Elanus leucurus	white-tailed kite
Circus cyaneus	northern harrier
? Accipiter striatus	sharp-shinned hawk
Accipiter cooperii	Cooper's bawk
Buteo lineatus	red-shouldered hawk
? Buteo swainsoni	Swainson's hawk
Buteo jamaicensis	red-tailed bawk
? Aquila chrysaetos	golden eagle
Falconidae	Falcons
Falco sparverius	American kestrel
? Falco mexicanus	prairie falcon
Phasianidae	Pheasants and Quails
Callipepla californica	California quail
Charadriidae	Piovers
Charadrius vociferus	killdeer
Columbidae	Pigeons and Doves
* Columba livia	rock dove
Zenaida macroura	mourning dove
Cuculidae	Cuckoos and Roadrunners
Geococcyx californianus	greater roadrunner
Caprimulgidae	Goatsuckers
Chordeiles acutipennis	lesser nighthawk
Apodidae	Swifts
Aeronautes saxatalis	white-throated swift
Trochilidae	Hummingbirds
Calypte anna	Anna's hummingbird
Calypte castae	Costa's hummingbird
Piçidae	Woodpeckers
Picoides nuttallii	Nuttall's woodpecker
? Picoides pubescens	downy woodpecker
? Picoides villosus	hairy woodpecker

	BIRDS	
	Scientific Name	Common Name
	Colaptes auratus	northern flicker
	Tyrannidae	Tyrant Flycatchers
	Contopus cooperi	olive-sided flycatcher
	Contopus sordidulus	western wood-pewee
	Empidonax oberholseri	dusky flycatcher
?	Empidonax difficilis	Pacific-slope flycatcher
	Sayornis nigricans	black phoebe
	Sayornis saya	Say's phoebe
	Myiarchus cinerascens	ash-throated flycatcher
	Tyrannus verticalis	western kingbird
	Alaudidae	Larks
?	Eremphila alpestris actia	California horned lark
	Hirundinidae	Swallows
	Tachycineta thalassina	violet-green swallow
	Petrochelidon pyrrhonota	cliff swallow
	Stelgidapteryx serripennis	northern rough-winged swallow
	Hirundo rustica	barn swallow
	Corvidae	Jays and Crows
	Aphelocoma californica	western scrub-jay
	Corvus brachyrhynchos	American crow
  /11	Corvus corax	common raven
	Aegithalidae	Bushtits
	Psaltriparus minimus	bushtit
	Trogłodytidae	Wrens
?	Salpinctes obsoletus	rock wren
	Thryomanes bewickii	Bewick's wren
	Troglodytes aedon	house wren
	Regulidae	Kinglets
	Regulus calendula	ruby-crowned kinglet
	Sylviidae	Old World Warblers, Gnatcatchers
	Polioptila caerulea	blue-gray gnatcatcher
	Turdidae	Thrushes
?	Catharus ustulatus	Swainson's thrush
?	Catharus guttatus	hermit thrush
?	Turdus migratorius	American robin
?	Sialia currucoides	mountain bluebird
?	Sialia mexicana	wcstern bluebird
	Muccicanidae	Wrantits

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Appendix B: Plant and Wildlife Species Compendia

BIRDS	
Scientific Name	Common Name
Chamaea fasciata	wrentit
Mimidae	Thrashers
Mimus polyglottos	northern mockingbird
Toxostoma redivivum	California thrasher
Bombycillidae	Waxwings
Bombycilla cedrorum	cedar waxwing
Ptilogonatidae	Silky Flycatchers
Phainopepla nitens	phainopepla
Laniidae	Shrikes
Lanius ludovicianus	loggerhead sbrike
Sturnidae	Starlings
* Sturnus vulgaris	European starling
Porulidae	Wood Warblers
Vermivora celata	orange-crowned warbler
Dendroica coronata	yellow-rumped warbler
Oporonis tolmiei	MacGillivray's warbler
Wilsonia pusilla	Wilson's warbler
Cardinalidae	Cardinals
Pheucticus melanocephalus	black-headed grosbeak
Guiraca caerulea	blue grosbeak
Passerina amoena	lazuli bunting
Thraupidae	Tanagers
Piranga ludoviciana	western tanager
Emberizidae	Emberizids
Pipilo crissalis	California towhee
Pipilo maculatus	spotted towhee
Aimophila ruficeps conescen	s Southern California rufous-crowned sparrow
Spizella passerina	chipping sparrow
Spizella atrogularis	black-chinned sparrow
Chondestes grammacus	lark sparrow
Amphispiza belli belli	Bell's sage sparrow
Passerculus sandwichensis	savannah sparrow
Ammodramus savannarum	grasshopper sparrow
Passerella iliaca	fox sparrow
Melospiza melodia	song spartow
Zonotrichia leueophrys	white-crowned sparrow
Junco hyemalis	dark-eyed junco

	Scientific Name	Common Name	
J	[cteridae	Blackbirds	
	Agelaius phoeniceus	red-winged blackbird	
	Sturnella neglecta	western meadowlark	
?	Euphagus cyanocephalus	Brewer's blackbird	
	Molothrus ater	brown-headed cowbird	
	Icterus cucullatus	hooded oriole	
	Icterus bullockii	Bullock's oriole	
]	Fringillidae	Finches	
	Carpodacus mexicanus	house finch	
	Carduelis psaltria	lesser goldfinch	
?	Carduelis lawrencei	Lawrence's goldfinch	
?	Carduelis tristis	American goldfinch	
]	Passeridae	Old World Sparrows.	
,	* Passer domesticus	house sparrow	

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	MAMMALS	
	Scientific Name	Common Name
	Didelphidae	New World Opossums
?	* Didelphis virginiana	Virginia opossum
	Soricidae	Shrews
?	Sorex ornatus	ornate shrew
	Talpidae	Moles
?	Scapanus latimanus occultus	broad-handed mole
	Vespertilionidac	Evening Bats
?	Antrozous pallidus pacificus	pallid bat
?	Myotis californicus californicus	California myotis
?	Lasiurus cinereus	hoary bat
?	Pipistrellus hesperus	western pipistrelle
?	Plecotus townsendii pallescens	Townsend's big-eared bat
	Molossidae	Free-Tailed Bats
?	Tadarida brasiliensis	Brazilian free-tailed bat
?	Eumops perotis californicus	California mastiff bat
	Leporidae	Hares and Rabbits
?	Lepus californicus bennettii	San Diego black-tailed jackrabbit
	Sylvilagus audubonii sanctidiegi	Audubon's cottontail
	Sciuridae	Squirrels
	Spermophilus beecheyi nesioticus	California ground squirrel
	Geomyidae	Pocket Gophers
	Thomomys bottae	Botta's pocket gopher
	Heteromyidae	Pocket Mice and Kangaroo Rats
	Perognathus longimembris brevinasus	Los Angeles pocket mouse
	Chaetodipus californicus	California pocket mouse
	Chaetodipus fallax fallax	northwestern San Diego pocket mouse
?	Dipodomys agilis	Pacific kangaroo rat
?	Dipodomys merriami parvus	San Bernardino Merriam's kangaroo rat
	Dipodomys simulans	Dulzura kangaroo rat
	Muridae	Mice, Rats, and Voles
	Peromyscus californicus	California mouse
?	Peromyscus californicus insignis	California parasitic mouse
	Reithrodontomys megalotis	western harvest mouse
	Peromyscus eremicus	cactus mouse
	Peromyscus maniculatus	decr mouse
?	Neotoma fuscipes	dusky-footed woodrat

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	MAMMALS			
	Scientific Name		Common Name	
		Neotoma lepida	desert woodrat	
?		Neotoma lepida intermedia	San Diego desert woodrat	
?	*	Rattus norvegicus	Norway rat	
?	*	Rattus rattus	black rat	
?	*	Mus musculus	house mouse	
		Microtus californicus	California vole	
	Ca	nidae	Wolves and Foxes	
		Canis latrans	coyote	
?		Urocyon cinereoargenteus	дгау fox	
	Ргосуопідае		Raccoons	
?		Procyon lotor	raccoon	
	Mu	istelidae	Weasels, Skunks, and Otters	
?		Spilogale gracilis	western spotted skunk	
?		Mephitis mephitis	striped skunk	
	Fel	idae	Cats	
?		Lynx rufus	bobcat	
	Cervidae		Deer	
		Odocoileus he <del>m</del> ionus	mule deer	
* = ? =	* = Non-native Species ? = Potentially Present			

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# APPENDIX C: TREE SURVEY REPORT

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December 2002





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# ETIWANDA SUBDIVISION Tentative Tract 16072 Tree Survey Report



Prepared For:

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Prepared By:

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# San Bernardino County, California



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## ETIWANDA SUBDIVISION TENTATIVE TRACT 16072 TREE SURVEY REPORT

#### 1.0 INTRODUCTION

This report presents the results of a tree survey conducted for the Etiwanda Subdivision, Tentative Tract 16072, San Bernardino County, California. The project site is located in an unincorporated portion of San Bernardino County north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue north of the City of Rancho Cucamonga as shown in Figure 1, *Regional Map*, on page 2 and Figure 2, *Vicinity Map*, on page 3. The project site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. The project site is contained on the United States Geological Survey 7.5' Cucamonga Peak Quadrangle, in Section 21, T. 1 N., R. 6 W. The elevation of the project site is approximately 1,600 to 1,800 feet above mean sea level.

The project site is included in the City of Rancho Cucamonga's Etiwanda North Specific Plan. The City has established tree preservation guidelines for trees within the City boundary that meet their definition of "heritage tree". According to these guidelines the City requires a tree removal permit application be accompanied with any application for tentative subdivision maps or other proposals for urban development. The tree removal permit application must be submitted with a tree survey report containing all requested information according to section 19.08.060 of the City's tree preservation guidelines. Therefore, PCR was contracted by Richland Pinehurst, Inc. to conduct a tree survey for the proposed development of 359 single-family, detached residential units on approximately 150 acres of undeveloped land (Figure 3, *Proposed Project Plan*, on page 4). Any trees located within the proposed project development footprint were surveyed and then evaluated on whether they met the City's "heritage tree" criteria. The proposed project is surrounded by low density housing to the west, an Edison utility corridor to the north, very low density housing and flood control/resource conservation area to the east, and estate residential and water treatment plant facilities to the south (Figure 4, *Surrounding Land Uses*, on page 5).

The scope of this tree survey report encompasses the methods, survey results, recommendations, and conclusions for the trees located on the project site. This report is consistent with accepted scientific and professional standards of the Council of Tree & Landscape Appraisers, "Guide for Plant Appraisal" and is consistent with the City of Rancho Cucamonga's Tree Preservation Guidelines (Chapter 19.08). In accordance with the City's tree preservation guidelines an application has been obtained and shall be submitted with this report.



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The report shall contain, per City guidelines, the following information: (a) a statement as to reasons for removal or relocation; (b) the number, species, and size (circumference as measured twenty-four inches from ground level) and height of tree; (c) the location of all trees on-site on a plot plan in relation to structures and improvements (e.g., streets, sidewalks, fences, slopes, retaining walls, etc.). If the application is associated with a proposal for development, the location of all trees on-site shall be plotted on a grading plan; (d) photographs of the trees to be removed or relocated; (e) if a tree is proposed to be relocated, the relocation site shall be identified and site preparation and relocation methods described; (f) proposed method of removal; (g) the health of any tree declared diseased, infested, or dying shall be verified by a written report of a qualified arborist; and (h) in addition, the city planner may cause to be prepared, at the applicant's expense, a report by a qualified arborist to assist in making a determination on a tree removal permit application.

#### 2.0 METHODOLOGY

This tree survey report is based on information compiled through field reconnaissance, previous documentation, and appropriate reference materials. Consistent with the City's tree preservation guidelines all trees were surveyed that met one of the following "heritage tree" criteria: (1) all eucalyptus windrows; or (2) all woody plants in excess of fifteen feet in height and baving a single trunk circumference of fifteen inches or more; or (3) any multi-trunk tree(s) having a total circumference of thirty inches or more, as measured twenty-four inches from ground level; (4) a stand of trees the nature of which makes each dependent upon the others for survival; or (5) any other tree as may be deemed historically or culturally significant by the city planner because of size, condition, location, or aesthetic qualities. The tree survey was conducted on August 6, 20, September 5, and 11, 2002. All surveys were conducted by qualified PCR Biologist/ISA Certified Arborist, Stephanie Seapin and assisted by biologists Kristin Szabo, Susan Erickson, and GIS Technician, Oscar Uranga. The tree survey consisted of tagging each tree, measuring the circumference of each tree at 24-inches above ground level (in accordance with City tree preservation guideline standards), measuring diameter at breast height (DBH) of each tree at 4.5-feet above ground level (in accordance with International Society of Arboniculture (ISA) standards), noting height and canopy width, and assessing the condition of each tree, by rating their health, structure, and aesthetics with an excellent, good, fair, poor, or dead rating. In addition, a global positioning system was used to digitally map the location of each tree surveyed.

#### 3.0 RESULTS

A total of 213 trees were surveyed and evaluated as meeting the City's "heritage tree" criteria. Approximately 175 eucalyptus trees (*Eucalyptus spp.*), 11 unidentifiable ornamental

trees, 14 pepper trees (Schinus molle), 9 southern California black walnut trees (Juglans californica var. californica), and 4 western sycamore trees (Platanus racemosa) occur on-site (Figure 5, Tree Locations Map, on page 8). In general, all the trees within the project boundary were found to be in fair to poor condition physiologically, structurally, and aesthetically (Appendix A, Tree Matrix).

All 175 eucalyptus trees on-site occur as part of windrows and all show signs of beetle and/or psyllid infestation. These eucalyptus windrows are not maintained by the City or any other entity and have therefore been stressed which has made them easy targets for insect pests. In addition, there have been two fires that have swept through the area. In September 1988, a fire burned an area from Etiwanda Canyon to Lytle Creek and a second fire followed in November 1989, burning from East Canyon wash at Summit Avenue to San Sevaine wash along the foothills, and burning to the top of the mountain in San Sevaine and Ingvaldsen Canyons (Hickcox 1981). Eucalyptus trees are well adapted to fire, encouraging massive sprouting (Figure 6, *Fire Damaged Tree Photographs*, on page 9).

The euclyptus trees show signs of beetle damage to the leaves and trunks/limbs of the eucalyptus trees. A live beetle was found and sent to the Department of Entomology at the University of California, Riverside (UCR) for identification. UCR Staff Research Associate, Kathleen Campbell identified the beetle to be a Eucalyptus Tortoise Beetle or Australian Tortoise Beetle (ATB) (Trachymela sloanei). ATB chews notches along the leaves that "look like little steps" (Burns 2001) and create sinuous galleries (tunnels) in the inner bark (Owen 1991) (Figure 7, Beetle Gallery Photographs, on page 10). ATB is a leaf-feeding beetle and there is growing concern with experts in the field that this defoliation will further weaken the drought-stressed eucalyptus trees throughout the area and other parts of the state, predisposing them to attack by the eucalyptus longhorned borer (ELB) and/or the Yellow Phoracantha (Hagen 2001). Also, a few of the eucalyptus appear to have been attacked by redgum lerp psyllid (Glycapsis brimbecombei). Redgum lerp psyllid is the most conspicuous and most destructive new pest in this group (Hagen 2001). Psyllids feed by sucking plant juices and excreting, "honeydew" which is secreted on leaves creating a sticky nuisance problem (Stepp 1999). Affected leaves soon shrivel and fall causing extensive defoliation, weakening the trees and resulting in an increase to the trees susceptibility to wood-boring pests such as ELB (Hagen 2001). The following photographs show tiny, white dome shaped dots which are called "lerps" which are homes for the psyllid (Figure 8, Lerp Photographs, on page 11). Psyllid nymphs create these "lerps" made of gums and resins (Stepp 1999).

The pepper trees, sycamores, walnuts, and unidentifiable ornamental trees are all in fair health or aesthetics with poor structure. The pepper and walnut trees in particular, as well as some of the cucalyptus trees have severe paintball activity injury (Figure 9, *Paintball Damaged Tree Photographs*, on page 12). Injuries include, paintball pellets embedded into the trunks and The second s

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Figure 6 Etiwanda Subdivision Tentative Tract 16072 Fire Damaged Tree Photographs

Source PCR Services Corporation, 2002.



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Figure 7 Etiwanda Subdivision Tentative Tract 16072 Beetle Gallery Photographs

Source: PCR Services Corporation, 2002

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Figure 8 Etiwanda Subdivision Tentative Tract 16072 Lerp Photographs

Source PCR Services Corporation, 2002



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Figure 9 Etiwanda Subdivision Tentative Tract 16072 Paintball Damaged Tree Photographs

Source: PCR Services Corporation, 2002.

branches of the trees, particle board, ply-wood, and pallets nailed to the trunks of the trees used for target practice or for protection during paintball wars.

#### 4.0 IMPACTS

The proposed residential development would result in the loss of approximately 213 native and non-native/ornamental trees (Figure 10, *Impacts to Trees*, on page 14).

#### 5.0 **RECOMMENDATIONS**

The City of Rancho Cucamonga requires that all trees meeting the City's "heritage tree" criteria and that are to be removed shall be replaced with spotted gum (*Eucalyptus maculata*) or a City approved tree species along the established City grid pattern or the boundaries of the project property. The replacement trees shall be fifteen-gallon size, minimum spaced at eight feet on center, and properly staked, unless otherwise specified by a specific plan or community plan. All removals shall be mitigated at a 1:1 ratio.

Through our survey and evaluation we have determined no healthy candidates to be relocated/transplanted, due to their stressed condition. Stressed trees suffer from soil pH imbalances, drought, lack of minerals, or excess water (Lilly 2001). As a result, stressed trees are more likely to succumb to drought, defoliation, borers, bark beetles, or vascular wilt diseases (Lilly 2001). When a tree has entered this state of decline as mentioned above, it is said to be in a mortality spiral (Lilly 2001). Mortality spiral is defined as a sequence of events causing the decline, and eventual death, of a tree (Lilly 2001). Consequently, the feasibility of relocating/transplanting any of these trees on-site or off-site is not advisable or economically reasonable.

PCR advocates that the 213 "heritage trees" be removed and replaced with native trees within the proposed development. We recommend replacing the 200 non-native/ornamental trees and 13 native trees with coast live oaks (*Quercus agrifolia*), interior live oak (*Quercus wislizeni* var. *frutescens*), western sycamores (*Platanus racemosa*), and southern California black walnuts (*Juglans californica var. californica*) at a 1:1 ratio. We believe sufficient mitigation can be successfully completed on-site through the planting of oaks, sycamores, and walnuts within the greenbelt of the residential development (Figure 11, *Recommended Mitigation Tree Location*, on page 15). According to the conceptual landscape plan prepared by Gary Bye of Rainville & Bye an approximate 200 oaks and sycamores are planned within the greenbelt area of the proposed development (Rainville & Bye July 2002).





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#### 6.0 CONCLUSIONS

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The proposed residential development would result in the loss of approximately 213 nonnative/ornamental and native trees. All trees are located within the project boundary and found to be in fair to poor condition physiologically, structurally, and aesthetically. The trees have been surveyed and evaluated according to the City's guidelines and can be found in appendix A. PCR believes sufficient mitigation can be successfully completed on-site through the planting of oaks, sycamores, and walnuts within the greenbelt of the proposed residential development.

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Tree Survey Report PCR Services Corporation 1.5.9

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APPENDIX A: TREE MATRIX

	TREEID	SPECIES	TRUNK	C DBH (in.)	CANOPI (fl)	( HEIGHT (fl)	HEALTH	STRUCTURE	C AESTHETICS	IRCUMFERENCE
1.	601	Sycamore	Multi	24.5	40	30	Fair	Роот	Fair	86.3
2.	602	Sycamore	Multi	26	50	35	Fair	Poor	Fair	98.9
3.	603	Eucalyptus	Multi	23	25	25	Poor	Роог	Poor	100.5
4.	604	Eucalyptus	Multi	4.5	10	20	Роог	Poor	Poor	14.1
5.	605	Eucalyptus	Multi	5.5	10	15	Poor	Poor	Poor	22.0
6.	07	Eucalyptus	Mutti	22	10	30	Роог	Роог	Poor	95.8
7.	608	Eucalyptus	Melti	18.5	15	35	Poor	Poor	Poor	70.6
8.	609	Eucalyptus	Multi	25	20	40	Poor	Poor	Poor	109.9
9.	610	Eucalyptus	Multi	22	20	35	Роог	Poor	Poor	83.2
10.	611	Eucalyptus	Multi	25.5	20	50	Poor	Poor	Poor	94.2
11.	612	Eucalyptus	Multi	27.5	20	50	Poor	Poor	Роог	100.5
12.	613	Eucalyptus	Multi	6	8	25	Poor	Poor	Рост	22.0
13.	614	Eucalyptus	Multi	42	25	60	Роог	Poor	Poor	182.1
14.	615	Eucalyptus	Multí	29	20	50	Роог	Poor	Poor	111.5
15.	616	Eucalyptus	Multi	24	20	60	Роог	Poor	Poor	87.9
16.	617	Eucalyptus	Multi	19.5	10	60	Poor	Poor	Роог	70.6
17.	618	Eucalyptus	Multi	10.5	10	25	Poor	Poor	Роот	40.8
18.	619	Eucalyptus	Multi	54	20	60	Poor	Poor	Poor	191.5
19.	620	Eucalyptus	Muiti	30.5	25	60	Роот	Poor	Poor	153.9
20.	621	Eucalyptus	Multi	14	15	30	Poor	Poor	Роог	39.2
21.	622	Eucalyptus	Multi	19.5	20	60	Poor	Poor	Poor	72.2
22.	623	Eucalyptus	Multi	9	8	25	Poor	Poor	Poor	34.5
23.	624	Eucalyptus	Standard	7.5	10	20	Poor	Poor	Poor	31.4
<b>24</b> .	<b>62</b> 5	Eucalyptus	Multi	9	10	20	Роог	Poor	Poor	37.7
<b>2</b> 5.	626	Eucalyptus	Multi	61.5	30	55	Роог	Poor	Poor	237.1
26.	627	Pepper	Multi	17.5	35	20	Poar	Poor	Росг	62.8
27.	628	Pepper	Multi	24	30	25	Fair	Poor	Роог	83.2
28.	629	Pepper	Multi	42.5	40	20	Fair	Poor	Роог	138.2
29.	630	Реррег	Multi	52	45	30	Fair	Poor	Роог	168.0
30.	631	Pepper	Multi	30	20	20	Fair	Poor	Fair	95.8
31.	632	Pepper	Multi	47.5	30	40	Poor	Poor	Роог	191.5
32.	633	Eucalyptus	Multi	30	15	30	Poor	Poor	Poor	117.7
33.	634	Eucalyptus	Multi	54.5	15	60	Poor	Poor	Poor	201.0
34.	635	Eucalyptus	Multi	17	15	60	Poor	Poor	Poor	65. <b>9</b>
35.	636	Eucalyptus	Multi	8.5	8	25	Роог	Роог	Poor	31.4
36.	637	Eucalyptus	Multi	6	5	35	Poor	Poor	Роог	23.5
Appendix A:	Ттее	Matrix								
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	TREEID	SPECIES	TRUNK	DBH (in.)	CANOPY (fl)	HEIGHT (fl)	HEALTH	STRUCTURE	AESTHETICS	CIRCUMFERENCE
37.	638	Eucalyptus	Multi	30.5	20	50	Poor	Poor	Poor	124.0
38.	639	Eucalyptus	Multi	26	15	60	Poor	Poor	Poor	103.6
39.	640	Eucalyptus	Multi	34.5	30	35	Poor	Poor	Poor	152.3
40.	641	Реррет	Multi	20	40	35	Fair	Poor	Fair	73.8
41.	642	Pepper	Multí	10.75	20	30	Fair	Poor	Fair	48.7
42.	643	Реррег	Multi	8	10	20	Poor	Poor	Poor	29.8
43.	<b>64</b> 4	Eucalyptus	Multi	10.5	15	30	Poor	Poor	Poor	54.9
44.	645	Eucalyptus	Multi	8	10	15	Poor	Poor	Poor	31.4
45.	646	Eucalyptus	Multi	26.5	20	35	Poor	Poor	Poor	103.6
<b>4</b> 6.	647	Eucalyptus	Multi	9.5	10	25	Роог	Poor	Poor	34.5
47.	648	Eucalyptus	Multi	51.5	30	55	Роог	Poor	Poor	197.8
48.	649	Eucalyptus	Multi	26	35	<b>\$</b> 5	Poor	Poor	Poor	94.2
<b>49</b> .	650	Eucalyptus	Multi	20	15	45	Роог	Poor	Poor	78.5
50.	651	Eucalyptus	Multi	13.5	15	30	Poor	Рост	Poor	45.5
51.	652	Eucalyptus	Multi	23.5	25	40	Poor	Poor	Poor	70.6
52.	653	Eucalyptus	Multi	16	20	35	Poor	Poor	Poor	77.7
53.	654	Eucalyptus	Multi	24	15	30	Poor	Poor	Poor	89.5
54.	655	Eucalyptus	Multi	24.5	20	50	Роог	Poor	Poor	103.6
55.	656	Eucalyptus	Multi	41	25	40	Poor	Poor	Раог	138.2
56.	657	Eucalyptus	Multi	21.5	20	35	Роог	Poor	Poor	84.8
57.	660	Eucalyptus	Multi	22.5	25	30	Poor	Poor	Poor	91.8
58.	661	Eucalyptus	Multi	10	10	35	Роог	Poor	Poor	51.8
59.	662	Eucalyptus	Multi	31.5	30	50	Poor	Poor	Poor	122.5
60.	<b>6</b> 63	Eucalyptus	Multi	7	8	15	Роог	Poor	Poor	31.4
61.	664	Eucalyptus	Multi	66.5	30	60	Poor	Poor	Poor	213.5
62.	665	Eucalyptus	Multi	7.5	10	45	Poor	Poor	Poor	48.7
63.	<b>6</b> 6 <b>6</b>	Eucalyptus	Multi	16.5	15	55	Poor	Роог	Poor	64.4
64.	<b>6</b> 67	Eucalyptus	Multi	13	10	20	Poor	Poor	Poor	47.1
65.	668	Eucalyptus	Multi	36	25	40	Poor	Poor	Роог	130.3
<b>6</b> 6.	669	Eucalyptus	Multi	52	30	60	Poor	Роог	Poor	135.0
67.	<b>67</b> 0	Eucalyptus	Multi	55	40	35	Poor	Poor	Poor	262.2
68.	671	Eucalyptus	Multi	10	8	<b>4</b> 5	Poor	Poor	Poor	34.5
69.	672	Eucalyptus	Multi	25.5	10	30	Poor	Poor	Poor	91.1
70.	673	Eucalyptus	Multi	40.5	20	70	Poor	Роог	Poor	124.0
71.	674	Eucalyptus	Multi	25	20	40	Poor	Poor	Роог	111.5
72.	675	Eucalyptus	Multi	13.5	10	30	Poor	Poor	Poor	59.7
73.	676	Eucalyptus	Multi	19.5	15	30	Poor	Poor	Poor	78.5
74.	677	Eucalyptus	Multi	12	15	35	Роог	Poor	Poor	44.0
75.	678	Eucalyptus	Multi	14	15	35	Poor	Poor	Poor	45.5
76.	679	Eucalyptus	Multi	13.5	15	<b>2</b> 5	Роог	Poor	Poor	54.9
77.	680	Eucalyptus	Malti	16	15	2.5	Poor	Poor	Poor	61.2

Tree Survey Report PCR Services Corporation Etiwanda Subdivision Tentative Tract 16072 December 20, 2002 ì

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-	TREEID	SPECIES	TRUNK	( DBH (in-)	CANOPY	/ HEIGHT ( <u>[]-</u> )	HEALTH	STRUCTURE	AESTHETICS	CIRCUMFERENCE AT 2 (fL)
78.	681	Eucalyptus	Multi	21.5	20	45	Poor	Poor	Poor	91.1
79.	682	Eucalyptus	Multi	41	20	35	Poor	Poor	Poor	122.5
80.	683	Eucalyptus	Multi	12	15	20	Poor	Poor	Poor	54.9
81.	684	Eucalyptus	Multi	61.5	30	50	Poor	Poor	Poor	211.9
82.	685	Eucalyptus	Malti	8	5	25	Роог	Poor	Poor	34.5
83.	686	Eucalyptus	Maltí	39	20	45	Poor	Poor	Poor	153.9
84.	687	Eucalyptus	Multi	12.5	15	30	Poor	Poor	Роог	51.8
85.	688	Eucalyptus	Multi	54.5	35	40	Poor	Poor	Poor	175.8
86.	689	Eucalyptus	Multi	12.5	10	25	Роог	Poor	Роог	47.1
87.	690	Eucalyptus	Multi	34	30	60	Poor	Poor	Роог	122.5
88.	691	Eucalyptus	Multi	18.5	15	60	Poor	Poor	Poor	100.5
89.	692	Eucalyptus	Multi	15	15	55	Poor	Poor	Poor	61.2
90.	693	Eucalyptus	Multi	34	30	60	Poor	Poor	Poor	133.4
91.	694	Eucalyptus	Multi	17.5	15	40	Poor	Poor	Poor	64.4
<b>92</b> .	695	Eucalyptus	Multi	32.5	20	45	Poor	Poor	Poor	64.4
93.	696	Eucalyptus	Multi	58.5	30	50	Poor	Poor	Poor	164.8
94.	697	Eucalyptus	Multi	12	20	50	Poor	Poor	Poor	39.2
95.	698	Eucalyptus	Multi	31.5	20	60	Poor	Poor	Poor	120.9
<b>96</b> .	699	Eucalyptus	Multi	19.5	15	40	Poor	Poor	Poor	72.2
97.	700	Eucalyptus	Multi	38	25	60	Poor	Poor	Poor	144.4
<b>98</b> .	701	Eucalyptus	Multi	14	15	25	Роог	Роог	Poor	54.9
99.	702	Eucalyptus	Multi	23	20	60	Poor	Poor	Poor	87.9
100.	703	Eucalyptus	Multi	25.5	15	30	Poor	Роог	Poor	100.5
101.	704	Eucalyptus	Multi	29	15	40	Роог	Poor	Poor	103.6
102.	705	Eucalyptus	Multi	44.5	30	55	Poor	Poor	Poor	232.4
103.	706	Eucalyptus	Multi	46.5	20	60	Рост	Poor	Poor	<b>204</b> .I
104.	707	Eucalyptus	Multi	38	30	60	Poor	Роог	Роог	141.3
105.	708	Eucalyptus	Multí	33	30	30	Poor	Poor	Poor	109.9
106.	709	Eucalyptus	Multi	53.5	30	50	Poor	Poor	Роог	205.7
107.	710	Eucalyptus	Multi	15	15	30	Poor	Роог	Poor	54.9
108.	711	Eucalyptus	Multi	40.5	20	30	Poor	Poor	Poor	141.3
109.	712	Eucalyptus	Multí	14.5	10	25	Poor	Poor	Poor	51.8
110.	713	Eucalyptus	Multi	6.5	8	20	Роог	Poor	Poor	23.5
111.	714	Eucalyptus	Multi	17	15	30	Роог	Poor	Poor	61.2
112.	715	Eucalyptus	Multi	4	10	<b>2</b> 5	Роог	Poor	Poor	15.7
113.	716	Eucalyptus	Multi	56.5	30	40	Poor	Poor	Роог	196.2
114.	717	Eucalyptus	Multi	t1.5	10	20	Fair	Poor	Poor	45.5
115.	718	Eucalyptus	Multi	11	10	25	Poor	Роог	Poor	37.7
116.	719	Eucalyptus	Multi	13.5	10	35	Poor	Poor	Роог	42.4
117.	720	Eucalyptus	Multi	35	25	30	Poor	Poor	Poor	127.2
118.	721	Eucalyptus	Multi	28.5	10	40	Poor	Poor	Poor	100.5

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Appendix	A:	Tree	Mat	ix

_	TREEID	SPECIES	TRUNK	DBH (in.)	CANOPY ([t.)	HEIGHT _(ft.)	HEALTH	STRUCTURE	AESTHETICS	CIRCUMFERENCE AT 2 (ft.)
119.	722	Eucalyptus	Multi	18	8	20	Poor	Poor	Poor	61.2
120.	723	Eucalyptus	Multi	14.5	20	20	Poor	Poor	Poor	50.2
121	724	Eucalyptus	Multi	24.5	20	25	Poor	Poor	Poor	78.5
122.	725	Eucalyptus	Multi	71.5	30	65	Fair	Роог	Fair	235.5
123.	726	Eucalyptus	Multi	19	20	30	Fair	Роог	Fair	67.5
124.	727	Eucalyptus	Multi	37	30	50	Poor	Poor	Poor	124.0
125.	728	Eucalyptus	Multi	11.5	8	20	Poor	Роог	Fair	37.7
126.	729	Eucalyptus	Multi	7.5	8	20	Poor	Poor	Poor	28.3
127.	730	Eucalyptus	Multi	17.5	20	25	Poor	Poor	Poor	58.1
128.	731	Eucalyptus	Multi	8	8	20	Poor	Poor	Fair	28.3
129.	732	Eucalyptus	Multi	13.5	15	20	Poor	Роог	Poor	42.4
130.	733	Eucalyptus	Multi	9	8	25	Poor	Poor	Poor	28.3
131.	734	Eucalyptus	Multi	18.5	20	35	Poor	Poor	Poor	61.2
132.	735	Eucalyptus	Multi	21.5	20	30	Роог	Poor	Poor	67.5
133.	736	Eucalyptus	Multi	32.5	20	50	Poor	Роог	Poor	102.0
134.	737	Eucalyptus	Multi	55	35	65	Poor	Poor	Poor	f 86.8
13 <b>5</b> .	738	Eucalyptus	Multi	9	15	30	Роог	Poor	Роог	29.8
136.	739	Eucalyptus	Multi	34	15	45	Poor	Poor	Poor	116.2
137.	740	Eucalyptus	Multi	10.5	8	20	Poor	Роог	Poor	33.0
138.	74]	Eucalyptus	Multi	40.5	30	35	Poor	Poor	Poor	127.2
139.	742	Eucalyptus	Multi	21.5	20	30	Poor	Poor	Poor	67.5
140.	743	Eucalyptus	Multi	21.5	8	40	Poor	Poor	Poor	65.9
141.	744	Eucalyptus	Multi	17	20	20	Poor	Poor	Poor	53.4
142.	745	Eucalyptus	Multi	40.5	25	40	Poor	Poor	Poor	138.2
143.	746	Eucalyptus	Multi	24.5	20	25	Poor	Poor	Poor	76.9
144.	747	Eucalyptus	Multi	41.5	25	55	Poor	Poor	Poor	138.2
145.	748	Eucalyptus	Multi	42	20	55	Роог	Poor	Роог	75.4
146.	749	Eucalyptus	Multi	8.5	10	15	Роог	Poor	Poor	23.5
147.	750	Eucalyptus	Multi	39	30	40	Poor	Poor	Poor	51.8
148.	751	Eucalyptus	Multi	11.5	15	50	Poor	Poor	Poor	42.4
149.	752	Eucalyptus	Multi	36	20	45	Poor	Poor	Poor	124.0
150.	753	Eucalyptus	Multi	27.5	20	40	Poor	Poor	Poor	135.0
151.	754	Escalyptus	Multi	13.5	15	15	Poor	Poor	Poor	48.7
152.	755	Eucalyptus	Multi	26.5	10	35	Poor	Poor	Poor	84.8
153.	756	Eucalyptus	Multi	16	20	35	Poor	Poor	Poor	80.1
154.	757	Eucalyptus	Multi	17	15	40	Poor	Poor	Poor	53.4
155.	758	Eucalyptus	Multi	28	15	35	Роог	Poor	Poor	108.3
156.	760	Eucalyptus	Multi	30.5	20	55	Poor	Poor	Poor	100.5
157.	761	Eucalyptus	Multi	18	20	35	Poor	Poor	Poor -	65.9
158.	762	Eucalyptus	Multi	45	30	50	Poor	Poor	Poor	92.6
159.	763	Eucalyptus	Multi	57.5	25	50	Poor	Роог	Poor	218.2

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	TREEID	SPECIES	TRUNK	DBH (în.)	CANOPY (fl)	HEIGHT (fL)	HEALTH	STRUCTURE	AESTHETICS	CIRCUMFERENCE
160.	764	Walnut	Multí	22.5	40	15	Fair	Poor	Роот	76.9
161.	765	Walnut	Multi	19	30	18	Fair	Poor	Poor	67.5
162.	766	Walnut	Multi	18	30	16	Fair	Poor	Fair	75.4
163.	767	Pepper	Multi	7	10	20	Роог	Poor	Poor	26.7
164.	768	Walnut	Multi	9	20	15	Fair	Fair	Fair	31.4
165.	769	Walnut	Multi	8	20	15	Poor	Poor	Poor	31.4
166.	770	Реррет	Multi	12	20	16	Роог	Poor	Poor	<b>4</b> 2.4
167.	771	Реррег	Multi	26.5	30	16	Fair	Poor	Poor	97.3
168.	772	Eucalyptus	Multi	51.5	20	35	Роог	Poor	Poor	194.7
169.	773	Eucalyptus	Multi	31	25	35	Poor	Poor	Poor	± 20.9
170.	774	Eucalyptus	Multi	31	25	35	Poor	Poor	Poor	130.3
171.	775	Eucalyptus	Multi	32	20	40	Poor	Роог	Poor	131.9
172.	776	Eucalyptus	Multi	38.5	30	40	Роот	Poor	Poor	<b>i 68</b> .0
173.	777	Eucalyptus	Multi	7	8	25	Poor	Poor	Poor	17.3
174.	778	Eucalyptus	Multi	17	10	30	Poor	Poor	Роог	83.2
175.	779	Eucalyptus	Multi	48	25	40	Poor	Poor	Роог	169.6
176.	780	Eucalyptus	Multi	35.5	15	25	Poor	Poor	Роог	108.3
177.	781	Eucalyptus	Multí	32	20	20	Poor	Poor	Росг	109.9
178.	782	Реррет	Multi	93	50	50	Fair	Poor	Fair	282.6
179.	783	Walnut	Multi	7.5	8	15	Роог	Роог	Роог	33.0
180.	784	Pepper	Multi	14.5	20	25	Fair	Poor	Poor	53.4
181.	785	Eucalyptus	Multi	69	50	70	Poor	Poor	Poor	295.2
182.	786	Eucalyptus	Multi	24.5	20	55	Poor	Роот	Poor	80.1
183.	787	Eucalyptus	Multi	21.5	20	55	Poor	Роог	Poor	69.1
184.	788	Eucalyptus	Multi	32.5	20	55	Poor	Poor	Poor	119.3
185.	789	Eucalyptus	Multi	19.5	20	35	Peor	Poor	Poor	64.4
186.	790	Eucalyptus	Multi	20	15	35	Poor	Poor	Poor	72.2
187.	791	Eucalyptus	Standard	29.5	20	45	Poor	Poor	Poor	111.5
188.	792	Eucalyptus	Multi	29.5	30	50	Роог	Poor	Poor	100.5
189.	793	Eucalyptus	Multi	124	50	50	Роот	Poor	Роог	42.4
190.	794	Eucalyptus	Multi	36	20	45	Poor	Poor	Poor	127.2
191.	795	Eucalyptus	Multi	29	25	45	Poor	Poor	Poor	147.6
192.	796	Eucalyptus	Multi	48.5	30	50	Poor	Poor	Poor	161.7
193.	797	Eucalyptus	Multi	53	25	48	Роог	Poor	Роог	183.7
194	798	Eucalyptus	Multi	30	25	35	Poor	Poor	Poor	94.2
195.	799	Eucalyptus	Multi	21	15	30	Poor	Poor	Роог	78.5
196.	800	Eucalyptus	Multi	30	30	45	Роот	Poor	Poor	87.9
197.	801	Eucalyptus	Multi	51.5	40	42	Poor	Poor	Poor	182.1
198.	802	Wainut	Multi	5	6	6	Poor	Роог	Poor	15.7
<b>i 99</b> .	803	Walnut	Multi	7	6	6.2	Роог	Роот	Poor	22.0
200.	804	Walnut	Multi	19	25	15	Poor	Poor	Poor	53.4

Tree Survey Report PCR Services Corporation Etiwanda Subdivision Tentative Tract 16072 December 20, 2002

## 1/9/2024 Board Meeting

_	TREEID	SPECIES	TRUNK	DBH (in.)	CANOPY	HEIGHT (fl)	HEALTH	STRUCTURE	AESTHETICS	CIRCUMFERENCE AT 2 (fL)
201.	805	Other	Standard	Ð	20	30	Good	Poor	Fair	36.1
202.	806	Other	Standard	12	20	25	Fair	Poor	Poor	34.5
203.	807	Other	Standard	4.5	10	30	Poor	Poor	Poor	14.1
204.	808	Other	Standard	6	15	28	Fair	Роог	Poor	18.8
205.	809	Other	Standard	н	15	35	Роог	Fair	Fair	31.4
206.	810	Other	Standard	6.5	10	35	Роог	Fair	Fair	22.0
207.	811	Other	Standard	8	10	28	Poor	Poor	Poor	22.0
208.	812	Other	Standard	11	15	45	Fair	Fair	Fair	28.3
209.	813	Other	Standard	7	10	35	Fair	Fair	Fair	22.0
210.	814	Other	Multi	9	10	20	Fair	Роог	Poor	22.0
211.	815	Other	Standard	8.5	20	55	Fair	Good	Fair	28.3
212.	816	sycamore	multi	17.5	20	30	Poor	Роог	Poor	55.7
213.	817	sycamore	multi	6.25	15	30	Роог	Роог	Poor	22.0

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APPENDIX D: JURISDICTIONAL DELINEATION REPORT

December 20, 2002



Mr. John Schafer RICHLAND COMMUNITIES, INC. 3 Imperial Promenade, Suite 150 Santa Ana, California 92707

#### Re: Delineation of Jurisdictional Waters at the Etiwanda Property, San Bernardino County, California

Dear Mr. Schafer:

This letter report presents the findings of an investigation conducted by PCR Services Corporation (PCR) of jurisdictional "Waters of the U.S." and wetlands at the Etiwanda property, located in San Bernardino County, California. An assessment of jurisdictional wetlands and "Waters of the U.S." was conducted within and immediately adjacent to the 150-acre study area to determine whether or not the on-site drainages are subject to the jurisdiction of the U.S. Army Corps of Engineers (ACOE) and/or the California Department of Fish and Game (CDFG). The initial assessment was conducted by PCR Senior Ecologist Mark Sudol and Wildlife Biologist Ken Halama on September 2, 1998. A revised assessment was conducted by PCR Biologists Kristin Szabo and Ryan Roberts on October 24, 2002 to include an additional 20-acre parcel in the northwestern portion of the site, the flood control channel along the southern property boundary, and portions of off-site drainages beyond the northwestern and eastern property boundaries.

The formal jurisdictional determination was conducted to determine the presence or absence of features regulated by the ACOE, CDFG, and/or Regional Water Quality Control Board (RWQCB). As detailed in the attachment three jurisdictional drainages are present on-site totaling approximately 6,335 linear feet. These drainages support approximately 1.13 acres of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional streambed. Jurisdictional areas immediately adjacent to the site are within the three aforementioned drainages. Jurisdictional determinations were made for off-site portions of these drainages to the extent they may be impacted by activities associated with the Etiwanda Subdivision (Tentative Tract 16072) development project. Drainages measured adjacent to the site include approximately 4,343 linear feet and 0.98 acre of ACOE and CDFG jurisdictional streambed. Numerous other smaller drainages were also observed, but were not deemed jurisdictional due to their extremely ephemeral nature.

PCR is pleased to provide this letter/report summarizing the results of our jurisdictional delineation of the Etiwanda site in San Bernardino County. If you have any questions regarding our findings, please call us at (949) 753-7001.

Sincerely, PCR SERVICES CORPORATION Steven G. Nelson Director of Biological Services

Attachments

Kristin Szabo

Senior Biologist

One Venture, Suite 150, Irvine, California 92618-3320 (Areaver www.pornet.com) TEC 949.753.7001 FAX 949.753.7002

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#### Mr. John Schafer **RICHLAND COMMUNITIES, INC.** December 20, 2002 - Page 2



#### INVESTIGATION OF JURISDICTIONAL WATERS ON THE ETIWANDA SITE

#### SITE DESCRIPTION

The project site consists of approximately 150 acres of undeveloped land in an unincorporated area of San Bernardino County located north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue just north of the City of Rancho Cucamonga (see Figure 1. *Regional Map*, attached). The project site lics within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. The project site is contained on the United States Geological Survey (USGS) 7.5' Cucamonga Peak Quadrangle, in Section 24, T. 1 N., R. 7 W. (see Figure 2, *Vicinity Map*, attached).

Topographically the project site is characterized by alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. There are two drainages found on the project site that convey flow from the northwest to the southeast and merge with a defined flood control channel. Scrub communities dominate the project site. The project site has an approximately 14-acre area that has been heavily disturbed by past uses including an abandoned residence, ornamental and ruderal vegetation, and geotechnical trenching areas. Elevation on the project site ranges between 1,600 and 1,800 feet above mean sea level. Surrounding land uses include vacant land to the north, a County flood control channel to the east, sparse residential development to the southeast, a water treatment plant to the south, and residential development to the west. A utility corridor with overhead power lines is adjacent to the northern property boundary.

#### SUMMARY OF REGULATIONS

There are three key agencies which regulate activities within inland streams, wetlands, and riparian areas in California. The ACOE Regulatory Program regulates activities pursuant to Section 404 of the Federal Clean Water Act (CWA), the CDFG regulates activities within wetlands under the Fish and Game Code Section 1600-1607, and the RWQCB under Section 401 of the Federal CWA and the California Porter Cologne Act.

The ACOE regulates "discharge of dredged or fill material" into "Waters of the U.S.," which includes tidal waters, interstate waters, and "all other waters, interstate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce or which are tributaries to waters subject to the ebb and flow of the tide" (933 C.F.R. 328.3(a)), pursuant to provisions of Section 404 of the CWA. In accordance with Section 1601 of the California Fish and Game Code (Streambed Alteration), the CDFG regulates activities which "will substantially divert, obstruct, or substantially change the natural flow or bed, channel or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit." The ACOE generally takes jurisdiction within rivers and streams to the "ordinary high water mark" (OHWM) determined by erosion, the deposition of vegetation or debris, and changes in vegetation. The CDFG takes jurisdiction to the bank of the stream or to the limit of the adjacent riparian vegetation.

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#### Mr. John Schafer **RICHLAND COMMUNITIES, INC.** December 20, 2002 - Page 3



Any development proposal that involves impacting the drainages, streams or wetlands on the Site through filling, stockpiling, conversion to a storm drain, channelization, bank stabilization, road or utility line crossings, or any other modification would require permits from the ACOE, RWQCB, and CDFG before any development could commence on-site. Both permanent and temporary impacts are regulated and would trigger the need for these permits. Processing of the 401 and 1603 can occur concurrently with the ACOE permit process and can utilize the same information and analysis. The ACOE will not issue its authorization until the Water Board completes the Section 401 permit. Applications to the Water Board for a Section 401 permit and CDFG for a 1603 permit both require submittal of a valid document required by the California Environmental Quality Act.

#### METHODS

Prior to visiting the site, a review of historic and current aerial photographs, USGS topographic map, and the Los Angeles county soil survey map was conducted. The purpose of this review was to identify current drainage features in the vicinity and make preliminary determinations on their jurisdictional status based on historic, natural drainage patterns. Drainage features were then "groundtruthed" during field observations to obtain characteristic measurements and detailed descriptions. The entire site was evaluated and all areas which fall under the jurisdiction of the ACOE and/or the CDFG were identified. ACOE jurisdictional wetlands were delineated using a routine determination according to the methods outlined in the Corps of Engineers Wetland Defineation Manual (1987) based on hydrologic and edaphic features, and on the vegetation composition of the site. Non-wetland "Waters of the U.S." were delineated based on the limits of the OHWM as determined by erosion, the deposition of vegetation or debris, and changes in vegetation. The CDFG jurisdiction was defined to the bank (OHWM) of the stream/channels or to the limit of the adjacent riparian vegetation.

PCR staff ecologists used the definitions identified above, as well as the diagnostic environmental characteristics and ACOE approved procedures for the determination of jurisdictional "Waters of the U.S." and delineation of wetlands. Each area was examined for evidence of an OHWM, saturation, and/or wetland vegetation. If any of these criteria were met, a series of transects were run to determine the extent of jurisdictional waters.

#### Vegetation

Vegetation is considered wetland vegetation if prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic conditions described in the definition above. Hydrophytic species have morphological, physiological, and/or reproductive adaptation(s), which enable them to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Prevalent vegetation is generally defined as greater than 50 percent of the dominant species would be obligate wetland species (OBL), facultative wetland species (FACW), or facultative species with greater probability of occurrence in wetlands (FAC+).

#### Mr. John Schafer **RICHLAND COMMUNITIES, INC.** December 20, 2002 - Page 4



#### Soils

Soils are considered hydric if they have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions. Hydric soils are those which are flooded, or ponded long enough during the growing season to develop anaerobic conditions.

#### Hydrology

Hydrology is present if the area is inundated either permanently or periodically at mean water depths  $\leq 6.6$  feet, or soil is saturated to the surface at some time during the growing season of the prevalent vegetation.

In southern California with its Mediterranean climate, most streams have only ephemeral or intermittent flows and only a very small number are considered perennial watercourses. With only limited winter rainfall, there is generally not enough water for most ephemeral or intermittent streams to form well-established hydric soils. The result is that most riparian areas in the southwest do not meet the ACOE definition of a wetland but are only considered "waters". However, this does not mean these areas have less value, on the contrary, these areas have proportionally higher value and functional capacity than eastern wetlands. Southwestern riparian areas function as a refuge during the long, hot summers and provide valuable foraging and breeding habitat for a wide variety of species.

The CDFG has a broader definition on what constitutes jurisdictional "Waters of the State" of California. The CDFG determines jurisdiction based on established scientific criteria. Wetland categories which CDFG regulates include (but are not limited to) freshwater marshes, wet meadows, vernal pools, riparian woodland, riparian scrub, and coastal salt marshes. The following activities are regulated if the project will:

- 1. divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake designated by the Department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit;
- 2. use material from the streambeds designated by the Department; or
- 3. result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by the department.

#### RESULTS

The Etiwanda property is located within a portion of an alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. These processes form several major drainages which channel the high flows and a myriad of minor drainage channels which form an intricate network and carry the smaller flows during storm events. These major drainages migrate slowly across the fan as material is deposited during storm events. In the arid southwest, these major channels may take 50-100 years to migrate across a large fan. In the case of this property, the high flows are being confined to two major channels on-site and through a flood control channel at the southern property

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boundary. The smaller drainages found on the project site are local drainage courses which convey runoff from rain falling on the fan itself.

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As shown in Figure 3, *Etiwanda Site Drainages*, attached, the project site contains three jurisdictional drainages, labeled Drainage 1, 2, and 3. The drainges total 6,335 linear feet and support 1.13 acres of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State." Jurisdictional areas immediately adjacent to the site are within reaches of the three aforementioned drainages. Jurisdictional determinations were made for off-site portions of these drainages to the extent they may be impacted by activities associated with the Etiwanda Subdivision (Tentative Tract 16072) development project. Drainages measured adjacent to the site include approximately 4,342 linear feet and 0.98 acre of ACOE and CDFG jurisdictional streambed. None of the areas meet the ACOE definition of a jurisdictional wetland due to the lack of hydrophytic vegetation and hydric soils. The site investigation also identified other very minor drainages which exhibited indications of water flow. However, after consultation with the ACOE, these minor drainages were not considered jurisdictional because their width was less than one foot, the OHWM was not distinctive over the entire length, and there was no riparian or wetland vegetation present in or around the area. A brief description of the drainages is provided below.

Drainage 1 is an ephemeral stream which flows from the northwest to southeast. This drainage channel begins at the confluence of the concrete flood control channel which is located at the northwestern corner of the property adjacent to the housing complex and a natural channel which flows from the northwest to the southeast and merges with a defined flood control channel which parallels the southern boundary of the site. Drainage 1 is approximately 3,300 feet long and the average OHWM is 9.5 feet wide within the property. Clear evidence of an OHWM was observed. Very limited riparian vegetation, including four sycamore trees, has become established in the upper reaches. The remainder of the drainage has only upland vegetation such as mugwort, pine-bush, coyote bush, buckwheat, scalebroom, white sage and California sagebrush. Soils were rocky, sandy, and well drained with some leaf litter. On-site this drainage supports approximately 0.72 acre of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State." Jurisdiction immediately north of the site was measured for approximately 865 linear feet north of the property boundary within Drainage 1. The OHWM is an average of 7.4 feet wide within that reach. This off-site reach encompasses approximately 0.28 acre of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State."

Drainage 2 is an ephemeral stream found on the eastern side of the property which flows from the northwest to the southeast. It flows off-site and also eventually merges with the flood control channel on the southern boundary. Drainage 2 is approximately 1,310 feet long and an average of 3 feet wide within the property boundary. Evidence of an OHWM was observed. There was no riparian vegetation in or around this drainage, only upland vegetation such as pine-bush, buckwheat, white sage, deerweed, and California sagebrush. Soils were sandy and well drained with no evidence of organic layers. On-site this drainage supports approximately 0.09 acre of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State." Jurisdiction immediately adjacent to the site was measured for approximately 1,747 linear feet beyond the eastern property boundary within Drainage 2. The OHWM is an average of 10.2 feet wide within that reach. This off-site reach encompasses approximately 0.41 acre of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State".

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Drainage 3 is a flood control channel that flows from west to east along the southern edge of the property boundary. This drainage conveys local surface run off from rain and the adjacent housing development and has no inlet or culvert. Drainage 3 is approximately 1,725 feet long and 8 feet wide within and immediately adjacent to the property. Evidence of an OHWM was observed. There was no riparian vegetation in or around this drainage, only upland vegetation such as pine-bush, white sage, and California sagebrush. Soils were sandy and well drained with no evidence of organic layers. On-site this drainage supports approximately 0.32 acre of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State". Jurisdiction immediately adjacent to the site was measured for approximately 1,731 linear feet beyond the southeastern property boundary within Drainage 3. The OHWM is an average of 7.4 feet wide within that reach. This off-site reach encompasses approximately 0.29 acre of ACOE jurisdictional "Waters of the State."

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#### **CONCLUSIONS**

The Etiwanda property contains a total of three jurisdictional drainages totaling approximately 6,335 linear feet on-site. In addition, 4,343 linear feet within these three drainages were measured offsite. There are 1.13 acres of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State" on-site. In addition 0.98 acre of ACOE jurisdictional "Waters of the U.S." and CDFG jurisdictional "Waters of the State" were measured off-site. All drainages are ephemeral, and most likely only contain flowing water during storm events. There is little or no evidence of riparian vegetation (four sycamore trees within Drainage 1) and no wetlands were observed. Drainages 1, 2, and 3 have been characterized as jurisdictional waters due to the presence of hydrology indicators OHWM and photographic evidence of historical drainages patterns in the vicinity. Drainage 1 and 3 are indicated on USGS topographic maps as blue-line streams. The habitat on the project site typifies alluvial out-wash areas found to the west of the peninsular mountain ranges in southern California.

Table 1
Etiwanda Subdivision
Summary of Jurisdictional Area

	On-site Length (ft.)	Off-site Length (ft.)	On-site ACOE (acres)	Off-site ACOE (acres)	On-site CDFG (acres)	Off-site CDFG (acres)	Nature
Drainage 1	3,300	865	0.72	0.28	0.72	0.28	Ephemeral
Drainage 2	1,310	1,747	0.09	0.41	0.09	0.41	Ephemeral
Drainage 3	1,725	1,731	0.32	0.29	0.32	0.29	Ephemeral
Total	6,335	4,343	1.13	0.98	1.13	0.98	
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Source: PCR Services Corporation 1998 and 2002

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Final Report



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APPENDIX A - 2002 SAN BERNARDINO KANGAROO RAT TRAPPING PROGRAM, ETIWANDA TENTATIVE TRACT 16072, TRAPPING BOUTS 1 AND 2.

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# San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) Trapping Program Etiwanda Tentative Tract 16072 San Bernardino County, California

## 1.0 INTRODUCTION

A focused trapping program was conducted to determine the presence/absence of the federally endangered San Bernardino kangaroo rat (*Dipodomys merriami parvus*), (SBKR) within those areas directly or indirectly impacted by the proposed Etiwanda Tentative Tract 16072 proposed development (Project Site) including all suitable habitats located within the Edison Corridor (immediately north of the project site), east tributaries, and East and West Avenue extensions.

## 1.1 SAN BERNARINO KANGAROO RAT NATURAL HISTORY

The SBKR was first described in 1894. It is the most highly differentiated of the nineteen recognized subspecies of Merriam's kangaroo rat (Dipodomys merriami). Historically, this subspecies was known to occur in at least 25 locations within its range. Today it has been reduced to eight known locations of which only four, including Santa Ana Wash, San Jacinto Wash, Lytle Creek and Cajon Wash, contain substantial populations. The remaining populations are threatened by habitat loss and fragmentation in conjunction with urban development, flood control projects, off-road vehicle use, and sand and gravel mining operations and include Bautista Creek and Etiwanda alluvial fan (USFWS 2002). In an attempt to reverse the trend, the SBKR was designated by the United States Fish and Wildlife Service (USFWS) as a Category 2 candidate species for federal listing as endangered or threatened in 1991. In 1994, the USFWS reviewed new information supporting the proposal for listing and elevated its status to Category 1. Subsequently, the SBKR was emergency listed as endangered on January 27, 1998 and formally listed on September 24, 1998 (USFWS). In addition, the California Department of Fish and Game (CDFG) listed it as a "Species of Special Concern". This species is primarily found on sandy loam substrates, characteristic of alluvial fans and floodplains (USFWS 1994). These habitats are generally dominated by alluvial scrub vegetation, which consists of chaparral and sage scrub species.

On April 23, 2002, the USFWS designated 13,485 hectares (33,295 acres) of land in Riverside and San Bernardino counties, California, as critical habitat for the endangered SBKR. The USFWS states:

"Critical habitat identifies geographic areas that are important for the conservation of a threatened or endangered species and which may require special management considerations. However, a designation does not affect

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land ownership or establish a refuge, wilderness, reserve, preserve, or other special conservation area. It does not allow government or public access to private lands and does not close areas to all access or use. Rather, its impact is that federal agencies must consult with the Service on activities they undertake, fund, or permit that may affect critical habitat.

The areas designated as critical habitat are identified in four separate units. The four units are within the geographical range of the San Bernardino kangaroo rat and support the habitats the species requires for foraging, sheltering, reproduction, rearing of young, dispersal, and genetic exchange." USFWS 2002.

Specifically, the project site is located completely within critical habitat Unit 4: Etiwanda Alluvial Fan Wash. As stated by the USFWS:

"The Etiwanda Alluvial Fan and Wash which encompass approximately 1.950 ha (4,820 ac.), is located in western San Bernardino County and represents the approximate westernmost extent of the known range of the San Bernardino kangaroo rat. Within the northern boundary of the unit are portions of San Bernardino National Forest. This unit includes lands within and between the active hydrological channels of Deer, Day, and Etiwanda creeks. A large alluvial fan, floodplains, and terraces occur throughout the unit. Soils are primarily sandy or sandy loarn and support alluvial fan sage scrub. This unit also includes portions within the boundaries of the cities of Rancho Cucarnonga and Fontana; and the approximately 310 ha (760 ac) North Etiwanda Preserve" (USFWS 2002).

# 1.2 PROJECT SITE LOCATION/DESCRIPTION

The project site is located in unincorporated San Bernardino County (County) north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue north of the City of Rancho Cucamonga as shown in Figure 1, Regional Map. The project site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains, approximately 0.9 km (0.6 mile) south of the North Etiwanda Preserve as shown in Figure 2, Vicinity Map. The project site is contained on the United States Geological Survey (USGS) 7.5' Cucamonga Peak Quadrangle, in Section 24, T1N, R7W as shown in Figure 2, Vicinity Map. The elevation of the project site is approximately 488 m to 549 m (1,600 to 1,800) feet above mean sea level (MSL).

As described by PCR Services Corporation:

"Topographically, the project site is characterized by alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. There are two major drainages found on the project site which convey flows from the northwest to the southeast and merges with a defined flood control channel. Riversidean sage scrub dominates the project site with small drainages forming a network throughout the project site. The

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project site has an approximately 14-acre area that has been heavily disturbed by past uses including an abandoned residence, ornamental and ruderal vegetation, and geotechnical trenching areas. Surrounding land uses include vacant land to the north, a County flood control channel (Etiwanda Spreading Grounds) to the east, sparse residential development to the southeast, a water treatment plant to the south, and residential development to the west. A utility corridor with overhead power lines (Edison Corridor) is adjacent to the northern property boundary." (PCR Services Corporation 2001)

# 1.3 PROPOSED PROJECT/DESCRIPTION

The proposed project provides for the development of single-family detached residential units, multi-purpose trails, and open space paseos and areas on approximately 160 acres of undeveloped land. Landscape areas would be provided adjacent to all internal roadways, within an enhanced parkway in the primary internal north-south street, within an enhanced parkway on the north side of Wilson Avenue, and within in a paseo on the south side of Wilson Avenue (PCR Services Corporation 2001).

The discussion of natural community names and hierarchical structure follows the CDFG List of California Terrestrial Natural Communities Recognized by the Natural Diversity Data Base, January 1999 Edition. A brief summary of each natural community is discussed below. Natural community descriptions are based on PCR Services Corporation findings, Sawyer and Keeler-Wolfe (1995), and/or Holland (1986), as appropriate. In addition, a description of the locations on the project site and the variations of the community are discussed. Listed with each natural community is the CNDDB community code. Natural communities are mentioned in hierarchical order according to the CNDDB (PCR Services Corporation 2001).

# Riversidean Alluvial Fan Sage Scrub (32.005.02)

Riversidean alluvial fan sage scrub is distinguished by its vegetative composition, including being dominated by more mesic species than most coastal sage scrub stands. This community may be found on sandy, rocky alluvia deposited by streams and is adapted to harsh outwash conditions with porous, low fertility substrate. Riversidean alluvial fan sage scrub is considered a distinct and rare plant community found primarily on alluvial fans and flood plains along the southern bases of the Transverse Ranges and portions of the Peninsular Range in southern California (CNDDB 1999). Scalebroom (*Lepidospartum squamatum*), considered indicative of the alluvial scrub association, is also referred to as "scalebroom series" by Sawyer and Keeler-Wolf (1995). Riversidean alluvial sage scrub consists of numerous evergreen shrubs, a diverse assemblage of sub-shrubs, a springtime ground cover of annual wildflowers, and scalebroom, a shrub with high fidelity to alluvial substrates (Hanes et al. 1989). Smith (1980) describes three types of alluvial scrub recognized as pioneer, intermediate, and mature stands each containing scalebroom as a dominant species.

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The Etiwanda project site supports typical characteristic plants of Riversidean alluvial fan sage scrub throughout the drainage bisecting the project site flowing northwest to southeast. Plant species found on the project site include scalebroom, white sage (*Salvia apiana*), California sagebrush (*Artemesia californica*), California buckwheat (*Eriogonum fasciculatum*), black sage (*Salvia mellifera*), yerba santa (*Eriodictyon trichocalyx*), pinebush (*Ericameria pinifolia*), locoweed (*Astragalus spp.*), deerweed (*Lotus scoparius*), California aster (*Lessingia filaginifolia*), California croton (*Croton californicus*), holly-leaved cherry (*Prunus ilicifolia*), bushmallow (*Malacothamnus fasciculatus*), hoaryleaf ceanothus (*Ceanothus crassifolius*), and green bark ceanothus (*Ceanothus spinosus*).

# Upland Riversidean Sage Scrub (32.005.00)

Riversidean sage scrub is the most xeric expression of coastal sage scrub in southern California. It is the driest, most inland expression of the collection of sage scrub or coastal scrub series, and ranges throughout southern California south into Baja California between approximately 457 m to 1,372 m (1,500 and 4,500) feet above MSL. Typically this low, open shrub occurs on dry sites such as steep slopes, severely drained soils or clays that release stored moisture slowly. This community consists of drought-deciduous low shrubs, averaging two to three feet in height, and an herbaceous understory.

The upland Riversidean sage scrub community, found along the step-like scrub covered terrace of the site, represents a predominant expression of alluvial fan sage scrub as a monotypic stand of white sage. Also known as white sage series in Sawyer and Keeler-Wolf (1995), this community is dominated by white sage or white sage co-dominant with California sagebrush. Plant species found throughout the terrace area on-site include white sage, California sagebrush, California buckwheat, pine-bush, locoweed, California aster, brome grass (*Bromus* spp.), deerweed, yerba santa, holly-leaved cherry, wand buckwheat (*Eriogonum elongatum*), green bark ceanothus, our Lord's candle (*Yucca whipplei*), wild oat (*Avena fatua*), storksbill (*Erodium cicutarium*), and California croton as shown in Figure 3, *Site Photographs*.

# Disturbed/Disturbed Upland Riversidean Sage Scrub (32.005.00)

Disturbed areas on the project site are mostly devoid of vegetation as the result of an abandoned residence and geotechnical trenching areas. In some areas there are small amounts of vegetation beginning to re-establish (predominately non-native, weedy species adapted to frequent disturbance) including Riversidean sage scrub species. Many of the characteristic species of disturbed habitat are also indicator species of non-native grasslands, but disturbed areas tend to be dominated more by forbs than grasses as shown in Figure 4, *Site Photographs*.

Types of disturbed areas found on the project site include cleared land, geotechnical trenching areas, and dirt access roads. Ruderal vegetation found on the project site includes non-native grasses and a high proportion of weedy species including castor bean (*Ricinus communis*), telegraph weed (*Heterotheca grandiflora*), and black mustard (*Brassica nigra*). There are also eight Southern California black walnut trees located in the immediate vicinity of the abandoned residence as shown in Figure 4, *Site Photographs*.

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Top: Northeast view from the southwest corner of the project site. Bottom: Northwest view from the southeast corner of the project site. Upland Riversidean sage scrub is the dominant vegetation community occurring onsite as shown in both photographs.

Figure 3 - Site Photographs Etiwanda Tentative Tract 16072 San Bernardino Kangaroo Rat Trapping Program



## Ornamental Landscaping (99.900.06)

Developed and otherwise disturbed areas on the project site have ornamental landscaping species which include blue gum (*Eucalyptus globulus*), Peruvian pepper tree (*Schinus molle*), olive tree (*Olea europaea*), oleander (*Nerium oleander*), and silk tree (*Albizia julibrissin*) as shown in Figure 4, *Site Photographs*.

## 2.0 METHODOLOGY

In a collective effort to adequately determine presence/absence of the SBKR within and adjacent to those areas potentially impacted by the proposed project, two separate trapping bouts were conducted. Each trapping bout consisted of 240 traps set and checked for 5 consecutive days/nights for a total of 2,400 trap nights (one trap night = one trap set and checked for one night) as shown in Figure 5, *Trapline Locations*. Nine inch (modified) and twelve inch Sherman live traps were alternated throughout the trap lines resulting in 120 nine inch and 120 twelve inch traps set per bout. Each trap was baited with an oatmeal/seed mix. All animals captured were identified. In addition, all target species were measured. Measurements included HF-hind foot (mm), E-ear (mm), T-tail (mm), BL-body length (mm), and TL-total length. All traps were placed near characteristic k-rat/small mammal sign (active burrow entrances/dust baths, runways, etc.).

Specifically, 400 traps were placed in transects located throughout the project site or immediately adjacent to the northern (Edison Corridor) and southeast boundary, 60 traps were set in a rivulet (east of the project site boundary) extending in a southeast direction toward the Etiwanda Spreading Grounds, and 20 traps were set adjacent to the intersection of unimproved East and Wilson Avenues for a total of 480 traps. The trapping effort (480 traps) conducted within (160 acres) or immediately adjacent (approximately 35 acres) to the project site represented a density of 2.5 traps/acre.

All trapping was conducted by Ruben S. Ramirez, Jr. of Cadre Environmental as authorized by USFWS Federal Permit 780566 and CDFG Memorandum of Understanding, while assisted by Jason Berkley of PCR Services Corporation. Trapping bout 1 was conducted from August 27<sup>th</sup> to August 31<sup>st</sup>, 2002 and trapping bout 2 was conducted from September 24<sup>th</sup> to September 28<sup>th</sup>, 2002.

# 3.0 RESULTS

No SBKR were captured during the trapping program. However, three (3) sensitive species were documented and include the Los Angeles pocket mouse (*Perognathus longimembris brevinasus*) a California Special Concern and Forest Service Sensitive Species and northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*) and San Diego desert woodrat (*Neotoma lepida intermedia*), California Special Concern Species as



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shown in Figures 6 and 7, *Mammal Photographs*. Eight (8) additional small mammal species were captured during the trapping program including the California pocket mouse (*Chaetodipus californicus*), Dulzura kangaroo rat (*Dipodomys simulans*), California mouse (*Peromyscus californicus*), western harvest mouse (*Reithrodontomys megalotis*), cactus mouse (*Peromyscus eremicus*), deer mouse (*Peromyscus maniculatus*), dusky-footed woodrat (*Neotoma fuscipes*), and house mouse (*Mus musculus*) as shown in Appendix A, 2002 San Bernardino Kangaroo Rat Trapping Program – Etiwanda Tentative Tract 16072, Trapping Bout 1 and 2.

Although no SBKR were documented during the trapping program, four (4) observations have been documented approximately 700 m (2,297 feet) southeast of the project site within and adjacent to the southern portion of the Etiwanda Spreading Grounds (USFWS 2002) as shown in Figure 5, *Trapline Locations*. The project site is also contained within the USFWS designated critical habitat as shown in Figure 5, *Trap Line Locations*. As stated previously, "The fact that a project occurs within a designated critical habitat for a listed species does not allow the government or public access to private lands and does not close areas to all access or use; rather, its impact is that federal agencies such as the US Army Corps of Engineers (Corps) must consult with the USFWS on activities they undertake, fund, or permit that may affect critical habitat. Specifically, in the event the tributaries located within the project site are regulated by the Corps, consultation with the USFWS would be required.



Los Angeles Pocket Mouse (*Perognathus longimembris brevinasus*) - California Special Concern Species (CSC), Forest Service Sensitive (FS)



Dulzura Kangaroo Rat (Dipodomys simulans)

Figure 6 - Mammal Photographs Etiwanda Tentative Tract 16072 San Bernardino Kangaroo Rat Trapping Program



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Northwestem San Diego Pocket Mouse (*Chaetodipus fallax fallax*) - California Special Concern Species (CSC).



California Pocket Mouse (juvenile) (Chaetodipus californicus)

Figure 7 - Mammal Photographs Etiwanda Tentative Tract 16072 San Bernardino Kangaroo Rat Trapping Program



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## **APPENDIX A**

# 2002 San Bernardino Kangaroo Rat Trapping Program Etiwanda Tentative Tract 16072

# **Trapping Bout 1**

	8/27	8/28	8/29	8/30	8/31	Total
Number of Traps	240	240	240	240	240	1,200
Species						
*Los Angeles pocket mouse (Perognathus longimembris brevinasus)	7	5	9	5	7	33
California pocket mouse (Chaetodipus californicus)	0	0	0	1	4	5
**Northwestern San Diego pocket mouse (Chaetodipus fallax fallax)	49	66	73	78	97	363
Dulzura Kangaroo Rat (Dipodomys simulans)	2	5	4	5	6	22
California mouse (Peromyscus californicus)	7	6	7	2	3	25
Western harvest mouse (Reithrodontomys megalotis)	0	0	0	1	0	1
Cactus mouse (Peromyscus eremicus)	4	7	5	8	7	31
Deer mouse (Peromyscus maniculatus)	11	7	10	7	5	40
Dusky-footed woodrat (Neotoma fuscipes)	0	0	0	1	0	1
**San Diego desert woodrat (Neotoma lepida intermedia)	8	4	8	5	3	28
House mouse (Mus musculus)	0	0	0	0	0	0
Total	88	100	116	113	132	549
Capture Ratio %	37	42	48	47	55	45

Source: Cadre Environmental 2002

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\*California Special Concern Species, Forest Service Sensitive \*\*California Special Concern Species

## **APPENDIX A - continued**

# 2002 San Bernardino Kangaroo Rat Trapping Program Etiwanda Tentative Tract 16072

# **Trapping Bout 2**

	9/24	8/25	8/26	8/27	8/28	Total
Number of Traps	240	240	240	240	240	1,200
Species						
*Los Angeles pocket mouse (Perognathus longimembris brevinasus)	6	4	8	12	6	36
California pocket mouse (Chaetodipus californicus)	0	2	1	1	2	6
**Northwestern San Diego pocket mouse (Chaetodipus fallax fallax)	48	52	70	73	59	302
Dulzura Kangaroo Rat (Dipodomys simulans)	6	3	3	7	11	30
California mouse (Peromyscus californicus)	14	8	13	8	7	50
Western harvest mouse (Reithrodontomys megalotis)	2	0	1	0	0	3
Cactus mouse (Peromyscus eremicus)	4	4	7	0	3	18
Deer mouse (Peromyscus maniculatus)	5	2	0	7	4	18
Dusky-footed woodrat (Neotoma fuscipes)	0	0	0	0	0	0
**San Diego desert woodrat (Neotoma lepida intermedia)	2	6	5	6	4	23
House mouse Mus musculus)	0	0	1	0	0	· 1
Total	87	81	109	114	96	487
Capture Ratio %	36	34	45	48	40	41

Source: Cadre Environmental 2002

\*California Special Concern Species, Forest Service Sensitive

\*\*California Special Concern Species

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September 20, 2001

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Robert Henninger RICHLAND COMMUNITIES, INC. 3 Imperial Promenade, Suite 150 Santa Ana, California 92707

# Re: Results of Focused Sensitive Plant Surveys for the Etiwanda Project Site, San Bernardino County, California

Dear Mr. Henninger:

This report presents the findings of focused sensitive plant surveys for the Etiwanda project site in San Bernardino County, California. PCR Services Corporation (PCR) biologists conducted surveys within the 130-acre study area to determine the presence or absence of special status plant species potentially located within the project site. Plummer's mariposa lily (*Calochortus plummerae*) [California Native Plant Society (CNPS) List 1B (Rare, Threatened, or Endangered in California and Elsewhere)] and Southern California black walnut (*Juglans californica*) [CNPS List 4 (Species of limited distribution in California, but whose existence does not appear to be susceptible to threat.)] were observed on-site.

# STUDY AREA

The project site consists of approximately 130 acres of undeveloped land in an unincorporated area of San Bernardino County located north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue just north of the City of Rancho Cucamonga (see Figure 1, *Regional Map*, attached). The project site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. The project site is contained on the United States Geological Survey (USGS) 7.5' Cucamonga Peak Quadrangle, in Section 24, T. 1 N., R. 7 W. (see Figure 2, *Vicinity Map*, attached).

Topographically the project site is characterized by an alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. There are two drainages found on the project site that convey flow from the northwest to the southeast and merge with a defined flood control channel. Upland Riversidean sage scrub dominates the project site. The project site has an approximately 14-acre area that has been heavily disturbed by past uses including an abandoned residence, ornamental and ruderal vegetation, and geotechnical trenching areas. Elevation on the project site ranges between 1,600 and 1,800 feet above mean sea level. Surrounding land uses include vacant land to the north, a County flood control channel to the east, sparse residential development to the southeast, a water treatment plant to the south, and residential development to the west. A utility corridor with overhead power lines is adjacent to the northern property boundary.



# VEGETATION

The discussion of vegetation/plant community names and hierarchical structure follows the California Department of Fish and Game's (CDFG) List of California Terrestrial Natural Communities Recognized by the Natural Diversity Database.' A brief summary of each plant community is discussed below. Community descriptions are based on PCR findings, Sawyer and Keeler-Wolfe,<sup>2</sup> and/or Holland,<sup>3</sup> as appropriate. In addition, a description of the locations on the project site and the variations of the community are discussed. Listed with each community are two numbers: the first is the California Natural Diversity Database (CNDDB) community code, the second is the on-site community acreage. The locations of the communities on the project site are indicated in Figure 3, Locations of the Communities on the Project Site, attached.

# Riversidean Alluvial Fan Sage Scrub (32.005.02) (3.9 acres)

The Etiwanda project site supports typical characteristic plants of Riversidean alluvial fan sage scrub throughout the drainage bisecting the project site flowing northwest to southeast. Plant species found on the project site include scalebroom (Lepidospartum squamatum), white sage (Salvia apiana), California sagebrush (Artemisia californica), California buckwheat (Eriogonum fasciculatum), black sage (Salvia mellifera), yerba santa (Eriodictyon trichocalyx), pine-bush (Ericameria pinifolia), locoweed (Astragalus trichopodus), deerweed (Lotus scoparius), California aster (Lessingia filaginifolia), California croton (Croton californicus), holly-leaved cherry (Prunus ilicifolia), bushmallow (Malacothamnus fasciculatus), hoaryleaf ceanothus (Ceanothus crassifolus), green bark ceanothus (Ceanothus spinosus), western sycamore (Platanus racemosa), mule fat (Baccharis salicifolia), mugwort (Artemisia douglasiana), and blue wildrye (Elymus glaucus). Very limited riparian vegetation in one of the drainages consists of three western sycamore trees that have become established in the upper reaches.

# Upland Riversidean Sage Scrub (32.005.00) (116.3 acres)

Riversidean sage scrub is the most xeric expression of coastal sage scrub in southern California. It is the driest, most inland expression of the collection of sage scrub or coastal scrub series, and ranges throughout southern California south into Baja California between approximately 1,500 and 4,500 feet above msl. Typically this low, open shrub occurs on dry sites such as steep slopes, severely drained soils or clays that release stored moisture slowly. This community consists of drought-deciduous low shrubs, averaging two to three feet in height, and an herbaceous understory.

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State of California. Department of Fish and Game. Wildlife & Habitat Data Analysis Branch. California Natural Diversity Database. October 13, 2000. List of Terrestrial Natural Communities Recognized by the California Natural Diversity Database. 65pp.

Sawyer, John O. and T. Keeler-Wolf. 1995. A Manual of California Vegetation. Sacramento: California Native Plant Society.

Holland, R. F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, California: State of California Resources Agency, Department of Fish and Game, Non-Game Heritage Program.

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# Robert Henninger RICHLAND COMMUNITIES, INC. September 20, 2001 - Page 3



The upland Riversidean sage scrub community, found along the step-like scrub covered terraces of the site, represents a predominant expression of alluvial fan sage scrub as a monotypic stand of white sage. Also referred to as white sage series by Sawyer and Keeler-Wolf, this community is dominated by white sage or white sage is co-dominant with California sagebrush. Plant species found throughout the terrace area on-site include white sage, California sagebrush, California buckwheat, pine-bush, locowced, California aster, brome grass (*Bromus* spp.), deerweed, yerba santa, holly-leaved cherty, wand buckwheat (*Eriogonum elongatum*), green bark ceanothus, our Lord's candle (*Yucca whipplei*), wild oat (*Avena* fatua), storksbill (*Erodium cicutarium*), and California croton.

# Disturbed (N/A) (8.7 acres)

Disturbed areas on the project site are mostly devoid of vegetation or contain predominately non-native, weedy species adapted to frequent disturbance. Types of disturbed areas found on the project site include cleared land, geotechnical trenching areas, and dirt access roads. Plant species found on the project site include non-native grasses and a high proportion of weedy species including castor bean (*Ricinus communis*), storksbill, telegraph weed (*Heterotheca grandiflora*), black mustard (*Brassica nigra*), and wild oat.

# Ornamental Landscaping (99.900.06) (1.5 acres)

Developed and otherwise disturbed areas on the project site have otnamental landscaping species including blue gum (*Eucalyptus globulus*), Peruvian pepper tree (*Schinus molle*), olive tree (*Olea europaea*), oleander (*Nerium oleander*), and silk tree (*Albizia julibrissin*). There are also eight Southern California black walnut trees located in the immediate vicinity of the abandoned residence.

# METHODOLOGY

Surveys were conducted in accordance with survey guidelines published in the *Inventory of Rare* and Endangered Vascular Plants of California<sup>4</sup>. These guidelines have also been adopted by the CDFG. Sensitive plants include those species State and Federally listed as endangered or threatened under the Federal or California Endangered Species Acts, or rare under the California Native Plant Protection Act. Sensitive plants include those listed, or candidates for listing by the CDFG,<sup>5,6</sup> and the CNPS (particularly lists 1A, 1B, and 2). The rare and endangered plants listed in Attachment A, Sensitive Plant Species Table, have either been observed or are known to occur within the vicinity of the site.

<sup>&</sup>lt;sup>4</sup> Skinner, M. W., and B. M. Pavlik. 1994. California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California. California Native Plant Society. Special Publication No. 1, 5<sup>th</sup> ed. Sacramento, California.

<sup>&</sup>lt;sup>5</sup> State of California Resources Agency. January 2001. Department of Fish and Game. Natural Heritage Division. State and Federally Listed Endangered, Threatened, and Rare Plants and California. Sacramento.

<sup>&</sup>lt;sup>6</sup> State of California Resources Agency. July 2001. Department of Fish and Game. Natural Diversity Database. Special Vascular Plants, Bryophytes, and lichens List. Biannual publication.



Surveys for sensitive plants were conducted by PCR biologists Jenni Snibbe, Kristin Szabo, and Marc Blain on April 12, 17, 24, and May 7, 30, June 1, 13, 20, 27, 2001. Collectively, survey dates encompassed the flowering periods of all sensitive plants potentially occurring on-site. Methods used included slowly walking over all portions of the site. Close attention was paid to all sensitive plant species that have the potential to occur in the vicinity of the project site and were reported in the CNDDB including, Robinson's pepper-grass (Lepidium virginicum var. robinsonii), many-stemmed dudleya (Dudleya multicaulis), Southern California black walnut (Juglans californica), Hall's monardella (Monaredella macrantha ssp. hallii), Pringle's monardella (Monardella pringlei), pygmy poppy (Canbya candida), Santa Ana river woollystar (Eriastrum densifolium ssp. Sanctorum), Parry's spineflower (Chorizanthe parryi var. parryi), slender-horned spineflower (Chorizanthe parryi var. parryi), Plummer's matiposa lily (Calochortus plummerae), intermediate matiposa lily (Calochortus weedii vat. intermedius), thread-leaved brodiaea (Brodiaea filifolia), and California muhly (Muhlenbergia californica). These methods were intensified within suitable habitat areas. Other plant species surveyed for that typically occur at elevations above 4,500 feet were reported in the CNDDB within the Cucamonga Peak quad including Laguna mountains jewel-flower, (Streptianthus bernardinus) San Gabriel linanthus (Linanthus concinnus), Johnston's buckwheat (Eriogonum microthecum var. johnstonii), and Peirson's spring beauty (Claytonia lanceolota var. peirsonii). All plant species observed were recorded in field notes or collected and later identified using taxonomic keys. A list of all plant species observed on-site is included in the attached compendium (Attachment B, Plant Compendium). Plant taxonomy follows Hickman'. Common plant names, when not available from Hickman, were taken from Munz<sup>8</sup> and McAuley<sup>2</sup>. Scientific names are included only during the first mention of the species. Thereafter, common names alone are used.

It should be noted that the species accounts below reflect available information and the findings of focused plant surveys contributing to this report. It is acknowledged that plant population numbers (particularly among annual species) do vary from year to year depending on environmental factors (e.g., rainfall, temperatures), other natural phenomena (e.g., wild fires) and physical features (e.g., elevational ranges, aspect). Therefore, some sensitive plant populations may vary in their detectability from season to season. From a purely scientific standpoint this potential for variation may seem problematic. From a practical standpoint and pursuant to CEQA, however, biological assessments are based on the best available information including reasonable field study efforts. In the case of this assessment, every effort was made to conduct surveys for sensitive plants during the peak flowering periods and varying habitat associations for these species.

# Results

Plummer's mariposa lily and Southern California black walnut were observed on-site. All plant species observed were recorded in field notes and are included in the Plant Compendium (attached). Plummer's mariposa lily was observed growing in abundance throughout the upland Riversidean sage

Hickman, J. C. 1993. The Jepson Manual: Higher Plants of California. Berkeley: University of California Press.

Munz, P. A., 1974. A Flora of Southern California. Berkeley: University of California Press.

McAuley, M. 1996. Wildflowers of the Santa Monica Mountains. Canoga Park: Canyon Publishing.

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# Robert Henninger **RICHLAND COMMUNITIES, INC.** September 20, 2001 - Page 5



Attachment 3, Page 323 of 608

scrub plant community. The project site is estimated to support a population of thousands of individuals randomly scattered as single plants and as clusters of varying densities, especially along the bare areas. In addition, a small stand of approximately eight Southern California black walnut trees were observed within the abandoned residence area on-site.

Other sensitive plant species have been found in the general vicinity of the Etiwanda project site and could potentially occur on-site, but no other sensitive plant species were observed during the April-June 2001 sensitive plant surveys.

Should you have any questions regarding the methodology or findings in this report, please do not hesitate to contact Steven G. Nelson or Jenni J. K. Snibbe at (949) 753-7001.

# Sincerely, PCR SERVICES CORPORATION

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Steven G. Nelson Director of Biological Services

Attachments

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Jenni Snibbe Biologist/Ecologist

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# ATTACHMENT A: SENSITIVE PLANT SPECIES TABLE

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# BRASSICACEAE - MUSTARD FAMILY

ROBINSON'S PEPPER-GRASS – Lepidium virginicum var. robinsonii		
USFWS Status:	None	
CDFG Status:	None	
CNPS Status:	List 1B	
Habitat:	Chaparral, coastal sage scrub	
Flowering Period:	January-July	
Life Form:	Annual herb	
Distribution:	Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties, Santa Cruz Island, Baia California	
Comments:	Threatened by erosion and feral herbivores. This species typically occurs at elevations above 1,500 feet.	

A single record of Robinson's pepper-grass was reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys, however there is a low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

# LAGUNA MOUNTAINS JEWEL-FLOWER – Streptianthus bernardinus

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 4
Habitat:	Chaparral, lower montane, coniferous forest
Flowering Period:	June-July
Life Form:	Perennial
Distribution:	Elevations above 4,500 feet
Comments:	Clay or decomposed granite soils.

Laguna mountains jewel-flower was not observed on the project site. This species typically occurs at elevations above 4,500 feet therefore there is nn potential for occurrence.

# CRASSULACEAE - STONECROP FAMILY

MANY-STEMMED DUDLEYA - Dudleya multicaulis USFWS Status: FSC CDFG Status: None CNPS Status: List 1B California plant communities, including sage scrub, valley and foothill grassland; heavy Habitat: clay soils or rock outcrops;-- variety of southern California. Flowering Period: May-June Life Form: Succulent perennial herb. Distribution: Repurted from Los Angeles County to San Onofre Mt. in San Diego County. Temescal Wash south of Arcilla, northwest slope of Estelle Mountain. Declining due to habitat loss. This species typically occurs at elevations below Comments: 2,000 feet.

Several records of Many-stemmed dudleya were reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

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# JUGLANDACEAE - WALNUT FAMILY

SOUTHERN CALIFORNIA BLACK WA	LNUT – Juglans californica
USFWS Status:	None
CDFG Status:	Walnut woodland/forest is a CDFG highest inventory priority community.
CNPS Status:	List 4
Habitat:	Sage scrub, chaparral, cismontane woodland; often in association with oaks/oak woodland; frequently found on steep hillsides with northern exposures; deep alluvial soils.
Flowering Period:	March-May.
Life Form:	Deciduous tree.
Distribution:	Ventura, LA, Orange, Riverside, San Bernardino, San Diego Connties – foothills. Especially abundant in Santa Monica Mountaius (center of dispersal for species).
Comments:	Declining natural community. This species typically occurs at elevations below 4,800 feet.

Southern California black waluut was observed on the project site. A small stand of approximately eight trees was observed within the abandoned residence area.

# LAMIACEAE - MINT FAMILY

HALL'S MONARDELLA - Monardella	e macrantha ssp. hallii
USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 1B
Habitat:	Lower montane coniferous forest, valleys and foothill grassland; broadleaf upland forest, chaparral, cismontane woodland.
Flowering Period:	June-August
Life Form:	Perennial herb.
Distribution:	Orange, Riverside, San Bernardino, and San Diego Counties.
Comments:	Intermediates to subspecies macrantha are common. This species typically occurs at
	cicvations octween 1,000 and 0,200 ieee.

A single record of Hall's monardella was reported in the CNDDB within the vicinity of the project site and potentially snitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locatious.

# PRINCLE'S MONARDELLA – Monardella pringlei

Mindeletin Mining	normal pressions	
USFWS Status:	None	
CDFG Status:	None	
CNPS Status:	List 1A	
Habitat:	Coastal sage scrub.	
Flowering Period:	May-June	
Life Form:	Annual herb.	
Distribution:	Riverside, San Bernardino	
Comments:	Habitat lost to urbanization. and 1,500 feet.	This species typically occurs at elevations between 900

A single record of Pringle's monardella was reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

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# PAPAVERACEAE – POPPY FAMILY PYGMY POPPY– Canbya candida

<u> </u>	
USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 4
Habitat:	Joshua tree woodland, Mojavean desert scrub
Flowering Period:	March-June
Life Form:	Annual herb
Distribution:	Kern, Los Angeles, San Bernardino
Comments:	Sandy places. This species typically occurs at elevations between 1,800 and 4.000 feet.

A single record of Pygmy poppy was reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

# POLEMONIACEAE -- PHLOX FAMILY

SANTA ANA RIVER WOOLLYSTAR – Eriastrum densifolium ssp. sanctorum

USFWS Status:	FE
CDFG Status:	SE
CNPS Status:	List1B
Habitat:	Chaparral, sage scrub (alluvial fan)
Flowering Period:	July-August
Life Form:	Perennial herb
Distribution:	San Bernardino County (formerly Orange County; presumed extirpated).
Comments:	Known from one extended, but fragmented population. This species typically occurs at elevations below 4,800 feet.

A single record of Santa Ana River woollystar was reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

SAN GABRIEL LINANTHUS - Linanthus concinnus

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 1B
Habitat:	Lower montane coniferous forest, upper montane coniferous forest
Flowering Period:	May-July
Life Form:	Herb
Distribution:	Elevations over 5,000 feet
Comments:	Dry, rocky slopes. Often in Jeffrey Pine/Canyon Oak forest.

San Gabriel linanthus was not observed on the project site. This species typically occurs at elevations above 5,000 feet therefore there is no pritential for occurrence.

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# POLYGONACEAE - BUCKWHEAT FAMILY

PARRY'S SPINEFLOWER - Chorizanti	he partyi var. partyi
USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 3
Habitat:	Coastal or desert sage scrub, chaparral, dry slopes or flat ground, sandy soils.
Flowering Period:	April-June.
Life Form:	Annual herb.
Distribution:	Riverside and San Bernardino Counties, possibly Los Angeles County.
Comments:	Declining due to development and known from only 20 occurrences in Riverside
	County. This species typically occurs at elevations between 900 and 3,500 feet.

Two records of Parry's spineflower were reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

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#### SLENDER-HORNED SPINEFLOWER - Dodecabema leptoceras

USFWS Status:	FE
CDFG Status:	SE
CNPS Status:	List 1B
Habitat:	Allovial sage scrub vegetation on sandy flood-deposited rivers and washes
Flowering Period:	April-June
Life Form:	Annual herb
Distribution:	Los Angeles, Riverside and San Bernardino counties: San Gabriel, San Bernardino and
	San Jacinto Mountains; reported from Lake Elsinore and Hemet.
Comments:	Declining due to urbanization, flood control activities, off-road vehicle use, and
	competition from exotic species. This species typically occurs at elevations below
	2.000 feet.

Several records of Slender-homed spineflower were reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all snitable locations.

JOHNSTON'S BUCKWHEAT – Eriogonum microthecum vas. johnstonii

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USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 1B
Habitat:	Subalpine coniferous forest, upper montane coniferous forest
Flowering Period:	July-September
Life Form:	Shrub
Distribution:	Slopes and ridges on granite or limestone, elevation over 6,000 feet.
Comments:	Known only from Los Angeles and San Bernardino Counties

Johnston's buckwheat was not observed on the project site. This species typically occurs at elevations above 6,000 feet therefore there is no potential for occurrence.

# PORTULACACEAE - PURSLANE FAMILY

PEIRSON'S SPRING BEAUTY - Clayta	nia lanceolota var. peirsonii
USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 1B
Habitat:	Upper montane, coniferous forest, subalpine coniferous forest.
Flowering Period:	May-Jnne
Life Form:	Perennial, tuber
Distribution:	Endemic to San Beruardino County, 7,800 feet and over.
Commeuts:	Granitic scree slopes, often with a sandy or fine soil component and granitic cobble.

Peirson's spring beauty was not observed on the project site. This species typically occurs at elevations above 7,800 feet therefore there is no potential for occurrence.

# LILIACEAE - LILY FAMILY

PLUMMER'S MARIPOSA LILY - Calochortus plummerae

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 1B
Habitat:	Variety of southern California plant communities, including sage scrub, valley and
	foothill grassland, yellow pine forest; dry, rocky or sandy sites, granitic or alluvial soil.
Flowering Period:	May-july.
Life Form:	Bulbiferous perennial herb.
Distribution:	Ventura, Los Angeles, Riverside and San Bernardino Counties.
Comments:	Reported from divide toad between Oak Flat and Pleasants Peak, Santa Ana Mountains.
	This species projectly occurs at elevations below 4 800 feet

Plummer's mariposa lily was observed on the project site in abundance.

### INTERMEDIATE MARIPOSA LILY - Calochortus weedii var. intermedius

USFWS Status:	None	
CDFG Status:	None	
CNPS Status:	List 1B	
Habitat:	Chaparral, coastal scrub, valley and foothill grasslands.	
Flowering Period:	May-July.	
Life Form:	Bulbiferous perennial herb.	
Distribution:	Los Angeles, Orange, and Riverside Counties.	
Comments:	Threatened by development, road construction and fuel modification.	This species
	typically occurs at elevations below 2,000 feet.	

Several records of Intermediate mariposa lily were reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-June 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations. ÷

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USFWS Status:	FT
CDFG Status:	SE
CNPS Status:	List 1B
Habitat:	A variety of communities including sage scrub, valley and foothill grasslaud, yellow pine
	forest, rocky or sandy sites, granitic or alluvial soil.
Flowering Period:	March-June.
Life Form:	Bulbiferous perennial herb.
Distribution:	Los Angeles, Riverside, Orange, San Diego and San Bernardino Counties.
Comments:	This species may hybridize with other Brodiaea species. This species typically occurs at
	elevations below 4,800 feet.

The thread-leaved brodiaca was not observed during the April-June 2001 sensitive plant surveys however there is a low likelihood of occurrence due to presence of suitable habitat and isolated areas undetected due to inherent difficulties of observing all suitable locations.

# POACEAE - GRASS FAMILY

CALIFORNIA MUHLY – Muhlenbergia californica

USFWS Status:	None
CDFG Status:	None
CNPS Status:	List 4
Habitat:	Coastal sage, chapartal, meadows, lower montane coniferous forest
Flowering Period:	July-September
Life Form:	Herb
Distribution:	From San Bernardino vicinity to the edge of deserts,
Comments:	Usually found near streams or seeps. This species typically occurs at elevations
	between 1,300 and 6,500 feet.

Several records of California multiply were reported in the CNDDB within the vicinity of the project site and potentially suitable habitat occurs on-site. This species was not observed during the April-Inne 2001 sensitive plant surveys however there is low likelihood of occurrence in isolated areas undetected due to inherent difficulties of observing all suitable locations.

Key t	o Species Listing Status Codes		
FE	Federally Listed as Endangered	SCE	State Candidate for Endangered
FT	Federally Listed as Threatened	SCT	State Candidate for Threatened
SE	State Listed as Endangered	SP	State Protected
5T	State Listed as Threatened	SFP	State Fully Protected
FPE	Federally Proposed as Endangered	CSC	California Special Concern Species
FPT	Federally Proposed as Threatened		
Calif	arnia Natine Plant Society (CNDS)		

uj<u>ornia istarive riant society</u> (CNPS) List 1A: Presumed extinct in California.

List 1B: Rare, threatened, or endangered throughout their range.

List 2: Rare, threatened, or endangered in California, but more common in other states.

List 3: Plant species for which additional information is needed before rarity can be determined.

List 4: Species of limited distribution in California (i.e., naturally rare in the wild), but whose existence does not appear to be susceptible to threat.

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VASCULAR PLANTS	
Scientific Name	Соттоп Name
Angiosperms (Dicotyledons)	
Anacardiaceae	Sumac or Cashew Family
* Schinus molle	Peruvian pepper tree
Аросупасеае	Dogbane Family
* Nerium oleander	oleander
Asclepiadaceae	Milkweed Family
Asclepias eriocarpa	Indian milkweed
Asteraceae	Sunflower Family
Arıemisia californica	California sagebrush
Artemisia douglasiana	тиджоп
Artemisia dracunculus	tarragon
Baccharis salicifolia	mulefat
* Centaurea melitensis	tocalote
* Centaurea solstitialis	yellow star-thistle
Corethrogyne filaginifolia vat. bernardina	corthrogyne
Ericameria arborescens	golden-fleece
Ericameria pinifolia	pinebush
Erigeron foliosus	leafy daisy
Helianthus annuus	common sunflower
Heterotheca grandiflora	telegraph weed
* Hypochaeris glabra	smooth cat's-ear
Lepidospartum squamatum	scale-broom
Lessingia filaginifolia	California aster
Boraginaceae	Borage Family
A <b>m</b> sinckia menziesii	common fiddleneck
Cryptantha intermedia	common forget-me-not
Pectocarya linearis ssp. ferocula	slender pectocarya
Plagiobothrys sp.	popcorn flower
Plagiobothrys collinus	California popcorn flower
Brassicaceae	Mustard Family
* Brassica nigта	black mustard
Descurainia pinnata	western tansy-mustard
Erysimum capitatum	western wallflower
* Hirshfeldia incana	short-podded mustard

ATTACHMENT B: PLANT COMPENDIUM

PCR Services Corporation Focused Sensitive Plant Survey Richland Communities, Inc. September 2001

VASCULAR PLANTS	
Scientific Name	Common Name
Lepidium nitidum	shining peppergrass
* Lobularia maritima	sweet-alyssum
* Sisymbrium altissimum	tumble mustard
* Sisymbrium irio	Loudon rocket
Cactaceae	Cactus Family
Opuntia prolifera	coast cholla
Caryophyllaceae	Pink Family
Silene antirrhina	catchfly
* Silene gallica	common catchfly
Chenopodiaceae	Goosefoot Family
Chenopodium californicum	California goosefoot
Convolvulaceae	Morning-Glory Family
Calystegia macrostegia	western bindweed
* Ipomoea purpurea	common morning-glory
Crassulaceae	Stonecrop Family
Crassula connata	pygmy-weed
Cucurbitaceae	Gonrd Family
Marah macrocarpus	wild cucumber
Euphorbiaceae	Spurge Family
Croton californicus	California croton
* Ricinus communis	castnr bean
Fabaceae	Legume Family
Albizia julibrissin	silk tree
Astragalus spp.	milk-vetch
Astragalus pomonensis	Pomona rattleweed
Astragalus trichopodus	Santa Barbara locoweed
Lotus scoparius	deerweed
Geraniaceae	Geranium Family
Erodium sp.	filaree
<ul> <li>* Erodium botrys</li> </ul>	broad-lobed filaree
* Erodium cicutarium	red-stemmed filaree
Hydrophyllaceae	Waterleaf Family
Eriodictyon trichocalyx vac. trichocalyx	hairy yerba santa
Eucrypta chrysanthemifolia	common eucrypta
Phacelia distans	fern-leaf phacelia
Phacelia minor	wild canterbury-bell
Juglandaceae	Walnut Family
Juglans californica vas. californica	Southern California black walnut
Lamiaceae	Mint Family

S.:	Comment Name
* Manufilme	
Marruoium vuigare	
Monaraeua unceolala	
Satura apiana	white sage
Salvia mellifera	Diack sage
Malvaccae	Mallow Family
Malacotnamnus sp.	
Malacothamnus fasciculatus	mesa bushmallow
Myrtaceae	Myrtle l'amily
Eucalyptus sp.	gum tree
* Eucalyptus globulus	
Oleaceae	Olive Family
• Olea europaea	olive
Unagraceae	Evening Primrose Pamily
Camissonia bistorta	
Orobanchaceae	Broom-rape Family
* Orobanche vallicola	broom-rape
Platanaceae	Sycamore Family
Platanus racemosa	western sycamore
Połemoniaceae	Phlox Family
Eriastrum sapphirinum	sapphire eriastrum
Polygonaccae	Buckwheat Family
Eriogonum elongatum var. elongatum	long-stemmed buckwheat
Eriogonum fasciculatum	California buckwheat
Rumex hymenosepalus	desert rhubarb
Ranunculaceae	Buttercup Family
Delphinium cardinale	scarlet larkspur
Rhamnaceae	Buckthorn Family
Ceanothus crassifolius	hoary leaf ceanothus
Ceanothus cuneatus	buck brush
Ceanothus megacarpus	big-podded ceanothus
Ceanothus spinosus	green bark ceanothus
Rosaceae	Rose Family
Prunus ilicifolia	holly-leaved cherry
Angiosperms (Monocotyledons)	
Liliaceae	Lily Family
Calochortus plummerae	Plummer's mariposa lily
Chlangedum pomaridianum	roan plant

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VASCULAR PLANTS		
Scientific Name	Common Name	
Muilla maritima	common muilla	
Yucca whipplei	Our Lord's candle	
Poaceae	Grass Family	
Avena sp.	oat	
* Avena barbata	slender wild oat	
* Avena fatua	wild oat	
Bromus sp.	brome	
<ul> <li>Bromus diandrus</li> </ul>	ripgut grass	
* Bromus madritensis ssp. rubens	foxtail chess	
Elymus glaucus	blue wildrye	
* Hordeum murinum	glaucous foxtail barley	
Hordeum vulgare	barley	
* Lamarckia aurea	goldentop	
* Schismus arabicus	Arabian grass	
* = Non-native Species		







Attachment 3, Page 337 of 608



July 15, 2002

Ms. Christine Moen U.S. FISH AND WILDLIFE SERVICE 2730 Loker Avenue West Carlsbad, California 92008

# Re: Results of Focused Coastal California Gnatcatcher Surveys for the Etiwanda Project Site, San Bernardino County, California

# Dear Ms. Moen:

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This report is prepared in compliance with the conditions of authorized permits issued under Section 10(a)(1)(A) of the Federal Endangered Species Act to PCR Services Corporation (PCR) biologists Kristin Szabo (TE016487-0), Marc Blain (TE001075-0), Jenni Snibbe (TE044520-0), and James Mazza (TE032728-0) for the performance of protocol surveys for the coastal California gnatcatcher (*Polioptila californica californica*). As such, this letter report summarizes the methodology and findings of surveys for this species on the Etiwanda project site in San Bernardino County, California. PCR conducted surveys on all potentially suitable habitat within the 150-acre study area to determine the presence and location or absence of the coastal California gnatcatcher within the project site. No coastal California gnatcatchers were observed on-site during the focused surveys conducted.

Previous surveys conducted by PCR in 1998 and 2001 also did not detect the presence of the coastal California gnatcatcher on the Etiwanda project site.

# STUDY AREA

The project site consists of approximately 150 acres of undeveloped land in an unincorporated area of San Bernardino County located north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue just north of the City of Rancho Cucamonga (see Figure 1, *Regional Map*, attached). The project site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains. The project site is contained on the United States Geological Survey 7.5' Cucamonga Peak Quadrangle, in Section 24, T. 1 N., R. 7 W. (see Figure 2, *Vicinity Map*, attached).

Topographically the project site is characterized by alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. There are two drainages found on the project site that convey flow from the northwest to the southeast and merge with a defined flood control channel. Riversidean sage scrub dominates the project site. The project site has an approximately 14-acre area that has been heavily disturbed by past uses including an abandoned residence, ornamental and ruderal vegetation, and geotechnical trenching areas. Elevation on the project site ranges between 1,600 and 1,800 fect above mean sea level. Surrounding land uses include vacant land to the north, a County flood control channel to the east, sparse residential development to the southeast, a water treatment plant to the south, and residential development to the west. A utility corridor with overhead power lines is adjacent to the northern property boundary.

# Ms. Christine Moen U.S. FISH AND WILDLIFE SERVICE July 15, 2002 - Page 2



The discussion of vegetation community names and hierarchical structure follows the California Department of Fish and Game's *List of California Terrestrial Natural Communities Recognized by the Natural Diversity Database.*<sup>1</sup> A brief summary of each vegetation community is discussed below. Vegetation community descriptions are based on PCR findings, Sawyer and Keeler-Wolfe<sup>2</sup>, and/or Holland<sup>3</sup>, as appropriate. In addition, a description of the locations on the project site and the variations of the community are discussed. Table 1, *Plant Communities*, lists each plant community along with the California Natural Diversity Database (CNDDB) community code and the on-site community acreage. The locations of the communities on the project site are indicated in Figure 3, *Plant Communities*, attached.

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# Riversidean Alluvial Fan Sage Scrub

The Etiwanda project site supports typical characteristic plants of Riversidean alluvial fan sage scrub throughout the drainage bisecting the project site flowing northwest to southeast. Plant species found on the project site include scalebroom (Lepidospartum squamatum), white sage (Salvia apiana), California sagebrush (Artemesia californica), California buckwheat (Eriogonum fasciculatum), black sage (Salvia mellifera), yerba santa (Eriodictyon trichocalyx), pine-bush (Ericameria pinifolia), locoweed (Astragalus trichopodus), deerweed (Lotus scoparius), California aster (Lessingia filaginifolia), California croton (Croton californicus), holly-leaved cherry (Prunus ilicifolia), bushmallow (Malacothamnus fasciculatus), hoaryleaf ceanothus (Ceanothus crassifolus), green bark ceanothus (Ceanothus spinosus), western sycamore (Platanus racemosa), mule fat (Baccharis salicifolia), mugwort (Artemisia douglasiana), and blue wildryc (Elymus glaucus). Very limited riparian vegetation in the drainage consists of three western sycamore trees that have become established in the upper reaches.

# Upland Riversidean Sage Scrub

The upland Riversidean sage scrub community, found along the step-like scrub covered terraces of the site, represents a predominant expression of alluvial fan sage scrub as a monotypic stand of white sage. Also referred to as white sage series by Sawyer and Keeler-Wolf, this community is dominated by white sage or white sage co-dominant with California sagebrush. Plant species found throughout the terrace area on-site include white sage, California sagebrush, California buckwheat, pine-bush, locoweed, California aster, brome grass (*Bromus* spp.), deerweed, yerba santa, holly-leaved cherry, wand huckwheat (*Eriogonum elongatum*), green bark ceanothus, our Lord's candle (*Yucca whipplei*), wild oat (*Avena* fatua), storksbill (*Erodium cicutarium*), and California croton.



<sup>&</sup>lt;sup>1</sup> State of California. Department of Fish and Game. Wildlife & Habitat Data Analysis Branch. California Natural Diversity Database. October 13, 2000. List of Terrestrial Natural Communities Recognized by the California Natural Diversity Database. 65pp.

<sup>&</sup>lt;sup>2</sup> Sawyer, John O. and T. Keeler-Wolf. 1995. A Manual of California Vegetation. Sacramento: California Native Plant Society.

<sup>&</sup>lt;sup>3</sup> Holland, R. F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, California: State of California Resources Agency, Department of Fish and Game, Non-Game Heritage Program.

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# Ms. Christine Moen U.S. FISH AND WILDLIFE SERVICE July 15, 2002 - Page 3



# Table 1

# **Plant Communities**

Community Name	CNDDB Code	Acres On-site
Riversidean Alluvial Fan Sage Scrub	32.005.02	5.4
Upland Riversidean Sage Scrub	32.005.00	134.6
Disturbed	n/a	8.5
Ornamental Landscaping	99.900.06	1.5
Total		150.0

Source: PCR Services Corporation, 2001

# Disturbed

Disturbed areas on the project site are mostly devoid of vegetation or contain predominately non-native, weedy species adapted to frequent disturbance. Types of disturbed areas found on the project site include cleared land, geotechnical trenching areas, and dirt access roads. Plant species found on the project site includes non-native grasses and a high proportion of weedy species including castor bean (*Ricinus communis*), storksbill, telegraph weed (*Heterotheca grandiflora*), black mustard (*Brassica nigra*), and wild oat.

# Ornamental Landscaping

Developed and otherwise disturbed areas on the project site have ornamental landscaping species including blue gum (*Eucalyptus globulus*), Peruvian pepper tree (*Schinus molle*), olive tree (*Olea europaea*), oleander (*Nerium oleander*), and silk tree (*Albizia julibrissin*). There are also eight Southern California black walnut trees located in the immediate vicinity of the abandoned residence.

# METHODOLOGY

Surveys for the coastal California gnatcatcher were conducted by PCR biologists Kristin Szabo (Permit No. TE016487-0), Marc Blain (TE001075-0), Jenni Snibbe (TE044520-0), and James Mazza (TE032728-0). Methods employed were in conformance with USFWS Coastal California Gnatcatcher Presence/Absence Survey Guidelines, issued July 28, 1997. Accordingly, six surveys were performed at least one week apart, between 6:00 A.M. and 12:00 P.M., within all portions of the study area containing suitable habitat. Temperatures during surveys ranged between 57 and 93 degrees Fahrenheit. Weather conditions were suitable for surveys, with skies ranging from clear to 100 percent overcast, and winds below Beaufort scale 2.

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# Ms. Christine Moen U.S. FISH AND WILDLIFE SERVICE July 15, 2002 - Page 4



The site was divided into two plots of appropriate size to ensure complete coverage of all potential habitat during each survey and ensure that each investigator did not cover more than 80 acres each. Two permitted field investigators slowly walked over the site, stopping at appropriate intervals, uttered pishing sounds, and played a tape of recorded coastal California gnatcatcher vocalizations. The tape was played for several seconds at each interval, followed by a brief pause to listen for a response. Surveys were conducted on March 26, April 11, May 1, 23, 30, and June 6, 2002.

# RESULTS

No coastal California gnatcatchers were observed on the Etiwanda project site during any of the focused surveys conducted. Bird activity was relatively high during the surveys and a list of those species observed is included in the attached compendium.

Sensitive species observed include loggerhead shrike (Lanius ludovicianus) [Federal Special Concern Species (FSC), California Special Concern Species (CSC)], Cooper's hawk (Accipiter cooperi) (CSC-nesting), northern harrier (Circus cyaneus) (CSC-nesting), southern California rufous-crowned sparruw (Aimophila ruficeps canescens) (FSC, CSC), Bell's sage sparrow (Amphispiza belli belli) (FSC, CSC-nesting), and Plummer's mariposa lily (Calochortus plummerae) [California Native Plant Society (CNPS) List 1B (Rare, Threatened, or Endangered in California and Elsewhere)].

On at least four occasions, between one and five brown-headed cowbirds (Molothrus ater) were observed on-site.

Should you have any questions regarding the methodology or findings in this report, please do not hesitate to contact Kristin Szabo at (949) 753-7001 or by email at k.szabo@pcrnet.com.

# Sincerely, PCR SERVICES CORPORATION

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Kristin Szabo Senior Biologist

Attachments

# ETIWANDA AVIAN COMPENDIUM July 15, 2002 - Page A-1

# BIRDS



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# **ETIWANDA** AVIAN COMPENDIUM July 15, 2002 - Page A-2

BIRDS

#### SCIENTIFIC NAME COMMON NAME Shrikes Laniidae Lanius ludovicianus loggerhead shrike Corvidae Jays and Crows Aphelocoma californica western scrub-jay Corvus brachyrhynchos American crow Corvus corax common rayen Hirundinidae Swallows Tachycineta thalassina violet-green swallow Petrochelidon pyrrhonota cliff swallow Stelgidopteryx serripennis northern rough-winged swallow Hirundo rustica barn swallow Muscicapidae Wrentits Chamaea fasciata wrentit Bushtits Aegithalidae Psaltriparus minimus bushtit Troglodytidae Wrens Troglodytes aedon house wren Thryomanes bewickii Bewick's wren Regulidae Kinglets Regulus calendula ruby-crowned kinglet Sylviidae **Old World Warblers, Gnatcatchers** Polioptila caerulea blue-gray gnatcatcher Mimidae Thrashers Minus polyglottos northern mockingbird Toxostoma redivivum California thrasher Sturnidae Starlings Sturnus vulgaris European starling Ptilogonatidae Silky Flycatchers Phainopepla nitens phainopepla Parulidae Wood Warblers Dendroica coronata yellow-rumped warbler





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# **ETIWANDA** AVIAN COMPENDIUM July 15, 2002 - Page A-3

# BIRDS

SCIENTIFIC NAME	COMMON NAME	
Emberizidae	Emberizids	
Pipilo crissalis	California towhee	
Pipílo maculatus	spotted towhee	
Aimophila ruficeps canescens	Southern California rufous-crowned sparrow	
Chondestes grammacus	lark sparrow	
Spizella atrogularis	black-chinned sparrow	
Amphispiza belli belli	Bell's sage spatrow	
Ammodramus savannarum	grasshopper sparrow	
Melospiza melodia	song sparrow	
Zonotrichia leucophrys	white-crowned sparrow	
Cardinalidae	Cardinals	
Pheucticus melanocephalus	black-headed grosbeak	
Guiraca caerulea	blue grosbeak	
Passerina amoena	lazuli bunting	
steridae	Blackbirds	
Sturnella neglecta	western meadowlark	
Molothrus ater	brown-headed cowbird	
Icterus cucullatus	hooded oriole	
Icterus bullockii	Bullock's oriole	
ringillidae	Finches	
Carpodacus mexicanus	house finch	
	lesser goldfingh	

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PLANNING CONSULTANTS RESEARCH ENVIRONMENTAL PLANNING, POLICY & RESEARCH

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September 8, 1998

Mr. Robert Henninger
Vice President
RICHLAND COMMUNITIES, INC.
3 Imperial Promenade, Suite 150
Santa Ana, CA 92707

# RE: DELINEATION OF JURISDICTIONAL WATERS AT THE ETIWANDA PROPERTY, SAN BERNARDINO COUNTY, CA.

Dear Mr. Henninger;

A standard wetlands delineation and determination of jurisdictional "waters of the United States" was conducted at the Etiwanda project site on September 2, 1998. Specific definitions and procedures outlined below were used. Results of the determination follow.

Two jurisdictional drainages were found on the property, totaling 0.34 acres. Numerous other smaller drainages were also observed, but were not deemed jurisdictional due to their extremely ephemeral nature.

PCR is pleased to provide this letter/report summarizing the results of our wetlands delineation of the Etiwanda site in San Bernardino County. If you have any questions regarding our findings, please call us at (949) 753-7001. Thank you for your consideration.

Sincerely, PLANNING CONSULTANTS RESEARCH

Mark Sudol, D. ENV.

Senior Ecologist

Ken Halama, Ph.D. Wildlife Biologist

233 WILSHIRE BOULEVARD, SUITE 130 SANTA MONICA, CALIFORNIA 90401 TEL 310 451-4488 FAX 310 451-5279 E-MAIL: PCR@IOT.NET OHE VENTURE, SUITE 150 IRVINE, CALIFORNIA 92618 TEL 949 753-7001 FAX 949 753-7002 E-Mail: PCR2@IDT.NET

PLANNING CONSULTANTS RESEARCH Environmental Planning, Policy & Research 5

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# INVESTIGATION OF JURISDICTIONAL WATERS ON THE ETIWANDA SITE

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# Site Description

The project site is located in San Bernardino County north of Wilson Avenue between Etiwanda Avenue and the northern terminus of East Avenue just north of the cities of Rancho Cucamonga and Etiwanda. The site lies within the East Etiwanda Creek alluvial fan at the base of the San Gabriel Mountains and may be referenced as being within the northeast corner of Section 24, T1N, R7W on the Cucamonga Peak 7.5 minute quadrangle. The project site elevation ranges from 1,600 feet above mean sea level to 1,800 feet above mean sea level.

# **Summary of Regulations**

There are two key agencies which regulate activities within wetlands and riparian areas in California. The U.S. Army Corps of Engineers (Corps) Regulatory Program regulates activities pursuant to Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Resources, and Sanctuaries Act. The California Department of Fish and Game regulates activities within wetlands under the Fish and Game code Section 1600-1607.

The Corps of Engineers regulates the discharge of dredged or fill material into jurisdictional "waters of the United States" ("waters") through Section 404 of the Clean Water Act (as amended). The regulations (33 CFR 328.3) define "waters" as:

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which 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 commerce including any such waters:

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(I) Which are or could be used by interstate or foreign travelers for recreation or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purposes by industries in interstate commerce;

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs (a) (1)-(4) of this section;

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(6) The territorial seas;

(7) Wetlands adjacent to waters (other than waters which are themselves waters) identified in paragraphs (a) (1)-(6) of this section. (33 CFR 328.3(a))

The most important aspect of this definition is the interstate commerce clause. In order for the federal government to regulate an activity, there must be effects which impact one or more states. The definition of what constitutes interstate commerce has been litigated numerous times and found to include the movement of migratory birds and the recreational viewing of these birds by tourists (assuming interstate travel). This interpretation has allowed the Corps to regulate impacts to "waters of the United States", including intermittent and ephemeral streams in California.

Wetlands are included in the definition of "waters" but also have additional criteria for delineation because these areas are perceived to have higher value. The U.S. Army Corps of Engineers Wetland Delineation Manual (1987) provides a definition and diagnostic environmental characteristics for the identification and delineation of wetlands. The Corps and EPA define wetlands as (Federal Register, 1980):

"Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

Wetlands have the following general diagnostic environmental characteristics:

Vegetation: The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic conditions described in the definition above. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Prevalent vegetation is generally defined as greater than 50 percent of the species would be obligate wetland species (OBL), facultative wetland species (FACW), or facultative species with greater probability of occurrence in wetlands (FAC+).

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Soil: Soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions. Hydric soils are those which are flooded, or ponded long enough during the growing season to develop anaerobic conditions.

Hydrology: The area is inundated either permanently or periodically at mean water depths  $\leq 6.6$  feet, or soil is saturated to the surface at some time during the growing season of the prevalent vegetation.

In southern California with its Mediterranean climate, most streams have only ephemeral or intermittent flows and only a very small number are considered perennial watercourses. With only limited winter rainfall, there is generally not enough water for most ephemeral or intermittent streams to form well-established hydric soils. The result is that most riparian areas in the southwest do not meet the Corps' definition of a wetland but are only considered "waters". However, this does not mean these areas have less value, on the contrary, these areas have proportionally higher value and functional capacity than eastern wetlands. Southwestern riparian areas function as a refuge during the long, hot summers and provide valuable foraging and breeding habitat for a wide variety of species.

California Department of Fish and Game (CDFG) has broader definition on what constitutes jurisdictional waters of the state of California. CDFG determines jurisdiction based on established scientific criteria. Wetland categories which CDFG regulates include (but are not limited to) freshwater marshes, wet meadows, vernal pools, riparian woodland, riparian scrub, and coastal salt marshes. The following activities are regulated if the project will:

(1) divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake designated by the Department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit,

(2) use material from the streambeds designated by the Department, or



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(3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by the department.

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# Methods

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A determination of jurisdictional wetlands and "waters of the United States" of the Etiwanda property was conducted by Dr. Mark Sudol and Dr. Ken Halama of Planning Consultants Research (PCR) on September 2, 1998. The entire site was evaluated and all areas which would fall under the jurisdiction of the U.S. Army Corps of Engineers and the California Department of Fish and Game were identified. A qualitative functional assessment of the habitat was also conducted during the site investigation.

PCR staff ecologists have used the definitions identified above, as well as the diagnostic environmental characteristics, and Corps approved procedures for the determination of jurisdictional "waters of the United States" and delineation of wetlands. Each area was examined for evidence of an "ordinary high water mark" and for wetland vegetation. If these criteria were met, then an excavation of the soil was conducted to determine if wetland indicators were present. Standard criteria were used to determine soil characteristics including comparison with standard plates within a Munsell soil color chart. Scientifically defensible indicators were used to determine the extent of jurisdictional habitat according to CDFG regulations.

# Results

The Etiwanda property is located within a portion of an alluvial fan formed through the erosion and transport of materials from the San Gabriel Mountains. These processes form several major drainages which channel the high flows and a myriad of minor drainage channels which form an intricate network and carry the smaller flows during storm events. These major drainages migrate slowly across the fan as material is deposited during storm events. In the arid southwest, these major channels may take 50-100 years to migrate across a large fan. In the case of this property, the high flows are being confined to two or three major channels through flood control activities. The smaller drainages found on the project site are local drainage courses which convey run off from rain falling on the fan itself.



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There are two minor drainages found on the Etiwanda property which convey flows across the fan and have sufficient flows to form a defined ordinary high water mark (Figure 1). The largest drainage channel begins at the confluence of the concrete flood control channel which is located at the northern end of the property adjacent to the housing complex and a natural channel which flows from the northwest. This channel flows from the northwest to the southeast and merges with a defined flood control channel which parallels the southern boundary of the site. The other drainage is found on the eastern side of the property, again running from the northwest to the southeast. It flows off site and also eventually merges with the flood control channel on the southern boundary. The site investigation also identified three other very minor drainages which exhibited indications of an ordinary high water flow. However, after consultation with the Corps, these minor drainages were not considered jurisdictional because their width was less than one foot, the ordinary high water mark was not distinctive over the entire length, and there was no riparian or wetland vegetation present in or around the area. While there were areas which would fall under the jurisdiction of the Corps, there were no areas which would qualify as wetlands on the project site. A brief description on each drainage is provided below.

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**Drainage 1** is a small, ephemeral stream which flows from the northwest to southeast. Drainage 1 is approximately 1820 feet long and six (6) feet wide throughout the property. Clear evidence of an ordinary high water mark was observed. Very limited riparian vegetation, including three sycamore trees, have become established in the upper reaches. The remainder of the drainage has only upland vegetation such as coyote bush, buckwheat, and sage. Soils were sandy and well drained with no evidence of organic layers. This drainage was approximately 0.25 acres of jurisdictional "waters of the U.S."

**Drainage** 2 is a very small ephemeral stream which flows from the northwest to southeast. Drainage 2 is approximately 1310 feet long and three (3) feet wide throughout the property. Evidence of an ordinary high water mark was observed. There was no riparian vegetation in or around this drainage, only upland vegetation similar to Drainage 1. Soils were sandy and well drained with no evidence of organic layers. This drainage was approximately 0.09 acres of jurisdictional "waters of the U.S."

Total area of jurisdiction under the Corps would be 0.34 acres of "waters of the U.S." and no acres of wetlands. Total area of jurisdiction under the CDFG would also be approximately 0.34 acres.



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# Table 1. Summary of Jurisdictional Area on Etiwanda Property

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	Length	Width	Acreage
Drainage 1	1820 feet	6 feet	0.25
Drainage 2	1310 feet	3 feet	0.09
Total			0.34

# Conclusions

The habitat on the project site typifies alluvial out-wash areas found to the west of the peninsular mountain ranges in southern California. Coastal sage scrub dominates the site with small non-jurisdictional drainages forming a network throughout the site. All drainages are ephemeral, and most likely only contain flowing water during spring runoff. There is little or no evidence of wetland or riparian vegetation, therefore the functionality of these ephemeral washes is considered low.

# Appendix D Traffic Impact Study
## Appendix D Traffic Impact Study

# ETIWANDA PROPERTIES (TTM 16072) TRAFFIC IMPACT ANALYSIS Rancho Cucamonga, California (REVISED 6/17/02)







transportation planning • traffic engineering acoustical / air quality studies

June 17, 2002

Mr. John Schafer RICHLAND COMMUNITIES 3 Imperial Promenade, Suite 150 Santa Ana, CA 92707

#### Subject: Etiwanda Properties Traffic Impact Analysis (Revised)

Dear Mr. Schafer:

RK ENGINEERING GROUP, INC. is pleased to submit the revised Etiwanda Properties Traffic Impact Analysis. This report provides a summary of the findings, analysis procedures and evaluation of the project area with respect to on-site and off-site traffic impacts pursuant to the City of Rancho Cucamonga and the County of San Bernardino and Congestion Management Program requirements.

This traffic impact analysis report includes an evaluation of Opening Year (2004) and Year 2020 scenarios pursuant to CMP requirements. A number of traffic recommendations are included for future conditions within Section 7 of this report.

If you have any questions regarding this study, please do not hesitate to call at (949) 474-0809.

Sincerely,

RK ENGINEERING GROUP, INC.

Franh M

Frank Yeh Transportation Planner

FY:RK:rd/1035 JN:1058-01-01

Attachments

No. 0555 EXP. 12/31/05 Robert Kahn, P.E. Principal

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#### ETIWANDA PROPERTIES (REVISED) TRAFFIC IMPACT ANALYSIS SAN BERNARDINO COUNTY, CALIFORNIA

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Prepared for:

#### RICHLAND COMMUNITIES 3 Imperial Promenade, Suite 150 Santa Ana, CA 92707

Prepared by:

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> Frank Yeh Robert Kahn, P.E.

> > June 17, 2002

JN:1058-01-01 FY:RK:rd/1035 .

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## ETIWANDA PROPERTIES (REVISED) TRAFFIC IMPACT ANALYSIS SAN BERNARDINO COUNTY, CALIFORNIA

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#### 1. INTRODUCTION

This report summarizes the traffic impact analysis conducted to assess the impacts of the potential land uses within the Etiwanda Properties development on the roadway system in the study area. The project is located in the County of San Bernardino. The general location of the project site is presented on Exhibit 1-A.

The traffic issues related to the proposed land use and development have been evaluated in the context of the California Environmental Quality Act (CEQA) and the San Bemardino County Congestion Management Program (CMP). The project is currently in the County of San Bemardino, however, the City of Rancho Cucarnonga is the lead agency responsible for preparation of the traffic impact analysis, in accordance with both CEQA and CMP authorizing legislation since the project will be annexed to the City. Exhibit 1-B depicts the CMP roadway network and study area limits. The CMP requires no analysis further than 5 miles from the project site. In accordance with CMP requirements, both an Opening Year analysis and a CMP Horizon Year analysis are included in this report.

The introduction to this report presents an overview of the project and provides a brief description of the study area. The analysis methodologies used to evaluate the impacts of the project are described, and the definitions of roadway system deficiencies and significant project impacts are presented in the context of the CMP and CEQA requirements.

Subsequent sections of the report will describe the project in detail and provide a complete description of existing and projected traffic conditions within the study area.



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#### 1.1 <u>Project Overview</u>

The project site is located in the County of San Bernardino, however, it will be annexed by the City of Rancho Cucamonga. The project's lead agency will be the City of Rancho Cucamonga. The project is located north of Wilson Avenue, between Etiwanda Avenue and East Avenue (see Exhibit 1-A).

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The project site is proposed to be developed with 359 single-family detached residential dwelling units. Exhibit 1-C illustrates the project site plan.

Additional detailed discussion of the roadway network features of the project and its traffic generation characteristics will be provided in subsequent sections of this report.

#### 1.2 <u>Study Area</u>

The overall study area evaluated in this study was previously presented on Exhibit 1-B, which also identified all CMP roadways within the study area. The roadway elements which must be analyzed in accordance with CMP requirements are dependent on both the analysis year (project Opening Year or CMP Horizon Year) and project generated traffic volumes.

Regional access to the site is provided by State Route 210 (SR-210) and the Interstate 15 (I-15) Freeway. Local access is provided by various arterial roadways in the vicinity of the site. The east-west arterials which will be most affected by the project include Wilson Avenue, Summit Avenue and Highland Avenue. North-south arterials expected to provide local access include Etiwanda Avenue and East Avenue.

A series of scoping discussions were conducted with the following agencies to define the desired analysis locations for each future analysis year:



Attachment 3, Page 369 of 608 1058-01-01:05A ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California



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- City of Rancho Cucamonga
- San Bernardino Associated Governments (SANBAG)

In addition, staff from the Southern California Association of Governments (SCAG) have also been contacted to discuss the project and its associated travel patterns.

The Year 2020 horizon year analysis locations can only be determined once the projected Year 2020 project related traffic volumes have been developed. This information will be presented in subsequent sections of this report. The Opening Year (2004) and Year 2020 analyses include the entire project.

#### 1.3 Analysis Methodologies

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are consistent with the San Bernardino County Congestion Management Program. The following analysis years are considered in this report:

- Existing Conditions 2001
- Project Opening Year 2004
- CMP Horizon Year 2020

The overall methodologies used to develop future traffic volume forecasts, and the explicit traffic operations analysis methodologies are summarized herein. The primary section of interest to the non-technically oriented reviewer is Section 1.4.2 (Definition of Significant Impact).

#### 1.3.1 Overall Analysis Methodology

As described previously, traffic conditions are evaluated in this report for both existing conditions and two future horizon years. Actual traffic count data

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were obtained from a variety of sources to quantify existing traffic conditions. Traffic count data was also collected by RK ENGINEERING GROUP, INC. specifically for this study.

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The CMP Horizon Year (2020) traffic volumes without the project have been derived from the subregional travel demand model currently being used for long range planning in San Bernardino County. This model is commonly referred to as the Comprehensive Transportation Plan (CTP) model. The CTP model is currently the only approved travel demand forecasting tool within the study area, as none of the locally developed travel demand models in the study area have received the necessary "finding of consistency" (with the CTP model) from SANBAG/SCAG.

Based upon discussions with SANBAG staff, the average daily traffic (ADT) volume forecasts have been determined using the growth increment approach on the CTP Model Year 1994 and Year 2020 ADT volume forecasts (see Appendix "A"). This difference defines the growth in traffic over the 26 year period. The incremental growth in ADT volume has been factored to reflect the forecast growth between Year 2001 and Year 2020. For this purpose, linear growth between the Year 1994 base condition and the forecast Year 2020 condition was assumed. Since the increment between Year 2001 and Year 2020 is 19 years of the 26-year time frame, a factor of 0.73 (i.e., 19/26) was used.

The peak hour directional roadway segment volume forecasts have been determined using the growth increment approach on the CTP Model Year 1994 and Year 2020 peak hour volumes. The incremental growth calculations are shown in Appendix "A". Current peak hour intersection approach/departure data is a necessary input to this approach. The existing traffic count data serves as both the starting point for the refinement process, and also provides important insight into current travel patterns and the relationship between peak hour and daily traffic conditions. The initial turning movement proportions are estimated

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based upon the relationship of each approach leg's forecast traffic volume to the other legs forecast volumes at the intersection. The initial estimate of turning movement proportions is then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 255). A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

The Opening Year (2003) traffic volumes have been interpolated from the Year 2020 traffic volumes based upon a portion of the future growth increment.

Project traffic volumes for all future conditions projections were estimated using the manual approach described in the CMP guidelines. Trip generation has been estimated based on the regression equations contained in the Institute of Transportation Engineers (ITE) publication <u>Trip Generation</u>, 6th Edition. The project trip distributions were developed based on a review of the site access and projected future traffic patterns as predicted by the CTP model.

The input data to the CTP Model has been reviewed. The growth in housing in this data suggests that the proposed project is already included in the CTP baseline scenario. Project traffic volumes were therefore added to the future year background volumes obtained from the CTP Model. The result of this traffic forecasting procedure is a series of traffic volumes suitable for traffic operations analysis.

#### 1.3.2 Traffic Operations Analysis

The current technical guide to the evaluation of traffic operations is the <u>1997</u> <u>Highway Capacity Manual</u> (HCM) (Transportation Research Board Special Report 209). The HCM defines level of service as a qualitative measure which

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describes operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The criteria used to evaluate LOS (Level of Service) conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted.

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The definitions of level of service for uninterrupted flow (flow unrestrained by the existence of traffic control devices) are:

- LOS "A" represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.
- LOS "B" is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.
- LOS "C" is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.
- LOS "D" represents high-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.
- LOS "E" represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.
- LOS "F" is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations.

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Uninterrupted flow is generally found only on limited access (freeway) facilities in urban areas. The level of service is based on the HCM, Table 3-1.

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The definitions of level of service for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control.

The level of service is typically dependent on the quality of traffic flow at the intersections along a roadway. The HCM methodology expresses the level of service at an intersection in terms of delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control. The levels of service determined in this study are calculated using an HCM methodology.

For signalized intersections, average total delay per vehicle is used to determine level of service. Levels of service at signalized study intersections have been evaluated using an HCM intersection analysis program.

Study area intersections which are stop sign controlled with stop-control on the minor street only have been analyzed using the two-way stop-controlled unsignalized intersection analysis methodology of the HCM. For these intersections, the calculation of level of service is dependent on the occurrence of gaps occurring in the traffic flow of the main street. Using data collected describing the intersection configuration and traffic volumes at these locations to calculate average intersection delay, the level of service has been calculated. The level of service criteria for this type of intersection analysis is based on total delay per vehicle for the worst minor street movements.

For all-way stop (AWS) controlled intersections, the ability of vehicles to enter the intersection is not controlled by the occurrence of gaps in the flow of the main street. The AWS controlled intersections have been evaluated using the HCM methodology for this type of multi-way stop controlled intersection į

configuration. The level of service criteria for this type of unsignalized intersection analysis is based on average total delay per vehicle for the overall intersection.

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The level of services are defined in terms of average delay for the intersection analysis methodology as follows:

	AVERAGE TOTAL DELAY PER VEHICLE (SECONDS)				
LEVEL OF SERVICE	SIGNALIZED	UNSIGNALIZED			
А	0 to 10.00	0 to 10.00			
В	10.01 to 20.00	10.01 to 15.00			
с	20.01 to 35.00	15.01 to 25.00			
D	35.01 to 55.00	25.01 to 35.00			
Е	55.01 to 80.00	35.01 to 50.00			
F	80.01 and up	50.01 and up			

Per CMP, signalized intersections are considered deficient (LOS "F") if the overall intersection critical volume to capacity (V/C) ratio equals or exceeds 1.0, even if the level of service defined by the delay value is below the defined LOS standard. The V/C ratio is defined as the critical volumes divided by the intersection capacity. A V/C ratio greater than 1.0 implies an infinite queue.

A level of service analysis must be conducted on all existing segments and intersections on the CMP network potentially impacted by the project or plan (as defined by the thresholds in Section 1B of the 1999 San Bernardino CMP). Urban segments (i.e., segments on roadways that are generally signalized) do not require segment analysis. Segment requirements can normally be determined by the analysis of lane requirements at intersections. Freeway

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mainline segments must be analyzed, and ramp-weaving analysis may be required at local discretion, if a ramp or weaving problem is anticipated.

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The LOS analysis for signalized intersections has been performed using optimized signal timing. This analysis has included an assumed lost time of two seconds per phase in accordance with San Bernardino CMP recommended default values. Signal timing optimization has considered pedestrian safety and signal coordination requirements. Appropriate time for pedestrian crossings have also been considered in the signalized intersection analysis. The following formula has been used to calculate the pedestrian minimum times for all HCM runs:

[(Curb to Curb distance - 6 feet) / (4 feet/second)] + 7 seconds

Saturation flow rates of 1,800 vehicles per hour of green (vphg) for through and right turn lanes and 1,700 vehicles for single left turn lanes, 1,600 vehicles per lane for dual left turn lanes and 1,500 vehicles per lane for triple left turn lanes have been assumed for all capacity analysis. These are the default values recommended by the CMP guidelines.

As required by the San Bernardino CMP, the peak hour traffic volumes have been adjusted to peak 15 minute volumes for analysis purposes using the existing observed peak 15 minute to peak hour factors for all scenarios analyzed. Where feasible improvements in accordance with the local jurisdiction's General Plan and which result in acceptable operations cannot be identified, the Year 2020 peak hour factor has been adjusted upwards to 0.95. This is specifically allowed by the San Bernardino CMP guidelines to account for the effects of congestion on peak spreading. Peak spreading refers to the tendency of traffic to spread more evenly across time as congestion increases. - <u>]</u> ;

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#### 1.4 Definition of Deficiency and Significant Impact

The following definitions of deficiencies and significant impacts have been developed in accordance with the City of Ranchö Cucamonga General Plan CMP requirements.

#### 1.4.1 Definition of Deficiency

The definition of an intersection deficiency has been obtained from the City of Rancho Cucamonga General Plan. The General Plan states that peak hour intersection operations of LOS "D" or better are generally acceptable. Therefore, any intersection operating at LOS "E" to "F" will be considered deficient. It should be noted that the City of Rancho Cucamonga has a list of several intersections where level of service "E" is acceptable. This list includes the project study intersection (Etiwanda Avenue at Highland Avenue).

For freeway facilities, the CMP controls the definition of deficiency for purposes of this study. The CMP definition of deficiency is based on maintaining a level of service standard of LOS "E" or better, except where an existing LOS "F" condition is identified in the CMP document (San Bernardino CMP Table 2-1). A CMP deficiency is, therefore, defined as any freeway segment operating or projected to operate at LOS "F", unless the segment is identified explicitly in the CMP document.

The identification of a CMP deficiency requires further analysis in satisfaction of CMP requirements, including:

- Evaluation of the mitigation measures required to restore traffic operations to an acceptable level with respect to CMP LOS standards.
- Calculation of the project share of new traffic on the impacted CMP facility during peak hours of traffic.

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 Estimation of the cost required to implement the improvements required to restore traffic operations to an acceptable level of service as described above.

This study incorporates each of these aspects for all locations where a CMP deficiency is identified.

1.4.2 Definition of Significant Impact

The identification of significant impacts is a requirement of CEQA, and is not directly addressed in the CMP document. The City of Rancho Cucamonga General Plan and Circulation Element have been adopted in accordance with CEQA requirements, and any roadway improvements within the County of San Bernardino which are consistent with these documents are not considered a significant impact, so long as the project contributes its "fair share" funding for improvements.

A traffic impact is considered significant if the project both: i) contributes measurable traffic to and ii) substantially and adversely changes the level of service at any location projected to experience deficient operations under foreseeable cumulative conditions, where feasible improvements consistent with the City of Rancho Cucamonga and the County of San Bernardino General Plan cannot be constructed.

#### 2. PROJECT DESCRIPTION AND CMP TRAFFIC CONTRIBUTION TEST

This section describes the project land uses and traffic characteristics for each of the future horizon years analyzed. The CMP traffic contribution test used to determine the CMP Horizon Year (2020) analysis locations is also presented in this section.

#### 2.1 <u>Project Description</u>

The project site plan was previously presented on Exhibit 1-C. The project site is proposed to be developed with 359 single-family detached residential dwelling units.

#### 2.2 <u>Project Traffic</u>

The traffic related to the project has been calculated in accordance with the following accepted procedural steps:

- Trip Generation
- Trip Distribution
- Traffic Assignment

These steps are described in detail below.

#### 2.2.1 Project Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation Manual (6th Edition) has been used to calculate the overall quantity of traffic which the project site is estimated to generate. Table 2-1 presents the rates and equations which have been obtained from the ITE Trip Generation Manual.

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#### TABLE 2-1

#### TRIP GENERATION RATES<sup>1</sup>

		A	м	P	м	
LAND USE	UNITS <sup>2</sup>	IN	Ουτ	IN	Ουτ	DAILY
Single-Family Detached Residential	טם	0.19	0.56	0.65	0.36	9.57

<sup>1</sup> Source: Institute of Transportation Engineers (ITE), <u>Trip Generation</u>, Sixth Edition, 1997, Land Use Category 210.

<sup>2</sup> DU = Dwelling Units

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Table 2-2 summarizes the projected trip generation for the Etiwanda Properties development. The proposed development is projected to generate approximately 3,436 trip-ends per day with 269 vehicles per hour during the AM peak hour and 362 vehicles per hour during the PM peak hour.

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#### 2.2.2 Project Trip Distribution and Assignment

The trip distribution and assignment process represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the location of commercial, employment and recreational opportunities and the proximity to the regional freeway system.

The CTP model has been used to evaluate the regional distribution of project traffic. A select zone (trip distribution) analysis was performed using the CTP model with the assistance of SCAG staff. For the Opening Year (2004) trip distribution it has been assumed that Wilson Avenue would not be extended to the east of East Avenue.

The detailed trip distribution/traffic assignment process has been accomplished manually. The Opening Year (2004) project trip distribution is shown on Exhibit 2-A. Wilson Avenue, east of East Avenue, would be constructed in the horizon Year (2020). The Year 2020 project trip distribution is shown in Exhibit 2-E.

#### 2.2.3 Project Only Traffic Volume Forecasts

The project only traffic forecasts have been developed by applying the trip generation, distribution, and traffic assignment calculations. The ADT volumes attributable to the project only are presented on Exhibit 2-B for Opening Year (2004), and on Exhibit 2-F for Year 2020. The AM peak hour project only traffic forecasts are depicted on Exhibit 2-C for Opening Year (2004), and on Exhibit Year (2004), and (Year (2004

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#### TABLE 2-2

#### PROJECT TRIP GENERATION

			PEAK HOUR				
			A	м	<u></u>	vi	
LAND USE	QUANTITY	UNITS <sup>1</sup>	IN	OUT	IN	OUT	DAILY
Single-Family Detached Residential	359	DU	68	201	233	129	3,436

<sup>&</sup>lt;sup>1</sup> DU = Dwelling Units

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## **EXHIBIT 2-A OPENING YEAR (2004) PROJECT TRIP DISTRIBUTION**



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# OPENING YEAR (2004) PROJECT PM PEAK HOUR INTERSECTION VOLUMES

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### **EXHIBIT 2-E** YEAR 2020 PROJECT TRIP DISTRIBUTION



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ETIWANDA PROPERTIES (TTM 16072), Rancho Cucamonga, California

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engineering group, inc.

# YEAR 2020 PROJECT AM PEAK HOUR INTERSECTION VOLUMES



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# YEAR 2020 PROJECT PM PEAK HOUR INTERSECTION VOLUMES



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The project traffic volumes presented in this section are the criteria determining the limits of the required CMP Horizon Year (2020) analysis. The CMP states that any CMP roadway link carrying 80 or more two-way project trips or any CMP freeway link carrying 100 or more two-way project trips during the AM and/or PM peak hour must be analyzed to ensure that no CMP deficiencies are anticipated within the study area. Exhibit 2-I graphically depicts the CMP project traffic contribution test volumes on all of the roadway segments adjacent to the potential CMP intersection analysis locations previously identified, until the project volume contribution has clearly dropped below the CMP 80 trip threshold.

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Table 2-3 summarizes the CMP traffic contribution test for the potential freeway segments in the study area. Only freeway segments with 100 or more two-way (total) trips need to be analyzed in accordance with CMP requirements. Exhibit 2-J presents the resulting final CMP Horizon Year (2020) analysis locations. Overall, 7 intersection locations and no freeway segments have been analyzed per CMP requirements.

The project does not contribute traffic greater than the CMP freeway threshold volume of 100 two-way trips to a State Highway (SR-210 Freeway and I-15 Freeway), and the project contribution test has indicated that the project will contribute more than 80 trips (CMP roadway threshold volume) along roadway segments serving CMP intersections within the City of Rancho Cucamonga. This means that the County of San Bernardino must notify the Congestion Management Agency (SANBAG) and the City of Rancho Cucamonga in accordance with CMP requirements. Each of these agencies must also be provided with a copy of the CMP traffic impact analysis, once the document is accepted by the County of San Bernardino.

# CMP PROJECT TRAFFIC CONTRIBUTION TEST VOLUMES


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#### **TABLE 2-3**

#### CMP FREEWAY PROJECT TRIP CONTRIBUTION SUMMARY

FREEWAY	SEGMENT	PROJECT TRIPS
SR-210	I-15 Fwy. to Day Creek Blvd.	0
SR-210	Day Creek Blvd. to Milliken Ave.	65
1-15	Foothill Blvd. to Baseline Rd.	43
I-15	Baseline Rd. to SR-210 Fwy. /I-15 Fwy. Interchange	0
I-15	SR-210 Fwy. /I-15 Fwy. Interchange to Wilson Ave.	0
I-1 <u>5</u>	Wilson Ave. to Coyote Cyn Rd.	11

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## CMP HORIZON YEAR ANALYSIS LOCATIONS



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#### 3. EXISTING CONDITIONS

This section of the report summarizes existing roadway and traffic conditions in the study area. The existing conditions intersection analysis locations are presented on Exhibit 3-A. The number of through travel lanes for existing roadways and intersection controls are presented, along with existing traffic count data collected for this study. This data was used to analyze existing traffic operations in the study area. Existing plans for roadway improvements are also described in this section.

#### 3.1 Existing Roadway System and Daily Traffic Volumes

The number of through travel lanes for existing roadways and intersection controls within the study area are presented on Exhibits 3-B, while Exhibit 3-C depicts the current ADT volumes in the study area. Existing ADT volumes have been estimated by RK ENGINEERING GROUP, INC. using the following formula for each intersection leg:

PM Peak Hour (Approach + Exit Volume) x 12 = Daily Leg Volume.

Regional access to the site is provided by the SR-210 Freeway and I-15 Freeway. Local access is provided by various arterial roadways in the vicinity of the site. The east-west arterials which will be most affected by the project include Wilson Avenue, Summit Avenue and Highland Avenue. North-south arterials expected to provide local access include Etiwanda Avenue and East Avenue.

#### 3.2 Existing Peak Hour Traffic Volumes

Existing intersection level of service calculations are based upon manual AM and PM peak hour turning movement counts conducted specifically for RK ENGINEERING GROUP, INC. and are shown on Exhibits 3-D and 3-E. Peak

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### Attachment 3, Page 396 EXHIBIT 3-A **EXISTING ANALYSIS LOCATIONS**



### EXHIBIT 3-B EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



### 7-10 Attachment 3, Page 398 XHIBIT 3-C EXISTING AVERAGE DAILY TRAFFIC (ADT) Attachment 3, Page 398 XHBAT 3-C



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### **EXHIBIT 3-D EXISTING AM PEAK HOUR INTERSECTION VOLUMES**



## **EXISTING PM PEAK HOUR INTERSECTION VOLUMES**



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hour traffic count worksheets are included in Appendix "B". Explicit peak hour factors have been calculated using the data collected for this effort as well. The AM peak hour traffic volumes were determined by counting the two hour period between 7:00 to 9:00 AM in the morning. Similarly, the PM peak hour traffic volumes were identified by counting the two hour period from 4:00 to 6:00 PM in the evening.

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#### 3.3 Existing Traffic Operations

Existing peak hour traffic operations have been evaluated for both the AM and PM peak hours of traffic throughout the study area. The results of this analysis are summarized in Table 3-1, along with the existing intersection geometrics and control devices at each analysis location.

The following study area intersections operate at Level of Service "E" to "F" during the peak hours:

Etiwarida Avenue (NS) at:

- Summit Avenue (EW)
- Highland Avenue (EW)

East Avenue (NS) at:

• Summit Avenue (EW)

The operations analysis worksheets for existing conditions are included in Appendix "C".

3.4 Planned Transportation Improvements and Relationships to General Plan

The transportation system within the study area is expected to undergo significant improvement as a result of work currently under construction by

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#### TABLE 3-1

#### EXISTING CONDITIONS INTERSECTION ANALYSIS

		INTERSECTION APPROACH LANES												<u> </u>			
· · · ·		NO	NORTH-		SOUTH-			EAST-			WEST-			DELAY <sup>2</sup>		LEV	
INTERSECTION	CONTROL <sup>3</sup>	L.	T	R	L	T	R	- E	T	R	L	T	R	AM	PM	AM	PM
Etiwanda Ave West (NS) at:						• <del>•••••••••••</del>			Tradition *	·····		<u> </u>					
• Wilson Ave. (EW)	AWS	0	o	0	1	0	1	1	2	0	0	2	0	9.1	8.4	<u>A</u>	A
Etiwanda Ave East (NS) at:																	
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	_4	15.1	F	с
<ul> <li>Highland Ave. (EW)</li> </ul>	TS	1	1	0	1	1	0	1	1	1	1	1	0	57.8	18.0	E	В
East Ave. (NS) at:																	
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	-	8.9	F	A
<ul> <li>Victoria St. (EW)</li> </ul>	TS	1	2	1	1	1	1	1	1	0	1	1	1>	13.1	14.2	В	В

<sup>1</sup> When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right;>> = Free Right Tum;> = Right Tum Overlap

<sup>2</sup> Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single tane) are shown.

<sup>a</sup> AWS = All Way Stop TS = Traffic Signal

<sup>4</sup> - = Delay High, Intersection Unstable, Level of Service "F".

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Caltrans on the State Route 210 corridor. The County of San Bernardino Circulation Plan in the vicinity of the project is shown on Exhibit 3-F.

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The City of Rancho Cucamonga Circulation Plan in the vicinity of the project is shown on Exhibit 3-G. The City of Rancho Cucamonga roadway cross-sections for each roadway classification presented on Exhibit 3-G are depicted on Exhibit 3-H.

The City of Fontana General Plan roadway classifications within the study area are shown on Exhibit 3-1. Exhibit 3-J shows the City of Fontana roadway cross-sections for the various classifications depicted on Exhibit 3-I.

Many of the roadways in the study area have not been fully constructed to their Master Plan Classification. A brief discussion of the various facilities providing direct access to the project and their ultimate configurations is, therefore, provided.

Interstate 15 is expected to undergo two significant changes. Two high occupancy vehicle (HOV) lanes (one in each direction) are included in the long term plans for this facility. In addition, a new interchange with the SR-210 Freeway is currently under construction. An interchange is also planned at Duncan Canyon Road.

State Route 210 (SR-210) is currently under construction. In the vicinity of the project site between Day Creek Boulevard and Sierra, SR-210 is open to traffic.

#### 3.4.1 Funded Roadway Improvements

The most significant improvement project in the study area involves the construction of the SR-210 Freeway between Los Angeles County and the City of San Bernardino. The Summit Avenue interchange with the I-15 Freeway is

1/9/2024 Board Meeting	7-10	Attachment 3, Page 45X	HBIT 3-F
GENER	AL PLAN ROAD	NAY CLASSIFICA	TIONS
PIN 19	20 SITE " *		
EXISTING PROPOSED	pati aga 286	eser pes _ pes _ Controlle Access C mane === - Nauntoia	d/Limiled allector Najor Highwar
	rial Highway	Heuntain Highway Slata Hig Slandard:	Secondary Ihway (Spacial 5 ar Canditians
water and the second se	ighsay		
SOURCE: COUNTY OF SAN BERNARDINO		enqir	neering
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### CITY OF RANCHO CUCAMONGA GENERAL PLAN ROADWAY CROSS-SECTIONS

CODE			USE						
	Chous Section		Midblock	Minor	Major				
A		Local Residential							
В		Collector - Residential Local - Industrial 66' ROW	T	F	7				
с	Image: 1     Ima	Secondary Arterial							
D		Major Arterial							
E		Meior Divide d'Arterial			<b>.</b>				
F	→↓↓↓↓ <sup>120</sup> <sup>150</sup> ↓↓↓↓↓ <sup>150</sup> <sup>150</sup>	MajorDivided Highway for use where special intersection treatment is required.							

SOURCE: CITY OF RANCHO CUCAMONGA



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## EXHIBIT 3-1 CITY OF FONTANA GENERAL PLAN ROADWAY CLASSIFICATIONS





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currently open for traffic. Day Creek Boulevard is being constructed by the University Property from Wilson Avenue to the SR-210 Freeway. Day Creek Boulevard between Baseline Road and Highland Avenue has been constructed and the traffic signals on Day Creek Boulevard at Highland Avenue and Etiwanda Avenue are installed, all by the City of Rancho Cucamonga. No other committed sources of funding for additional improvements necessary to serve the increase in traffic are in place. The analyses contained in this report, therefore, assumed minimal additional improvements beyond those anticipated in the State Route 210 corridor, Summit Avenue and Day Creek Boulevard.

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#### 4. FUTURE DAILY TRAFFIC CONDITIONS

This chapter of the report describes the development of the future year traffic volume forecasts and presents the resulting traffic volumes which will be used for traffic operations analysis. Future traffic conditions without the project are presented first, followed by the future with project traffic volumes.

#### 4.1 <u>Future Without Project Daily Traffic Conditions</u>

As described within Section 1.3.1, the refined Horizon Year 2020 ADT volume forecasts are developed using a growth increment process based on volumes predicted by the CTP Year 1994 and Year 2020 models. The growth increment for CMP Horizon Year 2020 on each roadway segment is the increase in CTP model volume from existing Year 2001 to Year 2020. The final Year 2020 roadway segment volume used for analysis purposes is then determined by adding the Year 2020 growth increment volume to the existing counted volume. Since the input data to the CTP 2020 scenario does not include the proposed development, the project volumes are added to the CTP baseline to determine 2020 with project traffic conditions.

The Opening Year (2004) traffic projections have been interpolated between Year 2020 traffic volumes and existing traffic volumes utilizing a portion of the growth increment (see Section 1.3.1).

#### 4.1.1 Opening Year (2004) Without Project Daily Traffic Conditions

Opening Year (2004) ADT volumes without the project traffic are shown on Exhibit 4-A.

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### OPENING YEAR (2004) WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)



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For Opening Year (2004) without project traffic conditions, a traffic signal is projected to be warranted at the following study area intersection (see Appendix "D"):

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Etiwanda Avenue (NS) at:

Summit Avenue (EW)

4.1.2 Year 2020 Without Project Daily Traffic Conditions

Year 2020 ADT volumes without the project traffic are shown on Exhibit 4-B. For Year 2020 without project traffic conditions, traffic signals are projected to be warranted at the following additional study area intersections (see Appendix "D"):

East Avenue (NS) at:

Wilson Avenue (EW)

#### 4.2 Euture With Project Daily Traffic Conditions

Project traffic volumes on study area roadway segments are determined by generating project trips and manually routing the traffic through the roadway network. The routing patterns follow the trip distribution which was presented in Section 2 on Exhibit 2-A. Trips are assigned to each individual roadway link occurring along a specific route.

The accumulation of traffic assigned to each roadway link represents the project traffic volume for that link. Project only ADT volumes for each analysis year were presented in Section 2 on Exhibit 2-B.

The future year with project traffic volumes are presented in the following sections.

# Attachment 3, Page 414 AMBIT 4-B YEAR 2020 WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)

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#### 4.2.1 Opening Year (2004) With Project Daily Traffic Conditions

The ADT's for the Opening Year (2004) with project have been determined using the volume addition process (see Section 1.3.1). Opening Year (2004) with project ADT volumes are shown on Exhibit 4-C.

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For Opening Year (2004) with project traffic conditions, a traffic signal is projected to be warranted at the following study area intersection (see Appendix "D"):

East Avenue (NS) at:

• Summit Avenue (EW)

#### 4.2.2 Year 2020 With Project Daily Traffic Conditions

The ADT's for the Year 2020 with project have been determined as described above using the volume addition process (see Section 1.3.1). Year 2020 with project ADT volumes are shown on Exhibit 4-D.

For Year 2020 with project traffic conditions, traffic signals are projected to be warranted at the following additional study area intersections (see Appendix "D"):

Etiwanda Avenue -- West (NS) at:

• Wilson Avenue (EW)

Etiwanda Avenue - East (NS) at:

• Wilson Avenue (EW)

# Attachment 3, Page 416 of 608 EXHIBIT 4-C OPENING YEAR (2004) WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)



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## EXHIBIT 4-D YEAR 2020 WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)



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#### 5. FUTURE TRAFFIC OPERATIONS ANALYSIS

This section of the report presents the operations analysis for the traffic volume forecasts for future baseline traffic conditions without the project and for future baseline traffic conditions with the project. The analysis procedures conform to the requirements of the San Bernardino CMP. The operations analysis for each analysis year is presented in a separate subsection.

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- 5.1 Euture Opening Year (2004) Traffic Operations
- 5.1.1 Opening Year (2004) Without Project Conditions

The intersection operations analysis for Opening Year (2004) without project traffic conditions with existing geometrics, construction of Day Creek Boulevard, and SR-210 Freeway improvements are summarized in Table 5-1. Improvements beyond existing conditions include:

 Construct the east leg of the intersection of Etiwanda Avenue - East at Wilson Avenue. A westbound departure lane, westbound through lane, and an eastbound departure lane are included in the analysis.

Opening Year (2004) without project AM and PM peak hour intersection turning movement volumes are shown on Exhibits 5-A and 5-B, respectively. The operations analysis worksheets for Opening (2004) without project conditions are included in Appendix "E". As shown in Table 5-1, the following intersections are projected to experience LOS "E" to "F" operations and are, therefore, deficient per the County of San Bernardino criteria:

Etiwanda Avenue - East (NS) at:

- Summit Avenue (EW)
- Highland Avenue (EW)

#### TABLE 5-1

#### OPENING YEAR (2004) WITHOUT PROJECT CONDITIONS INTERSECTION ANALYSIS

		INTERSECTION APPROACH LANES															
	TRAFFIC	NORTH-			SOUTH-			EAST-			WEST-			DELAY <sup>2</sup>		LEVE	
INTERSECTION	CONTROL <sup>3</sup>	<u>د</u>	T	R	L L	T	R	L	T	R	E.	T	R	AM	PM	AM	PM
Etiwanda Ave West (NS) at:					<u> </u>												{
• Wilson Ave. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	9.2	9.1	Α	A
Etiwanda Ave East (NS) at:																	1
• Wilson Ave. (EW)	CSS	0	1	0	0	0	0	0	1	0	0	1	0	0.1	10.9	А	В
<ul> <li>Summit Ave. (EW)</li> </ul>	AWS	0	1	0	0	1	0	0	1	0	0	1	0	4	26.4	F	D
<ul> <li>Highland Ave. (EW)</li> </ul>	TS	1	1	0	1	1	0	1	1	1	1	1	0		19.6	F	В
East Ave. (NS) at:																	
• Wilson Ave. (EW)	CSS	0	<u>1</u>	0	0	<u>1</u>	0	0	<u>1</u>	0	0	0	0	0.0	0.0	A	A
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1.	0	0	1	0		10.4	F	В
Victoria St. (EW)	TS	1	2	1	1	1	1	1	1	0	1	1	1>	13.8	14.1	B	<u> </u>

<sup>1</sup> When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; <u>1</u> = Improvement

<sup>2</sup> Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single fane) are shown.

<sup>3</sup> CSS = Cross Street Stop
 TS = Traffic Signal
 AWS = All Way Stop

<sup>4</sup> – = Delay High, Intersection Unstable, Level of Service "F".

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## OPENING YEAR (2004) WITHOUT PROJECT AM PEAK HOUR INTERSECTION VOLUMES



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## OPENING YEAR (2004) WITHOUT PROJECT PM PEAK HOUR INTERSECTION VOLUMES



East Avenue (NS) at:

• Summit Avenue (EW)

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#### 5.1.2 Opening Year (2004) With Project Conditions

The intersection operations analysis for Opening Year (2004) with project traffic conditions with existing geometrics are summarized in Table 5-2. Improvements beyond existing conditions are also shown and were described previously on Section 5.1.1. Opening Year (2004) with project AM and PM peak hour intersection turning movement volumes are shown on Exhibits 5-C and 5-D, respectively. The operations analysis worksheets for Opening Year (2004) with project conditions are included in Appendix "F". As shown in Table 5-2, the SAME intersections as in the Opening Year (2004) without project conditions are projected to experience LOS "E" to "F" operations and are, therefore, deficient per the County of San Bernardino criteria.

The intersection operations analysis for Opening Year (2004) with project traffic conditions with improvements are summarized in Table 5-3. Improvements presented in Table 5-3 include both funded improvements and any additional improvements needed to achieve LOS "D" or better during the peak hours. Additional improvements not described previously include traffic signals at the intersections of Etiwanda Avenue at Summit Avenue and East Avenue at Summit Avenue. Physical improvements that will be required at the intersection of Etiwanda Avenue and Highland Avenue include a northbound right turn lane, a southbound right turn lane (with right turn signal overlap phasing). The operations analysis worksheets for Opening Year (2004) with project conditions (with improvements) are included in Appendix "G". As shown in Table 5-3, the study area intersections are projected to operate at Level of Service "C" or better during the peak hours, with improvements.

#### TABLE 5-2

#### OPENING YEAR (2004) WITH PROJECT CONDITIONS INTERSECTION ANALYSIS

		INTERSECTION APPROACH LANES															
		NORTH-			SOUTH-			EAST-			WEST-			DELAY <sup>2</sup>		LEVE	EL OF
	TRAFFIC	<u> </u>	DUN	D	BOUND			BOUND			BOUND			(SECS.)		SERVICE	
	CONTROL <sup>3</sup>	<u> </u>	T	R	Ľ	τ	R	Ľ	T	R	L	T	R	AM	PM	AM	PM
Etiwanda Ave West (NS) at:					1			{									
• Wilson Ave. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	9.9	9.9	Α	А
Etiwanda Ave East (NS) at:																	
• Wilson Ave. (EW)	CSS	0	1	0	0	0	0	0	1	0	0	1	0	10.9	12.9	в	в
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	_4		F	F
Highland Ave. (EW)	TS	1	1	0	1	1	0	1	1	1	1	1	0		22.3	F	С
East Ave. (NS) at:																	
Wilson Ave. (EW)	CSS	0	<u>1</u>	0	0	<u>1</u>	0	0	<u>1</u>	0	0	0	0	8.7	8.5	A	A
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	-	12.4	F	в
<ul> <li>Victoria St. (EW)</li> </ul>	TS	1	2	1	1	1	1	1	1	0	1	1	1>	14.1	14.1	8	В

<sup>1</sup> When a right turn is designated, the fane can either be striped or unstriped. To function as a right turn fane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; <u>1</u> = Improvement

<sup>2</sup> Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>3</sup> CSS = Cross Street Stop TS = Traffic Signal AWS'= All Way Stop

<sup>4</sup> -- = Delay High, Intersection Unstable, Level of Service "F"

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## OPENING YEAR (2004) WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES



# Attachment 3, Page 426 of 608 EXHIBIT 5-D OPENING YEAR (2004) WITH PROJECT PM PEAK HOUR INTERSECTION VOLUMES


#### TABLE 5-3

#### INTERSECTION APPROACH LANES<sup>1</sup> NORTH-SOUTH-EAST-DELAY<sup>2</sup> WEST-LEVEL OF TRAFFIC BOUND BOUND BOUND BOUND (SECS.) SERVICE INTERSECTION AM CONTROL<sup>3</sup> L Т R L TR L Т R L T R AM PΜ PM Etiwanda Ave. - West (NS) at: AWS 0 2 0 0 9.9 • Wilson Ave. (EW) 0 0 1 0 1 1 0 2 9.9 А А Etiwanda Ave. - East (NS) at: CSS 0 0 0 0 0 0 0 0 10.9 в в 1 0 1 1 12.9 Wilson Ave. (EW) TS 0 1 0 0 1 0 0 1 0 0 1 0 15.3 9.5 В А Summit Ave. (EW) TS 0 46.8 Ð В 1 1 0 1 1 1 1 1 1 1 1 18.6 Highland Ave. (EW) East Ave. (NS) at: Wilson Ave. (EW) CSS 0 1 0 0 1 0 0 1 0 0 0 0 8.7 8.5 А А 0 0 0 0 0 15.8 10.3 в <u>TS</u> 0 1 0 1 1 0 1 в Summit Ave. (EW) 2 1 В TS 1 1 1 1 0 1 14.1 14.1 в Victoria St. (EW) 1 1 1 1>

#### OPENING YEAR (2004) WITH PROJECT CONDITIONS INTERSECTION ANALYSIS WITH IMPROVEMENTS

<sup>1</sup> When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right Turn Overlap; 1 = Improvement

<sup>2</sup> Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single fane) are shown.

<sup>3</sup> AWS = All Way Stop CSS = Cross Street Stop TS = Traffic Signal

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#### 5.2 <u>Future CMP Horizon Year (2020) Traffic Operations</u>

### 5.2.1 CMP Horizon Year (2020) Without Project Conditions

The intersection operations analysis for Year 2020 without project traffic conditions with existing geometrics, construction of Day Creek Boulevard, and SR-210 Freeway improvements are summarized in Table 5-4. Year 2020 without project AM and PM peak hour intersection turning movement volumes are shown on Exhibits 5-E and 5-F, respectively. The operations analysis worksheets for Year 2020 without project conditions are included in Appendix "H". As shown in Table 5-4, the following intersections are projected to experience LOS "D" to "F" operations and are, therefore, deficient per the County of San Bernardino criteria:

Etiwanda Avenue (NS) at:

- Wilson Avenue (EW)
- Summit Avenue (EW)
- Highland Avenue (EW)

East Avenue (NS) at:

• Summit Avenue (EW)

## 5.2.2 CMP Horizon Year (2020) With Project Conditions

The intersection operations analysis for Year 2020 with project traffic conditions with existing geometrics, construction of Day Creek Boulevard, and SR-210 Freeway improvements are summarized in Table 5-5. Year 2020 with project AM and PM peak hour intersection turning movement volumes are shown on Exhibits 5-G and 5-H, respectively. The operations analysis worksheets for

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#### TABLE 5-4

#### INTERSECTION APPROACH LANES<sup>1</sup> DELAY 2 NORTH-SOUTH-EAST-WEST-LEVEL OF TRAFFIC BOUND BOUND BOUND BOUND (SECS.) SERVICE INTERSECTION CONTROL<sup>3</sup> Ł Т R LΤR L Т R L T R AM PM AM I PM. Etiwanda Ave. - West (NS) at: AWS Wilson Ave. (EW) 0 0 0 0 1 0 0 1 1 2 0 2 9.7 15.7 С А Etiwanda Ave. - East (NS) at: Wilson Ave. (EW) CSS 0 0 0 0 0 0 1 1 0 0 1 0 10.6 в F ---AWS 0 \_4 F F Summit Ave. (EW) 0 1 0 0 1 0 0 0 0 1 1 Highland Ave. (EW) TS 1 1 0 1 0 1 1 1 1 0 F С 1 1 29.3 \_ East Ave. (NS) at: Wilson Ave. (EW) CSS 0 0 0 0 0 0 0 0 19.1 F С 1 1 1 1 ---AWS 0 0 0 0 0 0 1 0 F F Summit Ave. (EW) 1 1 0 1 ------Victoria St. (EW) TS 1 2 1 1 1 1 1 1 0 1 1 1> 16.0 17.0 8 B

#### YEAR 2020 WITHOUT PROJECT CONDITIONS INTERSECTION ANALYSIS.

<sup>1</sup> When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; <u>1</u> = Improvement

<sup>3</sup> AWS = All Way Stop CSS = Cross Street Stop TS = Traffic Signal

<sup>4</sup> -- = Delay High, Intersection Unstable, Level of Service "F".

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<sup>&</sup>lt;sup>2</sup> Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.



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# EXHIBIT 5-F YEAR 2020 WITHOUT PROJECT PM PEAK HOUR INTERSECTION VOLUMES



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#### TABLE 5-5

#### YEAR 2020 WITH PROJECT CONDITIONS INTERSECTION ANALYSIS

			IN	TER	SEC	TIC	N A	PPR	DAC	HL	٨NE	S <sup>1</sup>					
2		N	ORT	H-	S	TUC	Ή-	E	AST	-	W	/ES	T-	DEL	AY <sup>2</sup>	LEVE	EL OF
	TRAFFIC	B	QUN	D	B	QUI	۵V	80	NUC	D	B	NUC	۱D	(SE	<u>CS.)</u>	SER	VICE
INTERSECTION	CONTROL <sup>3</sup>	L	· T	R	L.	T	R	L	Т	R	Ļ	Т	R	AM	PM	AM	PM
Etiwarida Ave West (NS) at:																	
• Wilson Ave. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	10.4	17.9	B	c
Etiwanda Ave, East (NS) at:					F												
• Wilson Ave. (EW)	CSS	0	1	0	0	0	0	0	1	0	0	1	0	12.0	-	В	F
Summit Ave. (EW)	AWS	0	1	0	0	1	0	0	1	0	0	1	0	4		F	F
<ul> <li>Highland Ave. (EW)</li> </ul>	TS	1	1	0	1	1	0	1	1	1	1	1_	0		34.2	F	<u>c</u>
East Ave. (NS) at:																	
• Wilson Ave. (EW)	CSS	0	1	0	0	<u>1</u>	0	0	<u>1</u>	0	0	1	0			F	F
• Summit Ave. (EW)	AWS	0	1	0	0	1	0	D	1	0	0	1	0			F	F
Victoria St. (EW)	TS	1	2	1	1	1	1	1	1	0	1	1	1>	16.0	17.0	В	ÍВ

<sup>1</sup> When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; <u>1</u> = Improvement

<sup>2</sup> Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

<sup>3</sup> AWS = All Way Stop
 CSS = Cross Street Stop
 TS = Traffic Signal

<sup>4</sup> - = Delay High, Intersection Unstable, Level of Service "F".

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# YEAR 2020 WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES



# YEAR 2020 WITH PROJECT PM PEAK HOUR INTERSECTION VOLUMES



Year 2020 with project conditions are included in Appendix "I". As shown in Table 5-5, the **SAME** intersections as in the Year 2020 without project conditions are projected to experience LOS "D" to "F" operations and are, therefore, deficient per the County of San Bernardino criteria.

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The intersection operations analysis for Year 2020 with project traffic conditions with improvements are summarized in Table 5-6. Improvements presented in Table 5-6 include both funded improvements and any additional improvements needed to achieve LOS "C" or better during the peak hours. Traffic signals will be required at all studied intersections, and physical improvements will be required at most of the locations analyzed. The operations analysis worksheets for Year 2020 with project conditions (with improvements) are included in Appendix "J." As shown in Table 5-6, the study area intersections are projected to operate at Level of Service "C" or better during the peak hours, with improvements.

#### 5.3 <u>CMP Freeway Evaluation</u>

As required by the CMP, an analysis of Horizon Year (2020) freeway level of service is required for all freeway segments which carry 100 or more project trips in the peak hour. The project does not contribute traffic greater than the CMP freeway threshold of 100 two-way trips to a State Highway (SR-210 Freeway and I-15 Freeway).

### TABLE 5-6

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#### INTERSECTION APPROACH LANES<sup>1</sup> DELAY 2 LEVEL OF NORTH-SOUTH-EAST-WEST-SERVICE TRAFFIĆ BOUND BOUND BOUND BOUND (SECS.) PM CONTROL<sup>3</sup> R ÅΜ PM AM I INTERSECTION L Ť. ĹŤ R Т Rİ L Τ\_ R L Etiwanda Ave. - West (NS) at: TS 0 2 0 0 2 0 9,9 6.5 A А Wilson Ave. (EW) 0 0 1 0 1 1 Etiwanda Ave, - East (NS) at: в Wilson Ave. (EW) 0 0 0 8.6 19.3 А <u>TS</u> 0 1 0 0 0 0 1 0 1 С 1 1 0 22.9 30.1 С Summit Ave. (EW) <u>TS</u> 0 0 0 1 0 0 0 0 1 С 29.8 32.8 2 0 С Highland Ave. (EW) тs 1 1 0 1 1 1 1 1 1 1 East Ave. (NS) at: 9.1 В А Wilson Ave. (EW) 0 0 0 0 10.8 <u>TS</u> 1 0 1 0 1 1 1 1 С В Summit Ave. (EW) τs 0 2 0 0 2 0 1 1 0 1 1 0 29.3 17.0 17.0 в в 16.0 Victoria St. (EW) TS 1 2 1 1 1 1 1 1 0 1 1 1>

#### YEAR 2020 WITH PROJECT CONDITIONS INTERSECTION ANALYSIS WITH IMPROVEMENTS

L = Left; T = Through; R = Right; > = Right Turn Overlap; <u>1</u> = Improvement

<sup>3</sup> TS = Traffic Signal

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When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

<sup>&</sup>lt;sup>2</sup> Analysis Software: Traffix, Version 7.5.1115 (2001). Per the 1997 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst individual movement delay and level of service for the worst individual movement delay and level of service for the worst individual movement delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

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#### 6. IMPROVEMENT COSTS AND PROJECT CONTRIBUTION

This section of the report summarizes the improvements and associated costs required to meet CMP level of service requirements at CMP analysis locations. The project fair share contribution for the improvements at each location is also identified.

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#### 6.1 <u>CMP Required Improvements and Costs</u>

Improvements which will eliminate all anticipated roadway operational deficiencies throughout the study area have been identified for CMP Opening Year (2004) and CMP Horizon Year (2020) traffic conditions. The improvements were determined through the operations analysis of Section 5.

The approximate costs for the CMP Year 2020 improvements have generally been estimated using cost guidelines in the 1999 CMP Handbook (see Appendix "K"). A unit cost of \$120,000 for installation of a traffic signal has been substituted for the somewhat lower value cited in the CMP materials. The needed improvements and resulting costs are summarized in Table 6-1 for intersections and roadway links. For the arterial roadway system, some of the improvements identified in Sections 3 and 5 are already funded. For instance, if the San Bernardino RTIP indicated that a roadway was to be improved to a six lane divided facility, three through lanes and a single left turn lane were assumed to be constructed as part of the funded improvements. The physical improvements at the intersections of Etiwanda Avenue - East and East Avenue at Wilson Avenue are examples of funded improvements in the study area (the project will construct most of these improvements in conjunction with development.) Therefore, no cost is shown in Table 6-1 for already funded improvements. The total cost of needed and unfunded arterial roadway improvements is \$1,527,000.

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#### TABLE 6-1

## SUMMARY OF INTERSECTION AND ROADWAY IMPROVEMENTS AND COSTS

		TOTAL
Etiwarda Ava Wort (NS) at		
• Wilson Ave. (EW)	Install Traffic Signal	\$120.000
Etiwanda Ave East (NS) at:		
• Wilson Ave. (EW)	Install Traffic Signal 2020	\$120,000
• Summit Ave. (EW)	Install Traffic Signal 2004	\$120,000
• Highland Ave. (EW)	Construct SB Right Tum Lane 2004	\$50,000
	Construct an Additional WB Through Lane 2°2°	\$259,000
East Ave. (NS) at: • Wilson Ave. (EW)	Install Traffic Signal 2019 2020	\$120,000
• Summit Ave. (EW)	Install Traffic Signal 2004	\$120,000
	Construct One Additional NB Lane to Provide	\$259,000
	a Share Left and Through and Shared Right	
	and Through Lane Construct One Additional SB Lane to Provide a Shared Left and Through and Shared Right/	\$259,000
	Construct EB Left Tum Lane	\$50,000
	Construct WB Left Turn Lane	\$50,000
TOTAL		\$1,527,000

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## 6.2 Project Contribution and Fair Share Costs

In conformance with CMP requirements, project fair share contributions have also been calculated for CMP Horizon Year improvement locations. The project share of cost has been based on the proportion of project peak hour traffic contributed to the improvement location relative to the total new peak hour Year 2020 traffic volume.

Table 6-2 presents a summary of improvement cost and project cost shares at each CMP Horizon Year (2020) intersection improvement location. The intersection fair share cost calculations are based on the PM peak hour traffic volumes, since this is when most (and the most severe) intersection deficiencies occur. As shown in Table 6-2, the project's fair share of identified intersection and roadway link costs is \$162,324.

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#### TABLE 6-2

#### PROJECT FAIR SHARE INTERSECTION TRAFFIC CONTRIBUTION

			YEAR 2020		TOTAL	PROJECT		
	TOTAL	EXISTING	PROJECT	PROJECT	NEW	NEW	COST	
INTERSECTION/SEGMENT	COST	TRAFFIC	TRAFFIC	TRAFFIC	TRAFFIC	TRAFFIC	SHARE	1 63
Etiwanda Ave West (NS) at: • Wilson Ave. (EW)	\$120,000	319	1,402	142	1,083	13.1%	\$15,734	11 
Etiwanda Ave East (NS) at: • Wilson Ave. (EW)	\$120,000	291	1,450	160	1,159	13.8%	\$16,566	. * *
• Summit Ave. (EW)	\$120,000	928	1,983	112	1,055	10.6%	\$12,739	
• Highland Ave. (EW)	\$309,000	1,214	2,209	109	995	11.0%	\$33,850	¶ : ]
East Ave. (NS) at: • Wilson Ave. (EW)	\$120,000	0	1,305	165	1,305	12.6%	\$15,172	
Summit Ave. (EW)	\$738,000	510	1,656	106	1,146	9.2%	\$68,262	
TOTAL	\$1,527,000						\$162,324	

#### 7. SUMMARY AND RECOMMENDATIONS

This chapter summarizes the findings of this traffic impact analysis, and provides a series of recommendations related to project implementation.

#### 7.1 Summary

The traffic issues related to the proposed land use and development have been evaluated in the context of the California Environmental Quality Act (CEQA) and the San Bernardino County Congestion Management Program (CMP). The City of Rancho Cucarnonga is the lead agency responsible for preparation of the traffic impact analysis, in accordance with both CEQA and CMP authorizing legislation. In accordance with explicit CMP requirements, both an Opening Year analysis and a CMP Horizon Year analysis are included in this report.

A series of scoping discussions were conducted with the following agencies to define the desired analysis locations for each future analysis year:

- City of Rancho Cucamonga
- San Bernardino Associated Governments (SANBAG)

In addition, staff from the Southern California Association of Governments (SCAG) have also been contacted to discuss the project and its associated travel patterns.

The project does not contribute traffic greater than the CMP freeway threshold volume of 100 two-way trips to a State Highway (SR-210 Freeway and I-15 Freeway), and the project contribution test has indicated that the project will contribute more than 80 trips (CMP roadway threshold volume) along roadway segments serving CMP intersections within the City of Rancho Cucamonga.

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This means that the City of Rancho Cucamonga must notify the Congestion Management Agency (SANBAG) in accordance with CMP requirements. SANBAG must also be provided with a copy of the CMP traffic impact analysis, once the document is accepted by the City of Rancho Cucamonga.

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The CMP Horizon Year (2020) traffic volumes without the project have been derived from the subregional travel demand model currently being used for long range planning in San Bernardino County. This model is commonly referred to as the Comprehensive Transportation Plan (CTP) model. The CTP model is currently the only approved travel demand forecasting tool within the study area, as none of the locally developed travel demand models in the study area have received the necessary "finding of consistency" (with the CTP model) from SANBAG/SCAG.

Project traffic volumes for all future conditions projections were estimated using the manual approach described in the CMP guidelines. Trip generation has been estimated based on the trip rates contained in the Institute of Transportation Engineers (ITE) <u>Trip Generation</u> Manual, 6th Edition. The project trip distribution was developed based on a review of existing traffic volumes and projected future traffic patterns as predicted by the CTP model.

Project traffic volumes were then subtracted from the future year background volumes. The result of this traffic forecasting procedure is a series of traffic volumes suitable for traffic operations analysis.

#### 7.1.1 The Project

The project site is proposed to be developed with 359 single-family detached residential dwelling units. Exhibit 1-C illustrates the project site plan.

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The traffic related to the project has been calculated in accordance with the following accepted procedural steps:

7-10

- Trip Generation
- Trip Distribution
- Traffic Assignment

Table 2-2 summarizes the projected trip generation for the Etiwanda Properties development. The proposed development is projected to generate approximately 3,436 trip-ends per day with 269 vehicles per hour during the AM peak hour and 362 vehicles per hour during the PM peak hour.

The trip distribution/traffic assignment process has been accomplished manually. The individual distribution pattern for the project has been developed based on the regional trip distribution, as well as the individual access points and local traffic patterns.

#### 7.1.2 Existing Study Area Conditions

All CMP Horizon Year (2020) analysis locations, which exist today, have been analyzed. Regional access to the site is provided by the SR-210 Freeway and I-15 Freeway. Local access is provided by various arterial roadways in the vicinity of the site. The east-west arterials which will be most affected by the project include Wilson Avenue, Summit Avenue and Highland Avenue. North-south arterials expected to provide local access include Etiwanda Avenue and East Avenue.

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The study area intersections analyzed currently operate at Level of Service "C" or better during the peak hours, except for the following intersections which operate at Level of Service "E" to "F" during the peak hours:

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Etiwanda Avenue (NS) at:

• Highland Avenue (EW)

East Avenue (NS) at:

- Summit Avenue (EW)
- 7.1.3 Future Conditions

An Opening Year (2004) analysis and a CMP Horizon Year (2020) analysis are included in this report. Opening Year (2004) traffic operations analysis has been completed for the AM and PM peak hours and are shown in Tables 5-1 through 5-3. AM peak hour and PM peak hour traffic operations analysis are summarized in Tables 5-4 through 5-6 for Year 2020 conditions. Most study area operational deficiencies will occur whether or not the project is constructed. Improvements have been identified for all operational deficiencies with the project.

For Opening Year (2004) without project traffic conditions, a traffic signal is projected to be warranted at the following study area intersection (see Appendix "D"):

Etiwanda Avenue (NS) at:

• Summit Avenue (EW)

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For Opening Year (2004) with project traffic conditions, a traffic signal is projected to be warranted at the following study area intersection (see Appendix "D"):

7-10

East Avenue (NS) at:

Summit Avenue (EW)

For Year 2020 without project traffic conditions, traffic signals are projected to be warranted at the following additional study area intersections (see Appendix "D"):

East Avenue (NS) at:

• Wilson Avenue (EW)

For Year 2020 with project traffic conditions, a traffic signal is projected to be warranted at the following study area intersection (see Appendix "D"):

Etiwanda Avenue - East (NS) at:

• Wilson Avenue (EW)

Etiwanda Avenue -- West (NS) at:

• Wilson Avenue (EW)

#### 7.2 <u>Recommendations</u>

The recommendations in this section address on-site improvements, off-site improvements and the phasing of all necessary study area transportation improvements.

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#### 7.2.1 On-Site Improvements.

On-site improvements and improvements adjacent to the site will be required in conjunction with the proposed development to ensure adequate circulation within the project itself. Exhibit 7-A depicts the recommended on-site circulation system.

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#### 7.2.2 Off-Site Improvements

The necessary off-site improvement recommendations were described in previous sections of this report. The project should contribute towards the cost of necessary study area improvements on a fair share or "pro-rata" basis.

### 7.2.3 Phasing

Actual improvement phasing should be monitored, as actual growth patterns may not match the growth projections exactly. New traffic count data should be obtained and evaluated as individual project phases are constructed.

#### 7.2.4 Transportation System Management Actions

a. Off-Site

As development in the area occurs, transit agencies should consider expanding service within the area.

b. On-Site

No on-site recommendations at this time.

## EXHIBIT 7-A CIRCULATION RECOMMENDATIONS



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### APPENDIX A

## ADT GROWTH INCREMENT CALCULATIONS, PEAK HOUR DIRECTIONAL GROWTH INCREMENT CALCULATIONS, AND FUTURE PEAK HOUR INTERSECTION TURNING MOVEMENT CALCULATIONS

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						ETIWANDA AVE V	VEST /	WILSON AVE				
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#### ETIWANDA AVE. - WEST / WILSON AVE. FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

[			, ,	EAR 2020 TRAF	FIC CONDITIC	ONS			
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	TURNING	INTIAL TURN		FUTURE YEAR		TURNING	INTIAL TURN		FUTURE YEAR
APPROACH	MOVEMENT	PROPORTION	APPROACH	TOTAL	APPROACH	MOVEMENT	PROPORTION	APPROACH	TOTAL
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BOUND	THRU	36	1N	D	BOUND	THRU	36	IN	٥
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	RIGHT	16	ວປາ	90		RIGHT	9	ουτ	280
EAST	LEFT	14	WEST LEG		EAST	LEFT	14	WEST LEG	
BOUND	THRU	86	IN	<b>50</b> .	BOUND	THRU	86	IN	760
	RIGHT	0	OUT	50		RIGHT	0	ООТ	90
WEST	LEFT	0	EAST LEG		WEST	LEFT	0	EAST LEG	
BOUND	THRU	53	1N	150	BOUND	THRU	39	IN	360
	RIGHT	47		270		RIGHT	61	<u>,</u>	890,

				YEAR 2020 TRA	FFIC CONDITI	ONS				
	AN	PEAK HOUR R	ESULTS			Р	M PEAK HOUR F	RESULTS		
	TURNING	INTIAL TURN	FUTURE YEAR	PEAK - DAILY	- <u> </u>	TURNING	INTIAL TURN	FUTURE YEAR	PEAK	- DAILY
APPROACH	MOVEMENT	PROPORTION	FORECAST	RELATIONSHI	APPROACH	MOVEMENT	PROPORTION	FORECAST	RELATI	ONSHIP
NORTH	LEFT	10	0	NORTH LEG	NORTH	LEFT	6	0	NORT	HLEG
BOUND	THRU	36	· 0	RATIO 7.3%	BOUND	THRU	36	0	RATIO	9.9%
	RIGHT	54	0	ADT 4,300		RIGHT	58	0	ADT	4,300
SOUTH	LEFT	84	221	SOUTH LEG	SOUTH	LEFT	91	142	soரா	H LEG
BOUND	THRU	0	0	RATIO #DIV/0	BOUND	THRU	0	0	RATIO	#D4V/01
	RIGHT	16	5	ADT 0	j	RIGHT	9	2	ADT	0
EAST	LEFT	14	2	EAST LEG	EAST	LEFT	14	33	EAST	LEG
BOUND	THRU	86	49	RATIO 4.9%	BOUND	THRU	86	748	RATIO	14.9%
	RIGHT	0	0	ADT 8,200	ļ	RIGHT	0	0	ADT	8,200
WEST	LEFT	0	0	WEST LEG	WEST	LEFT	0	D	WEST	LÉG
BOUND	THRU	53	45	RATIO 2.4%	BOUND	THRU	39	8B	RATIO	20.7%
	RIGHT	47	88	ADT 4.200		RIGHT	61	247	ADT	4,200

Modified by COMSIS Corp. (M. Roskin) 4/8/86 Modified by: FHWA 12/21/87 Modified by: RKJK 3/1/99

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#### ETIWANDA AVE. - WEST / WILSON AVE. FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

[			INTE	RIM YEAR 2004 7	RAFFIC CON	DITIONS			
	AM	PEAK HOUR INP	UT DATA			PM	PEAK HOUR INF	UT DATA	
	TURNING	INITIAL TURN		INTERIM YEAR		TURNING	BASE YEAR		INTERIM YEAR
APPROACH	MOVEMENT	PROPORTION	APPROACH	TOTAL	APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL
NORTH	LEFT	10	SOUTHLEG		NORTH	LEFT	6	SOUTHLEG	
BOUND	THRU	36	in	0	BOUND	THRU	36	IN	0
Ì	RIGHT	54	ουτ	9		RIGHT	58	OUT	0
SOUTH	LEFT	84	NORTH LEG	<u> </u>	SOUTH	LEFT	91	NORTH LEG	
BOUND	THRU	0	IN	180	BOUND	THRU	0	ίΝ	110
	RIGHT	16	<b>О</b> ИТ	70		RIGHT	9	out	150
EAST	LEFT	14	WESTLEG		EAST	LEFT	14	WEST LEG	
BOUND	THRU	86	łN	40	BOUND	THRU	86	IN	150
	RIGHT	0	о <b>л</b>	40		RIGHT	0	OUT	60
WEST	LEFT	0	EASTLEG		WEST	LEFT	0	EAST LEG	
BOUND	THRU	53	IN	120	BOUND	THRU	39	IN	200
	RIGHT	47	OUT	220		RIGHT	61	OUT	270

[			INTE	RIM YEA	R 2004 1	<b>FRAFFIC CON</b>	DITIONS				
	AN	PEAK HOUR R	ESULTS			<u>                                      </u>	PI	M PEAK HOUR P	RESULTS		
	TURNING	INITIAL TURN	INTERIM YEAR	PEAK	DAILY		TURNING	INITIAL TURN	INTERIM YEAR	PEAK	DAILY
APPROACH	MOVEMENT	PROPORTION	FORECAST	RELAT	ONSHIP	APPROACH	MOVEMENT	PROPORTION	FORECAST	RELATI	ONSHIP
NORTH	LEFT	10	0	NORT	HLEG	NORTH	LEFT	6	0	NORT	HLEG
BOUND	THRU	36	0	RATIO	8.2%	BOUND	THRU	36	0	RATIO	8.7%
ļ d	RIGHT	54	0	ADT	3,100		RIGHT	58	0	ADT	3,100
SOUTH	LEFT	84	181	SOUT	HLEG	SOUTH	LEFT	91	117	Sout	HLEG
BOUND	THRU	0	0	RATIO	#DIV/01	BOUND	THRU	a	0	RATIO	#DIV/01
	RIGHT	16	4	ADT	0		RIGHT	9	3	ADT	0
EAST	LEFT	14	2	EAST	LEG	EAST	LEFT	14	9	EAS	T LEG
BOUND	THRU	86	39	RATIO	7.4%	BOUND	THRU	86	153	RATIO	10.6%
	RIGHT	D	0	ADT	4,400		RIGHT	0	0	ADT	4,400
WEST	LEFT	0	0	WEST	I LEG	WEST	LEFT	0	0	WES	TLEG
BOUND	THRU	53	36	RATIO	5.1%	BOUND	THRU	39	57	RATIO	13.9%
	RIGHT	47	68	ADT	1,600		RIGHT	61	141	ADT	1,600

Modified by: COMSIS Corp. (M. Roskin) 4/8/86 Modified by: FHWA 12/21/87 Modified by: RKJK 3/1/99 J

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			ETIWA	NDA AVE.	EAST / WILSON AVE			· · · · · · ·	
	M PEAK HOUR					EAK HOUR			
2001	VOLUMES:	0 C	0		2001	LUMES: <	0 0	6	
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	0 >			< (		0 >		<	0
	210 v			v (	) [ 1	22 v		v .	a l
		107 D	<b>`</b> 1			< د	169 0	> 8	
EXISTING COUNT YEAR:	· · · · · · · · · · · · · · · · · · ·				EXISTING COUNT YEAR:				
2001		0	·O		2001		0	-0	-
		v	^				v	<b>^</b>	
	107 <	י או ≄	317 · 317 :	< ( > (		169 <	IN ≆ OLIT=	291 <	0
	210 -	. 001- v					v - 001 -	A .	Ĭ
		210	107		)		122	_169	}
EXISTING MODEL YEAR:					EXISTING MODEL YEAR:		_		
1994		U V	、 U		1994		O	, U	
	0 <	±N =	0 -	< (		0 <	IN =	0 <	0
	0 >	OUT =	• 0 >	> (	<b>)</b>	6 >	OUT =	0 >	0
		v	^ _				۷.	^	
		0	<u> </u>				. 0	0	
2020		D	0		2020		n	0	ĺ
		v	^ -				v	•	
	53 <	1N =	165 -	< 43		256 <	1N =	1373 <	111
1	84 >	OUT =	: 166 : ^	> 44	•	1023 >	OUT =	1373 >	1044
		69	39				73	238	
RAW GROWTH: 1994 TO	2020				RAW GROWTH: 1994 TO 20	20			
		0	0		· ·		0	Û	
	<b>F</b> 3 -	v	^			056	v	^	
	53 <			- 43 > 44		1023 >		~ ~	1044
		v	^			,010	v	*	
		69	39				73	238	
ADJUSTED GROWTH. 1994	TO 2020		0	-	ADJUSTED GROWTH: 1994 TO	2020	_		
-100 MINIMUM GROWTH %		v	~ <sup>0</sup>		-100 MINIMUM GROWTH %			, U	
	53 <	•	<	: 43		256 <	•	<	111
	84 >		>	• 44		1023 >		>	1044
		v co	20				v 79	720	ŀ
PROBATED GROWTH 2001	TO 2020					2020	73	238	
19 YEARS		0	0		19 YEARS	LOLD	D	0	
		v	•				v	^	[
	40 <		<	30		190 <		<	80
	00 -	v	× ´	20		750 ×	v	× ´	100
		<u>5</u> 0	30				50	170	
NEW PROJECTED VOLUMES:	2020				NEW PROJECTED VOLUMES: 202	0			
		0	, O				O	0	
	150 <	v		30		360 <	v	 	80
	270 >		>	30		870 >		>	760
		v	*				v	٨	
	70 2004	260	140	<u> </u>			170	340	
3 YEARS	10 2004	0	â		NIEKIM YEAR GROWTH. 2001 TO 3 YEARS	2004		n	
		v	~		U TEARG		v	, <sup>v</sup>	,
	10 <		<	o		30 <	-	<	10
	10 >		``	0		120 >		, >	120
		v 10-	0	l			۷ ۱.1	30	
NITIAL INTERIM VOLUMES:			<u> </u>		INITIAL INTERIM VOLUMES		10		
2004		0	0		2004		0	0	
	174 -	V _	1 0 0				v	^	
	120 < 220 >	ini ≑ OUT =	330 < 340 >	0		200 <	₩ = ΩUT+	450 < 450 ~	10
		v	^			240 >	v01.=	* 00	120
·····	<u> </u>	220	110				130	200	]
BALANCED INTERIM VOLUMES			-		BALANCED INTERIM VOLUMES:				
2004		0	, Ç		2004		Q	, o	j.
	120 <	trv ≍	340 <	0		200 <	JN =	450 <	10
	230 >	QUT =	340 >	0		240 >	OUT =	450 >	120
		Y	•	1			v	*	į
		220	110	[			130	200	<u> </u>

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Attachment 3, Page 456 of 608

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<u></u>									ETIW	ANDA A	AVE (	EAST	WILS	ON AVE.									
<u> </u>		S	TART	ING PO	ит ти	RNINC	S MOVE	MENT	DERIV	ATION (	BASE	YEAR	VOLU	MES) AT	LOCA	TIONS	WITHC	UT E	XISTIN		JNTS		
						AK HC	<u>UR</u>					<u> </u>				F	PEA	<u>k ho</u>					
INOF	THBO	UND AP	PROA	CH:								NOR	THEO	UND APP	PROAC	;H:							
NL<	=	NL	1	(NL	+	2*	NŤ	+	NR)			NL<	=	NL	f	(NL	+	2'	NT	+	NR)	_	
1	Ŧ	150	))	15	0+	2.	(	) +	30	1		ŀ	=	360	1	360	+	2*		0 +	76	0	
1	=	0.83	3									-	=	0.32									
2												1											
NT^	=	2.	NT	÷	(NL	+	2	NT	+	NR)		NT^	=	2*	NT	I	(NL	+	2"	NT	+	NR)	
1	-	2*		0/	150	) +	2*	C	+	30		Ľ	=	2*	0	1	360	+	2"		0 +	760	
		0,00	<b>}</b>									ł	÷	0.00									
l						_						ĺ											
INR>	=	NR	1	(NL	+	2*	NT	+	NR)			NR>	=	NR	1	(NL	+	2	NT	. *	NR)	~	
li	z	30		150	) +	2*	C	) +	30			K I	Ŧ	760	1	360	+	2		0 +	75	U	
<u> </u>		0.17	· · · · · · · · · · · · · · · · · · ·									<u> </u>		0.68		<del>.</del>					<u> </u>		
ISOU	тнво		PROA	CH:								ISOUT	нво	UND APP	PROAC	H:							
SL>	=	SL	1	{SL	+	2 <b>.</b>	ST	+	SR)			ISL>	Ŧ	SL	1	(SL	+	2	ST	<b>.</b> *	SR)		
	=	30	11	30	÷	2•	260	)+	150	I			=	760	1	760	+	2	17	0 +	30	0	
	Ŧ	0.04	ł										=	0.52									
1 <sub></sub>	_		oT				<u>.</u>			-			_	-			<i>(</i> <b>0</b> )			CT.		CDI	
SIV	-	2	51	1	(SL	+	2*	SI	+	SR)		SIV	*	2	SL	4	(SL	+	2.	51	*	360	
ii 👘	-	2-	20	07	30	) <del>+</del>	2*	260	+	150		1	-	2	170		760	+	2	1	/0 +	300	
	Ξ	U.74	i										=	0.23									
00/	-	¢n.		101		74	ст		<b>CO</b> \			00-	_	60		(0)		<b></b>	ET.	+	501		
SR.	-	360		(31	, T	2	31 76/		360			an.	-	170	<b>'</b>	131	I	2	31	n -	36	n	
	-	0.21		50	, +	4	200	. +	150				-	0.75	'	700	•	2		•••		<b>.</b>	
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CL	-		, ,			2	20	Ţ	260			IL.	-	EL	1	(EL D		2	760	Ţ	17	'n	
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ETS	_	·>+	ст	,	(E)		24	ET		50)				· -]+	ET		/C)	4		БТ		ED)	
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	-	 				, <b>.</b>	2	50	•	200		J.	_	60.00	100		U U		2	'			
		0.13											-	0.90									
ERv	=	ÉR	1	(ÊI	+	2*	FT	+	EB)			FRV	=	FR	1	/E1	+	2.	FT	+	ER		
[ <b>_</b>	=	260	1		+	2.	. 30	+	260				=	170	1	, 0	+	2.		0 +	17	o	
•	=	0.81		-		-							=	0.10		-		-		-			
WES	BOU	ND APP	ROAC	H:						÷		WES	IBOU	ND APP	ROACH	Ē							
WLV	=	WL	1	MUL	+	2"	wī	+	WR)			WLV	=	WL.	1	(WL	+	2'	wr	+	WR)		
	=	260	7	260	+	2-	150	+	0			1	Ŧ	170	1	170	+	2'	36	0 +		0	
	=	046											Ŧ	0.19									
WT<	Ξ	2"	WT	1	(WL	÷	2*	WT	+	WR)		WT<	=	2*	wτ	i	(WL	÷	2*	WT	•	WR)	
	-	2*	150	) /	260	+	2*	150	+	0			=	2.	360	1	170	+	2*	3	60 +	0	
•	=	0.54											=	0.81									
												ľ											
WR^	=	WR	1	(WL	+	2*	WT	+	WR)			WR^	Ξ	WR	I	(WL	+	2'	WT	÷	WR)	I	
	2	0	1	260	+	2*	150	+	0				=	0	1	i 170	+	2*	36	0 +		0	
	=	0.00		_							1	1	=	0.00									
ESTIN	ATED	PERCE	NTAG	ES								ESTR	ATE	D PROPO	ORTIO	NS:					-		
							21%	74%	4%			1							25	% 23	3% 52	%	
							<	v	>										<	v	>		
					0%	•		1.00		^	0%						0%	*		1.	00	۸	0%
					19%	>	1.00		1.00	>	54%						90%	>	1.0	0	1,0	0 >	819
					81%	v		1.00		v	46%						10%	ν		1	.00	v	19%
							<	v	>										<	v	>		
							83%	0%	17%		-								329	%	0% 68	%	
_																					_		-

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				EAST AVE.	/ WILSON AVE.	
AM PE	AK HOUR		<u> </u>	··· ·=·		
EXISTING TURNING MOVEMENT VOLU	JMES:	<u>ه</u> م	0		EXISTING TORNING MOVEMENT VOLUMES:	
2001	<	v	>		< v >	
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EXISTING COUNT YEAR:					EXISTING COUNT YEAR:	
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	0 -	, 001- v		-		```
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EXISTING MODEL YEAR.			<u></u>		EXISTING MODEL YEAR:	
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	0.	01 F =	0	> 1	U U U U U U U U U U U U U U U U U U U	1
	•	v V	^ <sup>×</sup>	-	v ^	
		0	0		0 0	
FUTURE MODEL YEAR:					FUTURE MODEL YEAR:	
2020		0	0			
	43 <	ŧN =	1579 -	< 140	5 111 < IN = 1559 <	361
	44 >	OUT =	1579 :	> 169	9 1044 > OUT = 1559 >	119
		. V	•		v ^	
	. <u> </u>	1367	<u>13</u> 1		250 155	
RAW GROWTH: 1994 10 2020	2	0	0		RAW GROW (H: 1994 10 2020	
		v	<u>ب</u>		v *	
	43 <		-	< 1405	5 111 < <	361
	44 >		3	> 165	) 1044 > >	1 198
		v	<u>.</u>		v A	
	7020	1367	131		250 155	
ADJUSTED GROWTH. 1994 TO	2020	0	0		-100 MINIMUM GROWTH % 0 0	
		v <sup>-</sup>	~		v ^	
	43 <		~	1405	111 < <	361
	44 >		~ >	169	1044 > >	1198
		1367	131		250 155	
PRORATED GROWTH: 2001 TO	2020				PRORATED GROWTH: 2001 TO 2020	
19 YEARS		0	0		19 YEARS 0 0	
	<u>00</u> -	v	<b>^</b> .		v ^	
	30 <		<	1030	80 < <	260
	30 -	v	<u>^</u>	120	/60 × × ^	000
		1000	100		180 110	
NEW PROJECTED VOLUMES 2020					NEW PROJECTED VOLUMES: 2020	
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	30 >		>	120	0∪ < < 750 > >	200 880
	-	v	*		v *	
		1000	100		180 110	
INTERIM YEAR GROWTH: 2001 TO	2004	-	-		INTERIM YEAR GROWTH. 2001 TO 2004	
3 YEARS			<u>,</u> 0		3 YEARS 0 0	
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NITIAL INTERIM VOLUMES:		~	~		INITIAL INTERIM VOLUMES:	
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	0 >	OUT =	180 >	20	120 > OUT = 180 >	140
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		160	20	ļ	30 20	<u></u>
2004		0	ń		BALANCED INTERIM VOLUMES.	1
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	0 >	OUT ≈	180 >	20	120 > OUT = 160 >	140
		160	<b>^</b>		¥ *	1
		160	20			

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										EAST AVE	WILSO	DN AV	Ë.									
		STA	<b>NT</b>	NG POI	NT TUR	RNING	MOVE	MENT	DERIVA	TION (BASE	YEAR	VOLU	MES) AT	LOCA	TIONS	WITH	DUT E	XISTIN	IG CO	UNTS		
					AM PE/	AK HO	UR				][				1	M PE	K H	<u><u></u>JUR</u>				
NÖF	THBO	DUND APP	ROA	CH:					··		NOR	THEOL	UND AP	PROAC	H:							
NL<	=	NL /		(NL	+	2*	NT	+	NR)		NL<	=	NL	7	(NL	÷	2'	NT	+	NR)		
1	=	30 /	r	- 30	+	2"	C	1 +	120		1	#	60	1	80	+	2*		0+	880		1
ľ	÷	0.20										=	80.0									
					44						I										<b>.</b>	
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F	÷	Z"	Ŭ	) /	30	+	2	0	+	120	11	=	25	0	1	80	+	2.		0+	880	
	- <b>F</b>	0.00									H	=	0.00									
	_					-			LICO.		Lo.		410					NT		AIC)		
INK?	-	NK /		(NL 20	Ť	2	111		100		NR.	-			(NL on	•	2	NI	۰. ۲	1960		
1	-	1207		30	•	2	U	т	120		li	-	000	,	60	4	2		0 4	000		
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	IHBU		COAL	ия: Ирг		2.	сĭ	+	600		1900	1HBUU	14A UML 12	-RUAU	751	<b>.</b>	<b>7</b> •	sт		SBI		
	-	120 /		120	, +	- -	1000	+	30		JSL-	-	30	5	RRO	+	2.	ីម	10+	80		
	_	0.05		120	•	-	1000	-	50			=	0.67		000	•	-					
		0.00									1		0.01									1
STv	=	2* 5	эт	1	(SL	+	2.	ST	+	SR)	ISTv.	=	2"	ST	1	(SL	+	2.	SТ	+	SR)	
	=	2"	1000	1	120	+	2.	1000	+	30	1	=	2"	180	1	880	+	2.	1	60 +	80	
1	=	0.93										=	0.27									
1																						
SR<	=	SR /		(SL	+	2*	51	+	SR)		SR<	=	SR	1	(SL	+	2*	ST	+	SR)		
1	=	1000 /		120	+	2*	1000	+	30		Į.	=	180	1	880	+	2*	16	30 +	80		
L	=	0.01									<u>I</u>	=	0.06									
EAS	rbou	ND APPRO	ACH	:							EAST	BOUN	ID APPP	ROACH								
EL^	=	EL /		(EL	÷	2*	ΕT	+	ER)		EL^	=	ΕĻ	1	(EL	+	2	ΕT	+	ER)		
1	=	01		0	4	2"	120	+	1000			=	0	1	0	+	2	880	+	180		
	=	0.00										÷	0.00									
											1		<b>.</b>					<b>.</b>			501	
E1>	-	2. 6	: I 	<i>i</i> ,	(EL	+	2.	E	+	ER)	E1>	-	2*	Ei	4	(EL	+	2.	E	÷	ER) 400	
	-	2	120		0	+	2	120	+	1000		=	2.	880	1	U U	+	2	5	30U +	100	
1	-	0.19										=	0.91									
EBV	-	ER (		(E)	+	2.	FT	+	ED)		ED.	-	ED	,	(5)		2.	БŤ	+	ER)		
	÷	1000 /		, 0	+	2*	120	+	1000			-	180	;	( <u></u> 0		2.	BE	30 +	180		
!	= .	0.81				-					. I	Ŧ	0.09	•	Ũ		•					
WES	reou	ND APPRC	ACH					-			WES	TBOUN	ND APP	ROACH	l:	· •	· .					
WLv	=	WL /		(WL	+	2.	WT	+	WR)		WLV	=	WL	1	(WL	+	2*	WT	+	WR)		
	=	1000 /		1000	+	2.	30	+	0			=	180	1	180	+	2*	٤	30 +	0		
	=	0.94										=	0.53									
wt<	F	2° W	п	ł	(WŁ	+	2*	WT	+	WR)	WT<	=	2*	WT	1	(WL	+	2*	WI	+	WR)	
	=	2.	30	1	1000	+	2'	30	÷	0		=	2.	80	ŧ	180	+	2*		80 +	0	
	=	0.06										=	0.47									
	_					~ .					ł											
**14"	-	WWTK /		(WE		2.	20		WR)		WR^	=	WR	1	(WL	+	2	wr.	*	- W(R)		
	-	0.00		1000	+	2	30	+	0			=	0 00	1	180	4	2.	e	\$0 +	0		
ESTIM	ATE	DEPCEN	1000	с.		•		<u></u>			L		0.00	DTO							<u> ·- ,                              </u>	
COLIN	HICL	PERCEN	AGE	-5			49/	<u>0</u> 2₽∕	e or		ESIM	ARIED	PROP	NK LIÓN	45.			~	<u>د</u> . ۳	792 670		
							r 170	937b	, 0% ,									- ti	70 2	//₀ ⊔/76 ≻		
					0%	~	-	1.00	-	۰ <u>۵</u> ۰						0er	•		× 1	00	٨	<u>0%</u>
					19%	>	1.00	0.00	1.00	070 5 64/						0.1%	~	1 (	ก่	1 00	> 4	17%
					81%	v		1.00	-	· 0/0	1					00/			1	00		53%
					2.70	-	<	v	>							5 70	Ŧ	<	v .	>		
							20%	0%	80%		Į							- 8	% (	0% 92%		

#### ETIWANDA AVE. - EAST / WILSON AVE. FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

F			1	FAR 2020 TRAF	FIC CONDITIC	ONS	<u></u>	<u></u>	
	AM	PEAK HOUR INP	UT DATA			PM	PEAK HOUR INF	UT DATA	
	TURNING	INTIAL TURN		FUTURE YEAR		TURNING	INTIAL TURN		FUTURE YEAR
APPROACH	MOVEMENT	PROPORTION	APPROACH	TOTAL	APPROACH	MOVEMENT	PROPORTION	APPROACH	TOTAL
NORTH	LEFT	83	SOUTHLEG		NORTH	ĻEFT	32	SOUTH LEG	
BOUND	THRU	0	iN	140	BOUND	THRU	0	IN	340
	RIGHT	17	സ	260		RIGHT	68	ουτ	170
SOUTH	LEFT	4	NORTH LEG		SOUTH	LEFT	52	NORTH LEG	
BOUND	THRU	74	łN	0	BOUND	THRU	23	IN	0
	RIGHT	21	സ്	0		RIGHT	25	லா	Û
EAST	LEFT	0	WEST LEG		EAST	LEFT	0	WEST LEG	
BOUND	THRU	19	או	270	BOUND	THRU	80	IN	870
	RIGHT	81	் 0ர	150		RIGHT	10	OUT	360
WEST	LEFT	46	EAST LEG		WEST	LEFT	19	EAST LEG	
BOUND ·	THRU	54	IN	30	BOUND	THRU	81	IN	80
	RIGHT	0	ουτ	39		RIGHT	Û	ovr	760

	YEAR 2020 TRAFFIC CONDITIONS													
	AN	PEAK HOUR R	ESULTS		PM PEAK HOUR RESULTS									
	TURNING INTIAL TURN FUTURE YEAR PEAK - DAILY					TURNING	INTIAL TURN	FUTURE YEAR	PEAK	DAILY				
APPRÓACH	MOVEMENT	PROPORTION	FORECAST	RELATIONSHIP	APPROACH	MOVEMENT	PROPORTION	FORECAST	RELATI	ONSHIP				
NORTH	LEFT	83	133	NORTHLEG	NORTH	LEFT	32	281	NORT	HLEG				
BOUND	THRU	0	C	RATIO #DIV/01	BOUND	THRU	Q	o	RATIO	#DIV/01				
	RIGHT	17	9	ADT 0		RIGHT	68	71	ADT	σ				
SOUTH	LEFT	4	0	SOUTHLEG	SOUTH	LEFT	52	0	SOUT	HLEG				
BOUND	THRU	74	O j	RATIO 6.7%	BOUND	THRU	23	0	RATIO	8.7%				
	RIGHT	21	0	ADT 6,000		RIGHT	25	0	ADT	6,000				
EAST	LEFT	0	0	EASTLEG	EAST	LEFT.	0	0	EAST	LEG				
BOUND	THRU	19	21	RATIO 1.5%	BOUND	THRU	90	689	RATIO	21.1%				
	RIGHT	81	247	ADT 4,000		RIGHT	10	165	ADT	4,000				
WEST	LEFT	46	13	WESTLEG	WEST	LEFT	19	5	WEST	LEG				
BOUND	THRU	54	17	RATIO 5.1%	BOUND	THRU	81	79	RATIO	14.8%				
	RIGHT	0	0	ADT 8,200		RIGHT	0	0	ADT	8,200				

Modified by: COMSIS Corp. (M. Roskin) 4/8/86 Modified by: FHWA 12/21/87 Modified by: RKJK 3/1/99

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## ETIWANDA AVE. • EAST / WILSON AVE. FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

	INTERIM YEAR 2004 TRAFFIC CONDITIONS													
	AMI	PEAK HOUR INP	UT DATA	_/````````````	PM PEAK HOUR INPUT DATA									
	TURNING INITIAL TURN INTERIM YEAR					TURNING	BASE YEAR		INTERIM YEAR					
APPROACH	MOVEMENT	PROPORTION	APPROACH	TOTAL	APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL					
NORTH	LEFT	83	SOUTHLEG		NORTH	LEFT	32	SOUTHLEG						
BOUND	THRU	0	IN	110	BOUND	THRU	0	ίΝ	200					
	RIGHT	17	OUT	220		RIGHT	68	OUT	130					
soutн	LEFT	4	NORTHLEG		SOUTH	LEFT	52	NORTH LEG						
BOUND	THRU	74	iN	0	BOUND	THRU	23	IN	0					
	RIGHT	21	ОЛТ	o		RIGHT	25	OUT	0					
EAST	LEFT	0	WESTLEG		EAST	LEFT	0	WEST LEG						
BOUND	THRU	19	{N	230	BOUND	THRU	90	iN	240					
	RIGHT	81	OUT	120	:	RIGHT	10	ουτ	200					
WEST	LEFT	46	EAST LEG		WEST	LEFT	19	EAST LEG						
BOUND	THRU	54	IN ,	C	BOUND	THRU	81	IN	10					
	RIGHT	0	<b>О</b> ЛТ	6		RIGHT	0	TUO	120					

<b></b>			INTE	RIM YEAR 2004 T	RAFFIC CON	DITIONS	<u></u>				
	A۸	PEAK HOUR R	ESULTS		PM PEAK HOUR RESULTS						
	TURNING INITIAL TURN INTERIM YEAR PEAK - DAIL					TURNING	INITIAL TURN	INTERIM YEAR	PEAK - DAILY		
APPROACH	MOVEMENT	PROPORTION	FORECAST	RELATIONSHIP	APPROACH	MOVEMENT	PROPORTION	FORECAST	RELATIONSHIP		
NORTH	LEFT	83	120	NORTHLEG	NORTH	LEFT	32	191	NORTH LEG		
BOUND	THRU	0	0	RATIO #DIV/01	BOUND	THRU	0	0	RATIO #DIV/01		
'.	RIGHT	17	Đ	ADT 0		RIGHT	68	19	ADT 0		
SOUTH	LEFT	4	0	SOUTHLEG	SOUTH	LEFT	52	0	SOUTHLEG		
BOUND	THRU	74	0	RATIO 7.6%	BOUND	THRU	23	0	RATIO 7.6%		
<u> </u>	RIGHT	21	0	ADT 4,500		RIGHT	25	0	ADT 4,500		
EAST	LEFT	0	0	EASTLEG	EAST	LEFT	0	0	EAST LEG		
BOUND	THRU	19	0	RATIO 0.0%	BOUND	THRU	90	101	RATIO 21.7%		
	RIGHT	B1	220	A <b>O</b> T 600		RIGHT	10	129	ADT 600		
WEST	LEFT	46	0	WEST LEG	WEST	LEFT	19	1	WEST LEG		
BOUND	THRU	54	0	RATIO 7.7%	BOUND	THRU	81	9	RATIO 9.8%		
	RIGHT	0	0	ADT 4,400		RIGHT	0	0	ADT 4,400		

Modified by: COMSIS Corp (M Roskin) 4/8/86 Modified by: FHWA 12/21/87 Modified by: RKJK 3/1/99

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	M PEAK HOUR		ודפ	WANDA AVI	PM PEAK HOUR	
EXISTING TURNING MOVEMENT	VOLUMES:				EXISTING TURNING MOVEMENT VOLUMES:	
2001		16 265	<b>\$</b> 5		2001 6 134 14	
	9^	¥	· .	47	5^	2
	85 >			< 94	22 > <	1
	274 v	~	> '	v 241	195 v v	13
		19792	159		111 170 169	
EXISTING COUNT YEAR:					EXISTING COUNT YEAR:	
2001	-	336	148	. '	2001 154 199 v ^	
	307 <	۹N =	1534	382	132 < 1N = 928 <	171
	368 >	_ OUT =	1534 :	> 299	133 > OUT ≈ 928 >	225
		V 780	A 48		372 470	
EXISTING MODEL YEAR:	<u> </u>				EXISTING MODEL YEAR:	
1994		11	6		1994 9 12	
	0 <	V 1N =	18.	. 1	ע ^ די וא א 1 מ	-
	0 >	OUT =	18 :	· 0	0 > OUT = 21 >	Ċ
		v	^		v *	
		<u>1</u>	6	<del></del>		
2020		55	60		2020 2B 209	
		v	*		v ^	
	491 <	IN ⇒ 01/T-	1073 <	: 579	383 < IN = 1313 <	183
i	212 -	v v	1013 -	, DI	330 × 001 - 1313 ×	397
		461	167		324 745	
RAW GROWTH: 1994 TO	2020				RAW GROWTH: 1994 TO 2020	
		44 V	_⊃4 ^		20 196 v ^	
	491 <	•	~	578	383 < <	183
	272 >		>	60	356 > >	397
		V 450	161	1	v * 316 733	
ADJUSTED GROWTH: 1994	TO 2020				ADJUSTED GROWTH: 1994 TO 2020	
-100 MINIMUM GROWTH %		44	54		-100 MINIMUM GROWTH % 20 196	ļ
	491 <	v	^ <	578	₩ * * 383 < <	183
	272 >		2	50	356 > >	397
		v	<u>^</u>		v *	
PORATED CROWTH 2001	10 2020	450	161	·····	216 733 PROBATED GROWTH: 2001 TO 2020	
19 YEARS	10 2020	30	40		19 YEARS 10 140	
		v	^		v *	
	360 < 200 >		<	420 40	280 < < 260 > >	130
	200	v	^		2001 V A	200
	<del></del>	330	120		230 540	
IEW PROJECTED VOLUMES	2020	370	190		NEW PROJECTED VOLUMES: 2020	1
		v	^		v ^	i
	670 <		<	800	410 < <	300
	570 >	v	``	340	390 >	520
		1110	570		600 1010	
TERIM YEAR GROWTH: 2001	TO 2004				INTERIM YEAR GROWTH: 2001 TO 2004	
3 YEARS		0	10		3 YEARS 0 20	
	60 <	v	<	70	40 < <	20
	30 >		>	10	40 > <b>&gt;</b>	50
		× 50	20	1	v ^ 40. 00	l l
ITIAL INTERIM VOLUMES.	··· · <b>=</b> ···,·	50		╾╍╼╼╼┥	NITIAL INTERIM VOLUMES.	<u></u>
2004		340	160		2004 150 220	ľ
	370 4	м м –	1660 <	AED	v A 170 - 181 - 4030 -	100
	400 >	OUT =	1670 >	310	170 < IN = 1070 < 170 > OUT = 1080 >	280
		v	<b>^</b>		v *	
		830	470	. <u> </u>	410 560	
				11		l l
ALANCED INTERIM VOLUMES		340	160	4	2004 150 220	i)
ALANCED INTERIM VOLUMES 2004		340 V	1 <del>6</del> 0 ^		2004 150 220 v ^	
ALANCED INTERIM VOLUMES	370 <	340 ∨ IN ≭	160 1660 <	450	2004 150 220 170 < IN = 1080 <	190
ALANCED INTERIM VOLUMES	370 < 400 >	340 ∨ IN ≭ OUT ≠ ∨	160 ^ 1660 < 1670 > ^	450 310	2004 150 220 170 < IN = 1080 < 170 > OUT = 1080 >	190 280

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#### ETIWANDA AVE. / SUMMIT AVE. FUTURE DIRECTIONAL TURN VOLUMES PROM FUTURE DIRECTIONAL LINK VOLUMES NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

<u> </u>				YEAR 2020 TRAF	FIC CONDITIO	ONS			
	AM	PEAK HOUR INP	UT DATA			PM	PEAK HOUR INF	UT DATA	
	TURNING	BASE YEAR		FUTURE YEAR		TURNING	BASE YEAR		FUTURE YEAR
APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL	APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL
NORTH	LEFT	197	SOUTH LEG		NORTH	LEFT	111	SOUTHLEG	
BOUND	THRU	92	IN	570	BOUND	THRU	170	łN	1,010
	RIGHT	159	Ουτ	1,110		RIGHT	189	OUT	600
SOUTH	LEFT	55	NORTH LEG		SOUTH	LEFT	14	NORTHLEG	
BOUND	THRU	265	IN	370	BOUND	THRU	134	IN	160
	RIGHT	16	ວປາ	190		RIGHT	6	ОЛТ	340
EAST	LEFT	9	WEST LEG		EAST	LEFT	5	WEST LEG	
BOUND	THRU	85	1N	570	BOUND	THRU	22	IN	390
	RIGHT	274	τυο	670		RIGHT	106	ουτ	410
WEST	LEFT	241	EAST LEG		WEST	LEFT	132	EAST LEG	
BOUND	THRU	94	IN	800	BOUND	THRU	15	IN	300
	RIGHT	47	OUT	340		RIGHT	24	்	520

				YEAR 2020 TRAF	FIC CONDITIO	DNS					
	AN	I PEAK HOUR R	ESULTS		PM PEAK HOUR RESULTS						
	TURNING BASE YEAR FUTURE YEAR PEAK - DAILY					TURNING	BASE YEAR	FUTURE YEAR	PEAK - DAILY		
APPROACH	MOVEMENT	COUNT	FORECAST	RELATIONSHIP	APPROACH	MOVEMENT	COUNT	FORECAST	RELATIONSHIP		
NORTH	LEFT	197	335	NORTH LEG	NORTH	LEFT	111	341	NORTH LEG		
BOUND	THRU	92	88	RATIO 0.8%	BOUND	THRU	170	276	RATIO 0.7%		
	RIGHT	159	147	ADT 67,500		RIGHT	189	401	ADT 67,500		
SOUTH	LEFT	55	59	SOUTH LEG	SOUTH	LEFT	14	22	SOUTHLEG		
BOUND	THRU	265	279	RATIO 2.4%	BOUND	THRU	134	125	RATIO 2.3%		
	RIGHT	16	32	ADT 69,600		RIGHT	6	14	ADT 69,600		
EAST	LEFT	8	15	EAST LEG	EAST	LEFT	5	17	EAST LEG		
BOUND	THRU	85	134	RATIO 7.8%	BOUND	THRU	22	97	RATIO . 5.6%		
	RIGHT	274	421	ADT 14,700		RIGHT	106	277	ADT 14,700		
WEST	LEFT	241	410	WEST LEG	WEST	LEFT	132	199	WEST LEG		
BOUND	THRU	94	303	RATIO 8.1%	BOUND	THRU	15	55	RATIO 5.2%		
	RIGHT	47	86	ADT 15,300		RIGHT	24	47	ADT 15,300		

Modified by: COMSIS Corp. (M. Roskin) 4/8/86 Modified by: FHWA 12/21/87 Modified by: RKJK 3/1/99
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### ETIWANDA AVE. / SUMMIT AVE. FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

	······································		INTE	RIM YEAR 2004 T	RAFFIC CON	DITIONS			
	AM F	PEAK HOUR INP	UT DATA			. PM	PEAK HOUR INF	PUT DATA	·
	TURNING	BASE YEAR		INTERIM YEAR		TURNING	BASE YEAR		INTERIM YEAR
APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL	APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL
NORTH	LEFT	197	SOUTH LEG		NORTH	LEFT	111	SOUTHLEG	
BOUND	THRU	92	1N	470	BOUND	THRU	170	IN	570
	RIGHT	159	OUT	B30		RIGHT	169	ουτ	410
SOUTH	LEFT	55	NORTH LEG		SOUTH	LEFT	14	NORTH LEG	
BOUND	THRU	285	IN	340	BOUND	THRU	134	IN	150
	RIGHT	16	out	160		RIGHT	6	OUT	220
EAST	LEFT	9	WESTLEG		EAST	LEFT	5	WEST LEG	
BOUND	THRU	85	IN	400	BOUND	THRU	22	IN	170
	RIGHT	274	ουτ	370		RIGHT	106	OUT	170
WEST	LEFT	241	EAST LEG		WEST	LEFT	132	EAST LEG	
BOUND	THRU	94	in	450	BOUND	THRU	15	١N	190
	RIGHT	47	ол	310		RIGHT	24	ം	280

<b></b>			INTE	RIM YEAR 2004	TRAFFIC CON	DITIONS			
ĺ	AN	PEAK HOUR R	ESULTS		<u></u>	P	M PEAK HOUR F	RESULTS	·
	TURNING	BASE YEAR	INTERIM YEAR	PEAK - DAILY		TURNING	BASE YEAR	INTERIM YEAR	PEAK - DAILY
APPROACH	MOVEMENT	COUNT	FORECAST	RELATIONSHIP	APPROACH	MOVEMENT	COUNT	FORECAST	RELATIONSHIP
NORTH	LEFT	197	224	NORTH LEG	NORTH	LEFT	111	145	NORTHLEG
BOUND	THRU	92	93	RATIO 1.0%	BOUND	THRU	170	189	RATIO 0.7%
	RIGHT	159	156	ADT 49,500		RIGHT	189	236	ADT 49,500
SOUTH	LEFT	55	58	SOUTHLEG	золтн	LEFT	14	14	SOUTH LEG
BOUND	THRU	265	265	RATIO 2.8%	BOUND	THRU	134	129	RATIO 2.1%
	RIGHT	16	19	ADT 45,900		RIGHT	6	6	ADT 45,900
EAST	LEFT	9	10	EAST LEG	EAST	LEFT	5	6	EASTLEG
BOUND	THRU	85	96	RATIO 6.5%	BOUND	THRU	22	30	RATIO 4.0%
	RIGHT	274	296	ADT 11,700		RIGHT	106	134	ADT 11,700
WEST	LEFT	241	269	WESTLEG	WEST	LEFT	132	146	WEST LEG
BOUND	THRU	94	127	RATIO 7.0%	BOUND	THRU	15	18	RATIO 3.1%
	RIGHT	47	57	ADT 11,100		RIGHT	24	25	ADT 11,100

1/9/2024 Board Meeting

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Attachment 3, Page 464 of 608

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		40112		£114	ANDA AVE.	HIGHLAND AVE.				
EXISTING TURNING MOVEMENT						A CONTRACT AND A CONTRACTACTA AND A CONTRACTACTACTACTACTACTACTACTACTACTACTACTACTA	VOLUMES	<u> </u>		
2001	V OLONA		67 309	41		2001	VOLUMED.	177 164	17	1
		<	v	>			<	v	>	
	240 ^				^ 21		289 ^			29
	438 >			•	< 265		120 >			. tua N
	190 V			י א	دد ۷		- 90 V	· · ·	> '	Ĩ
		!	50 194	19				84 154	16	
EXISTING COUNT YEAR:						EXISTING COUNT YEAR:				
2001			817	455		2001		358	472	
			v				0.57	v 11.1 ~	1214 -	143
		782 <	IN ≑ OUT=	2229 -	< 321		307 4		1214 >	153
EXISTING COUNT YEAR:         EXISTING COUNT YEAR:         358         4           2001         817         455         2001         358         4           2001         2001         2001         358         4         782 < N	^									
			494	263				<u>Z22</u>	254_	
EXISTING MODEL YEAR:						EXISTING MODEL YEAR:				
1994			11	6		1994		8	12	
		242 -		40.5	. 400		747	· 161 =	645	166
		249 >		400 1	5 102 5 192		300 >		645 :	255
		240 /	V0	×00 ·	122			v	,	
			145	43				<b>6</b> 0	171	
FUTURE MODEL YEAR:						FUTURE MODEL YEAR.				
2020			461	167		2020		324	745	
			V 154 -	2720			246 -	· 161 m	1857	234
	1	1431 5		2229 -	< 1420 > 121		815 2	ວບ =	1857	557
		110 -	v v	^			0.00	v		
			491	232		l		339	484	
RAW GROWTH: 1994 TO	2020					RAW GROWTH: 1994 TO	2020			
			450	161				316	733	
		1250 -	v	<b>^</b>			102 -	۲	<b>.</b>	c 67
		-132 >			~ 1230 > 19		-102 -			> 302
		.uc	v	~				v	•	
			347	189				279	313	
ADJUSTED GROWTH: 1994	TO 2	2020		• •		ADJUSTED GROWTH. 1994	TO 2020			
-100 MINIMUM GROWTH %			450	161		-100 MINIMUM GROWTH %		316	733	
	- 1	248 4	v	<b>^</b>	4730		102 -	. V	r .	c 67
		-132 >			· 1230		-102 -	,		> 302
			v	•				v	^	
			347	189				279	<u>313</u>	
PRORATED GROWTH: 2001	ŤÓ 2	2020				PRORATED GROWTH: 2001	TO 2020			
19 YEARS			330	120		19 YEARS		230	540	
		890 <	v		900	-	-70 <	×		< 50
	-	100 >		>	10		380 >			> 220
			v	•				×	^	
			250	140				200	230	
NEW PROJECTED VOLUMES:	2020					NEW PROJECTED VOLUMES.	2020	-00	4040	
			1150	580				590	10.10	
	1	670 <	v	<	1220		300 <	* 2		< 190
	•	730 >		>	510		840 -	•		> 370
			v	•		2		v	^	
			740	400				420	<u>480</u>	
NIERIM YEAR GROWTH: 2001	TO 2	604			]	INTERIM YEAR GROWTH: 2001	TO 2004	10	66	
S TEARS			50	20		J YEARS		40	× 90	
		140 <	v	<	140		-10 -	· ·		< 10
		-20 >		>	a		60 >	•		> 30
			¥	^				v	~	
UTIAL INTERNALIO		<u> </u>	40	20				30	40	
2004			070	400		INITIAL INTERIM VOLUMES:		100	5 CO	
			0/U V	400	1	2004		400		
	ę	920 <	!N ≍	2420 <	460		360 <	: 1N =	1360	< 150
	ε	810 >	OUT =	2430 >	500		520 2	OUT =	1350	> 18(
			v	^				v	^	
			530	280			<b></b>	250	290	
2004			970	100		BALANCED INTERIM VOLUMES.			cet	
			01U V	40U 4		2004		400	200	
	9	20 <	1N =	2420 <	460		360 4	( IN =	1360	< 150
	8	10 >	OUT =	2430 >	500		520 >	• OUT =	1350	> 180
			v	^	l			v	^	
			530	280				250	290	

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### ETIWANDA AVE. / HIGHLAND AVE. FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES NCHRP 255, PAGE 105 Written by: FHWA (C. Figel)

			١	EAR 2020 TRAF	FIC CONDITIO	ONS	<u>.</u>		
	AM	PEAK HOUR INP	UT DATA			PM	PEAK HOUR INF	PUT DATA	
	TURNING	BASE YEAR		FUTURE YEAR		TURNING	BASE YEAR		FUTURE YEAR
APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL	APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL
NORTH	LEFT	50	SOUTHLEG		NORTH	LEFT	84	SOUTHLEG	
BOUND	THRU	194	۱N	400	BOUND	THRU	154	IN	480
	RIGHT	19	ουτ	740		RIGHT	16	ουτ	420
SOUTH	LEFT	41	NORTH LEG		SOUTH	LEFT	17	NORTH LEG	
BOUND	THRU	309	אוו	1,150	BOUND	THRU	164	IN	590
h	RIGHT	467	ουτ	580		RIGHT	177	OUT	1,010
EAST	LEFT	240	WEST LEG		EAST	LEFT	289	WEST LEG	
BOUND	THRU	438	tN	730	BOUND	THRU	120	IN	840
1	RIGHT	150	OUT	1,670		RIGHT	50	ουτ	300
WEST	LEFT	35	EAST LEG		WEST	Left	ß	EAST LEG	
BOUND	THRU	265	1N	1,220	BOUND	THRU	106	IN	190
	RIGHT	21	OUT	510		RIGHT	29	<u>our</u>	370

				YEAR 20	20 TRAF	FIC CONDITIO	ONS	····			
	AN	PEAK HOUR R	ESULTS			<u> </u>	PI	M PEAK HOUR F	RESULTS		
	TURNING	BASE YEAR	FUTURE YEAR	PEAK	DAILY		TURNING	BASE YEAR	FUTURE YEAR	PEAK	- DAILY
APPROACH	MOVEMENT	COUNT	FORECAST	RELATI	ONSHIP	APPROACH	MOVEMENT	COUNT	FORECAST	RELAT	IONSHIP
NORTH	LEFT	50	69	NORT	HLEG	NORTH	LEFT	84	53	NORT	HLEG
BOUND	THRU	194	298	RATIO	2.6%	BOUND	THRU	154	384	RATIO	2.4%
	RIGHT	19	33	ADŤ	67,500		RIGHT	16	45	ADT	67,500
SOUTH	LEFT	41	68	SOUT	HLEG	зоотн	LEFT	17	71	sour	HLEG
BOUND	THRU	309	465	RATIO	1.8%	BOUND	THRU	164	351	RATIO	1.3%
	RIGHT	467	616	ADT	69,600		RIGHT	177	163	ADT	69,600
EAST	LEFT	240	196	EAST	LEG	EAST	LEFT	289	535	EAS	T LEG
BOUND	THRU	438	409	RATIO	11.8%	BOUND	THRU	120	254	RATIO	3.8%
	RIGHT	150	127	ADT	14,700		RIGHT	50	54	ADT	14,700
WEST	LEFT	35	148	WEST	LEG	WEST	LEFT	8	15	WES	TLEG
BOUND	THRU	265	985	RATIO	15.7%	BOUND	THRU	106	84	RATIO	7.5%
	RIGHT	21	86	ADT	15,300		RIGHT	29	91	ADT	15,300

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### ETWANDA AVE, / HIGHLAND AVE, FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

			INTE	RIM YEAR 2004 1	RAFFIC CON	DITIONS			
	AM	PEAK HOUR INP	UT DATA			PM	PEAK HOUR INP	UT DATA	
······	TURNING	BASE YEAR		INTERIM YEAR		TURNING	BASE YEAR		INTERIM YEAR
APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL	APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL
NORTH	LEFT	50	SOUTHLEG		NORTH	1773J	84	SOUTHLEG	
BOUND	THRU	194	IN	<b>2</b> 60	BOUND	THRU	154	۱N	290
	RIGHT	19	олт	530		RIGHT	16	OUT	250
SOUTH	LEFT	41	NORTH LEG		SOUTH	LEFT	17	NORTH LEG	
BOUND	THRU	309	IN	870	BOUND	THRU	164	IN	400
	RIGHT	467	олт "	480		RIGHT	177	TUO	560
EAST	LEFT	240	WESTLEG		EAST	LEFT	289	WEST LEG	
BOUND	THRU	438	IN	810	BOUND	THRU	120	ŧN	520
	RIGHT	150	олт	920		RIGHT	50	OUT	360
WEST	LEFT	35	EASTLEG		WEST	LEFT	8	EAST LEG	
BOUND	THRU	265	IN	- 460	BOUND	THRU	106	IN	150
	RIGHT	21	ол	500		RIGHT	29	ουτ	180

		<del></del>	INTE	RIM YEAR 2004 T	RAFFIC CON	DITIONS			
	AN	PEAK HOUR R	ESULTS	<u></u>		Ph	I PEAK HOUR R	ESULTS	
	TURNING	BASE YEAR	INTERIM YEAR	PEAK - DAILY		TURNING	BASE YEAR	INTERIM YEAR	PEAK - DAILY
APPROACH	MOVEMENT	COUNT	FORECAST	RELATIONSHIP	APPROACH	MOVEMENT	COUNT	FORECAST	RELATIONSHIP
NORTH	LEFT	50	51	NORTH LEG	NORTH	LEFT	84	77	NORTHLEG
BOUND	THRU	194	210	RATIO 2.7%	BOUND	THRU	154	191	RATIO 1.9%
	RIGHT	19	21	ADT 49,500		RIGHT	16	20	ADT 49,500
SOUTH	LEFT	41	46	SOUTHLEG	SOUTH	LEFT	17	23	SOUTH LEG
BOUND	THRU	309	336	RATIO 1.8%	BOUND	THRU	164	192	RATIO 1.2%
	RIGHT	467	· 491	ADT 45,900		RIGHT	177	181	ADT 45,900
EAST	LEFT	240	238	EAST LEG	EAST	LEFT	289	331	EAST LEG
BOUND	THRU	438	433	RATIO 8.2%	BOUND	THRU	120	137	RATIO 2.8%
	RIGHT	150	143	ADT 11,700		RIGHT	50	49	ADT 11,700
WEST	LEFT	35	52	WEST LEG	WEST	LEFT	8	8	WEST LEG
BOUND	THRU	265	378	RATIO 15.6%	BOUND	THRU	106	102	RATIO 7.9%
	RIGHT	21	32	ADT 11,100		RIGHT	29	38	ADT 11,100

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### EAST AVE./ WILSON AVE. FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

			· · · · · · · · · · · · · · · · · · ·	YEAR 2020 TRAF	FIC CONDITIO	ONS			
	AM	PEAK HOUR INP	UT DATA			PM	PEAK HOUR INF	UT DATA	
	TURNING	INTIAL TURN		FUTURE YEAR		TURNING	INTIAL TURN		FUTURE YEAR
APPROACH	MOVEMENT	PROPORTION	APPROACH	TOTAL	APPROACH	MOVEMENT	PROPORTION	APPROACH	TOTAL
NORTH	LEFT	20	SOUTHLEG		NORTH	LEFT	8	SOUTH LEG	
BOUND	THRU	a	iN	100	BOUND	THRU	o	IN	110
	RIGHT	60	<b>О</b> ЛТ	1,000		RIGHT	92	ол	180
SOUTH	LEFT	6	NORTH LEG		SOUTH	LEFT	67	NORTH LEG	
BOUND	THRU	93	IN	0	BOUND	THRU	27	IN	Ő
	RIGHT	1	OUT	0		RIGHT	6	OUT	0
EAST	LEFT	Ð	WESTLEG		EAST	LEFT	0	WEST LEG	
BOUND	THRU	19	IN	30	BOUND	THRU	91	IN	760
	RIGHT	81	τυο	30		RIGHT	9	דעס	80
WEST	LEFT	94	EAST LEG		WEST	LEFT	53	EAST LEG	
BOUND	THRU	6	IN	1,030	BOUND	THRU	47	IN	260
	RIGHT	0	דעס	120		RIGHT	٥	OUT	B80

				YEAR 202	0 TRAF	FIC CONDITIO	ONS			<u> </u>	
	AN	I PEAK HOUR R	ESULTS				PI	M PEAK HOUR F	RESULTS		
	TURNING	INTIAL TURN	FUTURE YEAR	PEAK -	DAILY		TURNING	INTIAL TURN	FUTURE YEAR	PEAK	- DAILY
APPROACH	MOVEMENT	PROPORTION	FORECAST	RELATIC	NSHIP	APPROACH	MOVEMENT	PROPORTION	FORECAST	RELAT	IONSHIP
NORTH	LEFT	20	3	NORTH	ILEG	NORTH	LEFT	8	1	NORT	THLEG
BOUND	THRU	0	0	RATIO #	IOIVIOI	BOUND	THRU	0	0	RATIO	#DIV/01
	RIGHT	80	106	ADT	0	:	RIGHT	92	113	ADT	0
золтн	LEFT	6	0	SOUTH	LEG	SOUTH	LEFT	67	0	Sour	HLEG
BOUND	THRU	93	Ð	RATIO	17.1%	BOUND	THRU	27	0	RATIO	4.5%
	RIGHT	1	0	ADT I	6,500		RIGHT	6	Ū	ADT	6,500
EAST	LEFT	C	0	EAST L	EG	EAST	LEFT	0	0	EAS	T LEG
BOUND	THRU	19	14	RATIO 1	11.5%	BOUND	THRU	91	767	RATIO	11.4%
	RIGHT	81	17	ADT §	9,800		RIGHT	9	21	ADT	9.800
WEST	LEFT	94	983	WEST	LEG	WEST	LEFT	53	159	WES	TLEG
BOUND	THRU	6	27	RATIO	1.5%	BOUND	THRU	47	79	RATIO	21.7%
	RIGHT	0	0	ADT 4	4,000		RIGHT	0	0	ADT	4,000

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### EAST AVEJ WILSON AVE. FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

		······································	INTE	RIM YEAR 2004 T	RAFFIC CON	DITIONS	······································		
	AM	PEAK HOUR INP	UT DATA			PM	PEAK HOUR INF	UT DATA	
	TURNING	INITIAL TURN		INTERIM YEAR		TURNING	BASE YEAR		INTERIM YEAR
APPROACH	MOVEMENT	PROPORTION	APPROACH	TOTAL	APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL
NORTH	LEFT	20	SOUTH LEG		NORTH	LEFT	8	SOUTHLEG	· · · · ·
BOUND	THRU	0	IN	20	BOUND	THRU	0	tN ,	20
	RIGHT	80	ουτ	160		RIGHT	92	OUT	30
SOUTH	LEFT	6	NORTH LEG		SOUTH	LEFT	67	NORTH LEG	
BOUND	THRU	93	IN	0	BOUND	THRU	27	<b>∦N</b>	0
	RIGHT	1	் பா	0		RIGHT	6	OUT	0
EAST	LEFT	0	WEST LEG		EAST	LEFT	0	WEST LEG	
BOUND	Į THRU	19	IN ,	0	BOUND	THRU	91	IN	120
	RIGHT	81	oர`	0		RIGHT	9	ουτ	10
WEST	LEFT	94	EAST LEG		WEST	LEFT	53	EAST LEG	
BOUND	THRU	6	{N	160	BOUND	THRU	47	iN	40
	RIGHT	0	ουτ	20		RIGHT	0	<u>о</u> ит	140

			INTE	RIM YEAR 2004	FRAFFIC CON	DITIONS			
	A۸	I PEAK HOUR R	ESULTS			Pl	M PEAK HOUR R	ESULTS	
· · · · ·	TURNING	INITIAL TURN	INTERIM YEAR	PEAK - DAILY		TURNING	INITIAL TURN	INTERIM YEAR	PEAK - DAILY
APPROACH	MOVEMENT	PROPORTION	FORECAST	RELATIONSHIP	APPROACH	MOVEMENT	PROPORTION	FORECAST	RELATIONSHIP
NORTH	LEFT	20	0	NORTH LEG	NORTH	LEFT	8	0	NORTH LEG
BOUND	THRU	D	0	RATIO #DIV/01	BOUND	THRU	O,	0	RATIO #DIV/01
:	RIGHT	80	20	ADT 0		RIGHT	92	20	ADT 0
souлн	LEFT	6	0	SOUTHLEG	SOUTH	LEFT	67	0	SOUTHLEG
BOUND	THRU	93	D	RATIO 11.3%	BOUND	THRU	27	0	RATIO 3.2%
	RIGHT	1	0	ADT 1,600		RIGHT	6	0	ADT 1,600
EAST	LEFT	0	0	EASTLEG	EAST	LEFT	0	6	EAST LEG
BOUND	THRU	19	0	RATIO 11.3%	BOUND	THRU	91	120	RATIO 11.0%
	RIGHT	81	0	ADT 1,600		RIGHT	9	3	ADT 1,600
WEST	LEFT	84	160	WEST LEG	WEST	LEFT	53	27	WEST LEG
BOUND	THRU	6	0	RATIO 0.0%	BOUND	THRU	47	10	RATIO 22.2%
	RIGHT	0	0	ADT 600		RIGHT	0	0	ADT 600

# 1/9/2024 Board Meeting

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AM PEAK I	HOUR				PM PEAK	HOUR			
EXISTING TURNING MOVEMENT VOLUME	<b>S</b> :	83 30	46		EXISTING TURNING MOVEMENT VOLUMI	ES:	20 10	đ	
2001	<	v 73	> 45			<	V 10	> "	
79 ^				^ 46	8 ^			^	
148 >				< 220	177 >			<	
60 v	_		~	v 142	28 v			v .	
		68 40	<b>126</b>				35 12	48	
XISTING COUNT YEAR:					EXISTING COUNT YEAR:				
2001		167	165		2001		34	22	
	971 -	<sup>v</sup> _	1006	< 100		404 4	м <sup>V</sup> –	A E10 -	
	287 >	- איי OUT=	1096	> 400		213 >	0UT ≠	510 >	
	207 -	_ 001= 				210	v -	•	
		241	234				68	95	
XISTING MODEL YEAR:					EXISTING MODEL YEAR:		_		
1994		0	. 0		1994		. 0	, O	
	1 <	iN =	9	< 8		0 <	IN =	16 <	
	0 >	OUT =	- 5	> 4		0 >	OUT =	5 >	
		v	~				v	^	
		0	0				- 5	16	
UTURE MODEL YEAR:		1367	131		PUTURE MODEL YEAK:		250	155	
		,30/ V	131		2020		294 V		
!	579 <	IN ≂	2277	< 682		183 <	3N =	1437 <	
	61 >	OU⊺ ≃	2277	> 142		397 >	OUT =	1437 >	
		V	*				V	A .	
AW GROWTH 1994 TO 2020		1425	100			<u></u>	294	310	
AN GROWTEL 1354 TO 2020		1367	131		1354 10 2020		250	155	
		v	٨		1		v	•	
:	578 <			< 674		183 <		<	
	60 >			> 138		397 >		<u> </u>	
		v 1425	165	1			v 289	494	
DJUSTED GROWTH: 1994 TO 20	320			····	ADJUSTED GROWTH: 1994 TO 2	2020			
-100 MINIMUM GROWTH %		1367	131		-100 MINIMUM GROWTH %		250	155	
_	- 76	v	^				v	^	
5	60 >			< 674 > 120		183 <		<	
		v		- 130		331 -	v	^	
		1425	166				289	494	
RORATED GROWTH: 2001 TO 20	20				PRORATED GROWTH: 2001 TO 2	020			
19 YEARS		1000	100		19 YEARS		180	110	
Α	20 <	v	••	< 400		130 <	v	 K	
	40 >	•		> 100		290 >		>	
		v	^				v	^	
		1040	120				210	360	<u>-</u>
W PROJECTED VOLUMES: 2020		1170	270		NEW PROJECTED VOLUMES 2020		240	130	
		• • • •	210 A				210 V	1.50	
7	90 <			< 900	:	320 <	-	<	
3	30 >			> 420		500 >		>	
		1000	200				V 200	A	
TERIM YEAR GROWTH 2001 TO 20	04	1200	000		NTERIM YEAR GROWTH 2001 TO 20	004	200	400	
3 YEARS		160	20		3 YEARS		30	20	
		v	^				v	•	
	70 <		•	< 80		20 <		<	
	10 >	ц	^	> 20		50 >		, <sup>&gt;</sup>	
		160	20	[			v 30	60	
TIAL INTERIM VOLUMES:	. <u></u>				NITIAL INTERIM VOLUMES:				
104		330	190		2004		60	40	
	10 -	V -	1370				v	A	
44 31	-u D0->	0UT =	1370 4	490		210 < 260 >	IN ≠ OUT-	5ăU < 670 >	
						cuu >	v - 100	× 0.0	
	<u> </u>	400	250				100	160	
LANCED INTERIM VOLUMES.					ALANCED INTERIM VOLUMES.	-			
004		330	190		2004		60	40	
	•n -	V 1N -	1370				v	~	
44 31	,	0UT =	1370 *	490		270 <	IN =	550 <	
50				5-0	•	200 2	- 100 V	v 010 ×	
		v					-		

1/9/2024 Board Meeting

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Attachment 3, Page 470 of 608

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										EAST AV	E. / SUMN	IT AV	Æ.									
ļ		s	TARTI	NG POI	NT TU	RNING	MOVEN	AENT D	ERIVA	TION (BAS	SE YEAR	<u>/OLU</u>	MES) AT	LOCA	TIONS	WITHC	UTE	XISTING	COUN	TS		
		<u> </u>			AM PE	AK HOI	UR								P	MPEA	<u>K HÖ</u>	UR				
NOF	THBC	DUND AP	PROA	CH:							NORT	гнво	UND APP	ROAC	H:							
INL<	-	NL.	1		+	2*	NT	+	NR)		NL<	₽	NL	1	(NE	+	2*	NI 420	*	NK) 820		
1	_	0.45	; ;	790	, +	2	2/0	+	420			-	0.23	,	320	+	2	130	•			
Į.	-	0.42										-	Q.23									
NTA.	=	2*	NT	Ŧ	(NL	+	2.	NŢ	+	NR)	NT^	±	<b>2</b> *	NT	1	(NL	÷	2.	NT	•	NR)	
1	=	2*	270	07	790	+	2*	270	+	420		z.	2*	130	1	320	+	2"	130	+	820	
	=	0.31										÷	0,19									
											1					• •	-					
NR>	=	NR	1	(NL	+	2*	NT	+	NR)		NR>	-	NR	1	(NL	+	2	NI 430	+	NR) \$20		1
	=	420	1	790	+	2-	270	+	420		i	-	820	1	320	*	Z	130	7	620		
L Sou			PROM	Ч		· · · ·						480		- Angle	<u>.                                    </u>			···· <u>·</u> ··				
ISL>	=	SŁ	1	(SL	+	2*	ST	+	SR)		SL>	=	SL	1 1	(SL	+	2*	SŤ	÷	SR)		
1	Ŧ	420	11	420	+	2*	1260	+	790			÷	820	1	620	+	2*	280	+	320		
	Ξ	0.11										=	0.48									
		<b>0</b> -					<b>.</b> .						~	<b>CT</b>		(0)		<b></b>	ст		SPI	
SIV	±	Z. 2.	51	. í	(SL (30	*	2'	1280	*	SR) 700	SIV	=	2"	51	1	(31,	+	2	280	+	320	
	=	0.68	1200		420	•	2	1200	Ŧ	190		-	6 33	200	1	Ų¢0		-			•	
ł		0.00									:		0.00									
SR<	=	SR	1	(SL	+	2"	ST	+	SR)		SR<	=	SR	1	(SL	+	2*	ST	÷	SR)		
ŀ	=	1280	1	420	+	2	1280	+	790			=	280	1	820	+	2'	260	+	320		
<u> </u>		0.21										=	0.19									_
EAS	IBOUI		ROACH	۲. ۲. (۲. (۲. (۲. (۲. (۲. (۲. (۲. (۲. (۲. (		<b></b>	<b>C</b> +		50)		EAST	BOUI		QACH			<b>n</b> -	<b>CT</b>	<b>_</b>	601		
	-	270	1	270	+	2.	420	1	ER() 1200		EL	- -	130	1	(EL 130	:	2,	820	÷	280		
l.	2	0 11	1	210	•	2	410	'	1200		l.	-	0.05	1	150	•	2	020				
ÉT>	=	2*	ET	1	(EL	÷	2*	Εĩ	+	ER)	ET>	=	2.	ET	1	(EL	+	2'	EТ	+	ER)	
	=	2"	420	)/	270	÷	2*	420	+	1280		=	2*	820	ł	130	+	2'	820	+	280	
	=	0.35										-	0.80									
ERV	-	FR	,	/EI	÷	2.	FT		ER)		EE.	-	FR	,	(E)	÷	7.	FT	+	ER)		
	=	1280	1	270	+	2*	420	+	1280			-	280	ï	130	+	2.	820	+	280		
	=	0.54										÷	0.14									
WES	rbou	ND APPF	ROAC	i:							WES	BOU	ND APPF	ROACH	l:							
WLv	=	WL	1	(WL	+	2'	WT	+	WR)		WLv	=	WL	1	(WL	+	2*	WT	+	WR)		
	#	1280	1	1280	+	2*	790	÷	270		l	=	280	1	280	+	2.	320	+	130		
	÷	0.41										\$	0.27									
wr<	Ξ	2'	wт	1	ſ₩L	+	2'	wт	÷	WR)	wt<		Z <b>'</b>	WT	1	w	÷	2'	wī	+	WR)	
	=	2"	790	1	1280	+	2	7, j0	÷	270		=	2	320	1	280	+	2"	320	+	130	
	=	0.50									1	÷	0.61									
			_			_			_		1											
WK*	=	WR	1	(WL	+	2"	WT 700	+	WR)		WR^	=	WR	ł.	(WL	*	2	WT	+	WR)		
	=	270	'	1200	*	2	790	-	270		F	=	130	1	280	+	2	320	+	130		
ESTA	ATE	) PERCE	NTAG	FS							ECTO	AATE		Netion	15.					-		
n							21%	68%	11%		Contra			251101	•••			19%	33%	46%		
							<	v	>									<	v	>		
					11%	~		1.00		^ !	9%					6%	^		1.00		~	122
					35%	>	1.00		1.00	> 50	0%					80%	>	1.00		1.00	>	619
					54%	v		1.00		v 4	1%					14%	v		1.00	·	v	219
							× 45%	v 314/	249									5 230/	10%	50%		
				<b>.</b>			+3%	3 70	24%		- 1							ZJ%	13 74			

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### EAST AVE. / SUMMIT AVE. FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

[			)	EAR 2020 TRAF	FIC CONDITIC	ONS			
	AM	PEAK HOUR INP	UT DATA	· · · ·	· ·	PM	PEAK HOUR INF	UT DATA	
	TURNING	INTIAL TURN	~	FUTURE YEAR		TURNING	INTIAL TURN		FUTURE YEAR
APPROACH	MOVEMENT	PROPORTION	APPROACH	TOTAL	APPROACH	MOVEMENT	PROPORTION	APPROACH	TOTAL
NORTH	LEFT	45	SOUTH LEG		NORTH	LEFT	23	SOUTH LEG	
BOUND	THRU	31	IN	350	BOUND	THRU	18	IN	460
	RIGHT	24	ουτ	1,280		RIGHT	59	TUO	280
SOUTH	LEFT	11	NORTHLEG		SOUTH	LEFT	48	NORTHLEG	
BOUND	THRU	68	IN	1,170	BOUND	THRU	33	ŧN	210
	RIGHT	21	<b>О</b> ЛТ	270		RIGHT	19	<b>о</b> ит	130
EAST	LEFT	11	WEST LEG		EAST	LEFT	6	WEST LEG	
BOUND	THRU	35	iN	330	BOUND	THRU	80	IN	500
	RIGHT	54	OUT	790		RIGHT	14	о <i>и</i> т	320
WEST	LEFT	41	EAST LEG		WEST	LEFT	27	EAST LEG	
BOUND	THRU	50	IN	900	BOUND	THRU	61	IN	370
l	RIGHT	9	OUT	420		RIGHT	12	о <b>и</b> т	820

				EAR 2020 TRA	FIC CONDITION	ONS				
	AN	PEAK HOUR R	ESULTS		) <u> </u>	Pi	M PEAK HOUR P	RESULTS		
	TURNING	INTIAL TURN	FUTURE YEAR	PEAK - DAILY	1	TURNING	INTIAL TURN	FUTURE YEAR	PEAK	- DAILY
APPROACH	MOVEMENT	PROPORTION	FORECAST	RELATIONSHIP	APPROACH	MOVEMENT	PROPORTION	FORECAST	RELATI	ONSHIP
NORTH	LEFT	45	128	NORTH LEG	NORTH	LEFT	23	87	NORT	HLEG
BOUND	THRU	31	123	RATIO 22.2%	BOUND	THRU	19	68	RATIO	5.3%
	RIGHT	24	101	ADT 6,500		RIGHT	59	308	308 ADT 6	
SOUTH	LEFT	11	180	SOUTHLEG	SOUTH	LEFT	48	105	SOUT	HLEG
BOUND	THRU	68	766	RATIO 16.3%	BOUND	THRU	33	76	RATIO	7.4%
! {	RIGHT	21	228	ADT 10,000		RIGHT	19	30	ADT	10,000
EAST	LEFT	11	43	EASTLEG	EAST	left	6	22	EAST	LEG
BOUND	THRU	35	140	RATIO 12.3%	BOUND	THRU	80	407	RATIO	11.0%
	RIGHT	54	149	ADT 10,800		RIGHT	14.	74	ADT	10,800
WEST	LEFT	41	365	WEST LEG	WEST	LEFT	27	130	WEST	T LEG
BOUND	THRU	50	434	RATIO 13.2%	BOUND	THRU	61	203	RATIO	9.7%
	RIGHT	9	104	ADT 8,500		RIGHT	12	40	ADT	8,500

Modified by. COMSIS Corp. (M. Roskin) 4/8/86 Modified by: FHWA 12/21/87 Modified by: RKJK 3/1/99

### EAST AVE. / SUMMIT AVE. FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

			INTE	RIM YEAR 2004 T	RAFFIC CON	DITIONS			
	AM	PEAK HOUR INP	UT DATA			PM	PEAK HOUR INF	PUT DATA	
	TURNING	INITIAL TURN		INTERIM YEAR		TURNING	BASE YEAR	· · · · · · · · · · · · · · · · · · ·	INTERIM YEAR
APPROACH	MOVEMENT	PROPORTION	APPROACH	TOTAL	APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL
NORTH	LEFT	45	SOUTH LEG		NORTH	LEFT	23	SOUTH LEG	
BOUND	THRU	31	<b>IN</b>	250	BOUND	THRU	19	IN	160
	RIGHT	24	דעס	400		RIGHT	59	OUT	100
SOUTH	LEFT	11	NORTHLEG		SOUTH	LEFT	48	NORTH LEG	
BOUND	THRU	68	IN	330	BOUND	THRU	33	IN	80
	RIGHT	21	OUT	190		RIGHT	19	о <b>л</b> тю	40
EAST	LEFT	11	WEST LEG		EAST	LEFT	6	WEST LEG	
BOUND	THRU	35	łN	300	BOUND	THRU	80	IN	260
	RIGHT	54	олт	440		RIGHT	14	о <b>и</b> т	210
WEST	LEFT	41	EAST LEG		WEST	LEFT	27	EAST LEG	
BOUND	THRU	50	IN	490	BOUND	THRU	61	IN	200
	RIGHT	9	олт	340		RIGHT	12	ол	320

	· · · ·		INTE	RIM YEAR 2004 1	RAFFIC CON	DITIONS			
	AA AA	PEAK HOUR R	ESULTS			Pi	M PEAK HOUR R	ESULTS	
	TURNING	INITIAL TURN	INTERIM YEAR	PEAK - DAILY		TURNING	INITIAL TURN	INTERIM YEAR	PEAK - DAILY
APPROACH	MOVEMENT	PROPORTION	FORECAST	RELATIONSHIP	APPROACH	MOVEMENT	PROPORTION	FORECAST	RELATIONSHIP
NORTH	LEFT	45	83	NORTHLEG	NORTH	LEFT	23	53	NORTH LEG
BOUND	THRU	31	81	RATIO 32.5%	BOUND	THRU	19	18	RATIO 6.2%
	RIGHT	24	86	ADT 1,600		RIGHT	59	87	ADT 1,600
souтн	LEFT	11	82	SOUTHLEG	SOUTH	LEFT	48	25	SOUTHLEG
BOUND	THRU	68	168	RATIO 20.3%	BOUND	THRU	33	19	RATIO 8.1%
	RIGHT	21	80	ADT 3,200		RIGHT	19	15	ADT 3,200
EAST	LEFT	11	41	EAST LEG	EAST	LEFT	6	10	EAST LEG
BOUND	THRU	35	172	RATIO 14.3%	BOUND	THRU	60	207	RATIO 8.9%
	RIGHT	54	87	ADT 5,800		RIGHT	14	38	ADT 5,800
WEST	LEFT	41	145	WEST LEG	WEST	LEFT	27	43	WEST LEG
BOUND	THRU	50	277	RATIO 13.7%	BOUND	THRU	61	142	RATIO 8.6%
	RIGHT	9	68	ADT 5,400		RIGHT	12	12	ADT 5,400

# 1/9/2024 Board Meeting

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			E	AST AVE.	VICTORIA AVE.			
	AK HOUR					<u>R</u>		
2001	UMES:	57 55	34		2001	36 90	59	
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5	6 >		-	< 9	61 >		<	ŧ
22	2 v		. 1	v 5	3 30 v	<i>.</i>	v	5
	ς	50 143	49			38 187	92	
EXISTING COUNT YEAR:					EXISTING COUNT YEAR			e
2001		146	261		2001	185	246	
	197 <	1N =	727 <	< 24	150	< 3N =	791 <	19
	95 >	. OUT ≠	727 >	> 13	96	> OUT =	791 >	21
		v 130	242			V 173	A 317	
EXISTING MODEL YEAR:	- 1 <b>8</b>	130	- 142			175	317	
1994		166	125		1994	162	193	
	34 4	V 161 –	^ 200 /			× 14) –	A 370 <	
	16 >	OUT =	299 >	- 1. -	36	> 0U7=	371 >	3
		v	^			v		
		148	105			123	169	
POTORE MODEL TEAK:		123	143		APOTORE MODEL TEAK:	478	370	
		v	^		J	v	•	
	572 <	(N ≝	1364 <	44	252	< IN = :	2253 <	424
	87 >	OUT =	1363 >	• 19	554	> OUT=:	2253 > ^	601
•		453	713			1023	797	
RAW GROWTH: 1994 TO 2020	)		-		RAW GROWTH: 1994 TO 2020	· · · ·		
		-44	18			316	177	
	548 <	v	^ <	43.	229	e v	^ <	421
	71 >		>	195	518	*	>	576
		v	*			v	^	
	2020	305	608			900	627	
-100 MINIMUM GROWTH %	2020	-44	18		ADJUSTED GROWTH: 1994 TO 2020	316	177	
		v	^			v	~	
	548 <		<	431	229	:	<	421
	112	v	× >	195	518 :	v	~ >	576
		305	608			900	627	
RORATED GROWTH 2001 TO	2020				PRORATED GROWTH. 2001 TO 2020			
19 YEARS		-30	10		19 YEARS	230	130	
	400 <	·	<	310	170 <	•	< 3	310
	50 >		>	140	380 >		> 4	120
		220	440			V 660	* 460	ļ
EW PROJECTED VOLUMES. 2020				·······	NEW PROJECTED VOLUMES 2020	000	400	
		120	270			420	380	
	600 ×	v	^		220 -	v	·	- 00
	150 >		,	280	480 >		< : > f	300
		v	^			v	~	
	· <u></u>	350	680			830	780	
VTERIM YEAR GROWTH 2001 TO	2004	0			INTERIM YEAR GROWTH: 2001 TO 2004	10	~~	
V 16400		v v	× .		J TEARS	40 v	∠U ∧	
	<del>6</del> 0 <	-	د	50	30 <	-	<	50
	10 >		, >	20	60 ×		>	70
		y 30	70			100	70	
ITIAL INTERIM VOLUMES:				<u> </u>	NITIAL INTERIM VOLUMES:	100		=
2004		150	260		2004	230	270	
	260 -	им –	A 0.08		100 -	V ALT	× 0.20 × •	
	110 >	OUT =	840 >	160	160 >	OUT = 1	010 > 2	280
		v	•			v	· -	
		160	310			270	390	
NDAMED INTERM VOLUMES		150	270		BALANCED INTERIM VOLUMES: 2004	200	770	
		v.		ł	£007	230 V	¢ru N	
	270 <	IN =	860 <	290	190 <	IN = 1	020 < 2	40
	110 >	OUT =	860 >	160	160 >	QUT = 1	010 > 2	:BO
		160	310	ŀ		V 170		
				الي محمد		2/0	<u></u>	ل

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### EAST AVE. / VICTORIA AVE. FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES NCHRP 255, PAGE 105 Written by: FHWA (C. Fieet)

			······	EAR 2020 TRAF	FIC CONDITIC	DNS			
	AMI	PEAK HOUR INP	UT DATA			PM	PEAK HOUR INF	UT DATA	
	TURNING	BASE YEAR		FUTURE YEAR		TURNING	BASE YEAR		FUTURE YEAR
APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL	APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL
NORTH	LEFT	50	SOUTH LEG		NORTH	LEFT	38	SOUTHLEG	
BOUND	THRU	143	IN	680	BOUND	THRU	187	IN	780
	RIGHT	49	олт	350		RIGHT	92	τυσ	830
SOUTH	LEFT	34	NORTH LEG		SOUTH	LEFI	59	NORTH LEG	
BOUND	THRU	55	iN	120	BOUND	THRU	90	iN	420
ĺ	RIGHT	57	லா	270		RIGHT	36	out	380
EAST	LEFT	17	WEST LEG		EAST	LEFT	5	WEST LEG	
BOUND	THRU	56	IN	150	BOUND	THRU	61	IN	480
	RIGHT	22	<b>о</b> ит	600		RIGHT	30	out	330
WEST	LEFT	53	EASTLEG		WEST	LEFT	53	EAST LEG	
BOUND	THRU	90	IN	550	BOUND	THRU	86	1N	500
	RIGHT	101	о <b>л</b>	280		RIGHT	54	олт	630

				YEAR 2020 TRAF	FIC CONDITIO	ONS	<u></u>		
	A۸	PEAK HOUR R	ESULTS			PN	A PEAK HOUR R	ESULTS	
	TURNING	BASE YEAR	FUTURE YEAR	PEAK - DAILY		TURNING	BASE YEAR	FUTURE YEAR	PEAK - DAILY
APPROACH	MOVEMENT	COUNT	FORECAST	RELATIONSHIP	APPROACH	MOVEMENT	COUNT	FORECAST	RELATIONSHIP
NORTH	LEFT	50	297	NORTH LEG	NORTH	LEFT	38	122	NORTH LEG
BOUND	THRU	143	195	RATIO 4.8%	BOUND	THRU	187	317	RATIO 9.9%
£	RIGHT	49	188	ADT 8,100		RIGHT	92	336	ADT 8,100
SOUTH	DUTH LEFT 34 17 SOUTH LEC					LEFT	59	80	SOUTHLEG
BOUND	THRU	55	60	RATIO 6.1%	BOUND	THRU	90	286	RATIO 9.4%
	RIGHT	57	43	ADT 17,000		RIGHT	36	43	ADT 17,000
EAST	LEFT	17	6	EASTLEG	EAST	LEFT	5	8	EAST LEG
BOUND	THRU	56	75	RATIO 8.0%	BOUND	THRU	61	214	RATIO 10.8%
	RIGHT	22	67	ADT 10,400		RIGHT	30	255	ADT 10,400
WEST	LEFT	53	223	WESTLEG	WEST	LEFT	53	279	WEST LEG
BOUND	THRU	90	260	RATIO 8.9%	BOUND	THRU	86	165	RATIO 9.6%
[]	RIGHT	101	67	ADT 8,400		RIGHT	54	55	ADT 8,400

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### EAST AVE. / VICTORIA AVE. FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES NCHRP 255, PAGE 105 Written by: FHWA (C. Fleat)

			INTER	RIM YEAR 2004 T	RAFFIC CON	DITIONS			
	AM	PEAK HOUR INP	UT DATA	• • · · · · · · · · · · · · · · · · · ·		PM	PEAK HOUR INF	TUT DATA	
	TURNING	BASE YEAR		INTERIM YEAR	· · · · ·	TURNING	BASE YEAR		INTERIM YEAR
APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL	APPROACH	MOVEMENT	COUNT	APPROACH	TOTAL
NORTH	LEFT	50	SOUTHLEG		NORTH	LEFT	36	SOUTH LEG	
BOUND	THRU	143	IN	310	BOUND	THRU	167	IN	390
	RIGHT	49	OUT	160		RIGHT	92	ം സര	270
SOUTH	LEFT	34	NORTHLEG		SOUTH	LEFT	59	NORTH LEG	
BOUND	THRU	55	IN	150	BOUND	THRU	90	IN	230
	RIGHT	57	០ហា!	270		RIGHT	36	ം സാ	270
EAST	LEFT	17	WESTLEG		EAST	LEFT	5	WEST LEG	
BOUND	THRU	56	IN	110	BOUND	THRU	61	IN	160
	RIGHT	22	OUT	270		RIGHT	30	τυο	180
WEST	LEFT	53	EAST LEG		WEST	LEFT	53	EAST LEG	
BOUND	THRU	90	1N	290	BOUND	THRU	86	IN	240
	RIGHT	101	OUT	160		RIGHT	54	<del>ب</del> رە	280

			INTE	RIM YEAR 20	004 TF	RAFFIC CON	DITIONS				
	AN	PEAK HOUR R	ESULTS				Pl	M PEAK HOUR F	RESULTS		
	TURNING	BASE YEAR	INTERIM YEAR	PEAK - DA	VLY		TURNING	BASE YEAR	INTERIM YEAR	PEAK	- DAILY
APPROACH	MOVEMENT	COUNT	FORECAST	RELATIONS	SHIP /	APPROACH	MOVEMENT	COUNT	FORECAST	RELAT	ONSHIP
NORTH	LEFT	50	84	NORTH L	EG 🛉	NORTH	LEFT	38	51	NORT	HLEG
BOUND	THRU	143	160	RATIO 5.1	9% (E	BOUND	THRU	187	210	RATIO	7.0%
	RIGHT	49	66	ADT 7,1	100		RIGHT	92	125	ADT	7,100
SOUTH	UTH LEFT 34 30 SOUTHL						LEFT	59	63	SOUT	HLEG
BOUND	THRU	55	58	RATIO 61	2% 8	BOUND	THRU	<b>9</b> D	127	RATIO	8.6%
	RIGHT	57	62	ADT 7.6	500		RIGHT	36	38	ADT	7,600
EAST	LEFT	17	16	EAST LE	GE	AST	LEFT	5	6	EAST	LEG
BOUND	THRU	56	64	RATIO 7.8	8% B	BOUND	THRU	61	92	RATIO	8.9%
	RIGHT	22	30	ADT 5.8	300		RIGHT	30	60	ADT	5,800
WEST	LEFT	53	72	WEST LE	G V	VEST	LEFT	53	83	WEST	TLEG
BOUND	THRU	90	125	RATIO 9.5	5% B	IOUND	THRU	86	101	RATIO	8,7%
	RIGHT	101	94	ADT 4.0	000		RIGHT	54	53	ADT	4,000

Modified by: COMSIS Corp. (M. Roskin) 4/8/86 Modified by: FRWA 12/21/87 Modified by: RKJK 3/1/99

1/9/2024 Board Meeting	1	7-10	ļ	Attachmer	nt 3, Page 4	/6 of 608
		СТР	EXISTING	СТР	NEW	INTERIM
	1	1994	2001	2020	2020	2004
INTERSECTION	LEG	ADT	ADT	ADT	ADT	ADT
Etiwanda Ave (West) / Wilson Ave.	North	-	2,800	2,000	4,300	3,100
	South	-	-		-	-
	East	-	3,700	6,200	8,200	4,400
	West		1,100	4,200	4,200	1,600
Etiwanda Ave (East) / Wilson Ave.	North	-	-		-	-
	South	_	4,200	2,400	6,000	4,500
	East	-	-	5,500	4,000	600
· · ·	West		3,700	6,200	8,200	4,400
Etiwanda Ave. / Summit Ave.	North	200	4,200	1,700	5,300	4,400
	South	200	10,100	8,400	16,100	11,100
	East	-	4,800	5,100	8,500	5,400
	West	~	3,200	7,900	9,000	4,100
Etiwanda Ave. / Highland Ave.	North	200	10,100	8,400	16,100	11,100
	South	2,100	5,700	9,600	11,200	6,600
	East	3,800	3,600	8,300	6,900	4,100
	West	5,500	9,900	9,700	13,000	10,400
East Ave. / Wilson Ave.	North	-	-		+	-
	South	-	700	7,900	6,500	1,600
	East	*	· -	13,400	9,800	1,600
	West		-	5,500	4,000	600
East Ave. / Summit Ave.	North	-	700	7,900	6,500	1,600
·	South	200	2,000	11,200	10,000	3,200
	East	200	4,800	8,400	10,800	5,800
	West	-	4,800	5,100	8,500	5,400
East Ave. / Victoria Ave.	North	3,800	5,200	. 7,200	7,700	5,600
	South	3,200	5,900	18,000	16,700	7,600
	East	400	4,900	7,800	10,300	5,700
	West	7.00	3,100	7,900	8,400	4,000

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### APPENDIX B

## TRAFFIC COUNT DATA

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1/9/2024 B	loard M	leeting				7-10			Attach	ment 3,	Page 47	'9 of 608	3
					Southly Vehicle A	AND CA AND MA	R COUN	ters Dunts					
N-S STREET: E-W STREET:	W. E WIL	ETIWAN SON AV	IDA AVE /E.(W)	Ē.	DATE: DAY:	12/1 TUE	8/01 SDAY			Ch PROJEC	TY: RAN CUC T# 0090	CHO AMONO 001A	ЪА
	NO		ND	SOI	JTHBOUN	<u></u>	FAS			WE	TBOUN	)	
LANES:	NL	NT	NR	SL 1	ST	SR 1	EL 1	ਜ 2	ER	WL	<b>W</b> Т 2	WR 0	TOTAL
6:00 AM 6:15 AM 6:30 AM 6:45 AM 7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:45 AM 9:00 AM 9:15 AM 9:30 AM 9:45 AM 10:00 AM 10:15 AM 10:30 AM 10:45 AM 11:30 AM 11:45 AM				39 45 48 39 38 26 19 18		1 1 2 0 2 0 0	0 0 1 0 0 0 0	8 10 9 14 8 9 11 6			16 8 9 10 9 6 7	9 15 17 22 18 14 9 8	73 79 84 86 74 60 45 39
TOTAL VOLUMES =	NL 0	NT 0	NR 0	SL 272	ST 0	SR 7	EL 1	ET 75	ER 0	WL 0	WT 73	WR 112	TOTAL 540
AM Peak Hr Beg	jins at			7	15 AM								
PEAK VOLUMES ⇔	D	0	o	170	0	4	1	41	0	0	<b>3</b> 5	72	323
	3-WA	Y STOP	- SOUT		T R WES	τ							

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### SOUTHLAND CAR COUNTERS VEHICLE AND MANUAL COUNTS

N-S STREET:	W. ETIWANDA AVE.	DATE:	12/18/01	CITY: RANCHO CUCAMONGA
E-W STREET:	WILSON AVE.(W)	DAY:	TUESDAY	PROJECT# 0090001P

NORTHBOUND		SOL	THBOU	ND	EASTBOUND			WESTBOUND					
LANES:	NL	NT	NR	SL 1	ST	SR 1	EL 1	ЕТ 2	ER	WL	₩Т 2	WR Q	TOTAL
1:00 PM	- <u></u>		<u> </u>				<u></u>	<u> </u>					
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM				25		2	0	5			7	20	59
3:15 PM				31		1	1	7			12	18	70
3:30 PM				25		0	0	9			15	30	79
3:45 PM				22		3	2	11			14	25	77
4:00 PM				27		1	1	9			17	37	92
4:15 PM				28		0	0	7			12	24	71
4:30 PM				30		1	1	5			9	33 .	79
4:45 PM				25		0	0	3			10	31	69
5:00 PM													
5:15 PM													
5:30 PM													
5:45 PM													
6:00 PM													
6:15 PM													
6:30 PM							-						
6:45 PM													
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	wī	WR	TOTAL
VOLUMES ⇔	0	٥	0	213	0	6	5	56	D	o	96	218	596
PM Peak Hr Be	gins at			<b>34</b> 5	PM								
PEAK VOLUMES ≃	0	0	0	107	0	5	4	32	o	o	52	119	319

3-WAY STOP, SOUTH, EAST & WEST ADDITIONS:

1/9/2024 Bo		7-10					Attachment 3, Page 481 of 608						
					SOUT <del>I</del> VEHICLI	HLAND C/ E AND M/	AR COUN ANUAL C	NTERS OUNTS					
N-S STREET:	E. <b>E</b>	TIWAN	DA AVE	Ξ.	DAT	'E: <b>12/</b> 1	18/01			Ċſ	TY: <mark>RAN</mark> CUC		GA
E-W STREET:	WiL	SON AV	VE. E		DAY	: TUE	ESDAY			PROJEC	.T# 0090	002A	
	NO	RTHBOU	ND	SC	UTHBOU	IND	EA	STBOUN	D	WE	STBOUN	D	<u></u>
LANES:	NL 1	NT	NR	SL	ST	SR	EL	ET	ER 1	WL	WT	WR	TOTAL
6:00 AM		<u> </u>	<u>, , , , , , , , , , , , , , , , , , , </u>			••••••						<u></u>	
6:15 AM													
6:30 AM													
7:00 AM	27								54				81
7:15 AM	26								49				75
7:30 AM	29								56				85
7:45 AM	25								51				76
8:00 AM	21								44				65
8:15 AM	19								32				51
8:30 AM	21								35				56
8:45 AM	13								27				40
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WI	WT	WR	TOTAI
VOLUMES =	181	0	0	0	0	0	0	0	348	0	0	0	529
AM Peak Hr Begi	ins at			7	00 AM								
PEAK													
VOLUMES =	107	0	0	0	0	0	0	0	210	0	0	0	317
ADDITIONS:													

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### SOUTHLAND CAR COUNTERS VEHICLE AND MANUAL COUNTS

N-S STREET:	E. ETIWANDA AVE.	DATE:	12/18/01	CITY: RANCHO
E-W STREET:	WILSON AVE. E	DAY:	TUESDAY	PROJECT# 0090002P

	NORTHBOUND			so	SOUTHBOUND EASTBOUND WESTBOL					STBOUNE	DUND		
LANES:	NL 1	NŤ	NR	SL	ST	SR	EL	ET	ER 1	WL	WT	WR	TOTAL
1:00 PM	' <del>}.¥@</del> @'9					<u></u>						<u></u>	<u></u>
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	29								34				63
4:15 PM	33								39				72
4:30 PM	44								31				75
4:45 PM	39								28				67
5:00 PM	47								24				71
5:15 PM	39								33				72
5:30 PM	44								37				81
5:45 PM	34								27				61
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL	NL.	NŤ	NR	SL	ŚT	SR	ĒL	ET	ĒR	WL	WT	WR	TOTAL
VOLUMES =	309	0	0	0	0	0	0	0	253	0	0	0	562
PM Peak Hr Be	gins at			445	РМ								
PEAK													
VOLUMES =	169	0	0	0	0	0	0	0	122	0	0	0	291
ADDITIONS:													

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### SOUTHLAND CAR COUNTERS VEHICLE AND MANUAL COUNTS

N-S STREET:	ETIV		AVE.		DATE	: 12/1	2/01			CI	ry: RAN	сно	
											CUC	AMONG	<b>A</b>
E-W STREET:	SUM	IMIT AV	Έ.		DAY:	WED	DNESD	۹Y	i	PROJEC	T# 0090	003A	
					. '			`					
	NOF	THBOU	٧D	SOL	THBOUN	۱D	EAS	TBOUND		WÉS	STBOUNI	)	<u></u>
LANES:	NL 0	NT 1	NR 0	SL O	ST 1	SR 0	EL O	ЕТ 1	ER 0	WL O	<b>ωτ</b> 1	WR 0	TOTAL
6:00 AM								. <u></u>		<u> </u>			<u></u>
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	30	28	83	26	63	0	2	12	37	79	15	19	394
7:15 AM	<b>3</b> 6	22	30	12	59	2	2	11	42	75	13	12	316
7:30 AM	70	16	17	13	80	11	1	33	93	48	35	5	422
7: <b>45 AM</b>	61	26	29	4	63	3	4	29	102	39	31	11	402
8:00 AM	32	37	22	8	40	0	0	13	35	40	5	1	233
8:15 AM	20	27	25	1	35	4	0	5	25	31	7	3	183
8:30 AM	14	20	22	3	46	0	1	3	20	34	3	2	168
8:45 AM	16	14	10	3	26	1	1	4	15	22	1	2	115
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
TOTAL	NL	NT	NR	SL	ŚŤ	SR	EL	ET	ER	WL	WT	WŔ	TOTAL

VOLUMES =	279	190	238	70	412	21	11	110	369	368	110	55	2233	
AM Peak Hr Bei	gins at			7	00 AM									
PEAK VOLUMES =	197	92	159	55	265	16	9	85	274	241	94	47	1534	
1000000		VOTO	~											

ADDITIONS: 4-WAY STOP

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### SOUTHLAND CAR COUNTERS VEHICLE AND MANUAL COUNTS

N-S STREET:	ETIWANDA AVE.	DATE:	12/12/01	CITY: RANCHO
				CUCAMONGA
E-W STREET:	SUMMIT AVE.	DAY:	WEDNESDAY	PROJECT# 0090003P

.

	NOATHBOUND		SOUTHBOUND			EASTBOUND			WESTBOUND				
LANES:	NL O	NT 1	NR 0	SL 0	ST 1	SR 0	EL O	ет 1	ER O	WL O	₩Т 1	WR 0	TOTAL
1:00 PM	. <u></u>	<u> </u>		<u> </u>				, <u> </u>					
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	27	27	51	5	42	1	2	5	31	38	3	5	237
4:15 PM	23	33	42	6	34	0	1	7	28	35	4	9	222
4:30 PM	29	46	60	З	31	2	3	з	30	29	2	4	242
4:45 PM	25	42	48	4	29	3	0	8	25	32	3	6	225
5:00 PM	34	49	39	1	40	1	1	4	23	36	6	5	239
5:15 PM	26	45	43	4	37	0	2	1	21	28	5	4	21 <del>6</del>
5:30 PM	28	41	36	6	34	1	1	2	17	31	7	8	212
5:45 PM	21	38	32	5	30	1	2	1	12	33	4	5	184
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL	NL	NT	NR	SL	ST	SR	EL	ÉT	ĒR	WL	WT	WR	TOTAL
VOLUMES =	213	321	351	34	277	9	12	31	187	262	34	46	1777
PM Peak Hr Be	gins at			415	РМ								
PEAK													
VOLUMES ⇔	111	170	189	14	134	6	5	<b>2</b> 2	106	132	15	24	928
ADDITIONS:	4-WA	Y STOP	2										

1/9/2024 Board N	Aeeting
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### SOUTHLAND CAR COUNTERS VEHICLE AND MANUAL COUNTS

N-S STREET:	ETIWANDA AVE.	DATE:	12/12/01	
E-W STREET:	HIGHLAND AVE.	DAY:	WEDNESDAY	PROJECT# 0090004A

	NORTHBOUND		SOUTHBOUND			EASTBOUND			WESTBOUND				
LANES:	NL 1	NT 1	NR O	SL 1	ST 1	SR 0	EL 1	ET 1	ER 1	<b>w</b> ∟ 1	WT 1	WR 0	TOTAL
6:00 AM		<u></u>									<u></u>		
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	15	56	2	13	68	91	75	63	14	4	31	5	437
7:15 AM	9	39	10	9	75	112	42	106	25	6	50	7	490
7:30 AM	14	54	5	12	<b>8</b> 0	120	45	142	46	9	78	3	608
7:45 AM	12	45	2	7	86	144	78	127	65	16	106	6	694
8:00 AM	26	33	4	4	49	66	61	31	54	4	34	2	368
8:15 AM	30	29	2	5	37	55	43	19	41	2	16	4	283
8:30 AM	18	21	3	з	40	63	22	20	23	3	11	6	233
8:45 AM	11	24	1	4	31	37	17	23	11	1	9	5	174
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
OTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
OLUMES =	135	301	29	57	<b>46</b> 6	688	383	531	279	45	335	38	3287
M Peak Hr Be	gins at			70	MA 00								
EAK													
/OLUMES =	50	194	19	41	309	467	240	438	150	35	265	21	2229
DDITIONS:	SIGN	ALIZED	İ										

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### SOUTHLAND CAR COUNTERS VEHICLE AND MANUAL COUNTS

N-S STREET:	ETIWANDA AVE.	
E-W STREET:	HIGHLAND AVE.	

DATE: 12/12/01 DAY: WEDNESDAY

### CITY: RANCHO CUCAMONGA PROJECT# 0090004P

<u></u>	NO	THBOU	ND	SOL	THBOUN	١D	EAS	TBOUND	<u></u>	WES	STBOUND	)	
LANES:	NL 1	NT 1	NR 0	SL 1	ST 1	SR 0	EL 1	ET 1	ER 1	WL 1	wт 1	WR Ö	TOTAL
1:00 PM		<u> </u>	<u></u>								-		
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	19	30	4	6	44	52	67	32	16	3	33	5	311
4:15 PM	16	36	3	4	42	46	59	23	11	2	28	8	278
4:30 PM	21	53	6	3	38	41	75	26	9	2	25	6	305
4:45 PM	28	35	3	4	40	38	88	39	14	1	20	10	320
5:00 PM	23	44	4	5	46	45	54	25	10	0	29	12	297
5:15 PM	17	38	5	з	36	44	78	28	8	4	23	7	291
5:30 PM	19	41	3	4	34	39	71	31	13	з	27	6	291
5:45 PM	20	34	5	2	38	26	60	24	11	2	21	6	249
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL	NL	NT	NR	SL	ST	SR	EL.	ET	ER	WL	WT	WR	TOTAL
	163	311	33	31	318	331	552	228	92	17	206	60	2342
PM Peak Hr Be	legins at 400 PM												
PEAK													
VOLUMES ≈	84	154	16	17	164	177	289	120	50	8	106	29	1214
ADDITIONS:	SIGN	ALIZED	)										

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### SOUTHLAND CAR COUNTERS VEHICLE AND MANUAL COUNTS

N-S STREET: EAST AVE. DATE: 12/12/01 CITY: RANCHO CUCAMONGA E-W STREET: SUMMIT AVE. DAY: WEDNESDAY PROJECT# 0090005A

		NORTHBOUND											
LANES:	NL O	NT 1	NR 0	SL O	ST 1	SR 0	EL O	ЕТ 1	ER 0	WL O	WT 1	WR 0	TOTAL
6:00 AM			<del></del>	<u></u>	<u></u>							<u>,</u>	<u>ور بالمحمول معمول مس</u>
6:15 AM								· -				-	
6:30 AM													
6:45 AM													
7:00 AM	11	16	26	23	12	38	44	64	3	28	60	21	346
7:15 AM	7	18	32	16	21	34	21	35	10	57	58	18	327
7: <b>30 AM</b>	22	4	30	5	5	9	- 9	16	25	34	49	4	212
7:45 AM	28	2	38	1	1	2	5	33	22	23	53	3	211
8:00 AM	3	0	5	2	0	3	5	27	8	6	24	1	84
8:15 AM	6	1	8	0	3	2	3	21	2	8	37	2	93
8:30 AM	4	2	3	2	1	2	5	15	7	7	31	2	81
8:45 AM	5	1	9	1	5	0	3	17	4	9	23	1	78
9:00 AM			•										
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:45 AM													
OTAL	NL	NT	NR	SL	ST	SR	EL	ET	ĒR	WL	WT	WR	TOTAL
OLUMES =	86	44	151	50	48	90	9 <del>5</del>	228	81	172	335	52	1432
M Peak Hr Be	gins at			70	00 AM								
EAK													
'OLUMES =	68	40	126	45	39	83	79	148	60	142	220	46	1096
DDITIONS:	4- <b>W</b> A		2										

### 7-10

### SOUTHLAND CAR COUNTERS VEHICLE AND MANUAL COUNTS

N-S STREET:	EAST AVE.	DATE:	12/12/01	CITY: RANCHO
				CUCAMONGA
E-W STREET:	SUMMITAVE.	DAY:	WEDNESDAY	PROJECT# 0090005P

<u></u>	NOF	THBOU	ND	SOU	THBOUN	ND	EAS	TBOUND	· · · · · · · · ·	WES	TBOUND		
LANES:	NL O	NT 1	NR 0	SL 0	ST 1	SA 0	EL 0	ЕТ 1	ER 0	WL 0	WT 1	WR 0	TOTAL
1:00 PM						<b>****</b> ********************************					<u> </u>		
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	8	4	11	1	1	5	1	49	8	6	39	1	134
4:15 PM	9	3	10	2	3	4	1	35	6	7	34	0	114
4:30 PM	10	3	19	1	2	5	4	50	5	8	27	1	135
4:45 PM	8	2	8	0	4	6	2	43	9	9	36	0	127
5:00 PM	9	1	24	2	1	8	1	29	2	6	33	2	118
5:1 <b>5 PM</b>	6	0	7	0	1	4	0	41	1	6	31	0	97
5:30 PM	11	1	10	1	0	3	1	38	7	7	28	1	108
5:4 <b>5 PM</b>	7	2	6	1	2	6	5	42	4	4	32	0	111
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM													
TOTAL	NL.	NT	NR	ŞL	ST	SR	EL.	ЕТ	ER	WL.	WT	WR	TOTAL
VOLUMES =	68	16	95	8	14	41	15	327	42	53	260	5	944
PM Peak Hr Be	gins at			400	РМ								
PEAK													
VOLUMES =	35	12	48	4	10	20	8	177	28	30	136	2	510
ADDITIONS:	4-WA ETIW	Y STO	P EDUCA	TION C	ENTER	LOCAT	FED ON	I N/E CC	ANER.	EAST	AVE. IS	AN	

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1/9/2024 Board Meeting

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### SOUTHLAND CAR COUNTERS VEHICLE AND MANUAL COUNTS

N-S STREET:	EAST AVE.	DATE:	12/13/01	CITY: RANCHO
E-W STREET:	VICTORIA ST.	DAY:	THURSDAY	CUCAMONGA PROJECT# 0090007A

<u></u>	NOF		ND	SOL	JTHBOU	ND.	EAS	STBOUND	>	WE	STBOUN	Þ	
LANES:	NL 1	NT 2	NR 1	SL 1	ST 1	SR 1	EL 1	ЕТ 1	ER 0	WL 1	WТ 1	WR 1	tgtal
6:00 AM	- <u>nt w </u>						<u> </u>						<u></u>
6:15 AM													
6:30 AM													
6:45 AM													
7:00 AM	5	17	6	3	11	5	2	10	3	5	10	10	87
7:15 AM	2	19	10	2	8	6	0	9	1	11	16	13	97
7:30 AM	7	28	8	4	7	14	0	16	7	13	12	17	133
7:45 AM	11	51	9	5	10	11	5	14	5	17	13	22	173
8:00 AM	13	46	10	7	16	10	8	24	6	14	26	28	208
8:15 AM	16	32	13	9	10	17	з	10	3	10	27	34	184
8:30 AM	10	14	17	13	19	19	1	8	8	12	24	17	162
8:45 AM	8	17	14	8	17	13	2	16	. 2	8	20	12	137
9:00 AM													
9:15 AM													
9:30 AM													
9:45 AM													
10:00 AM													
10:15 AM													
10:30 AM													
10:45 AM													
11:00 AM													
11:15 AM													
11:30 AM													
11:4 <b>5 AM</b>													
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	ŴT	WR	TOTAL
VOLUMES =	72	224	87	51	98	95	21	107	35	90	148	153	1181
AM Peak Hr Be	gins at			7	45 AM								
PEAK													
Volumes =	<del>5</del> 0	143	49	34	55	57	17	56	22	53	90	101	727
ADDITIONS:	SIGN	IALIZEE	)										

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# Attachment 3, Page 491 of 608

### SOUTHLAND CAR COUNTERS VEHICLE ANO MANUAL COUNTS

N-S STREET:	EAS	ST AVE.			DATE	: 12/1	3/01			Cľ	TY: RAN CUC	ICHO CAMON(	<del>3</del> A
E-W STREET:	VIC.	TORIA S	ST.		DAY:	THU	IRSDAY	Y		PROJEC	T# 009	00 <b>0</b> 7P	
_ <del></del>	NO	ATHBOU	ND	SÔ	UTHBOUN	ND	EAS	STBOUND	2	WE	STBOUN	D	
	NL 1	nt 2	NR 1	SL 1	SТ 1	SR 1	EL 1	ET 1	ER 0	WL 1	WT 1	WR 1	TOI
1:00 PM											·····	<u>ار بار ونازدز و</u>	
1:15 PM													
1:30 PM													
1:45 PM													
2:00 PM													
2:15 PM													
2:30 PM													
2:45 PM													
3:00 PM													
3:15 PM													
3:30 PM													
3:45 PM													
4:00 PM	3	31	14	5	17	8	0	12	5	10	13	8	126
4:15 PM	2	36	26	14	12	6	0	19	7	13	27	13	175
4:30 PM	6	40	20	11	16	9	1	16	9	18	21	10	177
4:45 PM	8	32	17	10	1 <del>9</del>	3	2	13	11	19	19	14	167
5:00 PM	5	54	15	9	24	7	1	18	8	15	24	17	197
5:15 PM	11	43	28	13	18	5	3	15	7	9	22	15	189
5:30 PM	13	49	22	16	26	11	0	12	5	13	17	10	194
5:45 PM	9	41	27	21	22	13	1	16	10	16	23	12	211
6:00 PM													
6:15 PM													
6:30 PM													
6:45 PM									۰.				
TOTAL	NL	NŤ	NR	SL	ST	ŚR	EL	ET	EA	WL	WT	WR	TOTAL
VOLUMES =	57	326	169	<b>99</b>	154	62	8	121	62	113	166	99	1436
PM Peak Hr Beg	jins at			500	РМ								
PEAK VOLUMES =	38	187	92	<b>59</b>	90	36	5	61	30	53	86	54	791
ADDITIONS:	SIGN		)										

-1/9/2024 Board Meeting

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Location:

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ETIWANDA AVE. (WEST) / WILSON AVE.

Turning Movement Counts Per CMP Requirements

	N	orthbou	nd	So	ultpon	nd	E	astbour	ıd	W	estbour	nd
	LT	Th	RT	LT	Th	RT	LŤ	Th	RT	LT	Th	RT
AM Peak Hour	######	*****	#####	190	0	6	1	55	0	0	41	83
Peak Hour Factor		#D/V/0!			0.90			0.75	.		0.86	
PM Peak Hour	######	######	#####	123	0	18	5	47	0	0	72	144
Peak Hour Factor	1	#DIV/0	!	0.86			· · · · · ·	0.77			0.81	

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Note the origination of the set	Input Data Below																	
Noncentral         Noncentral         Samphania         Earthourie         Noncentral         Noncentral           120         11         6         0         0         3         0         1         46         0         1         0         1         0         1         0         1         0         1         0         1         0         0         0         0         1         0         1         0         1         0         0         0         0         0         1         0	MORNING											<b>`</b>						
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		1	Nonhbound	1			Southboun	d			EastDound	-			Westbourg	1		
7 15       0       0       0       1       440       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       0       0       0       1       0       0       1       0       0       1       0       1       0       1       0       1       0       1       0       0       1       0       0       1       1       0       1       0 </td <td>(ar man)</td> <td></td> <td>17</td> <td>Th</td> <td>RT</td> <td>Total</td> <td>ιT</td> <td>Th</td> <td>RT</td> <td>Total</td> <td>LT</td> <td>Th</td> <td>RT</td> <td>Total</td> <td>LT</td> <td>Th</td> <td>RT</td> <td>⊤ota</td>	(ar man)		17	Th	RT	Total	ιT	Th	RT	Total	LT	Th	RT	Total	LT	Th	RT	⊤ota
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			_	_	_	_		_			_	_	_				-	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	7:00	7 15	0	U A	U A	Ů	39	0	1	40	0			8	0	16	45	23
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	7:15	7:30		0		U O	45		1	40	U	10		10	e O		19	2.
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4:30-5:30         0         116         39         174           4:45-5:45         0         112         36         171           5:00-6:00         0         112         36         171           Maximum Peak Mour by Approach         0         112         26         173           Maximum Peak Mour by Approach         0         120         40         174           Peak 15-Min by Approach         0         120         40         174           4 ' Peak 15-Min by Approach         0         35         13         54           Peak 15-Min by Approach         0         140         52         216           PHF for Peak 15-min interval         #DIV/0!         0.86         0.77         6.81           Peak 15-Minute         Nonthbournd         Southbound         Eastbound         Westroound         1           4:00-5:00         0         0         0         0         0         0         0         0         0           4:05:00         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0	4-15-5:15					0				120				40				168
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5.00-6:00         0         112         26         173           Maximum Peak Hour by Approach         0         120         40         174           Peak 15-Min by Approach         0         35         13         54           Peak 15-Min by Approach         0         140         52         216           PHF for Peak 15-min by Approach         0         140         52         216           PHF for Peak 15-min interval         #DIV/0!         0.86         0.77         0.81           Peak 15-Minute         Nonthbound         Southbound         Eastbound         Westroownd         400-5:00           Peak 15-Minute         Nonthbound         Southbound         Eastbound         Westroownd         400-5:00           Peak 15-Minute         Nonthbound         Southbound         Eastbound         UT         Th         RT         LT	4:45-5:45					σ				112				36				171
Maximum Peak Hour by Approach         0         120         40         174           Peak 15-Min by Approach         0         35         13         54           Peak 15-Min by Approach         0         140         52         216           PHF for Peak 15-min interval         MDIV/01         0.86         0.77         6.81           Peak 15-min interval         MDIV/01         0.86         0.77         6.81           Peak 15-min interval         Nonthbound         Southbound         Eastbound         Westbound         4.00         74           4:00-5:00         0	5.00-6:00					0				112				26				173
Maximum Peak Hour by Approach         0         120         40         174           Peak 15-Min by Approach         0         35         13         54           Peak 15-Min by Approach         0         35         13         54           PH F for Peak 15-min by Approach         0         140         52         216           PHF for Peak 15-min interval         #DIV/0!         0.86         0.77         0.81           Peak 15-Minute         Northbound         Southbound         Eastbound         Westbound         4.00           Preak 15-Minute         Northbound         Southbound         Eastbound         Westbound         4.00         0.00 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>																		
Peak 15-Min by Approach         0         35         13         54           4 * Peak 15-min, by Approach         0         140         52         216           Pief for Peak 15-min interval         #DIV/01         0.86         0.77         0.81           Peak 15-min interval         #DIV/01         0.86         0.77         0.81           Peak 15-min interval         #DIV/01         0.86         0.77         0.81           Peak 15-Minute         Nonhoound         Southbound         Eastbound         Westbound         Mestbound           Peak 15-Minute         Nonhoound         Southbound         Eastbound         Westbound         400-52         216           Peak 15-Minute         Nonhoound         Southbound         Eastbound         Westbound         Mestbound	Maximum Peak Hour by	Abblog	zh			0				12D				40				1/4
4 * Peak 15-min. by Approach         0         140         52         210           PHF for Peak 15-min interval         #DIV/01         0.86         0.77         0.81           Peak 15-min interval         MDIV/01         0.86         0.77         0.81           Peak 15-min interval         MDIV/01         0.86         0.77         0.81           Peak 15-min interval         Nonthbound         Southbound         Eastbound         Westbound         Eastbound           4:00-5:00         0	Peak 15-Min, by Approa	ach -				Ð				35				13				244
PHF for Peak 15-min interval         #DIV/0!         0.85         0.77         0.61           Peak 15-min interval         #DIV/0!         0.85         0.77         0.61           Peak 15-min interval         #DIV/0!         Southbound         Eastbound         Westbound           4:00-5:00         D         Th         RT         LT         Th         RT         LT         Th         RT         4:00-5:00         0	4 * Peak 15-min. by App	proach				0				140				52				0.81
Peak 15-Minute         Nonhoound         Southbound         Eastbound         Westbound         Westbound           4:00-5:00         0 <td></td> <td>terval</td> <td></td> <td></td> <td>#</td> <td>UV/0!</td> <td></td> <td></td> <td></td> <td>U.85</td> <td></td> <td></td> <td></td> <td><b>u</b>.77</td> <td></td> <td></td> <td></td> <td>0.01</td>		terval			#	UV/0!				U.85				<b>u</b> .77				0.01
Peak 15-Minute         Nonthoound         Social module         East count outling         Vesticities	PHF for Peak 15-min in						Caude Law 4				Eachernet				Wesnow			
Li       IA       Ri       Li       In       Ri       Li <th< td=""><td>PHF for Peak 15-min in</td><td></td><td></td><td></td><td></td><td></td><td>Soundmude:</td><td></td><td>-</td><td></td><td>Castoound</td><td>7.5</td><td>D۲</td><td></td><td>17</td><td>Ťb</td><td><b>PT</b></td><td></td></th<>	PHF for Peak 15-min in						Soundmude:		-		Castoound	7.5	D۲		17	Ťb	<b>PT</b>	
4:00-3:00       0	PHF for Peak 15-min in Peak 15-Minute		bruoddhol	7.	07		1 1	10	RI		<b>U</b> (	10	<b>R</b>		L I		101	
4 (55:15         0         0         0         105         1         30         3         5         0         0         4         4         5:15         0         0         0         0         105         1         105         1         105         1         105         105         105         105         105         105         105         105         105         105         0 <th0< th=""> <th0< th=""></th0<></th0<>	PHF for Peak 15-min in Peak 15-Minute	٨	britodinol LT	Th	RT				~				2		n	6	0	
4 30-530 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	PHF for Peak 15-min in Peak 15-Minute 4:00-5:00	٨	LT 0	Тљ 0	RT 0		0	0	0		0	0	0		0	6 6	0 0	
arabs.45 u u u u u u u u u u u u u u u u u u u	PHF for Peak 15-min in Peak 15-Minute 4:00-5:00 4 15-5:15	٨	lorthbournd LT 0 0	Тћ 0 0	RT 0 0		105	0	0 15		0 4	0 36	0 0		0 0 0	6 6 58	0 0 116	. •
2100-000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	PHF for Peak 15-min in Peak 15-Minute 4:00-5:00 4 15-5:15 4 30-5:30	٨	LT D O O O	Та 0 0 0	RT 0 0		105 D	0 0 0	0 15 0		0 4 0	0 36 0	0 0 0		0 0 0	0 0 58 0	0 0 116 0	
Totals 0 0 0 105 0 15 4 36 0 0 58 116 PHE Administration #Driv/01 #Driv/01 123 0 18 5 47 0 <u>0 72 144</u>	PHF for Peak 15-min in Peak 15-Minute 4:00-5:00 4 15-5:15 4 30-5:30 4:45-5:45	ħ	lonthbournd LT D Q Q Q	Th 0 0 0 0	RT 0 0 0		0 105 D	0 0 0	0 15 0 0		0 4 0 0	0 36 0 0	0 0 0 0		0 0 0 0	0 0 58 0 0	0 0 116 0 0	
TOURS HIT NOW NOW NOW NOW 122 0 18 5 47 0 0 72 144	PHF for Peak 15-min in Peak 15-Minute 4:00-5:00 4:15-5:15 4:30-5:30 4:45-5.45 5:00-6:00	M	lonthbournd LT D Q Q Q Q	Th 0 0 0 0 0	RT 0 0 0 0		0 105 D 0 0	0 0 0 0	0 15 0 0 0		0 4 0 0	0 36 0 0 0	0 0 0 0		0 0 0 0	0 0 58 0 0	0 0 116 0 0	
	PHF for Peak 15-min in Peak 15-Minute 4:00-5:00 4:15-5:15 4:30-5:30 4:45-5:45 5:00-6:00 Toute	N	LT T D D D D D D D D D D D D D	Тл 0 0 0 0 0	RT 0 0 0 0 0		0 105 0 0 0 105	0 0 0 0 0	0 15 0 0 0		0 4 0 0 1	0 36 0 0 0 36	0 0 0 0		0 0 0 0	0 0 58 0 0	0 0 116 0 0 15	

### Attachment 3, Page 493 of 608

### Fitename: EASSUM

1/9/2024 Board MeetBAST AVE. / SUMMIT AVE.

7-10

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Turning Movement Counts Per CMP Requirements

	No	rthbou	nd	Sc	outhbou	nd	É	astbour	ıd		estbour	br
-	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Tn	RT
AM Peak Hour	79	46	146	79	68	145	122	229	93	185	287	60
Peak Hour Factor		0.86			0.57			0.65			0.77	
PM Peak Hour	46	12	78	6	12	27	9	196	31	33	149	2
Peak Hour Factor	0.78			0.86				0.90			0.91	_

input Data Selow											·						
													-				
MORNING		North Source of				V Court-1				->				Kaciturun	 d		
from 10		LT	Th	RT	Total	LT	'n	RT	Total	Lasmoning LL	Th	FΠ	Total	ξŤ	- Th	RT	Total
	•					<i>c</i> -										24	109
7.00	7,15	11	18	25	53	23	12	38 14	73	44. 21	35	3 \$0	131 66	£6 57	56	18	133
7.30	7.45	22	4	30	55	5	5		19		16	25	50	14	49	4	87
7:45	8:00	28	2	38	68	1	1	2	4	5	33	22	50	23	53	3	79
8:00	8.15	3	0	5	6	2	Ó	3	5	5	27	5	40	6	24	1	31
€·15	8:30	8	1	5	15	0	з	2.	5	з	21	2	26	8	37	Z	47
8.30	8 45	4	2	3	9	2	1	2	5	5	15	7	27	7	31	2	40
8:45	9.00	5	1	9	15	1	5	a	6	3	17	4	24	â	23	•	
PEAK HOUR																	
7:00 8:00		68	40	126	68	45	39	\$3	73	79	148	60	111	142	220	46	133
approacti:		c	234	>		<	167 -	->		<	287	>		с С. и	371		
depart:		< <del></del>	165	2		<-	241 -	>		¢	718:			<	311		
CMP Calculations				,	18			s	8			e	6				WØ
Peak Hour By Approac	th I												<b></b>				408
7:00-8:00					234				167				287				330
7:30-8:30					147				99 33				176				244
7-45-8:45					100				19				153				197
8.00-9:00					47				21				117				151
Manufacture Deads Marine		anab							157				267				408
Peak 15-Min by Anno	у Аррі Хаст	uu cn			21)A 69				73				111				133
4 * Peak 15-min. by Ar	oproact	1			272				292				444				532
PHF for each Approact	ti				0.66				0.57				0.65				0.77
Peak Hout		Northbourd				Southern	1			Fashourd				Westbour	ъđ		
r çat nuu		LT	Th	ST		LT	ĺπ.	RT		LT	Th	RT		ĿŤ	Th	RT	
7.00-8:00		68	40	126		45	39	83		79	148	БĢ		142	220	46	
7-15-8-15		Q	0	σ		0	0	٥		0	0	0		0	ů	о Л	İ
7.30-8:30		Ð	0	0		0	0	0		0	0	0		0	0	ŏ	
7:45-6.45 8:00-0:00		0	0	0		0	0	0		บ	6	ő		ő	ō	0	
9.00-9.00		v	5	0			U	v		5	•	-		-			
Totals		68	40	126		45	39	83		79	148	6D		142	220 287	46 60	
PHF Applied		79	45	146		(9)	08	145		122	129	32					
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EVENING		A .				v				 5	•			< Westbow	- M		
literaria 10		Northbound   Y	Th	рт	Total	5001hboon0 1 T	ו דיי	79	Total	Eastbound T	774	RT	Total	ττο στο στο L Τ	Th	RĨ	Total
		F.		R1	(geal)	L1		<b>R</b> 1	i Qual	- 1				<b>-</b>			
4.00	4.15	8	4	11	23	1	1	5	7	ĩ	49	8	58	6	39	1	46
4:15	4 30	9	э	10	22	2	3	4	9	1	35	6	42	7	14	0	41
4.30	4.45	10	3	19	32	1	2	5	8	4	50	5	59	5 0	21		45
4:45	5:00	8	2	8	18	0	4	6	10	2	43 20	9 9	34	э В	13	2	41
5:16	515 5110	9	1	24	34	2	1	5	11	1	41	4	42	6	31	ō	37
5:30	5.3U 5:45	11	1	•0	13	1	0	3	5 4	1	38	,	46	7	25	1	36
5.45	6:00	7	2	6	15	1	2	5	4	5	42	4	51	4	3z	0	36
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PEAK HOUR		n-			<b>.</b> .						177	28	60	٦n	135	2	45
14'00 5'00 200m2cTr		35	12	48	34	4	10 10-	20 >	11	е с	213	20	29	<	168 -	, .	
depart		e	22 ->	>		<	68	->		<	229	>		<	191	~	
								_					- 0				WB
CMP Calculations	•			N	18			s	₿			1	-8				
4 00-5:00					<b>G</b> .5.				34				213				168
4:15-5:15					106				38				187				163
4:30-5.30					97				34				187				159
4 45-5 45					87				30				174				150
5:00-6:00					84				29								
Maximum Peak Hour b	γ Αρρα	Jach			106				38				213				168
Peak 15-Min by Approx	ach				34				11				59				184
4 Peak 15-min by Ap	proach				135				44 D-96				236				0.91
ient for Peak 15-min in	nerval				Q 78				0.60								
Peak 15-Minute		Northbound				Southbourd	1			Eastbound	i	_		Westbou	nd Th		
1		LT	Tħ	RT		LT	$\mathbf{T}h$	RT		LT	Th	RT		1.7	1N 136	R.I 7	
4 00-5 00		0	0	0		0	0	0		8	177	28		ы. С	0	ō	
4:15-5:15		36	9 0	61 n		5	10	23		0 0	õ	0		õ	ō	0	· ·
4:45-5:45		ŏ	ō	Ď		õ	ŏ	ō		ŏ	ŏ	ŏ		0	<b>Q</b>	0	ł
5:00-6:00		õ	ō	õ		ō	ō	D		0	Ð	0		0	Ů	0	•
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		36	9	61		5	10	23		6	177	24		20			

### 1/9/2024 Board Meeting

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7-10

EASVIC Filename: Location:

EAST AVE. / VICTORIA ST.

#### Turning Movement Counts Per CMP Requirements

	No	nhbau	nd	Southbound			E	astbour	ıd	Westbound			
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	
AM Peak Hour	55	183	47	48	80	76	<b>Z</b> 4	96	32	62	105	118	
Peak Hour Factor	0.86			0.77				0.66		0.86			
PM Peak Hour	40	198	98	71	109	44	4	68	36	69	97	58	
Peak Hour Factor	0.94			0.83				0.97		0.94			

Input Data Below			··				-		_						<u> </u>		
MORNING						<b>F</b>	v							¢.	_		
trom tá		Northbou LT	nd Th	Rĩ	Total	5 գահինա LŤ	und Th	RT	ែរនា	Easibound 17	Ta	RT	Total	Westbouri Li	d Th	RT	Tota
		_						_						,			
7:00	7.15	5	17	6	28	3	11	\$	19	2	10	3	15		10	10	25
7.15	7.30	2	19	10	31	2		6	16	0		1	10	11	76	14	40
7:30	7:45	7	28	8	43	4	7	14	25	Ð	18		23	13	12	17	42
7:45	8:00	11	\$1	8	71	5	10	11	26	5	24	5	24	17	13	22	52
<b>B</b> :00	8 15	13	45	10	69	7	16	10	33	5	24	6	38	14	26	25	68
8:15	8:30	15	32	13	61	9	10	17	36	3	10	3	16	10	27	34	71
8.10	R-45	10	54	17	41	13	19	19	51	1	8	8	17	12	24	17	53
8:45	9.00	8	17	14	39		17	13	38	2	16	2	20	\$	20	12	40
0.45	3.00	5				•											
PEAK HOUR																	
7.45 8.45		\$0	143	49	71	34	55	57	51	17	56	22	38	53	90	101	11
approach	<.	-	242	>		<	146 —	>		د_	95:			«»	244 -	>	
depart	<.		261 —	>		<	130	>		<	139	>		<	197 -	->	
CMP Calculations				,	4B			S	58			1	EØ				wв
Deep Lieur Ru Acornito	-6							-									
Treat Hos by Approac					173				86				72				159
7:00-8:00					214				100				05				202
7:10-8:10									470				401				202
7 30-8.30					294				120				101				233
7 45-8:45					242				146				95				244
6:00-9:00					210				158				91				232
Manmum Peak Hour b	ADDICA	icin.			244				158				101				244
Dask 15 Min hu bears	arth				71				51				38				71
Heak to-min. by Appro					22.4				204				152				264
IN Peak IS-min by Ap	AN MARK				0.85				0.77				0.56				0.86
Print for each Approace	••				0.00				977				0.00				
Peak Hour	1	Northbour	nđ			Southbou	กส			Eastbound				Westbound	1		
		LΤ	Τn	RŤ		LΤ	Th	RT		LT	Th	RT		LT	Th	RT	
7:00-8:00		0	0	Û		0	0	0		0	0	0		0	9	D	1
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0.00-9.00		v	, v				~*	44		~	~	-		-	-		1
Totals		47	157	40		37	62	59		16	64	21		53	90	101	I
PHF Applied		55	183	47		48	60	76		24	96	32		62	105	118	
																	1
EVENING										_>				<b>*</b> -			
EVENING	*	- Northbour	10 <sup>4</sup>	<b>a</b> -	_	Southbou	nd			-> Eastbound		•	•	< Westbound		-+	
EVENING Irom 10	*	vorthbour LT	no: Th	RT	Tolai	Southboy LT	nd Th	RT	Tola!	–> Eastbound ⊾T	ሙ	ŔŤ	Total	≺– Westbound ∟T	l Th	ъ	Total
EVENING Irom 10	•	Konhbour LT	105 Th	RT	Tolai	Souinbou LT	nd Th	RT	IslaT ot	-> Eastbound ⊾T	Th 12	RT 5	Total	<- Westbound LT \$0	Th 13	ty z	Total Total
EVENING Irom to 4:00	4 15	Northbour LT	no: Th 31	RT 14	Tolai 48	Souinbou LT 5	nd Th 17	RT a	Tola! 30	-> Eastbound LT 0	Th 12	RT 5 7	Total 17 24	<- Westbound LT 10	Th 13	R) 8 13	Total 31 531
EVENING 100m 10 4:00 4 15	4 15 4 30	Northbour LT 3 2	10 <sup>5</sup> Th 31 36	RT 14 26	Tolai 48 54	Souinbou LT 5 14	, nd Th 17 12	RT 8 6	Tola! 30 32	-> Eastbound LT Q	Th 12 19	RT 5 7	Total 17 26	≺- Westbound LT 13	Th 13 27	R) 8 13	Total 31 53
EVENING Irom 10 4:00 4:15 4:30	4 15 4 30 4 45	xonthbour LT 3 2 6	no Th 31 36 40	RT 14 26 20	Tolai 48 54 66	Southbou LT 5 14 11	nd Th 17 12 18	RT a 6 9	Tola! 30 32 36	-> Eastbound LT 0 1	Th 12 19 16	RT 5 7 9	Total 17 26 26	<− Westbound LT 13 18	Th 13 27 21	RŤ 8 13 10	Total 31 53 49
EVENING (rom 10 4:00 4.15 4.30 4:45	4 15 4 30 4:45 5:00	xonthbour LT J 2 6 B	nof Th 31 36 40 32	RT 14 26 20 17	Tolai 48 64 57	Southbox LT 5 14 11 10	Ad Th 17 12 18 19	RT 8 6 9 3	Tola! 30 32 36 32	-> Eastbound LT 0 1 2	Th 12 19 16 13	RT 5 7 9 11	Total 17 26 26 26	< Westbound LT 10 13 18 19	Th 13 27 21 19	尺) 8 13 10 14	Total 31 53 49 52
EVENING 1/200 10 4.00 4.15 4.15 4.30 4:45 5:00	4 15 4 30 4 45 5 00 5 15	xonthbour LT J 2 6 8 5	no Th 31 36 40 32 54	RT 14 26 20 17 15	Tolai 48 64 65 57 74	Southboy LT 5 14 11 10 9	nd Th 17 12 18 19 24	RT 8 9 3 7	Tola! 30 32 36 32 40	-> Eastbound LT 0 1 2 1	Th 12 19 16 13 18	RT 5 7 9 11 8	Total 17 26 26 26 27	<- Westbound LT 10 13 18 19 15	Th 13 27 21 19 24	RŤ 8 13 10 14 17	Total 31 53 49 52 56
EVENING Irom 10 4:00 4:15 4:30 4:45 5:00 5:15	4 15 4 30 4 45 5 09 5 15 5 30	xoothboor LT 3 6 8 5 11	no Th 31 36 40 32 54 43	RT 14 26 20 17 15 28	Tolai 48 64 57 74 62	Southbox LT 5 14 11 10 9 13	nd Th 17 12 16 19 24 18	RT 8 9 3 7 5	Tola! 30 32 36 32 40 36	-> Eastbound LT 0 1 2 1 3	Th 12 19 18 13 18	RT 5 7 9 11 <i>8</i> 7	Total 17 26 26 27 25	<- Westbound LT 13 18 19 15 9	Th 13 27 21 19 24 22	RŤ 8 13 10 14 17 15	Toral 31 53 49 52 56 46
EVENING Irom 10 4:00 4:15 4:15 4:30 4:45 5:00 5:15 5:30	4 15 4 30 4 45 5 03 5 15 5 30 5 30 5 30	xoothbour LT 3 6 8 5 11 13	no Th 36 40 32 54 43 49	RT 14 26 27 17 15 28 22	Tolai 48 64 66 57 74 62 84	Southbox LT 5 14 11 10 9 13 16	, nd Th 17 12 18 19 24 18 28	RT 8 9 3 7 5 11	Tola! 30 32 35 32 40 36 53	-> Eastbound LT 0 1 2 1 3 0	Th 12 19 18 13 18 13 18	RT 5 7 9 11 8 7 5	Total 17 26 26 26 27 25 17	<- Westbound LT 13 18 19 15 9 15 9 13	Th 13 27 21 19 24 22 17	R) 8 13 10 14 17 15 10	Toral 31 53 49 52 56 46 40
EVENING 1/2m 10 4.00 4.15 4.30 4.45 5.00 5.15 5.30 5.45	4 15 4 30 4 45 5 09 5 15 5 30 5 30 5 30 5 30	xorthbour LT 3 2 6 8 5 11 13 9	no Th 31 36 40 32 54 43 43 43	RT 14 26 20 17 15 28 22 27	Tolai 48 54 56 57 74 82 84 77	Southboy LT 5 14 11 10 9 13 16 21	nd Th 17 12 18 19 24 18 28 22	RT 8 9 3 7 5 11 13	Tola! 30 32 36 32 40 36 53 55	-> Eastbound LT 0 1 2 1 3 0 1	Th 12 19 16 13 18 13 15 15 12 76	RT 5 7 9 11 8 7 5 10	Total 17 26 26 26 27 25 17 25 17 27	<- Westbound LT 10 13 18 19 15 15 13 13 16	Th 13 27 21 19 24 22 17 23	R) 8 13 10 14 17 15 10 12	Total 31 53 49 52 56 46 40 51
EVENING Irom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45	4 15 4 30 4 45 5 00 5 15 5 30 5 30 5 30 5 45 6 00	xadhbour LT 3 2 6 8 5 11 13 9	no Th 31 36 40 32 54 43 43 49 43	RT 14 26 20 17 15 28 22 27	<b>Tolai</b> <b>68</b> 66 57 74 82 84 77	Southboy LT 5 14 11 10 9 13 16 21	nd Th 17 12 16 19 24 18 28 22	RT 8 9 3 7 5 11 73	Tola! 30 32 36 32 40 36 53 55	-> Eastbound LT 0 1 2 1 3 0 1	Th 12 19 16 13 13 15 15 12 76	RT 5 7 9 11 8 7 5 10	Total 17 26 26 26 27 25 17 27	<- Westbound LT 10 13 18 19 15 9 13 16	Th 13 27 21 19 24 22 17 23	RĴ 8 13 10 14 17 15 10 52	Total 31 53 49 52 56 46 40 51
EVENING Irom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45 PEAK MOUR	4 15 4 30 4 45 5 00 5 15 5 30 5 30 5 30 5 30 5 30 6 00	xonthbour LT 3 2 6 8 5 11 13 9	nof Th 31 36 40 32 54 43 49 49	RT 14 26 20 17 15 28 22 27	Tolai 64 65 67 74 62 84 77	Southbox 1,T 5 14 11 10 9 13 16 21	nd Th 17 12 19 24 18 28 28 22	RT 8 9 3 7 5 11 13	Tola! 30 32 36 32 40 36 53 55	Eastbound LT 0 1 2 1 3 0 1	Th 12 19 16 13 18 13 15 15 12 76	RT 5 7 9 11 8 7 5 10	Total 17 26 26 26 27 25 17 27 27	<- Westbound LT 13 18 19 15 9 13 16	Th 13 27 21 19 24 22 17 23	RĴ 8 13 10 14 17 15 10 52	Total 31 53 49 52 56 40 51
EVENING Irom 10 4:00 4:15 4:15 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 5:00	4 15 4 30 4 45 5 00 5 15 5 30 5 30 5 30 5 30 5 30 5 30 5 30 5 3	xonthosour LT 3 2 6 8 5 11 13 9 38	107 Th 36 40 32 54 43 49 41 41	RT 14 26 20 17 15 28 22 27 92	Tolai 48 66 57 74 82 84 77 84	Southbox LT 5 14 11 10 9 13 16 21 59	nd Th 17 12 18 24 18 28 22 90	RT 8 9 3 7 5 11 53 36	Tola! 30 32 36 32 40 36 53 55 55	-> Eastbound LT 0 1 2 1 3 0 1 5	Th 12 19 18 13 18 13 15 12 76	RT 5 7 9 11 8 7 5 10 30	Total 17 26 26 26 27 25 17 27 27	<- Westbound LT 13 18 19 15 9 13 16 53	Th 13 27 21 19 24 22 17 23 85	R) 8 13 10 14 17 15 10 12 54	Total 31 53 49 52 56 46 40 51 56
EVENING Irom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 6:00 approach	4 15 4 30 4 45 5 00 5 15 5 15 5 30 5:45 6 00	xonthbour LT 3 2 6 8 5 11 13 9 38 –	ng Th 31 36 40 32 54 40 32 54 41 41 187 317 →>	RT 14 26 20 17 15 28 22 27 92	Tolai 48 66 57 74 62 84 77	Southbox 1,T 5 14 11 10 9 13 16 21 21 59	nd Th 17 12 16 19 24 18 28 22 90 185>	RT 8 9 3 7 5 11 73 36	Tolat 30 32 36 32 40 36 53 55 55	-> Eastbound LT 0 1 2 1 3 0 1 1 5	Th 12 19 18 13 13 15 12 76 61 96>	RT 5 7 9 11 8 7 5 10 30	Total 17 26 26 26 27 25 17 27 27	<pre>&lt;- Westbound LT 10 13 18 18 19 15 9 13 16 </pre>	Th 13 27 21 19 24 22 17 23 86 193	R) 8 13 10 14 17 15 10 12 54	Total 31 53 49 52 56 46 40 51 56
EVENING trom 10 4:00 4:15 4:30 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 6:00 approach depart:	4 15 4 30 4 45 5 50 5 15 5 30 5 15 5 30 5 25 6 00 4 <	Northboor LT 3 6 8 5 11 13 9 38 	ng Th 31 36 40 32 54 43 49 41 187 317 →> 245 →>	RT 14 26 20 17 15 28 22 27 92	Tolai 48 66 57 74 82 84 77 84	Southbar LT 5 14 11 10 9 13 16 21 59 <	, nd Th 17 18 19 24 18 28 22 90 185 → 173 →	RT 8 9 3 7 5 11 13 36	Tola! 30 32 36 32 40 36 53 55 55	-> Eastbound LT 0 1 2 1 3 0 1 5 <	Th 12 19 16 13 13 15 12 76 61 96	RT 5 7 9 11 8 7 5 10 30	Total 17 26 26 27 25 17 27 27 27	< Westbound LT 13 18 19 15 9 13 16 53 <	13 27 21 19 24 22 17 23 85 	R1 8 13 10 14 17 15 10 12 54	Total 31 53 49 52 56 45 40 51 56
EVENING Irom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 6:00 approach depart:	4 15 4 30 4 45 5 15 5 30 5 15 5 5 30 5 15 5 30 5 15 5 30 5 15 5 30 5 15 5 30 5 15 5 30 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Northboor LT 3 2 6 8 5 11 13 9 38 	110 131 136 40 32 54 43 49 41 41 187 317 →> 245 →	RT 14 26 27 17 28 22 27 92	Tolai 48 54 57 74 82 84 77 84	Southbox LT 5 14 11 10 9 13 16 21 21 59 <	, nd 17 12 16 19 24 18 28 22 90 185 → 173 →	RT 8 9 3 7 5 11 13 36	Tola! 30 32 40 36 53 55 55	-> Eastbound LT 0 1 2 1 3 0 1 5 <	Th 12 19 16 13 13 15 12 76 51 96	RT 5 7 9 11 8 7 5 10 30	Total 17 26 26 26 27 25 17 27 27 27	< Westbound LT 10 13 18 19 15 9 13 16 53 <	Th 13 27 21 19 24 22 17 23 85 193 ~~ 150 ~~	R) 8 13 10 14 17 15 10 12 54 54	Total 31 53 49 52 56 46 40 51 56
EVENING Irom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 6:00 approach depart: CMP Calculations	▲ 15 4 30 4·45 5·00 5 15 5·30 5·30 5·30 5·30 5·30 5·30 5·30 4 5·30 5·30 5·30 5·30 5·30 5·30 5·30 5·30	xaataboon LT 3 6 8 5 11 13 9 38 	no Th 31 36 40 32 54 43 49 41 187 317 →> 245 →	RT 14 26 20 17 15 28 22 27 27 92	Tolai 48 66 57 74 62 64 77 84	Southbar LT 5 14 11 10 9 13 16 21 59 <	, nd Th 17 12 16 19 24 18 28 22 90 185 → 173 →	RT 8 9 3 7 5 11 13 36 5 5	Tola! 30 32 36 32 40 36 53 55 55 55	-> Eastbound LT 0 1 2 1 3 0 1 5 5 5	Th 12 19 16 13 13 15 12 76 51 96> 212>	RT 5 7 9 11 8 7 5 10 30	Total 17 26 26 26 27 25 17 27 27 27	< Westbound LT 10 13 18 19 13 16 53 <	13 27 21 19 24 22 17 23 45 193 160	R) 8 13 10 14 17 15 10 12 54 54	Total 31 53 49 52 56 40 51 56 56
EVENING Irom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 6:00 approach depart: CMP Calculations Peak Hour By Approach	4 15 4 30 4 45 5 00 5 15 5 30 5 45 6 00 <		.10 <sup>5</sup> 7h 31 36 40 32 54 43 49 41 187 317 →> 245 →	RT 14 26 17 15 28 22 27 92	Total 48 56 57 74 82 84 77 84	Southbox 1,T 5 14 11 10 9 13 16 21 21 59 <	, nd Th 17 12 18 19 24 18 28 22 90 185 → 173 →	RT 8 9 3 7 5 11 73 36 5 5	Tola! 30 32 36 32 40 36 53 55 55 55	-> Eastbound LT 0 1 2 1 3 0 1 1 5 <	Th 12 19 16 13 13 15 12 16 61 96> 212>	RT 5 7 9 11 <i>8</i> 7 5 10 30	Total 17 26 26 27 25 17 27 27 27 8	< Westbound LT 10 13 18 19 15 9 13 16 53 <	Th 13 27 21 19 24 22 17 23 85 193 ~~ 150 —	RJ 8 13 10 14 17 15 10 12 54	Total 31 53 49 52 56 40 51 56
EVENING Irom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 6:00 approach depart: CMP Calculations Peak Hour By Approach 4:00-5:00	4 15 4 30 4 45 5 00 5 15 5 30 5 30 5 30 5 30 5 45 6 00 <	Acataboon LT 3 6 8 5 11 13 9 38 	110 Th 31 36 40 32 54 43 49 41 187 317 → 245 →	RT 14 26 20 17 15 28 22 27 92	Tolai 48 66 57 74 62 84 77 84 77 84 235	Southbox 1,T 5 14 11 10 9 13 16 21 21 59 <	, d Th 17 12 16 24 18 28 22 90 195 → 173 →	RT 8 9 3 7 5 11 13 36 5 5	Tola! 30 32 36 32 40 36 53 55 55 55 55 55	-> Eastbound LT 0 1 2 1 3 0 1 5 <	Th 12 19 16 13 13 15 12 76 96 → 212 →	RT 5 7 9 11 8 7 5 10 30	Total 17 26 26 27 25 17 27 27 27 27 27 8 95	< Westbound LT 10 13 18 19 15 9 13 16 53 <	Th 13 27 21 19 24 22 17 23 85 	RJ 8 13 10 14 17 15 10 12 54	Total 31 53 49 56 46 40 51 56 56
EVENING Irom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 6:00 approach depart: CMP Calculations Peak Hour By Approach 4:05-5:00	4 15 4 30 4 45 5 02 5 15 5 30 5 30 5 30 5 30 5 45 6 00 5 45 6 00	Acontribution LT 3 2 6 8 5 11 13 9 38 	h0 Th 31 36 40 32 54 43 49 41 187 −> 245 →	RT 14 26 20 17 15 28 22 27 92 92	Tolai 48 66 57 74 82 84 77 84 84 84 84 84 85 84 85 85 85 85 85 85 85 85 85 85 85 85 85	Southbou 1,T 5 14 11 10 9 13 16 21 21 59 <	, nd Th 17 12 19 24 19 28 22 20 90 185 → 173 →	RT 8 9 3 7 5 11 13 36 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Tolat 30 32 36 32 40 36 53 55 55 55 55 55 110 140	-> Eastbound LT 0 1 2 1 3 0 1 1 5 <	Th 12 19 16 13 15 12 16 61 96 → 212 →>	RT 5 7 9 11 8 7 5 10 30	Total 17 26 26 26 27 27 27 27 27 27 8 8	< Westbound LT 10 13 18 19 15 9 13 16 53 <	Th 13 27 21 19 24 22 17 23 85 193 150	R1 8 13 10 14 15 10 12 54	Total 31 53 52 56 46 40 51 56 51 56 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
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EVENING Irom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 5:45 PEAK HOUR 5:00 6:00 4:00-5:00 4:00-5:00 4:15-5:15 4:30-5:30 4:45-5:45	4 15 4 30 4 45 5 15 5 30 5 15 5 30 5 15 5 30 5 15 5 30 6 00 5 45 6 00 5 45 6 00	Northbour LT 3 2 6 8 5 11 13 9 38 -	htő Th 31 40 32 54 43 49 41 187 317 →> 245 →>	RT 14 26 20 17 15 28 22 27 27 92	Tolai 48 66 57 74 82 84 77 84 77 84 77 84 235 261 279 297	Southbou LT 5 14 11 10 9 13 16 21 59 <	, nd 17 12 19 24 28 28 22 90 185 → 173 →	RT 6 9 3 7 5 11 13 36 5 5 5 5 5 5 5 5 5 5 5	Tola! 30 32 36 32 40 36 53 55 55 55 55 55 130 140 140 140 141	-> Eastbound LT 0 1 2 1 3 0 1 5 <	Th 12 19 16 13 13 15 12 76 51 96> 212>	RT 5 7 9 11 8 7 5 10 30 8 6	Total 17 26 26 26 27 25 17 27 27 27 27 6 8 95 108 108 108 108 95	<- Westbound LT 10 13 18 19 13 16 53 <	85 ~~~	R1 8 13 14 14 17 15 10 12 54	Total 31 53 49 52 56 40 51 56 56 85 210 203 219 40
EVENING EVENING trom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 5:45 PEAK HOUR 5:00 6:00 approach depart: CMP Calculations Peak Hour By Approach 4:05:5:05 4:30-5:00 4:55:45 5:00-5:00	4 15 4 30 4 45 5 5 5 30 5 15 5 30 5 15 5 30 5 15 6 00 <		h0 Th 31 32 32 54 49 41 187 245 →	RT 14 26 20 17 15 28 22 27 27 92 N	Totai 48 54 66 57 74 62 84 77 84 77 84 24 251 279 297 317	Southbou 1,T 5 14 11 10 9 13 16 21 21 <	, nd Th 17 12 18 19 24 18 28 22 90 185 → 173 →	RT 8 9 3 7 5 11 13 36 5 5 5 5 5 5	Tola! 30 32 36 32 40 36 53 55 55 55 55 55 55 55 55 55 55 55 55	-> Eastbound LT 0 1 2 1 3 0 1 1 5 <	Th 12 19 13 13 12 15 12 16 51 242>	RT 5 7 9 11 8 7 5 10 30 20	Total 17 26 25 27 25 17 27 27 27 27 27 27 27 8 8 95 105 105 105 95 96	< Westbound LT 10 13 18 19 15 9 13 16 53 <	Th 13 27 21 19 24 22 17 23 85 193 ~~ 150 —	R) 8 13 14 14 17 15 10 12 54 54	Total 31 53 49 52 56 46 40 51 56 56 165 210 203 194 193
EVENING Irom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 6:00 approach depart: CMP Calculations Peak Hour By Approach 4:05-5:00 4:15-5:15 4:30-5:30 4:45-5:45 5:00-5:00	4 15 4 30 4 45 5 00 5 15 5 30 5 35 6 00 <	- - - - - - - - - - - - - -	10 <sup>6</sup> Th 31 36 40 32 54 43 49 41 187 317 →> 245 →	RT 14 26 26 17 15 28 22 27 92 N	Totai 48 66 57 74 82 84 77 84 77 84 77 84 77 84 77 82 84 235 261 279 297 317	Southbox 1,T 5 14 11 10 9 13 16 21 21 59 <	, nd 17 12 18 24 19 24 19 28 22 90 105 → 173 →	RT 8 9 3 7 5 5 11 13 36 5 5 5 5 5	Tolat 30 32 36 53 55 55 55 55 130 140 144 161 185	-> Eastbound LT 0 1 2 1 3 0 1 1 5 <	Th 12 19 16 13 13 15 12 76 51 96 212 	RT 5 7 9 11 8 7 5 10 30 20	Total 17 26 26 26 27 25 17 27 27 27 8 8 95 105 104 95 95 104	< Westbound LT 10 13 18 19 15 9 13 16 53 <	1 Th 13 27 21 19 24 22 17 23 46 	R1 8 13 10 14 17 15 10 12 54 54 54 54	Total 31 53 49 52 56 40 51 56 51 56 8 8 8 8 8 9 8 9 9 9 9 9 9 9 9 9 9 9 9
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EVENING EVENING trom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 5:45 PEAK HOUR 5:00 6:00 approach depart: CMP Calculations Peak Hour By Approach 4:05-5:00 4:15-5:15 4:30-5:30 4:45-5:45 5:00-6:00 Maximum Peak Hour by Appro-	4 15 4 30 4 45 5 50 5 35 5 35 6 00 <	xonthbour LT 3 2 6 8 5 11 13 9 38 -	ht Th 31 36 40 32 54 43 49 41 187 → 245 →	RT 14 26 20 17 15 28 22 27 92 92	Totai 48 66 57 74 82 84 77 84 84 85 84 85 85 84 85 85 85 85 85 85 85 85 85 85 85 85 85	Southbox 1,T 5 14 11 10 9 13 16 21 21 <	, nd 17 12 18 19 24 18 28 22 90 185 → 173 →	RT 8 9 3 7 5 5 11 11 13 36 5 5	Tolat 30 32 36 53 55 55 56 130 140 144 161 185 185 -56	-> Eastbound LT 0 1 2 1 3 0 1 1 5 <	Th 12 19 13 13 15 12 76 51 212>	RT 5 7 9 11 8 7 5 10 30	Total 17 26 27 25 17 27 27 27 27 27 27 27 27 27 27 27 27 27	< Westbound LT 13 18 19 15 9 13 16 53 <	Th 13 27 21 19 24 22 17 23 85 17 23 160	RJ 8 13 13 14 17 14 17 15 10 12 54 54	Total 31 53 49 52 56 46 40 51 56 56 20 203 194 193 210 56 70
EVENING Irom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 6:00 approach depart: CMP Calculations Peak Hour By Approach 4:05-5:00 4:15-5:15 4:30-5:30 4:45-5:45 5:00-5:00 Maximum Peak Hour by Peak 15-min, by Approach 4:************************************	4 15 4 30 5 00 5 15 5 30 5 35 6 00 < h y Approach	xonthbour LT 3 2 6 8 5 11 13 9 38 	ht Th 31 36 40 32 54 43 49 41 187 317 → 245 →	RT 14 26 17 15 27 27 92 92 N	Totai 48 66 57 74 82 84 77 84 84 84 84 84 84 84 84 84 84 84 84 84	Southbox 1,T 5 14 11 10 9 13 13 16 21 21 59 <	, nd 17 12 18 24 19 24 19 28 22 90 105 → 173 →	RT 8 9 3 7 5 11 13 36 5 5 5	Tolat 30 32 36 52 40 36 53 55 55 55 130 140 144 161 185 185 185 224	-> Eastbound LT 0 1 2 1 3 0 1 1 5 <	Th 12 19 16 13 13 15 12 76 	RT 5 7 9 11 8 7 5 10 30 8 6	Total 17 26 26 26 27 25 17 27 27 27 27 27 27 27 27 00 8 8 95 96 104 95 996 104 95 996	< Westbound LT 10 13 18 19 15 9 13 16 53 <	1 13 27 21 19 24 22 19 17 23 86 	RT 8 13 10 14 17 15 10 12 54 54	Total 31 53 52 56 40 51 56 56 203 194 195 210 56 203 194 195 210 56 224
EVENING Irom 10 4:00 4:15 4:30 4:45 5:00 5:15 5:30 5:45 PEAK HOUR 5:00 6:00 6:00 4:00-5:00 4:15-5:15 4:30-5:30 4:15-5:15 4:30-5:30 4:15-5:15 4:30-5:30 4:45-5:45 5:00-6:00 Maximum Peak Hour by Approach 4:5-5:15 4:25-15 4:25-15 4:25-15 4:25-15 4:25-15 4:25-15 4:25-15 4:25-15 5:00-6:00 Maximum Peak Hour by Approach 4:15-5:15 5:00-6:00 Maximum Peak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour by Approach 5:00-6:00 Maximum Piak Hour By Approach 5:00-6:00 Maximum Piak Hour By Approach 5:00	4 15 4 30 5 00 5 15 5 30 5:45 6 00 < c- h	- - - - 	htő Th 31 40 32 54 43 49 41 187 317 →> 245 →>	RT 14 26 27 17 15 28 22 27 27 92 92	Tolai 48 64 65 57 74 84 77 84 77 84 84 235 261 276 297 317 84 83 6 297 317 84 83 6 9,94	Southbou LT 5 14 11 10 9 13 16 21 21 59 <	, nd 17 12 19 24 28 22 90 185 → 173 →	RT 8 9 3 7 5 11 73 36 5 5 5	Tota! 30 32 32 40 53 55 55 55 130 140 144 161 185 56 224 0.63	-> Eastbound LT 0 1 2 1 3 0 1 5 <	Th 12 19 16 13 15 12 76 51 96 → 212 →>	RT 5 7 9 11 8 7 5 10 30 20	Total 17 26 26 26 27 27 27 27 27 27 27 27 27 27 27 05 105 105 95 96 105 27 70 8 105 27 70 20 50 95 96	<- Westbound LT 10 13 18 19 13 16 53 <	Th 13 27 21 19 24 22 17 23 85 193	R) 8 13 10 14 17 15 10 12 54	Total 31 53 49 52 56 46 40 51 56 56 256 203 203 210 203 194 193 210 56 224 0,94
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# APPENDIX C

# EXISTING CONDITIONS INTERSECTION ANALYSIS

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Default Scen	ario		Mo	on Jan	7,2	002 11	:36:54	L			Page	2-1
				Etiw Exis A	anda ting M Pea	Proper Condit: k Hour	ties ions					
*****	1997	1 HCM 4	Level ( 1-Way S	)f Ser Stop M	více ethod	Computa (Base	ation Volum	Repor Ne Alt	t ernati <sup>.</sup> ******	ve)	*****	*****
Intersection	#1 E	tiwano	la Ave	We	st (N	S) / W:	ilson	Ave.	(EW)			
Cycle (sec): Loss Time (se Optimal Cycle	ec): e:	10(	) ) (Y+R )	= 4	sec)	Critica Averaga Level (	al Vol e Dela Of Ser	./Cap y (se vice:	. (X): c/veh)	* * * * * * * *	0.2	90 .1 A
Approach: Movement:	No L	rth Ba - T	ound - R	So	uth B - T	ound - R	E L	ast B - T	ound - R	W L	est Bo - T	ound - R
Control: Rights: Min Green:	ן S ס	top S: Inclu	ign ide 0	.   S	top S Incl	ign ude 0	ا  s	top S. Inclu	ign ude	s	top Si Inclu	ign 1de
Lanes:	0 	o o	0 0 	1 	0 0 	0 <u>1</u>	1 	0 2 	0 0	ہ ا	0 1 	1 0
Volume Module	e: 0	0	0	1 70	~		. 1	4.1	0	<u> </u>	25	
Growth Adj.	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Inicial Bse:	1.00	2.00	1.00	170	2.00	4	1.00	41	0	1.00	35	77
User Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adi:	1.00	1.00	1.00	0.90	0.90	0.90	0.75	0.75	0.75	0.86	0.86	0.86
PHF Volume:	0	0	0	189	C	4	1	55	0	0	41	84
Reduct Vol:	0	0	0	0	G	0	0	0	0	0	0	0
Reduced Vol:	0	D	0	189	C	4	1	55	0	0	41	84
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	189	6	4	1	55	0	0	41	84
<b></b> -						• •				<b></b>		!
Saturation Fl	.ow Mo	dule:										
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:			U	651	Û	827	597	1303	l	U 	584	790
Capacity Anal	veic	Modul	l			1				1		
Vol/Sat.	YYYY	XXXX	~ · · · · · · · · · · · · · · · · · · ·	0.29	XXXX	0 01	0 00	0.04	XXXX	xxxx	0.06	0 11
Crit Moves:	100-0			****			0.00	****				****
Delav/Veh:	0.0	0.0	0.0	10.2	0.0	6.9	8.5	8.2	0.0	0.0	8.1	7.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	10.2	0.0	6.9	8.5	8.2	0.0	0.0	8.1	7.6
LOS by Move:	*	*	+	в		A	А	А	+	*	А	А
ApproachDel:	xx	XXXX			10.2			8.2			7.8	
Delay Adj:	×	XXXX			1.00			1.00			1.00	
ApprAdjDel:	XXX	xxxx			10.2			8.2			7.8	
LOS by Appr:		*			В			А			А	
******	* * * * *	****	*****	* * * * * *	****	*****	* * * * * *	* * * * *	*****	*****	****	* * * * * *

1/9/2024 Board Meeting

14. AN

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Warner

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Default Scenario	Mon Jan 7, 2002 11:	36:54	Page 3-1
	Etiwanda Propert Existing Conditi AM Peak Hour	ies .ons	
Level 1997 HCM 4-Way	Of Service Computa Stop Method (Base	tion Report Volume Alternativ	re)
* * * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	*****	****
Intersection #3 Etiwanda Av	e. (NS) / Summit Av	re. (EW)	
********************	******	******	**********
(ycie (sec): 100)		(1 Vol./Cap. (X):	1.417
Loss Time (sec): U (Y+	$K \neq 4$ Sec) Average	Delay (sec/veh):	161.0
optimal cycle: 0	Level (	DI Service:	
Approach: North Bound	South Bound	Fast Bound	West Bound
Movement: I T - R	I T - R		L - T - R
	-1	1	
Control: Stop Sign	Stop Sign	Stop Sign	Stop Sign
Rights: Include	Include	Include	Include
Min. Green: 0 0	0 0 0	0 0 0	0 0 0
Lanes: 0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
	-		
Volume Module:			
Base Vol: 197 92 15	9 55 265 16	9 85 274	241 94 47
Growth Adj: 1.00 1.00 1.0	0 1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
Initial Bse: 197 92 15	9 55 265 16	9 85 274	241 94 47
User Adj: 1.00 1.00 1.0	0 1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
PHF Adj: 0.79 0.79 0.7	9 0.81 0.81 0.81	0.68 0.68 0.68	0.85 0.85 0.85
PHF Volume: 249 116 20	1 68 327 20	13 125 403	284 111 55
Reduct Vol: 0 0	0 0 0 0	0 0 0	0 0 0
Reduced Vol: 249 116 20		13 125 403	284 111 55
PCE Adj: $1.00 1.00 1.0$		1.00 1.00 1.00	
MLF AQ : 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.		1.00 1.00 1.00	
Final VOL: 249 116 20	- 66 327 20		204 111 55
Saturation Flow Modules	-	1	1
Adjustment: 1.00 1.00 1.0	0 1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
Lanes: 0.44 0.21 0.3	5 0.16 0.79 0.05	0.02 0.23 0.75	0.63 0.25 0.12
Final Sat.: 176 82 14	2 65 311 19	10 96 308	248 97 48
	-   {		
Capacity Analysis Module:			
Vol/Sat: 1.42 1.42 1.4	2 1.05 1.05 1.05	1.31 1.31 1.31	1.15 1.15 1.15
Crit Moves: ****	* * * *	****	* * * *
Delay/Veh: 226.6 227 226.	5 90.5 90.5 90.5	179,3 179 1 <b>7</b> 9.3	121.1 121 121.1
Delay Adj: 1.00 1.00 1.0	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00
AdjDel/Veh: 226.6 227 226.	5 90.5 90.5 90.5	179.3 179 179.3	121.1 121 121.1
LOS by Move: F F F	FFF	FFF	FFF
ApproachDel: 226.6	90.5	179.3	121.1
Delay Adj: 1.00	1.00	1.00	1.00
ApprAdjDel: 226.6	90.5	179.3	121.1
LUS DY Appr: F	F	F	

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Default Scen	arío		M(	on Jar	ι7, 2	002 11	:36:54	1			Page	4-1
				Etiv Exis A	vanda ting M Pea	Proper Condit: k Hour	ties ìons	· <b></b>				
*****	1997	HCM	Level ( Operati	)f Ser Lons M	vice lethod	Computa (Base	ation Volum	Report ne Alt	ternati	ve)		
Intersection	#4 E	tiwan	da Ave	. (NS)	/ Hi	ghland	Ave.	(EW)			* * * * * *	******
*********	****	*****	******	*****	****	******	*****	*****	******	*****	*****	******
Cycle (sec): Loss Time (se Optimal Cycle	ec): e: *****	13	0 6 (Y+R 0	= 3	sec)	Critica Average Level (	e Dela Of Ser	./Cap y (se vice:	. (X): c/veh)	; • • • • • • • • •	0.98 57.	82 .8 E
Approach:	No	orth B	ound	So	uth Be	ound	न स	ast Br	nund		esr Br	ound
Movement:	L	- т	- R	L	- т	- R	L –	- Т	- R	L ·	- T	- R
				[				<b>-</b>				
Control:		Permi	tted		Permi	tted	P	roteci	ed	Pr	rotect	ed
Rights:		Incl	ude		Inclu	ude		Inclu	ıde		Inclu	ıde
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1	0 0	10	1	00	10	1	0 1	01	10	) ()	1 0
Volume Module	e:	1.04	10	4.7	200		240	470	150	76	7.65	
Base vol:	1 00	194	1 00	41	1 00	407	240	438	1.00	35	265	21
Growin Auj:	1.00	1.00	1.00	1.00	1.00	1.00	240	1.00	150	1.00	1.00	21
HILLIAL BSE:	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
DUE Adj:	0.00	00.1 0 90	0.90	0.86	0.86	0.96	0 77	0 77	0 77	1.00	1.00	0.63
PHE Volume	56	216	2.20 71	4 A	359	543	317	569	195	56	421	2.05
Reduct Vol:	0	0 0	0	10	 0	0	1	0	175	0	-++- 0	0
Reduced Vol:	56	216	21	48	359	543	312	569	195	56	421	33
PCE Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	56	216	21	48	359	543	312	569	1.95	56	421	33
											<b></b>	
Saturation Fl	low Mo	odule:				•				•		•
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.91	0.09	1.00	0.40	0.60	1.00	1.00	1.00	1.00	0.93	0.07
Final Sat .:	1700	1639	161	1700	717	1083	1700	1800	1800	1700	1668	132
				]								
Capacity Anal	ysis	Modul	e:					_				
Vol/Sat:	0.03	0.13	0.13	0.03	0.50	0.50	0.18	0.32	0.11	0.03	0.25	0.25
Crit Moves:					****		****		0 75		****	
Green/Cycle:	0.51	0.51	0.51	0.51	0.51	0.51	0,19	0.37	0.37	0.08	0.26 0.00	0.26
volume/Cap:	10.06	V.26	10.26	0.05 יייו	0.98	0.98	0.98	U.86	0.30 30 5	U.42 (	0.98 05 1	0.98 ac 1
Delay/ven:	10.1	1 00	1 00	1 00 T0-T	30.5	20.5	1 00	49.4	29.5	1 00	1 00	00.1 1 00
USEI DCIAGJ: NdiDol/Voh	16 1	18 1	18 1	16 1	1.00	1,00	7.00 T.00	100	1.00 20 F	- <u>-</u>	1.00 85 1	4.00 85 1
DecignOveve:	10.1 7	-0-1 R	10.1	10.1 7	15	כ, סכ רכ	20.2 10	72.4 78	ن. و <i>ع</i> ۵	ي د. جرد 4	22.1	0J.1 7
***************	ے * * * * *			ے * * * * * *	****	******	 ******	40 *****	د *****		 *****	- *****

Default Scen	ario		Mo	n Jan	7, 20	002 11:	36:54				Page	5-1
****				Etiwa Exist AN	anda H ting ( M Peak	Propert Conditi Mour	ies ons					
		 T	.evel 0	f Com	rice (	· · · · · ·						
	1997	HCM 4	l-Wav S	ton Me	ethod	(Base )	Cion r Vòlume	alte	rnativ	<u>e)</u>	·	
******	*****	*****	*****	*****	*****	******	*****	******	*****	 ******	* * * * *	*****
Intersection	#5 E	ast A1 *****	/e. (NS	) / Si	10001t	Ave. (	EW) *****	* * * * * *	******	*****	* * * * *	*****
Cycle (sec):		100	)		C	ritica	l Vol	./Cap.	(X):		1.06	з.
Loss Time (s	ec):	(	) (Y+R	= 4 ;	sec) A	verage	Dela	y (sec	/veh):		50.	6
Optimal Cycl	e:	(	)		I	Level 0	f Ser	vice:				F
*******	* * * * *	* * * * * 1	******	*****	* * * * * *	*****	*****	*****	* * * * * *	* * * * * *	* * * * *	*****
Approach:	No	rth Bo	ound	Sou	uth Ba	ound	Ea	ast Bo	und	We	st Bo	und
Movement:	$\mathbf{L}$	- T	~ R	L ·	- Т	- R	Ŀ	- T	- R	L -	Т	- R
						{				1 <b>-</b>		
Control:	S	top Si	ign	SI	top Si	ign	SI	top Si	ġn	St	op Si	gn
Rights:		Inclu	ıde		Inclu	ıde		Inclu	de.		Inclu	de
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0 1!	0 0	0 0	0 1!	0 0	0 (	5 <u>1</u> !	0 0	0 0	1!	00.
						!						!
Volume Modul	e:											
Base Vol:	68	40	126	45	39	83	79	148	60	142	220	45
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	40	126	45	39	83	79	148	60	142	220	46
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1,00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.57	0.57	0.57	0.65	0.65	0.65	0.77	0.77	0.77
PHF Volume:	79	47	147	79	68	146	122	228	92	184	286	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	104	- DPC	60
Reduced Vol:	- 79	47	147	79	68	146	122	228	92	184	1 00	1 00
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1 00	1 00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	285	1.00 60
Finai Vol.:	, 79	4 /	14/	, 79	68	146	122	228	92	 	200	
			·	1			+					
Adjustment.			1 40	1 00	1 00	3 00	1 00	1 00	1 00	1 00	1.00	1.00
Aujustmeut:	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00	0.52	0.21	1.00	0 54	0.11
Lanes: Final Sar	127	75	0.04 736	119	103	220	134	251	102	174	269	56
· · · · · · · · · · · · · · · · · · ·	1	· · · · · ·		1			1	<b>-</b>		1		
Capacity Anal	lvsis	Modul	e.	•			•		'	1		
Vol/Sat:	0.62	0.62	0.67	0 66	0 66	0.66	0.91	0.91	0.91	1.06	1.06	1.06
Cric Moves		* * * *			****			****			****	
Delay/Veh	21.5	21.5	21.5	23.1	23.1	23.1	45.9	45.9	45.9	84.7	84.7	84.7
Delay Adi:	1.00	1.00	1.00	1,00	1.00	1,00	1,00	1.00	1.00	1.00	1.00	1.00
AdiDel/Veh	21.5	21.5	21.5	23.1	23.1	23.1	45.9	45.9	45.9	84.7	84.7	84.7
LOS by Move:	C		c	C	C	C	E	E	Е	F	F	F
ApproachDel:	-	21.5	-	-	23.1	-		45.9			84.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		21.5			23.1			45.9			84.7	
LOS by Appr:		С			С			Ε			F	
*******		*****	* * * * * *	* * * * * *	*****	******	*****	* * * * *	*****	* * * * * *	* * * * *	******

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1/9/2024 Board Meeting

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Default Scen	ario		Ma	on Jan	7,2	002 11:	36:54	r i			Page	6-1
				Etiw Exis A	anda ting M Pea	Propert Conditi k Hour	ies .ons					
	·		Level C	)f Ser	vice	Computa	tion	Renor	 +			
	1997	HCM (	Operati	ions M	ethod	(Base)	Volum	ie Alt	ernati	ve)		
*******	*****	*****	*****	*****	****	******	****	*****	******	*****	****	******
Intersection	#7 E *****	ast A <sup>.</sup>	ve. (NS ******	G) / V *****	ictor	ia St. ******	(EW)	*****	******	*****	*****	******
Cycle (sec):		6	0			Critica	l Vol	/Cap	. (X):		0.1	53
Loss Time (s	ec):		б (Y+R	<b>=</b> 3	sec)	Average	e Dela	y (se	c/veh)	:	13	.1
Oprimal Cycl	e :	6	0			Level	of Ser	vice:				в
*********	* * * * *	*****	******	*****	****	******	*****	*****	*****	*****	*****	******
Approacn: Movement:		- T T T T T T T T T T T T T T T T T T T		50	utn B _ m	ouna - P	т E	ast B	ound	τW	est B	
sovement:		- L	- r.	ي. - ـ ـ ـ ا ا	- 1	- ĸ	<u>ت</u> ا ـ ـ ـ ـ	- 1	- ĸ	يد 	- 1	- ĸ
Control:	, đ	rotec	Led	q p	rotec	red	1	Permi	tted	11	Permi	tted
Rights:	-	Incl	ude	-	Incl	ude		Incl	ude		Ovl	+
Min. Green	10	16	16	10	16	16	21	21	21	21	21	21
Lanes:	1	0 2	0 1	1	0 1	0 1	1	0 0	1 0	1	0 1	0 1
							1					
Volume Modul	e:			• •		•				. 1		•
Base Vol:	50	143	49	34	55	57	17	56	22	53	90	101
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	50	143	49	34	55	57	17	56	22	53	90	101
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.77	0.77	0.77	0.66	0.66	0.66	0.86	0.86	0.86
PHF Volume:	58	166	57	44	71	74	26	85	33	62	105	117
Reduct Vol:	0	0	0	0	Û	0	0	0	0	0	0	0
Reduced Vol:	58	166	57	44	71	74	26	85	33	62	105	117
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	58	166	57	44	71	74	. 26	85	33	62	105	117
Saturation F	 0w M					i						
Sat/Lane-	1800	1800	1800	1800	1900	1800	1800	1800	1800	1800	1800	1800
Adiustment.	0 94	1 00	1 00	0 94	1 00	1 00	0 94	1 00	1 00	0 94	1 00	1 00
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.72	0,28	1.00	1.00	1.00
Final Sat.	1700	3600	1800	1700	1800	1800	1700	1292	508	1700	1800	1800
				1		1			1			!
Capacity Anal	ysis	Modul	.e: '			1			1			
/ol/Sat:	0.03	0.05	0.03	0.03	0.04	0.04	0.02	0.07	0.07	0.04	0.06	0.07
Crit Moves:		* * * *		* * * *				* * * *				
Green/Cycle:	0.18	0.30	0.30	0.17	0.29	0.29	0.43	0.43	0.43	0.43	0.43	0.60
/olume/Cap:	0.19	0.15	0.10	0.15	0.14	0.14	0.04	0.15	0.15	0.08	0.14	0.11
Delay/Veh:	21.1	15.4	15.2	21.5	15.9	15.9	10.0	10.6	10.6	10.2	10.5	5.2
Jser DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.1	15.4	15.2	21.5	15.9	15.9	10.0	10.6	10.6	10.2	10.5	5.2
DesignQueue:	2	4	1	1	2	2	0	2	1	1	2	2

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Default Scena	ario		Мо	n Jan	7, 20	002 11:	38:01				Page	2-1
				Etiwa Exist PN	anda I ing ( 4 Pea)	Propert Conditi K Hour	ies ons					
****	1997	I HCM 4	level O -Way S	f Serv	vice ( ethod	Computa (Base	tion F Volume	eport Alte	ernativ	e)	*****	*****
Intersection	#1 Et	iwand	la Ave.	- Wes	st (NS	S) / Wi	lson /	ve.	(EW)		*****	
Cycle (sec):		100	)			Critica	l Vol.	/Cap	(X):		0.19	8
Loss Time (se	ec):	(	) (Y+R	= 4 ;	sec) i	Average	Delay	/ (sec	:/veh):		8.	4
Optimal Cycle	e :	C	3		3	Level <sup>C</sup>	)f Ser	rice:				A
*********	* * * * * *	****	******	*****	*****	******	*****	*****	*****	*****	*****	*****
Approach:	Nor	th Bo	bund	Soi	ith Bo	ound	Ea	ast Bo	ound	We	st Bc	und
Movement:	L -	·Υ	- R	L	- Т	- R	Ŀ.	- Т	- R	L -	Т	- R
			[						• • •			
Control:	St	op Si	gn	SI	top S:	ign	St	op Si	ign	St	op Si	.gn
Rights:	_	Inciu	ide _		Inclu	ıde	_	Inci	ide		inciu	ide 0
Min. Green:	, U		U A	. 0	0	0	, 0	,	0	. U	1	1 0
Lanes:	10 C	) ()	0 0 1	1 1	0 0	0 1	⊥ ( 	) 2	0 0	00	<u>г</u>	1
Volume Modula							1			[		. 1
Pare Vel.	=:	л	ń	107	0	c		22	n	0	50	119
Crowth Adi	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Initial Beek	1.00	1.00	1.00	107	1.00	1.00	1.00	37	1.00	1.00	52	119
User Adi.	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1.00	1.00	1.00	1.00	1.00
PHF Adi-	1.00	1.00	1.00	0.86	0.86	0.86	0.77	0.77	0.77	0.81	0.81	0.81
PHE Volume:	0	0	0	124	0.02	6.56	5	42	0	0	64	147
Reduct Vol:	0	0	0	0	ō	õ	0	Ū.	0	Q	0	0
Reduced Vol:	0	0	0	124	Ó	6	5	42	0	0	64	147
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	124	Q	6	5	42	0	D	64	147
			·							[		
Saturation Fl	low Mo	dule:										
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes :	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	٥.	628	0	791	605	1324	0	0	718	535
			1	1					1			
Capacity Anal	ysis	MOGUI	.e:	0 00		0.03	• • • •	0 07		~~~~	0 09	n 1 <b>8</b>
Crit Mover	XXXX	~~~~	2002	U.2U ****	7000	0.01	0.01	****	****	~~~~	5.02	****
Delay/Vob.	0.0	0.0	0.0	0 £	0.0	7 1	95	Ω 1	0.0	0.0	8 1	7.8
Delav Adi	1 D.0	1.00	3 00	1 00	1 00	1 00	1.00	1.00	1.00	1.00	1.00	1.00
AdiDel/Veh:	0.0	0.0	0.0	9.6	0.0	7.1	8.5	8.1	0.0	0.0	8.1	7.B
LOS by Move:	*	*	*	A.	*	A	Ā	A	*	+	А	А
ApproachDel:	xx	xxxx			9.5		••	8.2			7.9	
Delay Adj:	x	xxxx			1.00			1.00			1.00	
ApprAdjDel	xx	xxxx			9.5			8.2			7.9	
LOS by Appr:		*			А			А			А	
*******	* * * * *	* * * * *	* * * * * *	*****	*****	* * * * * *	*****	****	*****	* * * * * *	****	******

Default Scen	ario		Ma	on Jan	7,2	002 11	:38:01			1	page	3-1
				Etiw Exis P	anda ting M Pea	Proper Condit: k Hour	ties íons					
·			Level (	of Ser	vice	Comput:		Depor				
	1997	HCM	4-Wav (	Stop M	vice ethod	(Ваве	Volum	Repor	C Arnatis			
*****	*****	*****	*****	*****	*****	******	******	****	******	r=; *******	***	******
Intersection	#3 E	riwan	da Ave	(NS)	/ Su	mmit Av	ve. (E	W)				
********	****	*****	*****	*****	*****	*****	*****	*****	*****	*******	***	* * * * * * *
Cycle (sec): Loss Time (s Optimal Cycl	ec): e:	10	0 0 (Y+R 0	= 4	sec)	Critica Averaga Level (	al Vol e Dela Of Ser	./Cap y (se vice:	. (x): c/veh)	:	0.7	32 .1 C
********	*****	*****	× • • • • • • •				*****	*****	******	*******	***	*****
Approach:	NO	rtn B	ouna	50	исп в	ouna	т Б Т	ast B	ound	wes	E Bo	ound
Movement:	ы. Г	- 1	- K	بد 	- 1	- rc	ير 11	- 1	- R	ы – Ц	1	- R
Control	1	top 9	ian	1 G		inn	ا ا ج	ton S	ian	970		ion
Concror:	5	Incl	ude	_	Incl	ude	5	Incl	ude	- 500 т	pcl.	ide
Min Green.	n	0	о П	0	0	0	0	1.101	 0	0	0	100
Lanec.	0	יו מ	ô n	0	0 11	0 0	0	0 1	0 0	0 0	11	0 0
	1											· • • • • • • • • •
Volume Modul	י e:								I	1		1
Base Vol:	111	170	189	14	134	6	5	22	106	132	15	24
Growth Adi:	1.00	1.00	1.00	1.00	1.00	1.00	I.00	1.00	1.00	1.00 1	. 00	1.00
Initial Bse:	111	170	189	14	134	6	5	, 22	106	132	15	24
User Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1	. 00	1.00
PHF Adj:	0.90	0.90	0.90	0.83	0.83	0.83	0.94	0.94	0.94	0.90 0	. 90	0.90
PHF Volume:	123	189	210	17	161	7	5	23	113	147	17	27
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	123	189	210	17	161	7	5	23	113	147	17	27
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1	.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1	.00	1.00
Final Vol.:	123	189	210	. 17	161	7	. 5	23	113	. 147	17	27
							]					
Saturation F	Low Mo	odule:										
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1	.00	1.00
Lanes:	0.24	0.36	0.40	0.09	0.87	0.04	0.04	0.16	0.80	0.77 0.	. 09	0.14
Final Sat.:	169	258	287	1 55	524	23	22	95	456	4∡5	48	
			I	1		· · · · · · i	f			]		
Capacity Anal	19515	MOQUI	.e: 0 73	0.21	0 21	0 71	0.96	0 25	0.25	0 75 0	76	0 75
Vol/Sat:	0.73	U./5	0.75	0.31	****	0.51	****	0.25	0.25	****		0.35
Crit Moves:	10 7	10 2	10.2	10 8	10 P	י הי	10 1	10.3	10.1	11611	6	11 6
Delay/ven: Delay Adi.	19.3	1 00	1 00	1 00	1 00	1 00	10.1	1 00	1 00	1 00 1	00	1 00
Delay Adj: NdéDol/Nob.	10 3	1.00 TO 3	193	10 8	10.8	10 8	10 1	10 1	10 1	11 6 11	6	11 6
LOS by Move	د. <i>د</i> ـ	- C		20.0 Pi	то. с В	R	A R	R	R		B	B
LUS DY MOVE:	L.	19 2		÷	10 8	5	Ъ	10.1	4	11		2
npproachber:		1.00			1.00			1,00		. [	00	
AnnradiDel·		19.3			10.B			10.1		11	. 6	
DELAUJUEL.		 C						 B			B	
ny mpp.	*****	- *****	*****	* * * * * *	****	*****	* * * * * *	****	*****	*****	***	* * * * * *

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Default Scen	ario		Mo	on Jan	7,2	002 15:	:32:49				Page	4-1
				Etiwa Exis Pl	anda ting M Pea	Propert Conditi k Hour	ies lons					
		 I	Level (	)f Ser	vice	Computa	ition I	Report				
	1997	HCM C	Dperati	ions M	ethod	(Base	Voluma	e Alte	- ernativ	e)		
********	****	*****	******	*****	* * * * *	******	*****	* * * * * *	******	* * * * * *	*****	*****
Intersection	#4 E ++*+*	tiwan¢ *****	la Ave.	(NS)	/ Hi *****	ghland *******	Ave.	(EW) *****	******	*****	*****	******
Cycle (sec):		6(	0			Critica	al Vol	./Cap	(X):		0.56	68
Loss Time (s	ec):		5 (Y+R	= 3 :	sec)	Average	e Delay	y (sec	<pre>/veh) :</pre>		18.	. 0
Optimal Cycl	e:	60	)			Level C	of Ser	vice:				в
**********	*****	*****	******	*****	* * * * *	******	*****	* * * * * *	******	*****	*****	******
Approach:	No	rth Bo	ound	So	uth B	ound	Ēá	ast Bo	ound	We	est Bo	ound
Movement:	L	- T	- R	Ъ	- Т	- R	L	- T	- R	. L.	- Т	- R
				1	,				·			
Control:		Permit	ted	]	Permi	tted	P	rotect	red	P1	rotect	ed
Rights:		Inclu	lde		Inci	ude		Inclu	ide		Inciu	ide
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	1 0
Lanes:	1	0 0	1 0	1 1	0 0	10,	1 1	0 1	0 1	1 1	5 0	
Tradina Madrid												
volume Moaul	e:	164		1.7	1.64		0.00	1 2 0		0	100	20
Base vol:	1 00	154	1 00	1 00	164	1 00	209	1 00	1 00	2 00	1 00	1 00
Growen Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	. 1.00	1.00	104	1.00
Haar Adi.	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 20	1 00	1 00	1 00	1 00
DUE bdi.	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.91	0.87	0.97	0.87
PHE Volume-	97	177	18	19	186	201	357	148	67	0.0 <i>7</i>	122	33
Reduct Vol:	0	1,7		0	100	201	0	140	n n	Ő	 0	0
Reduced Vol:	97	177	18	19	186	201	357	148	62	9	122	33
PCE Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	97	177	18	19	186	201	357	148	62	- 9	122	33
			[	[		(	1		!			
Saturation FI	low Ma	dule:	,	'		'	•		•	•		
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.91	0.09	1.00	0.48	0.52	1.00	1.00	1.00	1.00	0.79	0.21
Final Sat.:	1700	1631	169	1700	866	934	1700	1800	1800	1700	1413	387
Capacity Anal	lysis	Modul	e:									
Vol/Sat:	0.06	0.11	0.11	0.01	0.22	0.22	0.21	0.08	0.03	0.01	0.09	0.09
Crit Moves:					* * * *		* * * *				****	
Green/Cycle:	0.33	0.33	0.33	0.33	0.33	0.33	0.32	0.34	0.34	0.23	0.25	0.25
Volume/Cap:	0.17	0.33	0.33	0.03	0.65	0.65	0.65	0.24	0.10	0.02	0.34	0.34
Delay/Veh:	14.5	15.5	15.5	13.7	19. <b>B</b>	19.8	20.4	14.3	13.5	18.0	TR'a	TR'A
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10 0
AajDel/Veh:	14.5	15.5	15.5	13.7	19.8	19.8	20.4	14.3	13.5	TR'0	18'A	10.9
**************************************	2 *****	4	U *****	U *****	4	5 ******	ک * * * * * *	د * * * * *	L ******	U *****	ر ۲****	1 * * * * * *
		A										

1/9/2024 Board Meeting

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Default Scen	ario		M(	on Jan	7, 2	002 11	:38:01	L			Page	5-1
				Etiw Exis P	anda ting M Pea	Proper Condit: k Hour	ties ions		····			
	1997	нсм	Level ( 4-Way (	Df Ser Stop M	vice ethod	Computa (Base	ation Volum	Repor Ne Alt	t ernati			•
********	****	****	* * * * * * *	*****	* * * * *	*****	* * * * * *	****	*****	*****	****	* * * * * * *
Intersection	. #5 E	ast A *****	ve. {N\$	5) / S *****	ummit *****	Ave.	(EW) *****	*****	******	*****	* * * * *	* * * * * * *
Cycle (sec): Loss Time (s Optimal Cycl	ec): e:	10	0 0 (Y+R 0	= 4	sec)	Critica Average Level (	al Vol e Dela Of Ser	./Cap y (se vice:	. (X): c/veh)	:	0.23 B	99 .9 A
Approach	No	rrh B	ound		uth D	ound	 E			 101		
Movement	т. Т.	- T		т. Т.	асн В " т	- 5	т Т	ast ອ - ຕ	- 19	т 1416 Т	= 5 L B( m	
PIOVenient:	1	1	- K	يىر. مەرال	- 1	- к		- 1	- K	·	- 1	- к
Control: Rights: Min Green:	 s	top S Inclu	ign ude	 S 0	top S Incl	ign ude 0	5 0	top S: Inclu	ign ude 0	St	top Si Inclu	ign Ide
Lanes	õ	0 1	ົດດັ	٥Č	0 1	0 0 1	a	ה ה	0 0	ດັດ	י ר ו ו	0 0
	<b>-</b>											·
Volume Modul	e:		I			:	1			• •		1
Base Vol:	35	12	48	4	10	20	8	177	28	30	136	2
Growth Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1,00	1.00	1.00	1.00
Initial Bse:	35	12	48	4	10	20	8	177	28	30	136	2
User Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adi:	0.78	0.78	0.78	0.86	0.86	0.86	0.90	0.90	0.90	0.91	0.91	0.91
PHF Volume:	45	15	62	5	12	23	9	197	31	33	149	2
Reduct Vol:	0	0	0	D	0	0	0	0	0	0	0	0
Reduced Vol:	45	15	62	S	12	23	9	197	31	33	149	2
PCE Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	45	15	62	5	12	23	9	197	31	33	149	2
										1		
Saturation F	low Ma	odule:	1	1		1	•		,	•		L
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.37	0.13	0.50	0.12	0.29	0.59	0.04	0.83	0.13	0.18	0.81	0.01
Final Sat.:	266	91	364	83	208	415	30	658	104	136	618	9
									{			
Capacity Anal	lysis	Modul	e:			•						
Vol/Sat:	0.17	0.17	0.17	0.06	0.06	0.06	0.30	0.30	0.30	0.24	0.24	0.24
Crit Moves:		****				****		* * * *		***		
Delay/Veh:	8.5	8.5	8.5	7.9	7.9	7.9	9.2	9.2	9.2	В.9	8.9	8.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.5	B.5	8.5	7.9	7.9	7.9	9.2	9.2	9.2	8.9	8.9	B.9
LOS by Move:	А	А	А	А	А	А	А	А	А	A	А	А
ApproachDel:		8.5			7.9			9.2			в.9	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.5			7.9			9.2			8.9	
LOS by Appr:		A			А			А			А	
· · · · · · · · · · · · · · · ·	****	* * * * *	* * * * * * *	*****	* * * * *	*****	*****	*****	* * * * * * *	*****	* * * * * *	*****

Traffix 7.5.1115 (c) 2001 Dowling Assoc. Licensed to RK ENGINEERING GROUP

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Default Scen	ario	Mo	on Jan	7, 20	002 11:	38:01				Page	6-1	
	Etiwanda Properties Existing Conditions PM Peak Hour Level Of Service Computation Report											
		Level C	f Ser	vice (	Computa	tion H	Report					
*********	1997 HCM ********	operati	.ONS M(	25000	(Base	volume	2 AICE ******	ernativ	5) ******	*****	*****	
Intersection	H7 Fast	Ave (NS	$v \neq v$	ictori	a St	(FW)						
**********	********	******	*****	*****	******	*****	*****	*****	*****	*****	*****	
Cycle (sec):		60		(	ritica	l Vol	/Cap	(X):		0.16	6	
Loss Time (s	ec):	6 (Y+R	= 3,	sec) /	Average	Delay	y (sec	/veh):		14.	2	
Optimal Cycl	e:	60		1	Jevel 0	f Ser	vice:				В	
**********	* * * * * * * * *	* * * * * * *	*****	* * * * * *	******	*****	* * * * * *	******	*****	* * * * * *	*****	
Approach:	North	Bound	So	uth Bo	ound	Εá	ast Bo	und	We	est Bo	ound	
Movement:	L - I	- R	$\mathbf{L}$	- Т	- R	Ľ	- T	- R	. Г	- T	- R	
			- <b>-</b>		<b>-  </b>						·	
Control:	Prote	cted	P	rotect	ed	1	Permit	ted	1	Permit	cea	
Rights:	Inc	lude		Inclu	ide		Inclu	ide	~ 1	001	21	
Min, Green:	10 1	6 16	10	16	16	21	21		21	~ `	0 1	
Lanes:	102	0 1	1	0 1	0 1	_ <b>i</b> '	0 0	T U	1	J 1		
					1				1		}	
Volume Modul	e:	- 00	<b>F</b> 0	0.0	7.0	-	<b>C</b> 1	20	53	86	54	
Base Vol: Orouth Adi.	38 18	7 92	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1.00	
Growin Adj: Initial Book	2.00 1.0	7 97	1.00	1.00	1.00	1.00	1.00	1.00	53	86	54	
lieer Adj.	1 00 1 0	0 1 00	1 00	1 00	1 00	1 00	1 00	1 00	1.00	1.00	1.00	
PHF Adi	1.50 1.0 n 94 n 9	4 0 94	0 83	0 83	0.83	0.97	0.97	0.97	0.94	0.94	0.94	
PHF Volume:	40 19	9 98	71	108	43	5	63	31	56	91	57	
Reduct Vol:	0	0 0	0	0	0	D	0	0	0	0	0	
Reduced Vol:	40 19	9 98	71	108	43	5	63	31	56	91	57	
PCE Adj:	1.00 1.0	0 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
MLF Adj:	1.00 1.0	0 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Final Vol.:	40 19	9 98	71	108	43	5	63	31	56	91	57	
					·			· <b>-</b> -			!	
Saturation F	low Modul	e:								1 0 0 0	1000	
Sat/Lane:	1800 180	0 1800	1800	1800	1800	1800	1800	1800	1800	1 00	1 00	
Adjustment:	0.94 1.0	0 1.00	0.94	1.00	1.00	0.94	1.00	1.00	1 00	1 00	1.00	
Lanes:	1.00 2.0	0 1.00	1.00	1.00	1.00	1.00	0.67	0.33	1700	1800	1800	
Final Sac.:	1100 360	0 1800	1700	1900	1800	1,00	1207		1			
Capacity Apal	usin Mod	! ula:	[			1		!	i		1	
Vol/Sat-	0 02 0 0	6 0 05	0 04	0.06	0 02	0 00	0.05	0.05	0.03	0.05	0.03	
Crit Moves	***	*	****	0.00	0.04	5.00	****	2				
Green/Cycle:	0.21 0.3	1 0.31	0.24	0.34	0.34	0.35	0.35	0.35	0.35	0.35	0.59	
Volume/Cap:	0.11 0.1	B 0.17	0.18	0.18	0.07	0.01	0.15	0.15	0.09	0.15	0.05	
Delay/Veh:	19.2 15.	1 15.1	18.4	14.1	13.5	12.7	13.5	13.5	13.2	13.5	5.3	
User DelAdi:	1.00 1.0	0 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
AdjDel/Veh:	19.2 15.	1 15.1	18.4	14.1	13.5	12.7	13.5	13.5	13.2	13.5	5.3	
DesignQueue:	1	52	2	2	1	D	1	1	1	2	1	
*****						* * * * * *		******	* * * * * *	* * * * * *	******	

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## APPENDIX D

TRAFFIC SIGNAL WARRANTS

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#### 7-10

# TRAFFIC SIGNAL WARRANTS

Major St: Etin	(Based on Estimat wanda Ave.	ted Avera	age Daily Traffic-S Minor St:	ee Note 2) Summit Ave.		Year ≃	0Y W/0 F
Volume =	15,600 Lanes=	1	Volume =	2,700	Lanes=	1 (one-way)	
URBAN	RURAL X	×		Minimum Rec EADT	luirements	<del></del>	
1. Minimum Ve Satisfied XX	hicular Not Satisfied		Vehicles per on major stre (both approac	day et ches)	Vehicles p on higher minor-stre (one direc	er day volume et approach tion only)	
Number of lar traffic on eac	nes for moving h approach.			· · · ·			
Major Street 1 2 + 2 + 1	Minor Street 15,600 1 1 2 + 2 +	2,700	Urban 8,000 9,600 9,600 8,000	Rural 5,600 * 6,720 6,720 5,600	Urban 2,400 2,400 3,200 3,200	Rural 1,680 * 1,680 2,240 2,240	
2. Interruption of traff Satisfied XX	of Continuous fic Not Satisfied		Vehicles per c on major stree (both approac	lay et hes)	Vehicles p on higher v minor-stree (one direct	er day volume et approach ion only)	
Number of lan traffic on each	es for moving n approach.						
Major Street 1 2 + 2 + 1	Minor Street 15,600 1 1 2 + 2 +	2,700	Urban 12,000 14,400 14,000 12,000	Rura! 8,400 * 10,080 10,080 8,400	Urban 1,200 1,200 1,600 1,600	Rural 850 * 850 1,120 1,120	
3. Combination Satisfied XX	Not Satisfied		2 Warrants		2 Warrants		
but following v fulfilled 80% o 100%	warrants ir more 100%						
1	2						

NOTES: 1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be provided for the left-turn movement.

2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

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#### 7-10 TRAFFIC SIGNAL WARRANTS

	(Based on Estimat	ed Avera	age Daily Traffic-S	ee Note 2)			
Major St:	East Ave.		Minor St:	Summit Ave.		Year =	OY W/P
Volume =	5.700 Lanes=	1	Volume =	2 000	Lanes≖	1 (one-way)	
		•	· Oldrine	2,000	Edites-	(one may)	
	<u></u>					<u> </u>	
URBAN	RURAL X	X		Minimum Red	quirements		· .
				EADT	-		
				······			
1 Minimum	Vehicular		Vahieles ner r	lav	Vehicles	har dav	
i i i i i i i i i i i i i i i i i i i				iay si		volume	
Sotiefied	Not Satisfied		(both approach	5L (haa)		volume of approach	
Satisticu	Not Sausiled		(uous approau	nes)		tion colu)	
	~~				(one orrec	auon oniy)	
Number o	f lanes for moving					· · · · · · · · · · · · · · · · · · ·	
traffic on	each approach.						[
Major Stree	t Minor Street		Urban	Rural	Urban	Rural	
1 1	5 700 1	2 000	8 000	5 600 *	2 400	1 680 *	ł
	1	2,000	0,000	6 7 20	2,400	1,680	
2+	2+		9,000	6,720	2,400	2 240	
2+	27		9,000	0,720 E COD	3,200	2,240	
1	2 +		8,000	0,000	3,200	2,240	
0 (-4				- <u>1995-1997</u>	Mahialaa		
2. Interrupti			venicies per c	iay	venicies p	er day	
	traffic		on major stree	et .	on higher	volume	
Satisfied	Not Satisfied		(both approac	hes)	minor-stre	et approach	
	XX	ľ			(one direc	tion only)	
Number of	lanes for moving			<b>.</b>			
traffic on e	each approach.						
Major Street	Minor Street		Urbag	Rural	i Irban	Roral	
1	5 700 1	2 000	12 000	9 400	1 200	850 *	
י ז ג	3,700 1	2,000	14,000	10,400	1,200	850	
2 +	1		14,400	10,000	1,200	1 120	
2+	2+		14,000	10,080	1,000	4,120	
1	2 +	}	32,000	8,400	1,600	₽, 120	
3. Combinat	ion						· · ·
			2 Waπants		2 Warrant	S	
Satisfied	Not Satisfied						
No one wa	xx arrant satisfied	ļ					
but following	no warrants	1			ł		
folfillad 801							
10/00/	EQ0/	1					
100 /6	20070						
I	۷.						Ĩ

NOTES: 1. Heavier left turn movement from the major street may be included

with minor street volume if a separate signal phase is to be provided for the left-turn movement.

2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counTed.

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#### 7-10

# TRAFFIC SIGNAL WARRANTS

2 1-1 - 0 - 14/1	(Based on Estimat	ed Avera	ge Daily Traffic-S	ee Note 2)			
vajor St. VVBSC Volume =	on Ave. 6,900 Lanes≖	1	Minor St: Volume =	East Ave. 3,250	Lanes=	Year = 1 (on <del>e-w</del> ay)	2020 W/C
URBAN	RURAL X	<		Minimum Re EADT	quirements		
1. Minimum Vehi Satisfied XX	cular Not Satisfied		Vehicles per o on major strea (both approac	day et hhes)	Vehicles p on higher minor-stre (one direct	er day volume et approach iion only)	
Number of lane traffic on each	s for moving approach.						-
Major Street 1 2 + 2 + 1	Minor Street 6,900 1 1 2 + 2 +	3,250	Urban 8,000 9,600 9,600 8,000	Rural 5,600 * 6,720 6,720 5,600	Urban 2,400 2,400 3,200 3,200	Rural 1,680 * 1,680 2,240 2,240	
2. Interruption of traffic Satisfied	Continuous Not Satisfied XX		Vehicles per c on major stree (both approac	lay et hes)	Vehicles pr on higher v minor-stree (one directi	er day rolume et approach ion only)	
Number of lanes traffic on each a	s for moving approach.		<u></u>				
Major Street 1 2 + 2 + 1	Minor Street 6,900 1 1 2 + 2 + 2 +	3,250	Urban 12,000 14,400 14,000 12,000	Rural 8,400 10,080 10,080 8,400	Urban 1,200 1,200 1,600 1,600	Rural 850 * 850 1,120 1,120	
3. Combination Satisfied XX No one warrant but following wa	Not Satisfied satisfied		2 Warrants		2 Warrants		
fulfilled 80% or a 100% 1	more 82% 2						

NOTES: 1. Heavier left turn movement from the major street may be included

with minor street volume if a separate signal phase is to be provided for the left-turn movement.

2. To be used only for NEW INTERSECTIONS or other localions where actual traffic volumes cannot be counTed.

Major St: Volume =	(Based on Estimate Etiwanda AveEast 7,000 Lanes=	ed Averaç 1	ge Daily Traffic-Se Minor St: Volume =	ee Note 2) Wilson Ave. 3,600 I	_anes=	Year <del>≖</del> 202 1 (on <del>e</del> -way)	0 W/ F
URBAN	RURAL X	(	· · · · · · · · · · · · · · · · · · ·	Minimum Requ EADT	lirements		
1. Minimun Satisfied	n Vehicular Not Satisfied XX		Vehicles per d on major stree (both approact	ay t nes}	Vehicles pe on higher ve minor-stree (one direction	r day plume t approach pn only)	
Number of traffic on	of lanes for moving each approach.			<u>_</u>		4 <u>4 </u>	
Major Stree 1 2 + 2 + 1	et Minor Street 7,000 1 1 2 + 2 + 2 +	3,600	Urban 8,000 9,600 9,600 8,000	Rural 5,600 * 6,720 6,720 5,600	Urban 2,400 2,400 3,200 3,200	Rural 1,680 * 1,680 2,240 2,240	
2. Interrupt Satisfied	iion of Continuous traffic Not Satisfied XX		Vehicles per d on major stree (both approact	ay t nes)	Vehicles pe on higher vo minor-stree (one direction	r day blume t approach on only)	
Number o traffic on	f lanes for moving each approach.			<u></u>			<u> </u>
Major Stree 1 2 + 2 + 1	et Minor Street 7,000 1 1 2 + 2 + 2 +	3,600	Urban 12,000 14,400 14,000 12,000	Rural 8,400 10,080 10,080 8,400	Urban 1,200 1,200 1,600 1,600	Rural 850 * 850 1,120 1,120	
3. Combina Satisfied No one w but follow	Not Satisfied XX varrant satisfied ving warrants		2 Warrants		2 Warrants		
fulfilled 80 100% 1	2% or more 83% 2						

NOTES: 1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be provided for the left-turn movement.

2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counTed.

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7-10 TRAFFIC SIGNAL WARRANTS

	(Bas	ed on Estimat	ed Avera	ige Daily Traffic-S	See Note 2)			
Major St: Volume  ≕	Etiwanda Ave. 7,050	-West Lanes=	2	Minor St: Volume =	Wilson Ave. 2,650	Lanes=	Year ≃ 2 (one-way)	2020 W/ P
URBAN		RURAL X	<		Minimum Re EADT	quirements		
t, Minimu Satisfied	m Vehicular d XX	Not Satisfied		Vehicles per on major stre (both approac	day et ches)	Vehicles p on higher minor-stree (one direct	er day volume et approach ion only)	· · · · · · · · · · · · · · · · · · ·
Number traffic or	of lanes for movin each approach	ng		- <sub>N</sub> ,			<u></u>	
Major Stre 1 2 + 2 + 1	eet 7,050	Minor Street 1 2 + 2 +	2,650	Urban 8,000 9,600 9,600 8,000	Rural 5,600 6,720 6,720 * 5,600	Urban 2,400 2,400 3,200 3,200	Rural 1,680 1,680 2,240 * 2,240	
2. Interrup Satisfiec	ition of Continuol traffic	us Not Satisfied XX	<b>1</b>	Vehicles per o on major stree (both approac	day et thes)	Vehicles pe on higher v minor-stree (one directi	er day olume it approach on only)	
Number of traffic on	of lanes for movi each approach.	ng						
Major Stre 1 2 + 2 + 1	et 7,050	Minor Street 1 1 2 + 2 +	2,650	Urban 12,000 14,400 14,000 12,000	Rurai 8,400 10,080 10,080 8,400	Urban 1,200 1,200 1,600 1,600	R⊔ral 850 850 1,120 * 1,120	
3. Combine Satisfied	ation	Not Satisfied XX		2 Warrants		2 Warrants		

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NOTES: 1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be

70%

provided for the left-turn movement.

2

No one warrant satisfied but following warrants fulfilled 80% or more..

100%

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2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counTed.

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### APPENDIX E

### OPENING YEAR (2004) CONDITIONS INTERSECTION ANALYSIS WITHOUT PROJECT (WITHOUT IMPROVEMENTS)

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Default Scen	fault Scenario Mon Jan 7, 2002 14:36:05									Page 2-1				
Etiwanda Properties Opening Year (2004) Without Project Conditions AM Peak Hour														
	1007		Level (	of Ser	vice (	Computa	ation	Repor	t.	·				
********	*****	****	- Way 50 ******	-op me	+****	(Fucure ******	8 VOLU *****	me Al'	ternati	.ve) **********	******			
Intersection	#1 E	tiwan	da Ave	We	st (N	S) / W:	ilson .	Ave.	(EW)					
Cycle (sec):		10	^ • • • • • • • •			Critica	alvol	/Can	(¥).	2 D	******* 08			
Loss Time (s	ec):		0 (Y+R	= 4	sec)	Average	e Dela	v (se	c/veh}:	. 9	.2			
Optimal Cycl	e:		0	-		Level (	Df Ser	vice:	-,, .	· · · · ·	A			
******	* * * * *	* * * * *	* * * * * * *	*****	* * * * *	******	*****	* * * * *	******	*****	*****			
Approach: Movement:	ach: North Bound South Bound East Bound ent: L - T - R L - T - R L - T - R										West Bound L - T - R			
<b></b>			<i></i> -			 ,	[							
Control:	ŞI	top S.	ign	S	top S:	ign	S	top S:	ign	Stop S	1gn			
Rights:	•	Incl	uae	0	TUCT	nae		Inclu	ade	Incl	ude			
Min. Green:		0 0	0 0	1	0 0	ں ۱	, 0	ີ່	0 0		,			
Lanes:				. <b>.</b>		· · · · · ·								
Volume Modul	 e:			6 1			1 1		ľ	. 1	I			
Base Vol:	 0	ρ	0	181	0	4	2	39	D	0 36	68			
Growth Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
Initial Bse:	0	0	0	181	0	4	2	39	0	0 36	68			
Added Vol:	0	0	0	0	0	0	0	0	0	0 0	D			
PasserByVol:	0	0	0	0	. 0	0	0	0	0	0 0	0			
Initial Fur:	0	0	0	181	0	4	2	39	0	0 36	68			
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
PHF Adj:	1.00	1.00	1.00	0.90	0.90	0.90	0.75	0.75	0.75	0.86 0.86	0.86			
PHF Volume:	0	0	0	201	0	4	3	52	0	0 42	79			
Reduct Vol:	0	0	0	0	0	0	D	0	0	0 0	0			
Reduced Vol:	0	0	0	201	0	4	3	52	0	0 42	79			
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
Final Vol.:	0	U	0	201	0	4	د ا	52	U	0 42	79			
Cotumnsion E		പിപിക	<b>-</b> ]	•		1	1				1			
Adjustment :	1 00	1 00	1 00	3 00	1 00	<b>1</b> 00	1 00	1 00	1 00	1 00 1 00	1 00			
Lanes	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00 1.00	1.00			
Final Sat.:	0	0	0	653	0	830	593	1293	0	0 678	783			
		<b></b> .			<b>-</b>				[		1			
Capacity Anal	ysis	Modul	e:	•										
Vol/Sat:	xxxx	xxxx	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	0.31	XXXX	0.01	0.00	0.04	XXXX	ххжж 0.06	0.10			
Crit Moves:				****				****			****			
Delay/Veh:	0.0	0.0	0.0	10.4	0.0	6.9	8.6	8.3	0.0	0.0 8.1	7.6			
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
AdjDel/Veh:	0.0	0.0	0.0	10.4	0.0	6.9	8.6	8.3	0.0	0.0 8.1	7.6			
LOS by Move:	*	*	*	в	*	А	A	A	*	* A	А			
ApproachDel:	XX	20000			10.4			8.3		1.8				
Delay Adj:	X	XXXX			1.00			T-00		1.00				
AppracjDel:	XX				10-4 D			נ.ס ת		/.8 7				
++++++++++++++++++++++++++++++++++++++	****	****	*****	*****		* * * * * *	*****	~~ *****	*****	~~ ********	*****			

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Default Scenario Mon Jan 7, 2002 14:36:05									Page 7-1			
Etiwanda Properties Opening Year (2004) Without Project Conditions AM Peak Hour											· · · · · · · ·	
19	997 H	CM Uns	Level ( signal:	Of Ser ized Me	vice ( ethod	Computa (Futu)	ation I re Volu	Report ume Ai	: lternat	ive)		
*********	*****	*****	******	******	*****	******	*****	* * * * * *	*****	******	*****	*****
Intersection	#107 *****	EC1Wi *****	anda A <sup>.</sup> ******	ve 1 ******	East *****	(NS) /	Wilso:	n Ave *****	. (EW) ******	*****	*****	******
Average Delay	y (se *****	c/veh *****	): *****	0.0	*****	W( *****	orst Ca	ase L.	evel 0:	i Serv:	LCe:	A ******
Approach:	No	rth B	ound	Soi	uth B	ound	E	ast Bo	ound	₩e	est Bo	ound
Movement:	L	- Т	~ R	L	- Т	- R	Ŀ	- Т	- R.	ւ -	- Т	- R
	<b>!</b>				•							
Control:	S	top S	ign	Si	top S	ign	Une	contr	olled	Und	contro	olled
Rights:		Incl	ude		Incl	ıde		Incl	ude		Inclu	ıde
Lanes:	1	0 0	0 0	0 1	0 0	0 0	0	0 0	01	0 (	) <u>1</u> !	00.
	ļ	<b></b>							<b>-</b>	[   ·		
Volume Module	≥:											
Base Vol:	120	0	0	0	0	0	0	0	220	Ô	0	Ó
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	120	0	0	0	0	0	0	0	220	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	120	0	0	0	0	0	0	0	220	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	126	0	0	0	0	0	0	0	232	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	126	0	0	0	0	0	0	0	232	0	0	0
Critical Gap	Modu	le:										
Critical Gp:	6.4	x x x x	XXXXX	XXXXX	XXXX	$\chi \chi \chi \chi \chi \chi$	x x x x x x	XXXX	XXXXX	XXXXX	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXXXX
FollowUpTim:	3.5	XXXX	XXXXX	XXXXX	XXXX	XXXXX	XXXXX	XXXX	XXXXX	XXXXX	XXXX	XXXXXX
Capacity Modu	le:											
Cnflict Vol:	0	XXXXX	XXXXXX	XXXX	$\mathbf{X}\mathbf{X}\mathbf{X}\mathbf{X}$	XXXXXX	XXXX	XXXX	XXXXX	XXXX	xxxx	XXXXX
Potent Cap.:	0	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXXX	XXXX	XXXX	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXX	XXXX	XXXXX	XXXX	XXXX	XXXXX
Move Cap.:	0	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXXX	XXXX	XXXX	XXXXX	XXXX	XXXX	XXXXX	XXXX	XXXX	XXXXX
				•	· · ·				• <b>- • •</b> •			
Level Of Serv	ice M	4odule	2:									
Stopped Del:	0.0	$\mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x}$	XXXXX	XXXXX	$\mathbf{X}\mathbf{X}\mathbf{X}\mathbf{X}$	XXXXX	XXXXXX	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXXX	XXXXX	$\infty \infty x$	XXXXX
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT -	LTR	- RT	LT ·	LTR	- RT	LT ·	LTR	- R <b>T</b>	LT	- LTR	- RT
Shared Cap.:	xxxx	x x x x	XXXXX	$\mathbf{x}\mathbf{x}\mathbf{x}$	$\mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x}$	XXXXX	XXXX	XXXX	$\infty \infty \infty$	XXXX	XXXX	XXXXX
Shrd StpDel:x	XXXX	XXXX	$\mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x}$	xxxxxx	XXXX	xxxxxx	XXXXXX	XXXX	XXXXX	XXXXX	XXXX	XXXXX
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:		0.0		x	xxxxxx		x	$x \cos \alpha$		x	xxxx	
ApproachLOS:		А			*			*			*	

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Default Scenario Mon Jan 7, 2002 14:36:05									Page 3-1				
	Etiwanda Properties Opening Year (2004) Without Project Conditions AM Peak Hour												
	1997	HCM 4	Level -Way S	Of Ser top Me	vice . thod	Comput (Futur	ation re Volu	Repo:	rt lterna	tive)			
******	* * * * *	****	*****	*****	*****	*****	******	****	******	******	****	*****	
Intersection	#3 E	tiwan	da Ave	. (NS) *****	/ Su	mmit /	Ave. (1	EW) *****	*****	******	****	* * * * * * * * *	
Cycle (sec): Loss Time (s Optimal Cycl	ec): e: *****	10	0 0 (Y+R 0	= 4	sec)	Criti( Averag Level	cal Vol ge Dela Of Sen	l./Caj ay (se cvice	p. (X) ec/veh : ******	: ): ******	1.500 : 205.3 F		
Approach:North BoundSouth BoundEast BoundMovement:L-T-RL-T-RL-T										W L	lest E - T	Bound - R	
Control: Rights:	' S	top S Incl	ign ude	S	top S Incl	ign ude	2	Stop 9 Incl	Sign Lude	S	top S Inc]	Sign Lude	
Min. Green:	0	0	0	C	0	(	, 0	, ( , ,	) (   ^ ~ ~	, 0 1		0	
Lanes:	U	0 1!	0 0	11	0 1:	0 0	U U	0 1	υţ	0	0 1:	0 0	
Nolume Modul				11			-			-			
Volume Modul	e:	60	756	50	265	10	10				1-1-		
Base Vol: Crowth Mdi.	1 00	200	00 1	1 00	1 00	1 00	, 100	1 00	> 295 1 1 00	209	1 2 4	1 5/	
Thitial Brok	1.00	1.00	156	1.00	265	1.00	00 ב. הר	1.00	: 1,00 : 204	: 360	1.00	1.00	
Added Vol:	0	0	100	0	205		. ₁ . ∩		220	) <u>209</u> ) 0	127		
PasserByVol:	ő	ő	ñ	0	ő	0	. 0	0	· · ·	, 0 , 0	0		
Initial Fur:	224	93	156	58	265	19	10	96	296	269	127	57	
User Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adi:	0.79	0.79	0.79	0.81	0.81	0.81	0.68	0.68	0.68	0.85	0.85	0.85	
PHF Volume:	284	118	197	72	327	23	15	141	435	316	149	67	
Reduct Vol:	0	0	0	0	0	0	0	0	O	0	0	0	
Reduced Vol:	284	118	197	72	327	23	15	141	435	316	149	67	
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Final Vol.:	284	118	197	72	327	23	15	141	435	316	149	67	
1							<b>-</b> ·				· – – – – -		
Saturation Fl	Low Mo	dule	:										
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Lanes:	0.47	0.20	0.33	0.17	0.77	0.06	0.02	0.24	0.74	0.59	0.28	0.13	
Final Sat.:	18A	78	<b>26</b> 1	1 67	306	22	11	99	305	233	110	49	
Consoity Nusl	veic	Modul		1						[ <b>-</b>			
Capacity Anai Vol/Sat:	1 50	1 50	1 50	1 07	1 07	1 07	1 43	1 4 7	1 43	1 36	1 36	1 36	
Crit Moves	1.50	****	1.50	1.07	****	1.07	1.45	****	1.75	1.50	****	1.20	
Delav/Veh: 2	61.5	261	261.5	96.0	96.0	96.0	229.2	229	229.2	202.2	202	202.2	
Delav Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
AdjDel/Veh. 2	61.5	261	261.5	96.0	96.0	96.0	229.2	229	229.2	202.2	202	202.2	
LOS by Move:	F	F	F	F	F	F	F	F	F	F	F	F	
ApproachDel:	2	61.5			96.0		2	29.2		2	02.2		
Delay Adj:		1.00			1.00			1.00			1.00		
Appr <b>A</b> djDel:	2	61.5			96.0		· 2	29.2		2	02.2		
LOS by Appr:		F			F			F			F		
* * * * * * * * * * * * *	* * * * *	****	*****	* * * * * *	****	* * * * * *	*****	* * * * *	* * * * * *	*****	* * * * *	* * * * * *	

1/9/2024 Board Meeting

Default Scen	ario		Mo	on Jan	7,2	002 14	:36:05				Page	4 - 1
	C	pening	g Year	Etiw (2004 A	anda ) Wit M Pea	Proper hout P k Hour	ties roject	Condi	itions			
		]	Level C	of Ser	vice	Comput	ation	Report	 t			
*********	1997	HCM OI	peratio	ns Me	thod	(Futur	e Volu	ne Alt	ternati	ve)		******
Intersection	#4 E	tiwand	la Ave.	(NS)	/ Hi	ghland	Ave.	(EW)				*****
Cycle (sec):		130	0			Critic	al Vol	. /Cap	. (X):		1.1	30
Loss Time (s	ec):		- 5 {Y+R	= 3	sec)	Averag	e Dela	y (se	c/veh):		86	.2
Optimal Cycl	e:	130	D			Level	Of Ser	vice:				F
*********	*****	*****	* * * * * * * *	*****	* * * * *	*****	*****	*****	*****	****	* * * * *	******
Approach:	No	orth Bo	pund	So	uth B	ound	E	ast Bo	ound	W 6	est_B	ound
Movement:	L	- T	- R	L	- T	- R		- т	- R	· بلا ا	- T	- к
Control		Dermit	•  ⊢∎≏d	1	Dormi	 rtad	!	rotec	red	р. – – – Г	rotec	red
Rights-		Inch	ude		tncl	uđe	r	Inclu	ade	• •	Incl	ude
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1	0 0	1 0	1	0 0	1 0	1	0 1	0 1	1 (	0 0	10
												!
Volume Modul	e:			l l								
Base Vol:	51	210	21	46	336	491	238	433	143	52	378	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	51	210	21	46	336	491	238	433	143	52	378	32
Added Vol:	0	0	ð	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	51	210	21	46	336	491	238	433	143	52	378	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.86	0.86	0.85	0.77	0.77	1.00	0.63	0.63	0.63 E1
PHF VOLUME:	57	233	23	53	 م	5/1	209	<b>⊃</b> •∠ ∩	190	03	800	51
Reduct Vol:	- U - C D	<b>7</b> 23	22	50	201	673	0	560	196	- U - D	500	51
Reduced VOI:	1 00	1 00	1 00	1 00	166	1 00	1 00	1 00	1 00	1 00	1 00	1.00
MLF Adj.	1 00	1 00	1 00	1.00	1 00	1.00	1.00	1 00	1 00	1 00	1.00	1.00
Final Vol.:	57	233	23	53	391	571	309	562	186	83	600	51
							<b>  -</b>			1		<b>  </b>
Saturation FI	Low Ma	odule:	•	•			••					
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.91	0.09	1.00	0.41	0.59	1.00	1.00	1.00	1.00	0.92	0.08
Final Sat.:	1700	1636	164	1700	731	1069	1700	1800	1800	1700	1660	140
									!			
Capacity Anal	y515	Modul	e:	<b>-</b>			A 10	0 71	0 10	0.05	0.30	0.26
vol/Sat:	0.03	0.14	0.14	0.03	0.53	0.53	0.18	0.31	0.10	0.05	0.36	0.20
Creen/Cycle:	0 47	0 47	6 47	0 47	0 47	0 47	0 1 4	0 40	0 40	0 08	0.32	0.32
Volume/Care	0.47	0.47 0 30	0.47 กวัก	0.47	0.4/	1 1 2	סע.ע קרן	0.40	0.40	0.63	1.17	1.13
Delav/Veb.	18 7	2.30	0.30 71 7	18 7	107	107 4	148 5	38.7	25.9	67.8	123	122.8
User Deladi	1 00	1 00	1 00	1 00	1 00	1 00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	18.7	21.3	21.3	18.7	107	107.4	148.5	38.7	25.9	67.8	123	122.8
DesignOueue:	2	9	1	2	17	25	20	26	8	6	32	3
******	*****	*****	******	* * * * * *	****	*****	*****	*****	*****	*****	****	* * * * * * *

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Default Scena	rio		Fi	Fri Jun 14, 2002 10:31:17						Page 2-1		2-1
Etiwanda Properties Opening Year (2004) Without Project Conditions AM Peak Hour												
			Gevel (	)f Sera	vice (	omputa	tion	Report				
19	97 H	CM Un:	signali	.zed M	ethod	(Futur	e Vol:	ume A]	ternat	ive}	*****	******
Intersection	<b>#108</b>	East	Ave.	(NS) /	Wilso	on Ave.	(EW)					
***********	****	****	* * * * * * *	*****	* * * * * *	*****	*****	* * * * * *	*****	****	*****	******
Average Delay	/ (se	c/veh	): ******	0.0	* * * * * *	W0 *****	rst C *****	ase Le *****	evel Of	Serv ****	ice: *****	******
Approach:	No	rth Bo	ound	So	uth Bo	und	$\mathbf{E}_{i}$	ast Bo	ound	W	est Bo	ound
Movement:	L	- T	→ R	L	- T	- R	г	- Т	- R	L	- Т	- R
						!			1			
Control:	S	top S:	ign	S	top Si	gn	Una	contro	olled	Un	contro	olled
Rights:		Inclu	ude		lnclu	ıde		Inclu	ıde		Inclu	ıde
Lanes:	0	0 1!	0 0	0 0	D 1!	0 0	0	0 1!	0 0	0	0 1!	0 0
						<b>-</b>	ļ ·				• • • • ·	
Volume Module	≩ 7											
Base Vol:	0	0	0	Ô	0	0	0	0	0	0	0	0
Growth Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	D	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	0	0	0	0	0	0	0	0	0	0	0	0
Critical Gap	Modu]	le:										
Critical Gp:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	D _ O	0.0	0.0	0.0	0.0
FollowUpTim:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			•		·							
Capacity Modu	le:											
Cnflict Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Potent Cap.:	0	0	D	0	0	0	0	0	0	0	0	0
Move Cap.:	1	1	1	1	1	1	1	1	1	1	1	1
			·						-	¦		
Level Of Serv	ice N	lodule	2 :									
Stopped Del:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS by Move:												
Movement:	LT -	- LTR	- RT	LT -	LTR	- RT	LT -	LTR	- <b>R</b> T	LT -	LTR	- RT
Shared Cap.:	0	0	0	0	0	0	0	D	0	0	0	0
Shrd StpDel:	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1 <sub>-</sub> D	1.0	1.0	1.0
Shared LOS:												
ApproachDel:		0.0			0.0			0.0			0.0	
ApproachLOS:												

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Default Scen	ario		Mo	Mon Jun 17, 2002 15:29:17						Page 2-1		
	oŗ	pening	g Year	Etiwa (2004) AN	anda ( ) Wit) 4 Peal	Propert hout Pr k Hour	ies oject	Condi	tions		<b></b>	
		. 1	Level C	f.Ser	vice.	Computa	tion H	leport	:			
:	1997 H	ICM 4	-Way St	op Mei	hod	(Future	Volum	ne Alt	ernati	ive)		
ttersection	****** #5 Ez	****** 951 A1	******* VA (NG	****** ) / Si	***** 17701+	Δve (	***** 500)	*****	******	*****	*****	*****
*********	*****	*****	******	*****	*****	******	*****	*****	*****	******	****	*****
Cycle (sec): Loss Time (sec) Optimal Cycle	ec): e: *****	10( ( (	0 0 (Y+R 0 *******	= 4 :	sec)	Critica Average Level C	l Vol Delay of Serv	/Cap. / (sec /ice:	(X): c/veh):	: *****	1.83	16 1 F
Approach:	No:	cth Be	ound	So	uth B	ound	Ea	ast Bo	ound	We	est Bo	ound
Movement:	L-T-R L-T-R L-T-R									L -	- Т	- R
				f					<b>-</b>		· ·	
Control:	SI	top S:	ign	S	top S	ign	SI	top Si	ign	St	op Si	lgn
Rights:	-	Inclu	ude		Incl	ude		Inclu	ude 🧳	~	Inclu	10e 0
Min. Green:	0	0	0	0	0	0		· · · ·	ں م		ט ייי	0 0
Lanes:	1		!		· · · · ·	•••••	1	, I: 		11		
Volume Modul	e:		1			I				15		•
Base Vol:	83	81	106	42	87	47	41	172	87	198	384	68
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	83	81	106	42	87	47	41	172	87	198	384	68
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	83	81	106	42	87	47	41	172	87	198	384	68
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.57	0.57	0.57	0.65	0.65	0.65	0.77	0.77	0.77
PHF Volume:	97	94	123	74	153	82	63	265	134	257	699	00 ()
Reduct Vol:	0	0	100	U 74	150	0	о С Э	165	124	257	499	88
Reduced Vol:	1 00	1 0.0	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1.00
MLF Adj.	1 00	1.00	1.00	1.00	1 00	1 00	1 00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	97	94	123	74	153	82	63	265	134	257	499	88
				1		1	1					
Saturation F	Low Mo	dule	: '				•					
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.33	0.30	0.39	0.24	0.49	0.27	0.14	0.57	0.29	0.30	0.60	0.10
Final Sat.:	131	128	168	101	209	113	64	267	135	140	272	4.8 
		Madul		]		[				11		(
Vol/Saty	0 73	n 73	0 73	0 73	0 73	0 73	0 99	0 99	0.99	1.84	1.84	1.84
Crit Moves	0.75	****	0.75	0.75	****	0.75	0.22	0.00	****		****	
Delav/Veh:	30.0	30.0	30.0	29.B	29.8	29.8	66.6	66.6	66.6	403.3	403	403.3
Delay Adj:	1.00	1,00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.0	30.0	30.0	29.8	29.8	29.8	66.6	66.6	66.6	403.3	403	403.3
LOS by Move:	D	D	D	D	D	D	F	F	F	F	£	F
ApproachDel:		30.0			29.8			66.6		4	103.3	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		30.0			29.8			66.6		4	103.3	
LOS by Appr:		D			D			F			F • • • • • •	* * * * * * *
* * * * * * * * * * * * *	****	*****	******	*****	*****	* * * * * * *	*****	****	******			

1/9/2024 Board Meeting

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Default Scen	efault Scenario Mon Jan 7, 2002 14:36:05									Page 6-1		
	Etiwanda Properties Opening Year (2004) Without Project Conditions AM Peak Hour										•	
		<b>-</b>		of Sea		Computs	 >+:	Bonor	• • • <b>•</b> ·			
	1007		bevel ( Deratiu	ons Me	thod	Compute (Future	ation • Volu	керог	c ternati	ive)		
********	*****	*****	******	*****	*****	******	*****	*****	******	******	****	******
Intersection	#7 E	East A	ve. (N	s) / v	lictor	ia St.	(EW)					
******	* * * * *	******	* * * * * *	*****	****	*****	*****	*****	******	******	****	******
Cycle (sec):		б	0	_		Critica	al Vol	/Cap	. (X):		0.2	00
Loss Time (s	ec):	-	6 (Y+R	= 3	sec)	Average	e Dela	iy (se	c/veh}		13	.8
Optimal Cycl	e:	6	0			Level (	Df Ser	vice:				В
**********	*****	******	******	*****	*****	******	*****	*****	*****	******	*****	******
Approach:	NC	огсл во	ouna	50	utn B	ouna	, н	ast B	ouna		est B	ouna
Movement:	ц Г	- T	- R	ы. 11	- 1	- к	يدا. ۱۱	- T	- R ·	ட - ப	- 1	- R
	1	Inchagi		י    ה	rorec	tod		Dormi	i -tod			 ++od
Jonerol:	F	Totec	ude	E	Incl	uda		Thel	-teu ide	1		LLEU
Kights:	1.0	1110-11	108	10	1001	12	• •	111011	102 21	<b>5</b> 1	21	<b>01</b>
	1	, <u>1</u> 0	n 1	1	^ 1	0 1	1	0 0	3 0	1 1	1 1	0 1
	1			 			1			1		i
/olume Modul	e:			3					1	•		I
Base Vol:	84	160	66	30	58	62	16	64	30	72	125	94
rowth Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
nitial Bse:	84	160	66	30	58	62	16	64	30	72	125	94
dded Vol:	0	0	0	0	0	0	0	0	0	0	0	0
asserBvVol:	0	0	D	0	Ō	0	0	ō	0	õ	Ő	Õ
nitial Fut:	84	160	66	30	58	62	16	64	30	72	125	94
lser Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
HF Adi:	0.86	0.86	0.86	0.77	0.77	0.77	0.66	0.66	0.65	0.86	0.86	0.86
HF Volume:	98	186	77	39	75	81	24	97	45	84	145	109
educt Vol:	0	0	0	0	0	0	0	0	0	0	0	0
educed Vol:	98	186	77	39	75	81	24	97	45	84	145	109
CE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
inal Vol.:	98	186	77	39	75	81	24	97	45	84	145	109
			!	1		!						
aturation Fl	ow Mo	odule:										
at/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
djustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
anes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.68	0.32	1.00	1.00	1.00
inal Sac.:	1700	3600	1800	1700	1800	1800	1700	1226	574	1700	1800	1800
•••••												
apacity Anal	ysis	Modul	e:									
DI/Sac:	0.06	0.05	0.04	0.02	0.04	0.04	0.01	0.08	0.0B	0.05	0.0B	0.06
rit Moves:	****				****		a		• • -		* * * *	
reen/Cycle:	0.26	0.33 2.5.0	0.33	0.20	0.27	0.27	0.37	0.37	0.37	0.37	0.37	0.57
Diume/Cap:	0.22	0.16	0.13	0.11	0.16	0.17	0.04	0.21	0.21	0.13	0.22	0.11
lay/Veh:	17.5	14.4	14.3	19.6	17.0	17.1	12.1	13.1	13.1	12.6	13.1	5.8
er DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ijDel/Veh:	17.5	14.4	14.3	19.6	17.0	17.1	12.1	13.1	13.1	12.6	13.1	5. <b>8</b>
signQueue:	2	4	2	1	2	2	1	2	1	2	3	2

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Default Scen	nario		М	on Jar	7,2	002 15	:40:59				Page	2-1
	c	)penin	g Year	Etíw (2004 P	vanda ) Wit M Pea	Propert hout Pr k Hour	ties roject	Cond	itions			
			Level (	Of Ser	vice	Computa	ation	Repor	t .	·		
	1997	HCM 4	-Way S'	top Me	thod	{Future	≥ Volu	me Al	ternati	ve)		
Intersection	1 #1 E	tiw <b>a</b> n	da Ave	We	st (N	S) / Wi	ilson	Ave.	(EW)	*****	*****	*****
Cycle (sec): Loss Time (s Optimal Cycl	ec):	10	0 0 (Y+R 0	= 4	sec)	Critica Average Level (	al Vol E Dela Of Ser	./Cap y (se vice:	. (X): c/veh):	** * * *	0.23	38 .1 A
Approach: Movement:	No L	orth B - T	ound - R	So L	uth B - T	ound - R	E L	ast B - T	ound - R	L N	est Bo - T	ound - R
Control:	Stop Sign Stop Sign Stop Sign								Stop Sign			
Rights:		Incl	ude		Incl	ude		Incl	ude		Inclu	ide
Min. Green:	0	0	Ð	0	0	0	0					
Lanes:	0										0 1	10,
Volume Modul	 a.					<b>-</b>						
Pace Vol.	.c	n	n	317	0	2	0	167	n	0	57	141
Growth Adi	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Initial Bee	1.00	1.00	1.00 A	1.00	1.00	1.00	1.00	153	1.00	1.00	57	141
Added Vol:	n n	ő	Ő	, I I	0	0	ő	100	0	0	, _ 0	131
PasserBvVol	õ	0 0	õ	ň	0	n	n	ň	n	ō	ñ	õ
Initial Fut:	0	Ō	0	117	Ō	3	9 9	153	õ	Ō	57	141
User Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	0.86	0.86	0.B6	0.77	0.77	0.77	0.81	0.81	0.81
PHF Volume:	0	0	0	136	0	3	12	199	O	0	70	174
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	D	136	0	3	12	199	0	0	70	174
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	Û	0	0	136	0	3	12	199	0	0	70	174
• • • • • • • • • • • • • • • • • • •			·			·				<b>-</b>		
Saturation F	iow Mo	odule:										
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0 	0	0	572	0	703	591	1292	D I	0	682	787
Capacity Anal	lysis	Modul	e:	1		1	1			1		
Vol/Sat:	xxxx	xxxx	XXXX	0.24	xxxx	0.00	0.02	0.15	xxxx	xxxx	0.10	0.22
Crit Moves:				****				****				****
Delay/Veh:	0.0	0.0	0.0	10.5	0.0	7.5	8.7	9.1	0.0	0.0	8.4	8.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
djDel/Veh:	0.0	0_0	0.0	10.5	0.0	7.5	В.7	9.1	0.0	0.0	8.4	8.3
LOS by Move:	+	*	*	в	÷	А	A	A	*	*	А	А
ApproachDel:	хx	XXXX			10.4			9.0			8.4	
elay Adj:	х	XXXX			1.00			1.00			1.00	
<pre>wpprAdjDel:</pre>	XХ	xxxx			10.4			9.0			8.4	
JOS by Appr:		*			в			А			А	
**********	*****	* * * * *	* * * * * * *		*****		* * * * * *					

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Default Scen	Scenario Mon Jan 7, 2002 15:40:59									Page 7-1		
	с 	penir	ng Year	Etiw (2004 P	anda } Wit M Pea	Proper hout F	roject	Cond	litions			· · · · · · · · · · · · · · · · · · ·
1	997 H	CM Un	Level signal	Of Ser ized M	vice ethod	Comput (Futu	ation re Vol	Repor ume A	t lternat	tive)		
********	* * * * *	*****	*****	*****	****	*****	*****	* * * * *	*****	*****	* * * * *	******
Intersection	#107 *****	Etiw *****	and <b>a</b> A	ve	East *****	(NS) /	Wilso	n Ave	:. (EW)	*****	* * * * *	******
Average Dela	y (se *****	c/veh	): ******	10.9 *****	*****	W * * * * * *	orst C ******	ase L *****	evel 0:	f Serv *****	ice:	B ******
Approach: Movement:	Nc L	rth B - T	ound - R	So L	uth B - T	ound - R	E L	ast B - T	ound - R	W L	est B - T	ound - R
												• • <b>-  </b>
Control:	S	top S	ign	S	τορ S	ign	Un	contr	olled	Une	contre	olled
Rights:		Incl	ude		Incl	ude		Incl	ude		Inch	ude
Lanes:	0	0 1!	0 0	0	0 0	0 0	0	0 0	1 0	0	1 0	0 0
	1			11	<b>-</b> -					i		
Volume Moduli	ו פ:			1 1			• 1					•
Base Vol:	191	n	19	0	0	0	0	101	129	1	9	0
Growth Adi	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bee	191	1.00	19	1.00	00.1 0	1.00	±.00	101	129	1.00	9.1.1 Q	1.00
Added Vol-	n	n n	0	n n	õ	0	ő	n			Ő	õ
RacerByVol -		0	n	0	0	n	ň	Ő	ň	ň	Ő	ň
Initial Fut	101	ň	19	0	ň	'n	ň	101	170	ĩ	ă	0
Upar Adi.	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
DUE Adj.	1 00	1 00	1 00	1.00	1 00	1.00	1.00	1.00	1.00	1 00	1.00	1 00
PHE Volume	191	1.00	1.00	1.00	1.00	1.00	1.00	1.00	120	1.00	1.00	1.00
PAP VOIUME.	171		17	0	0	0		101	123		2	0
Reduct Vol:	101	0	10	0	0	0	0	101	120	1	0	0
Crisical Car	171 Modu		19	U	U	0	0	101	129	1	9	0
Critical Gap	PIOGE	16:	<i>c</i> 2									
Critical Gp:	5-4	XXXX	0.2	XXXXX	XXXX	XXXXX	XXXXX	XXXX	XXXXXX	4.1	XXXX	XXXXX
FOILOWUPTIM:	3.5	XXXX	د.د.		XXXX	XXXXX		xxxx	XXXXX	, 2.2	XXXX	XXXXXX
Conserve Made	1.			[ ] =					1			
Cafiling Modu	177		200							<u></u>		
CHILICE VOL:	1//	XXXX	165	XXXX	XXXX	XXXXX	XXXX	XXXXX	XXXXX	230	XXXX	XXXXXX
Pocenc Lap.:	010	XXXX	884	XXXX	XXXX	XXXXX	xxxx	xxxx	XXXXXX	1350	XXXX	XXXXXX
Move Cap.:	817	xxxx	884		XXXX	$\infty \infty \infty$		xxxx	XXXXXX	1350	XXXX	xxxxx
Level Of Serv	ice M	lodule	: :	]						] =		F
Stopped Del:x	XXXX	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXXX	XXXXX	XXXX	XXXXX	XXXXX	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXXXX	7.7	XXXX	XXXXX
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR	- RT	LT -	LTR	- R <b>T</b>	LT -	LTR	- RT	LT -	LTR	- RT
Shared Cap.:	XXXX	823	200000	XXXX	хххх	XXXXX	XXXX	XXXX	XXXXX	XXXX	xxxx	xxxxx
Shrd StpDel:x	XXXX	10.9	XXXXX	XXXXX	XXXX	XXXXX	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXX	XXXXX	7.7	XXXX	XXXXX
Shared LOS:	*	В	*	*	*	*	*	*	*	А	¥	*
ApproachDel:		10.9		xx	20000		XX	xxxx		xx	XXXX	
ApproachLOS:		в			*			*			*	

Default Scer	ario		Mo	on Jan 7, 2002 15:40;59						Page 3-1			
	C	pening	g Year	Etiw (2004 P	anda ) Wit M Pea	Propert hout Pr k Hour	ies oject	Condi	itions				
		1	Level (	)f Ser	vice	Computa	tion 1	Report	<b></b>				
********	1997	HCM 4	-Way St	:op Me	thod	(Future	Volut	ne Alt	ernati	ve) ******	****	*****	
Intersection	143 E	tiwand	la Ave.	(NS)	/ Su	mmít Av	e. (E	₹) 		*****		*****	
Cycle (sec): 100 Critical Vol./Cap. (X): Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): Optimal Cycle: 0 Level Of Service:										0.923 26.4 D			
Approach: Movement:	NC L	rth Ba - T	ound - R	South Bound East Bound L - T - R L - T - R					ound - R	West Bound L - T - R			
Control: Rights:	 S	top S. Inclu	ign ude	S	top S Incl	ign ude	S	top S: Inclu	ign 1de	St	op Si Inclu	.gn ide	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	
Lanes:	0	0 1!	0 0	0	0 1!	0 0	0	0 1!	0 0	0 (	0 1!	0 0	
Volume Modul	1			11			1			]			
Base Vol	145	189	236	14	129	6	6	30	134	146	าя	25	
Growth Adi	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1.00	1.00	
Initial Bse:	145	189	236	14	129	т.00 б	1.00	30	174	146	18	25	
Added Vol:	0	0	2.2.0	0	111	0	0	0_	0	0	0	0	
PasserBvVol:	ō	ō	õ	õ	õ	õ	ŏ	Ď	Ū	0	ō	D	
Initial Fut:	145	189	236	14	129	6	6	30	134	146	18	25	
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1,00	
PHF Adj:	0.90	0.90	0.90	0.83	0.83	0.83	0.94	0.94	0.94	0.90	0.90	0.90	
PHF Volume:	161	210	262	17	155	7	6	32	143	162	20	28	
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	
Reduced Vol:	161	210	262	17	155	7	6	32	143	162	20	28	
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1,00	1.00	1.00	1.00	
Final Vol.:	161	210	262	17	155	7	6	32	143	162	20	28	
										1	<b></b>	<b></b>	
Saturation F.	low Ma	odule:											
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1,00	1.00	1.00	1.00	
Lanes:	0.25	0.33	0.42	0.09	0.87	0.04	0.03	0.18	Q.79	0.77	0.10	0.13	
Final Sat.:	175	228	284	. 52	480	22	20	99	442	408	50	70	
										]			
Capacity Ana.	Lysis	Modul	e:	• • •									
VOI/Sac:	0.92	0.92	0.92	0.32	0.32	0.32	0.32	0.32	0.32	0.40	0.40	0.40	
Delay/Veb.	20.2	20 7	ה חב	17 -	****	11 5	****	11 6	<b>,</b> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	<b>1</b> ~ ~	1 7 7	אידיא מי מין	
Delay Adi	1 00	22.2 1 00	37.2	11./	11./	1 00	1 00	11.0	11.6	100	1 00	1 00	
AdiDel/Veh	39 7	39.2	30 7	11 7	1.00	11 7	31 6	11 6	11 6	1.00	12 2	12 3	
LOS by Move	E	E	 E	±±./ R	++./ u	тт., Б	11.0 D	тт.0 ТТ.0	11.0	т).ј П	1.J.J R		
ApproachDel	-	39.2	L	Ľ	ל וו	5	<u>د</u>	ากัศ	Ъ	Ъ	13.3	2	
Delay Adi:		1.00			1 00			1 00			1.00		
ApprAdjDel:		39.2			11 7			11 6			13.3		
LOS by Appr:		E			B			11.U R			B		
*******	* * * * *	*****	* * * * * *	* * * * * *	****	******	*****	****	*****	*****	* * * * *	******	

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Default Scena	ario		Mo	on Jan	7, 2	002 15	40:59				Page	4-1	
Etiwanda Properties Opening Year (2004) Wirhout Project Conditions PM Peak Hour													
Level Of Service Computation Report													
1997 HCM Operations Method (Future Volume Alternative)													
***************************************													
Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)													
	****							/// 20	( <b>y</b> ).		n 61	78	
Locc Time (sec):	-01.		6 (Y+R	– 3	sec) ;	Averade	Nela	v lser	· (A). ·/veh)	-	19	6	
Optimal Cycle	/- 	6	0 (141)		1000	Level (	)f Ser	vice:	, • cm		10	.с В	
*******	 *****	*****	- * * * * * * * *	* * * * *	*****	******	****	*****	*****	*****	*****	- ******	
Approach:	No	rth Be	ound	50	uth Be	ound	E	ast Bo	ound	West Bound			
Movemenz:	$\mathbf{L}$	- T	– R	L	- Т	- R	L	- Т	- R	L	- Т	- R	
							1					]	
Control:		Permi	tted		Permit	Lted	Р	roteci	ed	P	rotect	ted	
Rights:		Inclu	de		Inclu	ıde		Inclu	ıde	Include			
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15	
Lanes:	1	0 0	10	1	0 0	10	1	0 1	0 1	1 1	0 0	1 0	
				<b>[</b>			]						
Volume Module	≩:	1	20	22					4.0			ħ.o.	
Base Vol:	1 00	1 00	1 00	23	3 00	181	100	1 00	1 00	1 00	1 00	38	
Growen Adj:	1.00	101	1.00	1.00	1.00	101	1.00	1.00	1.00	1.00	100	1.00 ac	
Initial Bse:		191	<b>∠</b> 0	<i>د ع</i>	192	101	100	137	4.9		102	30	
Added Vol:	0	0	U Ú	ں م	0	n	0	0	0 A	0	0	0	
Initial Fut:	77	191	20	27	192	181	331	137	49	q	102	38	
User Adi	1 00	1 00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1 00	1 00	
PHF Adi:	0.87	0.87	0.87	0.88	0.88	0.88	0.81	0.81	0.81	0.87	0.87	0.87	
PHF Volume:	89	220	23	26	218	206	409	169	60	10	117	44	
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	
Reduced Vol:	89	220	23	26	218	206	409	169	60	10	117	44	
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Final Vol.:	89	220	23	26	218	206	409	169	60	10	117	44	
· · · · · · · · · · · · · · · · · · ·				!		!							
Saturation Fl	OW MO	odule:											
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	
Aajuszment:	0.94	1.00	1.00	1 00	1.00 0.51	1.00	0.94	1.00	1.00	1 00	1.00	1.00	
Lanes:	1700	1670	171	1700	0.51	0.49	1700	1.00	1,00	1700	U.73	V.27 AQD	
rinai Sat.:	1700	1029		1		· • • • •	1	1900	1800	1,00	7211	407	
Capacity Anal	vsis	Modul	- 1 -	1		1	1			1		!	
Vol/Sat	0,05	0.13	0.13	0.02	0.24	0.24	0.24	0.09	0.03	0.01	0.09	0.09	
Crit Moves:			* - • •		****		****			2.01	****		
Green/Cycle:	0.32	0.32	0.32	0.32	0.32	0.32	0.33	0.35	0.35	0.23	0.25	0.25	
Volume/Cap:	0.16	0.42	0.42	0.05	0.73	0.73	0.73	0.27	0.10	0.03	0.36	0.36	
Delay/Veh:	14.7	16.4	16.4	14.1	22.8	22.8	22.8	14.4	13.3	17.9	19.0	19.0	
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
AdjDel/Veh:	14.7	16.4	16.4	14.1	22.8	22.8	22.8	14.4	13.3	17.9	19.0	19.0	
DesignQueue:	2	5	1	l	5	5	10	. 4	1	0	3	1	
***********	****	****	*****	*****	*****	*****	* * * * * *	*****	******	* * * * * *		******	

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1/9/2024 Board Meeting

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Default Scen	nario		F	ri Jun	14,	2002 19	5:27:4	9			Page	2-1	
Etiwanda Properties Opening Year (2004) Without Project Conditions PM Peak Hour													
Level Of Service Computation Report													
1997 HCM 4-Way Stop Method (Future Volume Alternative)													
**********	****	* * * * *	* * * * * *	******	*****	******	*****	* * * * *	******	** * * * *	*****	*****	
Intersection	ı ∦5 E	ast A	ve. {N:	S) / S	ummit	Ave. (	(EW)	*****				*****	
Cycle (sec): 100 Critical Vol./Cap. (X): Loss Time (sec): 0 (Y+R = 4 sec) Average Delay (sec/veh): Optimal Cycle: 0 Level Of Service:											0.396 10.4		
Optimal Cycle; 0 Level Of Service; B   ************************************													
Approach:	No	rth B	ound	So	uth B	ound	E	ast B	ound	We	est Bo	ound	
Movement:	L	- T	- R	Ĺ	- т	- R	L	- T	- R	L -	т	– R	
• • • • • • • • • • • • • •	1		<i></i>									{	
Control:	S	top S	ign	S	top S:	ign	S	top S:	ign	St	op Si	.gn	
Rights:		Incl	ude		Inclu	ude		Inclu	ude 🛛	Include			
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0	
Lanes:	0	0 1!	0 0	0 .	0 1!	0 0	0 1	0 1!	00,	, 0 (	) 1!	0 0	
Volume Modul	[								1	1			
Base Vol:	.c. 53	18	107	14	10	12	10	207	38	49	163	22	
Growth Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	53	18	107	14	10	12	10	207	38	49	163	22	
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0	
PasserByVol:	0	0	0	0	Ō	0	0	0	0	0	0	0	
Initial Fut:	53	18	107	14	10	12	10	207	38	49	163	22	
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	0.78	0.78	0.78	0.86	0.86	0.86	0.90	0.90	0.90	0.91	0.91	0,91	
PHF Volume:	68	23	137	16	12	14	11	230	42	54	179	24	
Reduct Vol:	0	Û	0	0	0	0	0	0	0	0	0	0	
Reduced Vol:	68	23	137	16	12	14	11	230	42	54	179	24	
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
MLF ADJ: Final Vol -	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
FINAL VOL.;	68 !	23	، دير	10	12	14	1, T 1	230	42	54	179	24	
Saturation F	low Mo	dule:	1	1		1	1					1	
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Lanes:	0.30	0.10	0.60	0.39	0.28	0.33	0.04	0.81	0.15	0.21	0.70	0.09	
Final Sat.:	203	69	409	230	164	197	28	581	107	147	488	66	
				]			!						
Capacity Anal	ysis.	Modul	e:										
Vol/Sat:	0.34	0.34	0.34	0.07	0.07	0.07	0.40	0.40	0.40	0.37	0.37	0.37	
Crit Moves:			****		* * * *			****			****	_	
Delay/Veh:	10.1	10.1	10.1	8.7	8.7	8.7	10.7	10.7	10.7	10.5	10.5	10.5	
Delay AQJ: AdiDel/Veb.	10 1	10 1	1.00	1.00	1.00	1.00	1.00	100	1.00	1.00	1.00	1.00	
LOS by Mover	то.т т	то т То т	то'т	ю./ л	נ./ א	0./ N	TO./	TO./	10.7	10.5	TO 2	10.2	
ApproachDel -	D C	یں ۱۵٦	Б	А	А 67	А	В	10 7	в	в	ש 10 ב	Б	
Delay Adi:		1.00			1.00			1 00			1 00		
ApprAdiDel:		10.1			8.7			10 7			10 5		
LOS by Appr:		в			А.			-0.7 H			<u>до.</u> р		
********	* * * * *	* * * * *	* * * * * *	*****	****	******	******	****	*****	*****	*****	*****	

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Default Scen	ario		F	rí Jun 14, 2002 15:27:49						Page 3-1			
	C	penin	ng Year	Etiv (2004 F	anda ) Wit M Pea	Proper hout P k Hour	ties Toject	: Cond	litions				
Level Of Service Computation Report 1997 HCM Unsignalized Method (Future Volume Alternative)													
********	****	* * * * *	*****	*****	****	*****	*****	****	*****	*****	*****	******	
Intersection	#108	East *****	Ave.	(NS) /	Wils	on Ave	. (EW)	*****	*****	******	****	******	
Average Dela	y (se *****	c/veh	1): *****	0.0 *****	****	W	orst C	ase L	evel 0:	f Serv:	ice: *****	A ******	
Approach:	No	rth B	ound	So	uth B	lound	Ē	ast B	ound	W	est Bo	ound	
MOVEMENT:		- 1	- K		- 1	- K		- 1	- K		- 1	- ג	
Control:	s	top S	ign	5	top S	lign	 עת	contr	olled	Und	contro	olled	
Rights:		Incl	ude		Incl	ude		Incl	ude		Inclu	ude	
Lanes:	, 1	0 0	0 0	0	0 1!	0 0	0	0 1!	0 0	0 0	1!	0 0	
Volume Medul				11						1			
Volume Modul	e:	~ ~	•						~	0		0	
Base vol:	10	1 00	2 00	1 00	1 00		1 00		1 00	1 00	1 00	1 00	
Growin Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	10	0	0	U 0	0	0	0		0	0	0	0	
Addeo Vol:	U	0	0	U	U	· · ·	0	· U	0	0	0	0	
PasserByvol:	0	U	U	0	U	0	0	U	0	U	U	0	
Initial Fut:	10	0			0	0	0				0	0	
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	T.00	1.00	1.00	1.00	
PHF Volume:	10	0	U	0	0	0	0	0	0	U	0	0	
Reduct Vol:	0	0	U	U	0	0	0	0	0	0	0	0	
Final Vol.:	10	, D	Đ	0	0	0	0	0	0	0	0	0	
Critical Gap	Moqu.	le:											
Critical Gp:	5.4	XXXX	XXXXX	XXXXX	xxxx	XXXXXX	XXXXXX	xxxx	XXXXX	XXXXX	XXXXX	XXXXXX	
FoilowUpTim:	د. د 			×××××		xxxxxx	- xxxxxx 		xxxxxx i	xxxxx 	xxxx 		
Capacity Modu	le:									•		'	
Cnflict Vol:	0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Potent Cap.:	0	xxxx	XXXXX	XXXX	xxxx	xxxxx	xxxx	xxxx	xxxxx	XXXX	xxxx	xxxxx	
Move Cap.:	0	xxxx	xxxxx	xxxx	xxxx	XXXXX	XXXX	xxxx	XXXXX	xxxx	xxxx	xxxxx	
							1					[	
Level Of Serv	, vice ⊾	lodule	2:	1		'	•		1	1		r	
Stopped Del:	0.0	xxxx	XXXXX	xxxxx	xxxx	xxxxx	200000	xxxx	XXXXX	xxxxx	xxxx	xxxxx	
LOS by Move:	±	*	*	*	*	*	*	*	*	*	*	*	
Movement:	LT -	LTR	- RT	LT -	LTR	- RT	LT -	LTR	- RT	LT -	LTR	- RT	
Shared Cap.:	xxxx	хххх	XXXXX	XXXX	0	xxxxxx	XXXX	xxxx	XXXXX	xxxx	xxxx	xxxxx	
Shrd StoDel:x	xxxx	xxxx	XXXXX	XXXXX	xxxx	xxxxxx	XXXXX	xxxx	XXXXX	00000	xxxx	xxxxx	
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	+	
ApproachDel:		0.0		xx	$\infty \infty \infty$		xx	xxxx		xx	xxxx		
ApproachLOS:		А			*			*			*		

1/9/2024 Board Meeting

Default Scen	nario		Mi	on Jan	7, 2	002 15	40:59				Page	6-1	
	C	penin	g Year	Etiw (2004 P	anda ) Wít M Pea	Propert hout Pr k Hour	ies oject	Cond	itions		~ <b>~ ~ ~</b>		
			Level (	of Set	vice ·	Computa	tion I	Report					
	1997	HCM O	peratio	ons Me	thod.	(Future	e Volu	ne Alt	:ernati	ve)			
*******	*****	*****	* * * * * * * *	*****	* * * * *	******	*****	*****	******	*****	*****	*****	
Intersection	17 E	last A	ve. (NS	5) / V	ictor	ia St.	(EW)						
*******	*****	****	* * * * * * *	*****	*****	******	*****	*****	******	*****	*****	******	
Cycle (sec):		6	D 	_		Critica -	1 Vol	./Cap	. (X):		0.22		
Loss Time (s	;ec):	1	6 (Y+R	= 3	sec)	Average	e Delag	y (seo	c/ven):		14.	. <b>1</b>	
Optimal Cycl	.e:	5	U * * * * * * * *		*****	Level (	)r ser	vice:		*****	*****	B ******	
Approach-	No	orth Br	יייייי	50			E:	er Bo		We	er Br	brun	
Movement:	т.	- T		т.	асы <u>в</u> - Т		τ	азс DC - Т		I	. т	- R	
	1								·	1	. <b>.</b>		
Control:	í P	rotec	ted	P	rotec	ced	, 1	Permit	red	' I	Permit	ted '	
Rights:		Inclu	ıde		Incl	ude		Inclu	ıde	Ovl			
Mín. Green:	10	16	16	10	16	16	21	21	21	21	21	21	
Lanes:	1.	0 2	0 1	1	01	0 1	1 (	0 0	1 0	1 (	) 1	0 I	
				il					1			·	
Volume Modul	e:												
Base Vol:	51	210	125	63	127	38	6	92	60	83	101	53	
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	51	210	125	63	127	3 B	6	92	60	83	101	53	
Added Vol:	0	0	Û	0	Ô	0	0	0	0	0	0	0	
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	
Initial Fut:	51	210	125	63	127	38	6	92	60	83	101	53	
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	0.94	0.94	0.94	0.83	0.83	0.83	0.97	0.97	0.97	0.94	0.94	0.94	
PHF VOLUME:	54	223	د د د	76	153	46	6	95	62	88	107	20	
Reduct Vol: Reduced Vel:	U E 4	222	1 7 7	20	157	0	0	0	0	0	107	56	
POF Add.	1 00	1 00	1 00	1 00	1 00	100	1 00	1 00	1 00	1 00	1 00	1 00	
MUF Adi	1 00	1 00	1.00	1,00	1 00	1.00	1 00	1.00	2.00	1.00	1 00	1 00	
Final Vol.	54	223	1.00	76	152	1.00	1.00	1.00	1.00	1.00	1.00	56	
			1			1	]		·				
Saturation Fl	Low Mo	dule:	ı	r			•		'	I			
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.61	0.39	1.00	1.00	1.00	
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	1089	711	1700	1800	1800	
					• • • • - •			• •			- <b></b>		
Capacity Anal	ysis	Modul	e :										
Vol/Sat:	0.03	0.06	0.07	0.04	0.09	0,03	0.00	0.09	0.09	0.05	0.06	0.03	
Crit Moves:	* * * *				* * * *			* * * *					
Green/Cycle:	0.17	0.33	0.33	0.20	0.36	0.36	0.37	0.37	0.37	0.37	0.37	0.57	
volume/Cap:	0.19	U.19	0.23	0.22	0.23	0.07	0.01	0.23	0.23	0.14	0.16	0.05	
Deray/Ven:	21.9	14.6	14.9	20.2	13.5	12.6	11.9	13.2	13.2	12.6	12.7	5.6	
Adipal/Vah	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	T.00	
DesignOueves	21.7 7	-4.0 E	14.9 3	20.2	5. تـ ـ د	⊥∠.ь	TT'A	13.2	13.2	12.6	12./	ס.כ י	
***********	- *****	*	_ * * * * * * *	2 * * * * * *	د *****	⊥ ******		∠ *****	⊥ ******	∠ ******	- * * * * * *	_ ******	

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#### APPENDIX F

## OPENING YEAR (2004) CONDITIONS INTERSECTION ANALYSIS WITH PROJECT (WITHOUT IMPROVEMENTS)

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Default Scer	nario		м	on Jai	n 7, 2	002 15	:54:42	? 		Page	e 2-1
		Open	ing Ye	Etiv ar (20 )	wanda 004) W AM Pea	Proper ith Pr k Hour	ties oject	Condi	tions		
			Level (	Of Ser	rvice	Computa	ation	Repor	t		
	1997	HCM 4	-Way St	top Me	ethod	(Future	e Volu	me Al	ternat:	ive)	
Intersection	. Hl I	Etiwan	da Ave	We	est (N	S) / W:	ilson	Ave.	(EW)		
* * * * * * * * * * *	****	*****	*****	* * * * * *	*****	*****	* * * * * *	*****	*****	*******	******
Cycle (sec): Loss Time (s Optimal Cycl	ec): e:	10	0 0 (Y+R 0	= 4	sec)	Critica Averaga Level ( ******	al Vol e Dela Of Ser	./Cap y (se vice: *****	. (X): c/veh)	0.3 : 9	87 9 A
Approach: Movement:	No L	orth B - T	ound ~ R	So L	outh B - T	ound - R	E L	ast Be - T	ound - R	West B L - T	ound - R
	1										
Control:	9	Stop S	ign	5	Stop S	ign	S	top S:	ign	Stop S	ign
Rights.		Tucl.	uae		Incl	ude		Incli	uae	Incl	ude
Min. Green:		, 0	0		0	0	- 0	ں <sub>م</sub>	0		
Lanes:	1	0 0	υυ	⊥ .,	υυ	0 1	1	0 2	0 0		1 0
Volume Medul	] <b>-</b>			1						11	
Pace Volume	e: (		0	1 8 1	n	4	2	30	n	0 36	ÉP
Growth Add.	1 00	, 0 , 1 00	1 00	1 00		2 00	1 00	1 00	1 00	1 00 1 00	1 00
Initial Brok	1.00	. 1.00	1.00	197	, 1.00	1.00	1.00	00.1	1.00	1.00 1.00	1.00
Added Vol.	0		0	101	. U	20		رد ع	0	0 10	14
RacerByVol.	0 n	ň	Ő	10	Ň	20	, 0	õ	n	0 0	F1 0
Initial Fut:	0	õ	ň	221	n n	24	ů ů	45	ň	0 54	87
HEAT Adi.	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00 1 00	1 00
DHE Adi	1 00	1 00	1 00	n 90	л 90	0.90	0 75	0 75	0.75	0 86 0 86	0.86
PHE Volume	1.00	1.00	1.00	246	0.20	27	12	60	0 0	FA 0	95
Reduct Vol:	0 0	õ	ñ	10	ň	 		n	ň	0 0	
Reduced Vol	ő	õ	ő	246	ñ	27	12	60	ñ	0 63	95
PCE Adi	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1.00	1 00 1 00	1 00
MLF Adi:	1.00	1.00	1.00	1.00	1.00	1 00	1 00	1.00	1.00	1.00 1.00	1.00
Final Vol.:	0	0	0	246	0	27	12	60	0	0 63	95
				1	<b>-</b>		1				
Saturation Fl	Low M	odule:		•		•			•		•
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00 1.00	1.00
Final Sat :	0	0	0	634	0	800	562	1220	0	0 648	743
											•
Capacity Anal	ysis	Modul	e:								
Vol/Sat:	XXXX	XXXX	XXXX	0.39	XXXX	0.03	0.02	0.05	XXXX	XXXX 0.10	0.13
Crit Moves:				* * * *				****			* * * *
Delay/Veh:	0,0	0.0	0.0	11.6	0.0	7.2	9.0	₿.6	0.0	0.0 8.6	8.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00
AdjDel/Veh:	0.0	0. <b>0</b>	0.0	11.6	0.0	7.2	9.0	8.6	0.0	0.0 8.6	8.0
LOS by Move:	*	*	*	в	*	A	A	A	*	* A	А
ApproachDel	×	$\infty \infty \infty$			11.2			8.7		8.2	
Delay Adj	X	2000			1.00			1.00		1.00	
ApprAd3Del:	x	20000			11.2			8.7		В.2	
JUS DY Appr:	****	*	******	****	B	*****		A	*****	A	
							* * * * * *	*****	******		

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Default Scena	ario		м	on Jan	7, 2	002 15	:54:42				Page	7-1
Etiwanda Properties Opening Year (2004) With Project Conditions AM Peak Hour												
	 рол ц	CM Uni	Level (	Of Ser ived M	vice (	Computa	ation 1	Report	t lternat	ivel		
··· ************	*****	*****	******	******	*****		******	*****	******	******	*****	******
Intersection	#107	Etiw:	anda A	ve 1	East	(NS) /	Wilson	n Ave	. (EW)	*****	*****	******
Average Delay	/ (se	c/veh *****	):	10.9	*****	W(	orst Ca	ase L	evel Of	Servi	ice:	B
Approach	No	rrh B	ound	So	uth B	ound	E	act B	bruc	We	est Bo	սով
Movement:	ь	- Т	- R	L	- т	- R	L	- T	- R	г.	- T	- R
				<b> </b>					1	1		
Control	۱ ور	top S	ion	 	ton s	ion	на Пта	contra	, balled		ontro	olled
Rights:	-	Incl	ude		Incl	- ഇന വർമ	UII	Inclu	uđe	0111	Inclu	ıde
Lanes:	0	0 1!	0 0	0	0 0	0 0	0	0 0	1 0	0	1 0	0 0
				11						1	<b>-</b> -	
Volume Module	<b>.</b> .						1		ł	1		•
Base Vol:	120	0	0	0	0	0	0	n	220	0	0	0
Growth Adi	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1.00	1.00
Initial Bse	120	1.00	1.00	±.00	1.00	1.00	1,00	1.00	220	1.00	0	0
Added Vol	14	ň	٦Ň	ů n	ň	ň	n N	6	40	30	18	0
PasserBvVol·	11	ň	10	ň	ň	Ő	ň	ñ	 0	0	0	0
Initial Fut:	134	ň	10	n n	ŏ	ň	0 0	6	260	30	1.8	0
User Adi	1 00	1 00	1 00	1 00	1 00	าก	00 T	1 00	1 00	1 00	1.00	1.00
PHF Adi:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	141	0	11	0	0	0	0	6	274	32	19	0
Reduct Vol:	0	Ō	0	0	Ő	0	Ď	0	0	0	0	0
Final Vol.:	141	Ō	11	0	0	D	D	6	274	32	19	0
Critical Gap	Modu]	le:		-	_	-	_	_				
Critical Gp:	6.4	xxxx	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	XXXXX
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	XXXXX	xxxx	xxxxx	2.2	xxxx	xxxxx
							1		!			
Capacity Modu	le:								,			
Cnflict Vol:	225	xxxx	143	XXXX	xxxx	xxxxx	xxxx	xxxx	xxxxx	280	x x x x x x x x x x x x x x x x x x x	XXXXX
Potent Cap.:	767	xxxx	910	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1294	xxxx	XXXXX
Move Cap.:	753	xxxx	910	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1294	xxxxx	XXXXX
		<b>-</b>								i		
Level Of Serv	ice M	odule	::									
Stopped Del:x	XXXX	xxxx	XXXXX	xxxxx	xxxx	xxxxx	xxxxx	xxxxx	XXXXX	7.8	XXXX	XXXXX
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR	- RT	LT -	LTR	- RT	LT ·	- LTR	- RT	LT ·	- LTR	- RT
Shared Cap.: :	xxxx	762	xxxxx	XXXX	xxxx	xxxxx	$\infty \infty \infty$	XXXX	xxxxxx	XXXX	XXXX	XXXXX
Shrd StpDel:x:	xxxx	10.9	XXXXX	$\mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x}$	xxxx	xxxxx	xxxxxx	XXXXX	$\infty \infty \infty$	7.9	XXXX	XXXXX
Shared LOS:	*	в	*	*	*	*	*	*	*	А	*	*
ApproachDel:		10.9		xx	xxxx		×	xxxx		x	$\infty \infty \infty$	
ApproachLOS:		в			*			*			*	

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Default Scen	nario		۲	lon Jar	17,2	2002 15	:54:42			Page 3-1			
	Etiwanda Properties Opening Year (2004) With Project Conditions AM Peak Hour												
	1997	нст 4	Level -Way S	Of Ser top Me	vice thod	Comput (Futur	ation e Volu	Repor me Al	c ternat	ive)		••••-••	
******	*****	*****	*****	*****	*****	*****	*****	****	*****	*****	* * * * *	******	
Intersection	n #¦3 E	Stiwar	ida Ave	. (NS)	/ Su	immit A	ve. (E	W) 	*****	******	* * * * *	***	
Cycle (sec): Loss Time (s Optimal Cycl	: sec): le:	10	0 (Y+R 0 (Y+R	*****	sec)	Critic Averag Level	al Vol e D <b>ela</b> Of Ser	./Cap y (se vice:	(X): c/veh)	:	1.5 225	66 .5 F	
Approach: Movement:	No L	orth E - T	ound - R	Sc L	outh P ~ T	iound - R	E L	ast B - T	ound - R	W. L	est B - T	ound - R	
Control: Rights:		Stop S Incl	ign ude	¦  s	top S Incl	ign ude	] S	top S Incl	ign ude	 S1	top S Incl	ign ude	
Min. Green:	C	0 0	0	C	0	0	0	0	0	0	0	0	
Lanes:	0	0 1!	0 0	0	0 1!	0 0	0	0 1!	0 0	0 0	D 1!	0 0	
	•												
Volume Modul	le:										_		
Base Vol:	224	1 93	156	58	265	19	10	96	296	269	127	57	
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	224	193 20	155	56	265	19	10	96	296	269	127	57	
Added Vol:	0	20		0	50	2	1	0	0	0	0	0	
Thitisl Fur.	ט זיכו לי	י י רוו	156	58	225	21	ט רו	96	296	260	127	57	
Heer Adi-	1 00		1 00	1 00	<u>ر ع</u> ر ۱ ۱ ۲	1 00	1 00	1 00	1 00	1 00	1 00	1 00	
PHF Adj.	0.79	0.79	0.79	0 81	0 81	0.81	0 68	0 68	0 68	0.85	0.85	0.85	
PHF Volume:	284	143	197	72	401	26	16	141	435	316	149	67	
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	
Reduced Vol:	284	143	197	72	401	26	16	141	435	316	149	67	
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Final Vol.:	284	143	197	72	401	26	16	141	435	316	149	67	
										! í <b></b> -			
Saturation F	low M	odule	:										
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Lanes:	0.45	0.23	0.32	0.14	0.81	0.05	0.03	0.24	0.73	0.59	0.28	0.13	
Final Sat.:	1 191	91	126	57	311	20	11	99	304	233	110	49	
Conscity Ana	lucie	Modul	1	11									
Vol/Sat.	1 57	1 57	1 57	1 26	1 26	1 26	1 43	1 43	1 4 3	1 36	1 36	1 36	
Crit Moves	±,	****		0	****	1.20	11	****	1.13	1.10	****	1.20	
Delay/Veh:	288.9	289	288.9	164.7	165	164.7	230.8	231	230.8	202.2	202	202.2	
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
AdjDel/Veh: 3	288.9	289	288.9	164.7	165	164.7	230.8	231	230.8	202.2	202	202.2	
LOS by Move:	F	F	F	F	F	F	F	F	F	F	F	F	
ApproachDel:	2	288.9			164.7		2	30.8		2	02.2		
Delay Adj:		1.00			1.00			1.00			1.00		
ApprAdjDel:	1	288.9			164.7		2	30.8		2	02.2		
LOS by Appr:		F		المراجع المراجع ا	F			F			F		
				*****		******	******	*****	*****	*****	****	*****	

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Etiwanda Properties Opening Year (2004) With Project Conditions AM Peak HourLevel Of Service Computation Report 1997 HCM Operations Method (Future Volume Alternative)Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)Cycle (sec):130Critical Vol./Cap. (X):1.180Loss Time (sec):6 (Y+R = 3 sec) Average Delay (sec/veh):99.3Optimal Cycle:130Level Of Service:FApproach:North BoundSouth BoundEast BoundWest BoundMovement:L		
Level Of Service Computation Report1997 HCM Operations Method (Future Volume Alternative)Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)Tressection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)Cycle (sec):130Critical Vol./Cap. (X):1.180Loss Time (sec):6 (Y+R = 3 sec) Average Delay (sec/veh):99.3Optimal Cycle:130Level Of Service:FApproach:North BoundSouth BoundEast BoundMovement:L - T - R <td <="" colspan="2" td=""></td>		
1997 HCM Operations Method (Future Volume Alternative)Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)Cycle (sec): 130 Critical Vol./Cap. (X): 1.180Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 99.3Optimal Cycle: 130 Level Of Service: FApproach: North Bound South Bound East Bound West BoundMovement: L - T - R L - T - R L - T - R L - T - RControl: Permitted Permitted Protected ProtectedRights: Include Include Include IncludeMinclude Include Include IncludeMinclude Include Include Include		
Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)Cycle (sec):130Critical Vol./Cap. (X):1.180Loss Time (sec):6 (Y+R = 3 sec) Average Delay (sec/veh):99.3Optimal Cycle:130Level Of Service:FApproach:North BoundSouth BoundEast BoundWest BoundMovement:L - T - RL - T - RL - T - RL - T - RControl:PermittedPermittedProtectedProtectedRights:IncludeIncludeIncludeIncludeMin. Green:15151515101515Lanes:10101010		
Intersection 44 Effwahda Ave. (NS) / Highland Ave. (EW)Cycle (sec):130Critical Vol./Cap. (X):1.180Loss Time (sec):6 (Y+R = 3 sec) Average Delay (sec/veh):99.3Optimal Cycle:130Level Of Service:FApproach:North BoundSouth BoundEast BoundWest BoundMovement:L-T-RLControl:PermittedPermittedProtectedProtectedRights:IncludeIncludeIncludeIncludeMin. Green:151515151515Lanes:1010101		
Cycle (sec):130Critical Vol./Cap. (X):1.180Loss Time (sec):6 (Y+R = 3 sec) Average Delay (sec/veh):99.3Optimal Cycle:130Level Of Service:FApproach:North BoundSouth BoundEast BoundWest BoundMovement:L - T - RL - T - RL - T - RL - T - RControl:PermittedPermittedProtectedProtectedRights:IncludeIncludeIncludeIncludeMin. Green:151515151015Lanes:1010101		
Loss Time (sec):6 (Y+R = 3 sec) Average Delay (sec/veh):99.3Optimal Cycle:130Level Of Service:FApproach:North BoundSouth BoundEast BoundWest BoundMovement:L - T - RL - T - RL - T - RL - T - RControl:PermittedPermittedProtectedProtectedRights:IncludeIncludeIncludeIncludeMin. Green:151515101510Lanes:100101010101010		
Optimal Cycle:130Level Of Service:FApproach:North BoundSouth BoundEast BoundWest BoundMovement:L - T - RL - T - RL - T - RL - T - RControl:PermittedPermittedProtectedProtectedRights:IncludeIncludeIncludeIncludeMin. Green:151515151015Lanes:1001010101010		
Approach:North BoundSouth BoundEast BoundWest BoundMovement: $L - T - R$ $L - T - R$ $L - T - R$ $L - T - R$		
Approach:North BoundSouth BoundEast BoundWest BoundMovement: $L - T - R$ $L - T - R$ $L - T - R$ $L - T - R$		
Movement:       L       I		
Control:PermittedPermittedProtectedProtectedRights:IncludeIncludeIncludeIncludeMin. Green:15151515101515Lanes:10010100100100100100100		
Rights:         Include         Include         Include         Include           Min. Green:         15         15         15         15         10         15         10         15         15           Lanes:         100         0         100		
Min. Green:         15         15         15         15         10         15         15         10         15         15         15         10         15         15         10         15         15         10         15         15         10         15         15         10         15         15         10         15         15         10         15         15         10         15         15         10         15         15         10         15         15         10         15         15         10         15         15         10         15         15         10         15         15         10         15         15         10		
Lanes: 10010 10010 10101 10010		
··     -·····   -······   -······		
Volume Module:		
Base Vol:         51         210         21         46         336         491         238         433         143         52         378         32		
Growth Adj: 3.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		
Initial Bse: 51 210 21 46 336 491 238 433 143 52 378 32		
Added vol: $0 - 9 - 0 - 0 - 26 - 34 - 12 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - $		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		
PHF Adi: 0.90 0.90 0.90 0.86 0.86 0.86 0.77 0.77 0.77 0.63 0.63 0.63		
PHF Volume: 57 243 23 53 421 610 325 562 186 83 600 51		
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0		
Reduced Vol: 57 243 23 53 421 610 325 562 186 83 600 51		
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0		
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0		
Final Vol.: 57 243 23 53 421 610 325 562 186 83 600 51		
Saturation Flow Module:		
Adjustment - 0.84 0.00 1.800 1		
Lanes- $100.0.93$ $1.00$ $1.0$		
Final Sat.: 1700 1643 157 1700 735 1065 1700 1800 1800 1700 1660 140		
Capacity Analysis Module:		
Vol/Sat: 0.03 0.15 0.15 0.03 0.57 0.57 0.19 0.31 0.10 0.05 0.36 0.36		
Crit Moves: **** **** ****		
Green/Cycle: 0.49 0.49 0.49 0.49 0.49 0.49 0.16 0.39 0.39 0.08 0.31 0.31		
Volume/Cap: 0.07 0.31 0.31 0.06 1.18 1.18 1.18 0.80 0.26 0.63 1.18 1.18		
Delay/Veh: 17.8 20.4 20.4 17.8 126 126.2 166.5 41.4 27.1 67.8 144 143.7		
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0		
Majuel/ven: 17.8 20.4 20.4 17.8 126 126.2 166.5 41.4 27.1 67.8 144 143.7		
исалундиене: 2 9 1 2 18 26 21 27 В 6 33 3		

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Default Scen	ario		F	ri Jun	14,	14, 2002 15:14:35				Page 3-1			
Etiwanda Properties Opening Year (2004) With Project Conditions AM Peak Hour													
Level Of Service Computation Report 1997 HCM Unsignalized Method (Future Volume Alternative)													
**********	*****	*****	******	*****	*****	******	*****	*****	*****	******	*****	******	
Intersection	#10B	East	Ave.	(NS) /	Wil6 *****	ол Ave	. (EW)	****	*****	*****	*****	******	
Average Dela	y (se *****	c/veh *****	): *****	8.7 ******	* * * * *	W * * * * * *	orst C	ase L *****	evel 0	f Serv	ice:	A *******	
Approach: Movement:	No L	rth B - T	ound - R	So L	uth B - T	ound - R	E L	ast B - T	ound - R	H L	est Ba	ound - R	
										1			
Control: Rights:	' Un	contr Incl	olled ude	Սո	contr Incl	olled ude	S	top S Incl	ign ude	S	top S: Inclu	ign ude	
Lanes:	0	1 0	0 0	0	0 1	0 0	0	0 0	0 1	0	0 0	0 0	
				1			11			11			
Volume Modul	e:			• •			• •			••		•	
Base Vol:	- 0	0	0	0	0	0	0	0	0	0	0	0	
Growth Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0	
Added Vol:	21	10	0	0	30	0	0	0	62	0	0	0	
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	
Initial Fut:	21	10	Ο	0	30	0	0	0	62	0	0	0	
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHF Adj:	0,95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
PHF Volume:	22	11	D	0	32	0	0	0	65	0	D	0	
Reduct Vol:	0	0	0	0	D	0	0	0	0	0	0	0	
Final Vol.:	22	11	0	0	32	0	0	0	65	0	0	0	
Critical Gap	Modu	le:											
Critical Gp:	4.1	XXXX	XXXXX	XXXXX	XXXX	xxxxx	xxxxx	XXXXX	6.2	XXXXX	XXXXX	xxxxx	
FollowUpTim:	2.2	20000	xxxxx	XXXXX	XXXX	xxxxx	x x x x x x x x x x x x x x x x x x x	XXXX	3.3	XXXXXX	$\mathbf{x}$	xxxxxx	
												!	
Capacity Modu	ile:												
Cnflict Vol:	32	XXXX	XXXXX	XXXX	XXXX	XXXXX	XXXX	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	32	XXXX	XXXX	XXXXX	
Potent Cap :	1594	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXXX	XXXX	XXXX	XXXXX	XXXX	XXXX	1048	XXXX	XXXX	XXXXX	
Move Cap.:	1594	XXXX	XXXXX	XXXX	$\mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x}$	XXXXXX	XXXX	XXXX	1048	XXXX	XXXXX	XXXXXX	
								<b></b>					
Level Of Serv	rice N	/odule	9:										
Stopped Del:	7.3	XXXXX	xxxxx	XXXXXX	xxxxx	XXXXX	XXXXX	XXXX	8.7	XXXXX	XXXX	XXXXX	
LOS by Move:	A	*	*	*	*	*	t	*	A	*	*	*	
Movement:	LT -	LTR	- RT	· LT -	LTR	- RT	LT -	- LTR	~ R <b>T</b>	LT -	LTR	- RT	
Shared Cap.:	XXXX	xxxx	XXXXX	XXXX	xxxx	XXXXX	XXXX	xxxx	XXXXX	XXXX	xxxx	xxxxx	
Shrd StpDel:	7.3	хххх	XXXXX	XXXXX	хххх	xxxxxx	xxxxxx	XXXXX	XXXXXX	xxxxx	XXXX	XXXXXX	
Shared LOS:	А	*	*	*	*	*	*	*	*	*	*	*	
ApproachDel:	x	xxxxx		хx	xxxx			8.7		xx	XXXX		
ApproachLOS:		*			*			А			*		

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Default Scen	ario		F	'ri Jur	14,	2002 1	1:14:0	9			Page	2-1		
		Ореп	ing Ye	Etíw ar (20 A	vanda 104) W M Pea	Proper With Pr k Hour	ties oject	Condi	tions					
			Level	Of Ser	vice	Comput	ation :	Repor	t.					
	1997	HCM 4	-Way S	top Me	thod	(Futur	e Volu	me Al	cernat;	ive)				
**********	*****	*****	*****	*****	****	*****	*****	*****	*****	******	*****	******		
Intersection	#5 E	Cast A	.ve. (N ******	'S) / S *****	ummit *****	Ave. *****	(EW) ******	****	*****	*****	*****	******		
Cycle (sec): Loss Time (s Optima) Cycl	ec):	10	0 0 (Y+R 0	. = 4	sec)	Critic Averag Level	al Vol e Dela Of Ser	./Cap y (se vice	. (X): c/veh)	2	2.09 265	94 .8 F		
********	*****	* * * * *	- *****	*****	****	******	******	*****	*****	*****	*****	- ******		
Approach:	pproach: North Bound South Bound East Bound											West Bound		
Movement:	L	- T	- R	L	- T	- R	L ·	L - T - R						
•	<b>-</b> -													
Control:	ʻ 5	top S	ign	'' s	top S	ian	'' s	top S.	ign	' SI	top S:	ign '		
Control: Stop Sign Stop Sign Stop Sign Rights: Include Include Include												ıde		
Min. Green:	ignts: include include include in.Green: 0 0 0 0 0 0 0 0 0													
Lanes:	0	0 1!	0 0	0	0 1!	0 0	0	0 1!	0 0	0 0	) 1!	0 0		
				1			11							
Volume Modul	e:			1 1			1 1			• •				
Base Vol:	63	81	106	42	87	47	41	172	87	198	384	68		
Growth Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Inicial Bse:	83	81	106	42	87	47	41	172	87	198	384	68		
Added Vol:	0	16	0	46	46	0	0	0	0	0	0	16		
PasserBvVol:	0	0	0	0	0	ō	0	0	0	0	0	0		
Initial Fut:	83	97	106	88	133	47	41	172	87	198	384	84		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
PHF Adj:	0.86	0.86	0.86	0.57	0.57	0.57	0.65	0.65	0.65	0.77	0.77	0.77		
PHF Volume:	97	113	123	154	233	82	63	265	134	257	499	109		
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0		
Reduced Vol:	97	113	123	154	233	82	63	265	134	257	499	109		
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Final Vol.:	97	113	123	154	233	82	63	265	134	257	499	109		
	<b>-</b>													
Saturation Fl	ow Me	odule	:											
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Lanes:	0.29	0.34	0.37	0.33	0.50	0.17	0.14	0.57	0.29	0.30	0.58	0.12		
Final Sat.:	117	136	149	136	206	73	57	240	122	123	238	52		
		•								<b>   </b> - ·				
Capacity Anal	ysis	Modu]	le:											
Vol/Sat:	0.83	0.83	0.83	1.14	1.14	1.14	1.10	1.10	1.10	2.09	2.09	2. <b>0</b> 9		
Crit Moves:		* * * *			* * * *			* * * *				****		
Delay/Veh:	42.7	42.7	42.7	115.3	115	115.3	103.2	103	103.2	520.1	520	520.1		
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Najuel/Veh:	42.7	42.7	42.7	115.3	115	115.3	103.2	103	103.2	520.1	520	520.1		
LUS Dy Move:	E	E	E	F	F	F	F	F	F	F	F	F		
<pre>wpproachDel:</pre>		42.7		נ	15.3		1	.03.2		5	520.1			
veray Adj:		1.00			1.00			1.00			1.00			
opprAcjDel:		42.7		1	15.3		1	03.2		-	520.1			
No by Appr:	• • • • • •	E.	******	****	F			F			F			
		****	~ 7 = = = * *	~ * * * * *	****	*******	*****	*****	******	*****	*****	* * * * * * * 1		

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Default Scenario Mon Jan 7, 2002 15:54:42 Page 6-1														
		Open	ing Yea	Etiv ar (20	anda 104) W M Pea	Proper lith Pr k Hour	ties oject	Condi	tions					
Level Of Service Computation Report 1997 HCM Operations Method (Future Volume Alternative)														
************* Intersection	**** #7 E	***** ast A	****** VP (N!	****** S) / V	***** Victor	****** ia St.	***** (EW)	****	*****	******	****	******		
cycle (sec):     60     Critical Vol./Cap. (X):     0.223														
Cycle (sec):	Cycle (sec):         60         Critical Vol./Cap. (X):         0.223           Loss Time (sec):         6 (Y+R = 3 sec) Average Delay (sec/veh):         14.1													
Loss Time (s	ec):		6 (Y+R	= 3	sec)	Average	e Dela	y (se	c/veh)	:	14	.1		
Optimal Cycle:         60         Level Of Service;         B           ************************************														
********	****	*****	******	*****	****	*****	*****	*****	******	******	****	******		
Approach:North BoundSouth BoundEast BoundWest BoundMovement:L - T - RL - T - RL - T - RL - T - R														
Movement:	Г	- т	~ R		- Т	- R	ц Т	- T	- R	ь. -	I.	- R		
Control				[]						[]		 ******		
Control:	P	Totec	tea uda	P	TOLEC	cea		Permi	ccea 	F	ermi	ttea		
Rights:         Include         Include         Ovl           Min. Green:         10         16         16         16         21 <td< td=""></td<>														
Min. Green:         10         16         10         16         16         21														
Lanes: 1 0 2 0 1 1 0 1 0 1 1 0 0 1 0 1 0 1 0 1														
Volume Module	4 61:			1 -	-	_	11		- 1		_	E		
Base Vol:	84	160	66	Э0	58	62	16	64	30	72	125	94		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	84	160	66	30	58	62	16	64	30	72	125	94		
Added Vol:	0	10	0	18	28	0	0	0	0	0	0	6		
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0		
Initial Fut:	84	170	66	48	86	62	16	64	30	72	125	100		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
PHF Adj:	0.86	0.86	0.86	0.77	0.77	0.77	0.66	0.66	0.66	0.86	0.86	0.86		
PHF Volume:	98	198	77	62	112	81	24	97	45	84	145	116		
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0		
Reduced Vol:	98	198	77	62	112	81	24	97	45	84	145	116		
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
rinai Vol.:	98	198	11	62 i	112	81	24	97	45	84	145	116,		
Saturation 91		പപം		; <b>-</b> - <b>-</b> -			1							
Sat/Lane.	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	800	1800		
Adjustment:	0.94	1.00	1.00	0.94	1 00	1 00	n 94	1 00	1 00	0 94 1	.00	1 00		
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.68	0.32	1.00 1		1.00		
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	1226	574	1700	800	1800		
				1			[							
Capacity Anal	ysiş	Modul	e:	•		1	1		1	,		I		
Vol/Sat:	0.06	0.05	0.04	0.04	0.06	0.04	0.01	0.08	0.08	0.05 0	80.0	0.06		
Crit Moves:	* * * *				****						***			
Green/Cycle:	0.26	0.33	0.33	0.21	0.28	0.28	0.36	0.36	0.36	0.36 0	.36	0.57		
Volume/Cap:	0.22	0.17	0.13	0.18	0.22	0.16	0.04	0.22	0.22	0.14 0	. 22	0.11		
Delay/Veh: 1	17.8	14.3	14.1	19.8	16.9	16.5	12.4	13.4	13.4	12.9 1	3.4	6.0		
User DelAdj: :	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1	.00	1.00		
AdjDel/Veh:	17.8	14.3	14.1	19.8	16.9	16.5	12.4	13.4	13.4	12.9 1	3.4	б.О		
DesignQueue:	2	4	2	2	3	2	1	2	1	2	3	2		
**********	* * * * *	* * * * *	* * * * * * *	* * * * * *	* * * * *	*****	* * * * * *	* * * * *	* * * * * * *	******	* * * *	*****		

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Default Scen	nario		M	on Jan	7, 2	002 15:			Page 2-1			
Etiwanda Properties Opening Year (2004) With Project Conditions PM Peak Hour												
			Level (	Of Ser	vice -	Computa	tion H	Report	- <b></b> t			
	1997	HCM 4	-Way St	top Me	thod	(Future	e Volut	me Al	ternati	ve)		******
Intersection	1 #1 9	tiwan	da Ave	***** We	st (N	******* S) / Wi	llson A	Ave.	******* (EW)	*****	*****	***
*******	*****	*****	******	*****	****	******	******	*****	****** /v).	*****	***** 1 C O	****** 7
Loss Time (s Optimal Cycl	Loss Time (sec):0 (Y+R = 4 sec) Average Delay (sec/veh):Optimal Cycle:0Level Of Service:											9 A
**************************************	**************************************											
Movement:	I.	л сп в - Т	- P	50 T.	чсп в - т		т	ast B - T		J	- T	- R
	. <b>!</b>						1				<b></b>	
Control:	<u></u> ' ' '	top S	ign	S	top S.	ign	ן. Sו	top S.	ign '	St	op Si	.gn .
Rights:		Incl	ude		Incl	ude		Incl	ude		Inclu	ıde
Min. Green:	Ain. Green: 0 0 0 0 0 0 0 0											
Lanes:	0	0 0	0 0	1	0 0	01	1 (	02	0 0	0 (	) 1	10,
												• • • •
Volume Modul	.e:	_	-		_		_			-		
Base Vol:	0	0	0	117	0	3	9	153	0		57	141
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	117	0	3	9	153	U	0	57	141
Addeu Vol:	U 0	0	0	25	U	13	23	21	0	0	12	
Initial Put.	0	0	0	140	0	10		174	0	0	60	188
Upper Adi.	1 00	1 00	1 00	143	1 00	1 00	1 00	1 00	1 00	1 00	1 00	2 00
PHE Adi	1 00	1.00	1 00	0.86	1.00 D B6	0.86	0.77	1.00	0 77	0.81	0 81	0.81
PHF Volume:	1.00	1.00	1.00	166	0.00	19	47	226	0.,,	0.01	85	232
Reduct Vol:	õ	õ	õ	0	ő			220	õ	ō	0	0
Reduced Vol:	0	Ō	0 0	166	Ő	19	42	226	0	0	85	232
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	166	Q	19	42	226	0	0	85	232
								• • ·				
Saturation F	low Mo	odul <b>e</b> :										
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0 <b>0</b>
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	. 0	0	0	, 545	0	659	. 559	1216	0	. 0	648	744
Competent to the		· · · · · · · · · · · · · · · · · · ·				•			1			1
Vol/Sat	LYSIS	modul	e:	A 77		0 00	0 07	0.10			0 12	ר ל ח
Crit Moves		~~~~	****	U.31	XXXX	0.03	0.07	0.19	XXXX	XXXX	0.15	****
Delay/Veb	0 0	0 0	0.0	11 6	0.0	8 0	<b>G</b> <i>A</i>	97	0 0	0.0	ВĠ	9.4
Delay Adi:	1.00	1.00	1,00	1.00	1.00	1.00	1,00	1.00	1.00	1.00	1,00	1.00
AdjDel/Veh:	0.0	0.0	0.0	11.6	0.0	B.0	9.4	9.7	0.0	0.0	8.9	9.4
LOS by Move:	*	*	*	В	*	A	A	A	*	*	A	А
ApproachDel:	xx	xxxx		_	11.2			9.6			9.2	
Delay Adj:	х	xxxx			1.00			1.00			1.00	
ApprAdjDel:	xx	$\mathbf{x}\mathbf{x}\mathbf{x}$			11.2			9.6			9.2	
LOS by Appr:		*			в			A			А	
*********	* * * * *	* * * * *	* * * * * * *	* * * * * *	****	*****	*****	****	******	*****	* * * * * *	*****

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Default Scen	ario		М	Mon Jan 7, 2002 15:10:57						Page 7-1		
Etiwanda Properties Opening Year (2004) With Project Conditions PM Peak Hour												
11	 997 н	(11) ก	Level	Of Ser	vice ethod	Comput (Futu	ation .	Repor	t Iternat	ivel		
··· **********	*****	*****	******	******	*****	*****	******	*****	******	*****	* * * * *	******
Intersection	#107	Etiw *****	anda A	vê *****	East *****	(NS) /	Wilso	n Ave	. (EW)	*****	****	*****
Average Delay	y (se ∗∗∗∗∗	c/veh *****	): ******	12.9	****	W ******	orst C ******	ase L *****	evel 01	Serv.	ice: *****	
Approach: Movement:	No L	rth B - T	ound - R	So L	uth B - T	ound - R	E L	ast B - T	ound - R	W L	est B - T	ound - R
				[]								
Control:	S	top S	ign	5	top S	ign	Un	contr	olled	Une	contr	olled
Rights:		Incl	ude		Incl	ude		Incl	ude		Inch	ude
Lanes:	. 0	0 1!	0 0	0	0 0	0 0	0	0 0	1 0	0	10	0 0 .
Volume Module	₽:			_			_			_	_	_
Base Vol:	191	0	19	0	0	0	0	101	129	1	9	0
Growth Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	191	0	19	0	0	0	0	101	129	1	9	0
Added Vol:	47	0	35	0	0	0	0	21	26	19	12	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	238	0	54	0	0	0	0	122	155	20	21	0
User Adj:	1.00	1.00	1.00	1,00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	238	0	54	0	0	0	0	122	155	20	21	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	238	) - ) -	54	U	Ŭ	0	0	122	155	20	21	D
Critical Gap	Moau.	le:	<i>c</i> 2									
Critical Gp:	0.4	XXXX	0.2	XXXXX	XXXX	XXXXXX	XXXXXX	XXXX	XXXXXX	4.1	XXXX	XXXXX
forrowobitus	3.2	2002	د.د		XXXX	XXXXXX		XXXX	, 10000	1 2.2	XXXX	XXXXX
Capacity Modu	le:									1		1
Cnflict Vol:	261	$\infty \infty$	200	XXXXX	$\infty \infty x$	XXXXX	XXXX	XXXX	XXXXXX	277	XXXX	XXXXX
Potent Cap.:	733	хххх	847	xxxxx	xxxx	XXXXX	xxxx	XXXX	XXXXX	1298	$\infty \infty x$	XXXXXX
Move Cap.:	724	XXXX	847	XXXX	XXXXX	XXXXXX	xxxx	XXXXX	xxxxx	1298	$\infty \infty x$	XXXXXX
Lovel Of Corr	den N			í								
Stopped Delvy	ICE P	NOGUIE										
LOS by Move	*	*	*	*	*	700X	70000	- XXXX	*****	/.¤ *	*	, xxxxx
Movement.			_ 1217	- ነጥ	- - 	- PT	* * **	י דיידי סידיי ד	- D <sup>-</sup>	A TT	ד.יייים	- 12-11
Shared Can	- 11 - 11	744	V V V V V	- 11 -	TTK XXXXX	- KI	ы - хуууу	LIK VVVV	- KI	тı	LIR VVVV	- RT
Shird StoDel.y	XXXX	12 9	XXXXX	YYYYY	XXXX	XXXXX	~~~~~	××~~	VVVVV	7 0	XXXX VVVV	XXXXX
Shared LOS	*	> R	*	*	*	*	*	*	*	7.D	*	*
ApproachDel		12.9		ŶŸ	XXXX		~~~~	~~~~~	-	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~	-
ApproachLOS:		В		,	*		~~~~	*		~~	*	

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Default Scer	м	on Jan	7,2	002 15	:10:57				Page	3-1				
		Open	ing Yea	Etiw ar (20 P	anda 04) W M Pea	Propert ith Pro k Hour	ies ject (	Condi	tions					
			Level (	of Ser	 vice	Computa	tion F	Report	 +					
	1997	HCM 4	-Way S	top Me	thod	(Future	e Volu	ne Al	ternati	ve)				
*******	*****	*****	*****	*****	*****	******	*****	*****	******	*****	****	*****		
Intersection	i #3 E	Stiwan	da Ave	. (NS)	/ Su	mmit Av	ve. (EV	N)	******	******	* * * * *	*****		
	* * * * *	10	о. О			Critics	a) Vol		( <b>Y</b> ),		1 06	6		
Loss Time (sec):	er).	10	0 (V+R	- 4	sec)	Average	e Delav	/Cap	. (A/. c/weh)/		46	.9		
Optimal Cycl	B:		0 (11)		0007	Level (	of Sen	vice:	•, •••••, •		10.5 E			
*******	*****	*****	******	******	* * * * *	******	******	*****	******	*****	*****			
Approach:	NC	orth B	ound	So	uth B	ound	Ea	ast Be	ound	We	st Bo	ound		
Movement:	vement: L-T-RL-T-RL-T-R										Т	- R		
• • • •	1								<b>  </b>					
Control:	S	top S	ign	S	top S	ign	St	top S.	ign .	St	op Si	ign		
Rights:		Incl	ude		Incl	ude		lnch	ude		Inclu	ıde		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0		
Lanes:	0	0 11	0 0	0	0 11	0 0	Đ í	0 1!	0 0	0 0	1!	0 0		
										1				
Volume Modul	e:													
Base Vol:	145	189	236	14	129	6	6	30	134	146	18	25		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	145	189	236	14	129	6	6	30	134	146	18	25		
Added Vol:	0	70	0	0	39	1	2	0	0	0	0	0		
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0		
Initial Fut:	145	259	236	14	168	7	8	30	134	146	18	25		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
PHF Adj:	0.90	0.90	0.90	0.83	0.83	0.83	0.94	0.94	0.94	0.90	0.90	0.90		
PAR VOIUME:	101	200	262	17	202	- -	9	ے د	143	102	20	±0 ∩		
Reduced Vol:	161	284	262	17	202	U 0	0	0	142	162	20	28		
PCF Adi	101	1 00	1 00	1 00	202	1 00	1 00	1 00	1 00	1 00	1 00	1 00		
MLF Adi	1 00	1 00	1 00	1 00	1 00	1 00	1.00	1.00	1.00	1 00	1 00	1.00		
Final Vol -	161	288	262	1.00	202	1.00	1.00	1.00	143	1.00	2.00	- 28		
				1		<b>-</b> -/		 		<b></b>				
Saturation F	low Ma	odule:	:	•		1	I		1	1				
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Lanes:	0.23	0.40	0.37	0.07	0.89	0.04	0.05	0.17	0.78	0.77	0.10	0.13		
Final Sat.:	151	270	246	41	493	21	25	95	423	398	49	68		
<b>-</b>		•							<b>-  </b>		<b>-</b> -	•		
Capacity Anal	ysis	Modul	le:											
Vol/Sat:	1.07	1.07	1.07	0.41	0.41	0.41	0.34	0.34	0.34	0.41	0.41	0.41		
Crit Moves:	****		_		****		****			* * * *				
Delay/Veh:	76.3	76.3	76.3	13.3	13.3	13.3	12.3	12.3	12.3	14.1	14.1	14.1		
Jelay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
NGJDel/Veh:	/6.3 E	/6.3	76.3	13.3	13.3	13.3	12.3	12.3	12.3	14.1	14.1	14.1		
Nove:	F.	۲ ح	F	в	В	В	В	8	В	В	В	в		
white a cunet:		/6.3			13.3			12.3			14.1			
veray Auj: NonradiDel.		1.00 76 7			12.00			1.00			1.00			
OS by Annr.		70.3 F			13-3 n			12.3			⊥4.⊥ ≂			
.~~ ~; nµµr;					в			в			в			

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Default Scen	nario		M	on Jar	17,2	002 15	:10:57	7			Page	4-1
		Ореп	ing Yea	Etiv ar (20	vanda 004) W PM Pea	Proper lith Pro	ties oject	Condi	tions			
	1997	HCM O	Level (	Of Ser	vice	Computa	ation	Repor	t ternat:	ive)		
******	*****	*****	******	******	*****	******	*****	******	******	* * * * * * * *	* * * * *	******
Intersection	1 #4 E	ciwan	da Ave.	. (NS)	/ Hi	ghland	Ave. *****	(EW)	*****	*****	*****	*****
Cycle (sec): Loss Time (s Optimal Cycl	ec): .e: *****	6	0 6 (Y+R 0	= 3	sec)	Critica Average Level (	al Vol e Dela Df Ser	l./Cap ay (se rvice:	. (X): c/veh)	:	0.6 22	88 .3 C
Approach: Movement:	Nc L	rth B - T	ound - R	So L	outh B - T	ound - R	E L	last B - T	ound - R	W L	est B - T	ound - R
Control: Rights:	<b>-</b> -	Permi Incl	tted ude		Permi Incl	tted ude	 P	roteci	ted ude	 P	rotec Incl	 ted ude
Min. Green:	in. Green: 15 15 15 15 15 16 15 15											
Lanes:	I	0 0	1 0	1	0 0	1 0	1	01	0 1	1	0 0	1 0
										<b>-</b>		
Volume Modul	e:									_		
Base Vol:	77	191	20	23	192	181	331	137	49	9	102	38
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:		191	20	23	192	181	155	137	49	9	102	38
Added Vol:	0	30	0	0	17	22	40 G	0	0	0	0	0
Initial Fut	77	221	20	23	209	202	271	137	49	U D	102	78
User Adi	1 00	1.00	1 00	1.00	1 00	1 00	2,1	1.00	1 00	1 00	1 00	1 00
PHF Adi:	0.87	0.87	0.87	0.88	0.88	0.88	0.81	0.81	0.81	0.87	0.87	0.87
PHF Volume:	89	254	23	26	238	231	458	169	60	10	117	44
Reduct Vol;	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	89	254	23	26	238	231	458	169	60	10	117	44
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	89	254	23	26	238	231	458	169	60	10	117	44
<b>-</b>										1		
Saturation Fl	OW MO	dule:										
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.92	0.08	1.00	0.51	0.49	1.00	1.00	1.00	1.00	0.73	0.27
-inal Sat.:	1700	1921	149	1,00	913	881	1,00	1800	1800	1700	1311	489
Canacity Anal	veie	Modul	<u>م</u> ،	[		1						
/ol/Sat·	0 05	0 15	0.15	0 02	0.26	0.26	0 27	en n	0 03	0 01	0 09	0 09
Crit Moves	5.05	5.15	U. <b>L</b> V	0.01	****	V.20	****	0.02	0.05	•. • I	****	0.05
Green/Cycle:	0.32	0.32	0.32	0.32	0.32	0.32	0.33	0.35	0.35	0.23	0.25	0.25
/olume/Cap:	0.16	0.48	0.48	0.05	0.81	0.81	0.81	0.27	0.10	0.03	0.36	0.36
Delay/Veh:	14.8	17.1	17.1	14.2	27.6	27.6	27.3	14.3	13.2	17.B	19.0	19.0
lser DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
djDel/Veh:	14.8	17.1	17.1	14.2	27.6	27.6	27.3	14.3	13.2	17.8	19.0	19.0
esignQueue:	2	6	1	l	6	6	<b>1</b> 1	4	1	D	3	1
*********	*****	*****	* * * * * * *	*****	* * * * *	******	*****	****	* * * * * * *	*****	* * * * *	* * * * * *

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Default Scer	Default Scenario					2002 1	4:56:3	8			Page	3 - 1
		Open	ing Ye	Etiw ar (20 P	anda 04) W M Pea	Proper ith Pr k Hour	ties oject	Condi	tions	<b>_ </b> _ <b>_</b> /		
			Level	Of Ser	vice	Comput	ation	Repor	 t			
. 1	997 H	CM Un	signal	ized M	ethod	(Futu	re Vol	ume A	lternat	ive)		
*******	****	*****	* * * * * *	*****	*****	*****	*****	****	*****	*****	*****	******
Intersection	) #108 *****	East *****	Ave.	(NS) / ******	Wils *****	on Ave *****	. (EW) ******	* * * * *	****	*****	*****	*****
Average Dela *********	ıy (se *****	c/veh *****	): *****	B.5 **** <u>*</u> *	****	W * * * * * *	orst C ******	ase L ****	evel 0:	E Servi	ice: *****	A * * * * * * *
Approach:	No	rth B	ound	So	uth B	ound	Е	ast B	ound	We	est Bo	ound
Movement:	L	- T	- R	L	- T	- R	$\mathbf{L}$	- T	- R	<u></u> ь.	- Т	- R
												• <del>•</del> •
Control:	Un	contr	olled	Un	contr	olled	S	top S	ign	S	top S:	ign
Rights:	_	Incl	ude	_	Incl	ude	_	lncl	ude		Inclu	lde
Lanes:	0	1 0	0 0	0	0 1	0 0	0	0 0	0 1		0 0	0 0
Nolume Modul	1			11								
Volume Modul	.e:		0							0	0	0
Crowth Ndi.	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
Growin Adj: Initial Rec.	1.00	1.00	T.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial BSe:	10	- U - D E	Ų	0	10	0	U	· 0	10	0	0	0
Recentry Vol:	12	دد م	U	0	13	0	0	0	40	0	0	0
PasserByvor:	0	20	0	0	10	0	0	0	40	0	0	0
Usor Mdi.	1 00	1 00	2 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
DVE Adj:	1.00	1.00	1.00	1,00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1 00
PHE Volume	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF VOLUME: Reduct Vol	DZ 0	23	0	0	19	0	0	0	40	0	0	0 0
Final Vol :	20	25	0	0	O	0	0	0	40	0	0	ñ
Critical Gan	Modul	رر ما	0	U	13	U	U	0	40	Ŭ	U	0
Critical Gap	4 1	vvvv	~~~~~	<b>***</b> ***	****	~~~~	*****	~~~~	6 2	*****	vvvv	*****
FollowInTime	2.1	~~~~	VYYYY	*****	~~~~	~~~~~	~~~~~	~~~~	2 2	AAAAA VVVVV	****	YYYYY
				1					ر.ر ا ـ ـ ـ ـ ـ ـ ـ ـ			
Capacity Modu	ule.											'
Cnflict Vol:	19	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	19	xxxx	xxxx	xxxxx
Potent Cap.:	1611	xxxxx	XXXXX	xxxx	XXXX	XXXXX	XXXX	XXXX	1065	XXXX	xxxx	XXXXX
Move Cap.:	1611	xxxx	XXXXX	XXXX	XXXX	XXXXX	XXXX	XXXX	1065	XXXX	XXXX	xxxxx
Level Of Serv	vice M	fodule	2:	1								1
Stopped Del:	7.2	$\infty \infty \infty$	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	8.5	xxxxx	xxxx	xxxxx
LOS by Move:	А	*	*	¥	*	*	*	*	А	*	*	*
Movement:	LT -	LTR	- RT	LT -	LTR	- RT	LT ·	- LTR	- RT	LT -	- LTR	- RT
Shared Cap.:	xxxx	$\infty \infty \infty$	XXXXX	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Shrd StpDel:	. 7.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	XXXXX
Shared LOS:	А	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	XX	xxxx		хх	xxxx			8.5		x	00000	
ApproachLOS:		*			*			А			*	

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Default Scen	ario		Fi	ri Jun	14,	2002 1	5:07:2	5			Page	2-1
		Open	ing Yea	Etiw ar (20	anda 04) W	Propert ith Pro	ies ject	Condit	ions			
			Level C	of Ser	vice	Computa	tion	Report				
*****	1997 ****	HCM 4	-Way St *******	op Me	chod *****	(Future ******	Volu	me Alt *****	ernati	ve) *****	*****	******
Intersection	#15 E	ast A	ve. (N9	s) / s	ummit	Ave.	EW)					
*******	****	****	******	*****	****	******	****	*****	*****	*****	*****	******
Cycle (sec):		10	0			Critica	il Vol	./Cap	. (X):		0.49	95
Loss Time (s	ec):		O (Y÷R	<b>≃ 4</b>	sec)	Average	e Dela	y (sec	:/veh):		12	. 4
Optimal Cycl	e:		0			Level (	of Ser	vice:				В
********	****	*****	*****	****	****	* * * * * * *	*****	*****	******	*****	*****	******
Approach:	No	rth B	ound	So	uth B	ound	E	ast Bo	bund	- W	est Bo	ound
Movement:	Ľ	- T	- R	L	- T	- R	, L	- T	- R	, L	- T	- R
	1						!					
Control:	5	top S	ıgn	S	τοp S	ıgn	S	top S:	ign	S	top S:	ign
Rights:	_	Incl	ude		TUCT	ude		inch	lde		Incit	lde
Min. Green:	- C	0	0	0	0	0	0	0	0	Ų	0	0
Lanes:	0	0 11	0 0	. 0	0 1:	0 0	. 0	0 1!	0 0	1	0 1!	0 0
N-luna Madul	1			<b>-</b>			1			1		
Volume Modul	e: 		103		10		1.0	207	2.0	4.0	1.60	72
Base Vol:	54	1 00	107	14	1 20	1 00	1 00	207	1 00	49	1 00	22
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	53	TR	101	14	10	12	10	207	38	49	163	42
Addea Vol:	0	54	0	02	10	0	U	0	0	0	0	54
PasserByVol:	- U		100	0	10	10		207	70	0	207	
initial Fut:	1 00	12	1 00	44	1 00	1 00	1 00	207	38	49	1 00	1 00
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Auj:	0.76	0.70	127	0.00	0.00	0.00	0.90	220	10.90	0.91	170	0.71
Par volume:	60 A	∡ק Ω	1, 17	) 1 2 1	4 /	14		230	44 Z	24 0	1/9	04
Reduced Vol	68	92	יי רבו	51	47	14	11	220	42	54	179	84
PCF Adi	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
MLF Addi	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1.00
Final Vol ·	68	92	137	51	47	14	11	230	47	54	179	84
	<u>-</u> -			1		1	1			i		
Saturation Fl	low M	odule:		•		I			ŀ	ſ		•
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.23	0.31	0.46	0.46	0.42	0.12	0.04	0.81	0.15	0.17	0.57	0.26
Final Sat .:	142	1 <b>9</b> 3	287	243	221	66	25	507	93	109	361	169
	• •	<b></b>			<i></i>							
Capacity Anal	ysis	Modul	e;	-								
Vol/Sat:	0.48	0.48	0.48	0.21	0.21	0.21	0.45	0.45	0.45	0.50	0.50	0.50
Crit Moves:		****		****				* * * *		* * * *		
Delay/Veh:	12.7	12.7	12.7	10.3	10.3	10.3	12.4	12.4	12.4	12.9	12.9	12.9
Əelay Adj: 👘	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.7	12.7	12.7	10.3	10.3	10.3	12.4	12.4	12.4	12.9	12.9	12.9
LOS by Move:	В	в	в	В	в	в	в	в	в	В	в	в
ApproachDel:		12.7			10.3			12.4			12.9	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		12.7			10.3			12.4			12.9	
LOS by Appr:		₿			в			в			в	
**********	* * * * *	*****	*****	* * * * * *	*****	*****	* * * * * *	*****		*****	*****	*****

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Default Scena	ario		Mo	on Jan	7, 2	002 15:	10:57				Page	6-1
		Open	ing Yea	Etiwa Ar (20) PM	anda ( 04) W: 4 Peal	Propert ith Pro k Hour	ies ject C	ondit	ions			
	1997 H	ICM O	Level C peratic	of Ser ons Met	vice ( hod	Computa (Future	tion R Volum	eport e Alt	ernati	ve)		
Intersection	#7 Ea	ast A	ve. (NS	S) / V:	ictor	ia St.	(EW)	*****	****	*****		
**********	*****	*****	* * * * * * *	*****	****	******	******	*****	*****	** * * * *	*****	*****
Loss Time (Sec):	ec) -	6	U 6 (Y∔R		sec)	Uritica Average	.1 VOI. Delav	/Cap. (sec	$(\mathbf{x})$ : $(\mathbf{yeh})$ :		14.	1
Optimal Cycle	B:	6	0		aec; ;	Level C	)f Serv	ice:	,, <b>.</b> Chi, .			в
********	*****	* * * * *	- * * * * * * *	*****	* * * * *	******	*****	****	*****	*****	****	*****
Approach:	No	rth B	ound	So	ath Be	ound	Ea	st Bo	ound	We	st Bo	սոմ
Movement:	L.	- Т	- R	L	- T	- R	L -	т	- R	<u></u> ь-	т	- R
						!	! <b>-</b>					
Control:	P	rotec	ted	P:	rotec	ted	Р	ermit	tea No	P	ermit Ord	cea
Kignes: Min Graan	10	11011		10	Inch	uae 14	<b>7</b> 1	21	10e 21	21	21	21
Lanes:	1 0	3 2	0 1	1 1	ים ב ר ח	0 1	1 0	0	1 0	1 0	1	0 1
										1		
Volume Module	: :		,				ı		•	1		
Base Vol:	51	210	125	63	127	38	6	92	60	83	101	53
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	51	210	125	63	127	38	6	92	60	83	101	53
Added Vol:	0	33	0	12	18	Û	0	0	0	0	0	21
PasserByVol:	0	0	0	Û	0	0	0	0	0	0	0	0
Initial Fut:	51	243	125	75	145	38	6	92	60	83	101	74
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF ACJ:	0.94	0.94	122	0.83	0.83	0.83	0.97	0.97	0.97	U.94 QQ	107	79
Reduct Vol:	24	239	10	90	1/5	40	0 0	75 0	02	0	0	0
Reduced Vol:	54	259	יי	90	175	46	о 6	95	62	88	107	79
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1,00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	54	259	133	90	175	46	б	95	62	88	107	79
Saturation Fl	ow Mo	dule:										
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	1 00	2.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	1 00	1.00	1.00
Final Sat	1700	3600	1800	1700	1800	1000	1700	1049	711	1700	1800	1800
[			1	1	1800	1000	1700	1065		1		
Capacity Anal	vsis	Modul	e:			1	1		I	I		I
Vol/Sat:	0.03	0.07	0.07	0.05	0.10	0.03	0.00	0.09	0.09	0.05	0.06	0.04
Crit Moves:	* * * *				****			****				
Green/Cycle:	0.17	0.34	0.34	0.21	0.38	0.38	0.35	0.35	0.35	0.35	0.35	0.56
Volume/Cap:	0.19	0.21	0.22	0.25	0.25	0.07	0.01	0.25	0.25	0.15	0.17	0.08
Delay/Veh:	21.9	14.2	14.4	20.1	12.8	11.7	12.7	14.1	14.1	13.5	13.6	6.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adjuer/Veh: .	21.9	14.2	14.4	20.1	12.8	11.7	12.7	14.1	14.1	13.5	13.6	6.1
>=>1AuAnene:	∠ *****	6 *****	3	2 ******	4	1	0	2	1 * * * * * * *	2	2	ر د * * * * * *

# APPENDIX G

# OPENING YEAR (2004) CONDITIONS INTERSECTION ANALYSIS WITH PROJECT (WITH IMPROVEMENTS)

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Default Scen	ario		Т	ue Jar	a B, 2	002 14	:53:32	-			Page	2-1	
Open	ing Y	/ear (	2004) 1	Etiw With P A	anda Tojec M Pea	Propert t Cond: k Hour	ties itions	(Wit)	n Impro	vement	.s)		
		1	Level (	Of Ser	vice	Computa	ation	Report	<b>_</b>				
	1997	нсм о <sub>ј</sub>	perati	ons Me	thod	(Future	e Volu	me Alı	ternati	ve)			
Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)													
**************	₩ጋ ⊑ *****		1d Mve	. (195) *****	/ 30 *****	*******	ve. (5 *****	*****	******	*****	****	******	
Cycle (sec): Loss Time (s Optimal Cycl	ec): e:	6) - 6)	0 4 (Y+R 0	= 3	sec)	Critica Average Level (	al Vol e Dela Of Ser	./Cap y (sec vice:	(X): c/veh):	1	0.73	35 .3 B	
*******	*****		******	******	*****	******	*****	*****	******	******	*****		
Approach: Novement:	I.	атта во - т		50	цсп в - т	ouna	E E	ast Bo		T	зс во Υ		
MOVEMENT.	يد 			1		- K	 					!	
Control:	1	Permit	ted	1	Permi	tted		Permín	ted	' P	ermit	ted	
Rights:		Inclu	ıde		Incl	ude		Inclu	ıde		1nclu	ıde	
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15	
Lanes:	0	0 11	0 0	0	0 1!	0 0	0	0 11	0 0	0 0	1!	0 0	
										<u>ا</u>			
Volume Modul	e:												
Base Vol:	224	93	156	58	265	19	10	96	296	269	127	57	
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	224	93	156	58	265	19	10	96	296	269	127	57	
Addea Vol:	0	20	บ ก	U n	60	2	1	0	0	0	0	0	
Initial Fut	224	כרו	156	L R	335	21	11	96	295	269	127	57	
liser Ada	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	
PHF Adi:	0.79	0.79	0.79	0.81	0.81	0.81	0.68	0.68	0.68	0.85	0.85	0.85	
PHF Volume:	284	143	197	72	401	26	16	141	435	316	149	67	
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0	
Reduced Vol:	284	143	197	72	401	26	16	141	435	316	149	67	
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Final Vol.:	284	143	197	72	401	26	16	141	435	316	149	67	
				1					!				
Saturation Fl	ow Mo	odule:				_							
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	
Lanes:	707	402	0.31	764	1430	0.05	0.03	120	1220	0.61 (	1.27	210	
i		402		200	1430	دو	49	420	1320	1033	400	219	
Capacity Anal	vsis	Modul	e ·	1			1			1		1	
Vol/Sat:	.0.36	0.36	0.36	0.28	0.28	0.28	0.33	0.33	0.33	0.31 (	). <b>3</b> 1	0.31	
Crit Moves:		****				0.20	0.22	****	0.00	0.01		0.91	
Green/Cycle:	0.48	0.48	0.48	0.48	0.48	0.48	0.45	0.45	0.45	0.45 (	).45	0.45	
Volume/Cap:	0.73	0.73	0.73	0.58	0.58	0.58	0.73	0.73	0.73	0.6B (	.68	0.68	
Delay/Veh	15.7	15.7	15.7	12.0	12.0	12.0	17.1	17.1	17.1	15.6 1	15.6	15.6	
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1	00	1.00	
AdjDel/Veh:	15.7	15.7	15.7	12.0	12.0	12.0	17.1	17.1	17.1	15.6 1	5.6	15.6	
DesignQueue:	5	3	4	1	7	0	0	3	9	6	3	· 1	
******	* * * * *	****	*****	* * * * * *	* * * * *	*****	* * * * * *	*****	*****	******	****	*****	

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Default Scen	ario		T	hu Jar	10,	2002 1	5:27:1	.5			Page	3-1
Орел	ing Y	ear (	2004) 1	Etiw With F A	vanda Projec M Pea	Propert t Condi k Hour	ies itions	(Wit)	n Impro	ovemen	ts)	
			Level (	Of Ser	vice	Computz	ation	Report				
	1997	нсм ој	peratio	ons Me	thod	(Future	Volu	me Alt	ernati	ve)		
*******	*****	****	*****	* * * * * *	****	******	*****	*****	******	*****	*****	*****
Intersection	#4 E	tiwan	da Ave	. (NS)	/ Hi	ghland	Ave.	(EW)				
********	****	*****	******	*****	*****	*******	*****	****** /00	/w\	*****	****** ^ 02	*****
Loss Time (s	PC) -	13	v € 1.∧™b		cec)	Average	a Dola TOV IS	v (cer	(A): /vebl.		46	, _ 
Optimal Cvcl	ec,. e.	רו	0 (1410		3007	Level (	)f Ser	y (se) vice:	., ven, .		10.	D
******	··· *****	*****	• * * * * * * *	* * * * * *	****	******	*****	*****	******	*****	* * * * * *	*****
Approach:	No	rth Be	ound	Sc	uth B	ound	Е	ast Bo	ound	W	est Bo	und
Movement:	L	- Т	- R	$\mathbf{L}$	- T	- R	$\mathbf{L}$	- Т	- R	L	- т	- R
						]	<b> </b>					
Control:		Permi	tted		Permi	tted	P	rotect	ed	P	rotect	.ed
Rights:		Inclu	ude		lncl	ude		Inclu	ıde		Inclu	ıde
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	1	0 0	1 0	1	01	0 1	1	01	0 1	1 1	0 0	1 0
••••	<b>!</b>											
Volume Modul	e:											
Base Vol:	51	210	21	46	336	491	238	433	143	52	378	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
INICIAL BSC:	51	210	21	46	336	491	238	433	143	52	378	2د
Added Vol:	0	9	U	0	26	34	12	0	U	0	U	0
TRIFICIA ENT.	E 1	210	21		202	0 5 2 5	250	422	147	- 0 - 0	270	ט ריר
HELLAI FUL:	1 00	1 00	1 00	1 00	204 00 E	1 00	250	433	143	1 00	370	1 00
PHE Add.	0 90	0.90	0.00	1.00	1.00	0.84	0.77	1.00	0 77	00.1	1.00	0 63
PHE Volumer	57	243	2.00	53	421	610	325	567	196	0.00	600	51
Reduct Vol:	n			0		010		102	100	0,00	000	0
Reduced Vol:	57	243	23	57	421	610	325	562	186	83	600	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1,00	1.00
Final Vol.:	57	243	23	53	421	610	325	562	186	63	600	51
						•	1		!			• • • • • • • •
Saturation Fl	ow Mo	dule:										
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	0.91	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.08
Final Sat.:	1700	1643	157	1700	1800	1800	1700	1800	1800	1700	1660	140
			<b>-</b>		<b>-</b>	· <b>-</b>						
Capacity Anal	ysis	Modul	é;									
vol/Sat:	0.03	0.15	0.15	0.03	0.23	0.34	0.19	0.31	0.10	0.05	0.36	0.36
TTE MOVES:	0.50	0.76	0.00	0		****	****	a			* * * *	
Joluma (Com	0.35	0.35	0.36	0.36	0.36	0.36	0.20	0.51	0.51	0.08	0.39	0.39
lelay/Vob.	0.09 27 4	∪.4⊥ วา	U.41	0.09	0.64	0.93	0.93	0.61	0.20	0.63	0.93	0.93
ISAT DALAH .	27.4 1 00	⇒⊥- <b>4</b> 1 00	4.1د مم 1	27.3	36.7	60.7	82.8	23.5	17.2	67.8	58.1	58.1
diDel/Veb.	τ.υυ 7 <b>7</b> Λ	1.00 11 A	1.UU 21 4	1.00	1.00	1.00	1.00	1.UU	1.00	1.00	1.00	T.00
esianOueue.	<i>د ، .</i> ۲ ٦	ייי רו	31.4	27.J S	/.סנ. ור	י, טס רל	0∠.8 ⊃∩	5. <i>د ک</i> ۲۰	17.2	67.U	20.1	20.1
***********			1 + + + + + + +	ء • + + + + •			20	<b>Z</b> I	/		29	<u>ک</u>

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Default Scenario Fri Jun 14, 2002 15:54:41											2-1			
Орел	ing Y	'ear (	2004)	Etiw Nith P A	vanda Projec M Pea	Propert t Condi k Hour	ties itions	(Wit)	h Impro	ovements)				
			Level (	of Ser	vice	Commuta	ncion	Renort	<b>-</b> - E					
	1997		neratio	ns Me	thod	(Future	e Volu	me Ali	- ternat:	ivel				
* * * * * * * * * * * *	*****	*****	*****	*****	****	******	*****	*****	*****	*******	*****			
Intersection #5 East Ave. (NS) / Summit Ave. (EW)														
*****	*****	****	*****	*****	****	*****	*****	****	*****	********	* * * * * ± ±			
Cycle (sec):		6	0			Critica	al Vol	./Cap	. (X):	0.8	09			
Loss Time (s	ec):		4 (Y+R	= 3	sec)	Average	e Del <b>a</b>	y (se	c/veh)	: 15	. 8			
Optimal Cycl	e:	6	0			Level (	Of Ser	vice:			в			
*******	****	* * * * *	* * * * * * * 1	*****	*****	******	*****	*****	******	********	*****			
Approach:	No	orth B	ound	So	uth B	ound	E	ast_Bo	ound_	West B	ound			
Movement:	, L	- Т	- R		- T	- R	L	- T	- R	ь - т	- R			
										 Dei				
Contro1:		Permi	ccea ude		Permi	tteu		Permit	iteu ido	rerui Inclu	udo			
Rights:	16	1001	100	1 5	1001	100	16	10010	בוב זי	15 15	15			
Min. Green:	U T D	0 1	0 0	0	0 1 I	0 0	0_7	0 17	0 0	0 0 11	0 0			
Lanes:	1						<b></b> -			1				
Volume Modul	 			1							1			
Base Vol.	E. 83	81	106	42	87	47	41	172	87	198 384	68			
Growth Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
Initial Bse:	83	81	105	42	87	47	41	172	87	198 384	68			
Added Vol:	0	16	0	46	46	ō	0	0	ō	0 0	16			
PasserByVol:	o	0	0	0	0	0	0	0	0	0 0	0			
Initial Fut:	83	97	106	88	133	47	41	172	87	198 384	84			
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
PHF Adj:	О.В6	0.86	0.86	0.57	0.57	0.57	0.65	0.65	0.65	0.77 0.77	0.77			
PHF Volume:	97	113	123	154	233	82	63	265	134	257 499	109			
Reduct Vol:	0	0	0	0	0	0	0	0	0	0 0	0			
Reduced Vol:	97	113	123	154	233	82	63	265	134	257 499	109			
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
Final Vol.:	. 97	113	123	154	233	82	. 63	265	134	257 499	109			
			!	1			1							
Saturation F.		10010:	1000	1000	1200	1 * * *	1000	1000	1000	1200 3000	1000			
Sat/Lane:	1900	1 00	1 00	1900	1 00	100	7 R Å Å	1 00	1 00	T900 T800	1 00			
Adjustment:	0.94	0.73	1.00	0.94	0.40	1.00 0 17	0.94	1.00	1.00	0.94 1.00	1.00			
Danes:	514	600	656	580	576	710	244	1024	519	526 1020	222			
			1	1			1		1	1				
Capacity Anal	lvsis	Modul	.e:	4		1	1		1	I	I			
Vol/Sat:	0.19	0.19	0.19	0.27	0.27	0.27	0,26	0.26	0.26	0.49 0.49	0.49			
Crit Moves:					****					***				
Green/Cycle:	0.33	0.33	0.33	0.33	0.33	0.33	0.60	0.60	0.60	0.60 0.60	0.60			
Volume/Cap:	0.57	0.57	0.57	0.81	0.61	0.81	0.43	0.43	0.43	0.81 0.81	0.81			
Delay/Veh:	18.0	18.0	18.0	26.7	26.7	26.7	6.6	6.6	6.6	13.9 13.9	13.9			
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
AdjDel/Veh:	18.0	18.0	18.0	26.7	26.7	26.7	6.6	6.6	6.6	13.9 13.9	13.9			
DesignQueue:	2	3	3	4	6	2	1	4	2	4 7	2			
***********	****	*****	*****	* * * * * *	*****	*****	* * * * * *	*****	*****	********	*****			

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Tue Jan 8, 2002 14:53:53 Default Scenario Page 2-1 \_\_\_\_\_ Etiwanda Properties Opening Year (2004) With Project Conditions (With Improvements) PM Peak Hour \_\_\_\_\_ Level Of Service Computation Report 1997 HCM Operations Method (Future Volume Alternative) Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW) \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Cycle (sec): 60 Critical Vol./Cap. (X): 0.560 Loss Time (sec):4 (Y+R = 3 sec) Average Delay (sec/veh):Optimal Cycle:60Level Of Service: 9.5 A \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Approach:North BoundSouth BoundEast BoundWest BoundMovement:L - T - RL - T - RL - T - RL - T - R 

 Control:
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 Volume Module: Base Vol: 145 189 236 14 129 6 6 30 134 146 18 25 Initial Bse: 145 189 236 14 129 6 6 30 134 146 18 25 Added Vol: 0 70 0 0 39 1 2 0 0 0 0 0 
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 PHF Volume:
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 0 28 0 143 20 28 Final Vol.: 161 288 262 17 202 8 9 32 143 162 20 28 Saturation Flow Module: Adjustment: 0.94 1.00 1.00 0.94 1.00 1.00 0.94 1.00 1.00 0.94 1.00 1.00 Lanes: 0.24 0.40 0.36 0.08 0.88 0.04 0.05 0.17 0.78 0.78 0.09 0.13 Pinal Sat.: 402 719 655 133 1593 66 83 313 1398 1330 164 228 Capacity Analysis Module: Vol/Sat: 0.40 0.40 0.40 0.13 0.13 0.13 0.10 0.10 0.10 0.12 0.12 0.12 Crit Moves: Crit Moves: Green/Cycle: 0.68 0.68 0.68 0.68 0.68 0.68 0.25 0.25 0.25 0.25 0.25 0.25 

 Volume/Cap:
 0.59
 0.59
 0.19
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 0.41
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 Delay/Veh:
 5.8
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 19.4
 19.4
 19.4
 20.1
 20.1
 20.1

 User DelAdj:
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 AdjDel/Veh:
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 20.1
 20.1

 DesignQueue: 2 3 3 0 2 0 0 1 4 4 1 1 \*\*\*\*\*\*\*\*\*\* \*\*\*\*\*

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Default Scena	ario		TÌ	nu Jan	10,	2002 10	5:25:4	.2			Page	3-1			
Open	ing Y	ear (:	2004) W	Etiw With P P	anda rojec M Pea	Propert t Condi k Hour	ies itions	(Wit)	n Impro	ovement	.s)				
			Level C	)f Ser	vice	Computa	tion	Report	<b></b>						
-	1997 HCM Operations Method (Future Volume Alternative)														
********	*****	*****	* * * * * * * *	*****	****	******	*****	*****	*****	******	****	******			
Intersection	#4 E	tiwand	ia Ave.	(NS)	/ Ні	ghland	Ave.	(EW)							
********	* * * * *	*****	* * * * * * * *	*****	****	******	*****	*****	******	******	****	******			
Cycle (sec):		60	0	-		Critica	1 Vol	./Cap	. (X) :		0.57	70			
Loss Time (se	ec):	(	6 (Y+R	= 3	sec)	Average	è Dela	ιγ (sed	c/veh}:	:	18.	.6			
Optimal Cycle	2: *****	61 +++++	U + + + + + + + +		****	Level (	ot ser	vice:			****	B			
Approach -	মন:	rth Br	יייישער	90 90	uth B	ound	 E	act Bo	wod			und			
Movement:	T	тсп во - т	- P	1. 1.	- T		т. Т.	.asl bu _ m	- P	т	ас во T	- B			
MOVEMENT:	i <b></b>		- K			- r i		- 1	- ĸ 	- LL 					
Control:	<b>'</b> 1	Permit	ted	t	Permi	tted	, P	rotect	ed	ri Pr	otect	ed '			
Rights:		Inclu	ıde		Incl	ude	-	Inclu	ıde		Inclu	ıde			
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15			
Lanes:	1	0 0	1 0	1	01	0 1	1	0 1	0 1	10	0	10			
				1					•						
Volume Module	≥:														
Base Vol:	77	191	20	23	192	181	331	137	49	9	102	38			
Growth Adj:	1.00	1.00	1.00	1,00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Initial Bse:	77	191	20	23	192	181	331	137	49	9	102	38			
Added Vol:	0	30	Ó	Ó	17	2 <b>2</b>	40	0	0	0	0	Ó			
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0			
Initial Fut:	77	221	20	23	209	203	371	137	49	9	102	38			
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
PHF Auj:	0.67	254	0.87	V.66 24	0.85	ບ.88 101	0.81	160	0.81	0.87	117	0.87			
Reduct Vol:	0 J 0	2J4 0	2.3	20	0.22	231	450	103	60	10	ττ. 1	54 U			
Reduced Vol:	89	254	23	26	238	ירכ	458	169	60	10	117	44			
PCE Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
MLF Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Final Vol.:	89	254	23	26	238	231	458	169	60	10	117	44			
												1			
Saturation Fl	ow Mo	dule:								•					
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800			
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00			
Lanes:	1.00	0.92	0.08	1.00	1.00	1.00	1.00	1.00	1.00	1.00 0	0.73	0.27			
Final Sat.:	1700	1651	149	1700	1800	1800	1700	1800	1800	1700 1	1311	489			
Capacity Anal	ysis	Modul	e:	•											
vol/Sat:	0.05	0.15	0.15	0.02	0.13	0.13	0.27	0.09	0.03	0.01 (	0.09	0.09			
CIIL MOVES:	በ ጎር	0 75	0 75	0.25	0.25	0.00	****	0.00				0 25			
Volume/Car.	0.20	0.25	0.25	0.25	0.25	0.25	0.40	0.39	0.39	0.26 0	1.25	0.25 0.24			
Delay/Veb.	9.21 19 0	0.02 22 E	0.9∡ ⊃7 ⊑	17 7	20 53	0.51 20 4	0.67	0.24	0.09		1.36	10.35			
User Deladi.	1 00	1 00	22.⊐ 1 00	1 00	1 00	20.4	17.5	1 00	1 00	ר מ. סד	.9.0	1 00			
AdiDel/Veb-	18 0	22 5	1.00 22 5	17 0	20 4	20 4	17 5	1.00	11 4	16 6 1	a n	19 0			
DesignOueue.	20.0		1	ے. ب <u>ـ</u>	۵۰.0 ۲	20.4 E	10	4 Z . D A	1 I I I	10'0 T	19.U N	19.0			
	- * * * * *	• *****	_ * * * * * * *	_ *****	*****	******		*****	 * * * * * * *	******	د ****	· ******			

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Fri Jun 14, 2002 16:02:27 Page 2-1 Default Scenario ------Etiwanda Properties Opening Year (2004) With Project Conditions (With Improvements) PM Peak Hour Level Of Service Computation Report 1997 HCM Operations Method (Future Volume Alternative) \* Intersection #5 East Ave. (NS) / Summit Ave. (EW) \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Cycle (sec): 60 Critical Vol./Cap. (X): 0.370 Loss Time (sec):4 (Y+R = 3, sec) Average Delay (sec/veh):10.3Optimal Cycle:60Level Of Service:B в \*\*\*\*\*\*\*\*\* Approach:North BoundSouth BoundEast BoundWest BoundMovement:L - T - RL - T - RL - T - RL - T - R 
 Control:
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 Volume Module: Base Vol: 53 18 107 14 10 12 10 207 38 49 163 22 Initial Bse: 53 10 107 14 10 12 10 207 38 49 163 22 
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 Final Vol.: 68 92 137 51 47 14 11 230 42 54 179 84 Saturation Flow Module: Adjustment: 0.94 1.00 1.00 0.94 1.00 1.00 0.94 1.00 1.00 0.94 1.00 1.00 Lanes: 0.24 0.31 0.45 0.47 0.41 0.12 0.04 0.81 0.15 0.18 0.56 0.26 Final Sat.: 406 551 819 803 730 219 70 1458 268 303 1009 470 Capacity Analysis Module: Vol/Sat: 0.17 0.17 0.17 0.06 0.06 0.06 0.16 0.16 0.16 0.18 0.18 0.18 Crit Moves: \*\*\*\* Crit Moves: AdjDel/Veh: 11.1 11.1 11.1 9.7 9.7 9.7 9.8 9.8 9.8 10.1 10.1 10.1 DesignQueue: 1 2 3 1 1 0 0 4 1 1 3 2 \*\*\*\*\*\*\*\*\*\*\*\*

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# APPENDIX H

# YEAR 2020 CONDITIONS INTERSECTION ANALYSIS WITHOUT PROJECT (WITHOUT IMPROVEMENTS)

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Default Scen	ario		м	on Jar	17,2	2002 16	:05:22			Pa	nge 2-1
		Y	ear 20	Etiv 20 Wit A	vanda hout M Pea	Proper Projec k Hour	ties t Cond	ition	s		
· • • • • • • • •		· - <del>-</del>	Level	of Ser	vice	Computa	ation	 Repor	 t		<b></b>
	1997	HCM 4	-Way S	top Me	thod	(Futur	e Volu	me Al	ternat	ive)	
Intersection	1 #1 E	Stiwan	da Ave	We	st (N	S) / W	ilson.	Ave.	(EW)	*******	*******
**************************************	*****	*****	******	*****	*****	****** Critica	****** al Vol	***** ./Can	****** (X)	***************************************	**********
Loss Time (s	sec):		0 (Y+R	<del>~</del> 4	sec}	Average	e Dela	y (se	c/veh)	:	9.7
Optimal Cycl	e:		0			Level (	Of Ser	vice:			А
********	*****	*****	******	*****	****	*****	*****	*****	*****	******	*******
Approach: Movement:	NC T	rtn в	ouna	50	10 C D B - T	ouna	Ei L	ast B	ouna	West	Bound
				 	- 1		1	- 1	- K	- <u>-</u> ال	
Control:	' <u>5</u>	Stop S	ign	' s	top S	ign	' S	top S	ign	Stop	Sign
Rights:		incl	ude		Incl	ude		Incl	ude	In	clude
Min. Green:	C	) 0	0	0	0	D	0	0	0	0	0 0
Lanes:	0	0 0	0 0	1	0 0	0 1	1 1	02	0 0	0 0	1 1 0
					<b>-</b>						
Volume Modul	e:		•			-	-	4.0		<u> </u>	
Base Vol:	1 00	0 1 00	1 00	221	1 00	1 00	2	49	1 00		45 88
Joitial Beer	1.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00 1.	VE 99
Added Vol	0	0	ň	144	0 0	0	- 0	 n	0	0	*3 <b>6</b> 8
PasserBvVol:	õ	0 0	õ	õ	õ	õ	0 0	0	ő	ů N	0 0
Initial Fut:	0	0	0	221	ō	5	2	49	ō	ō	45 88
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.	00 1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95 0.	95 0.95
PHF Volume:	0	0	0	233	0	5	2	52	0	0	47 93
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0 0
Reduced Vol:	0	0	0	233	0	5	2	52	0	0	47 93
PCE Adj:	1.00	1.00	1.00	1.00	1,00	1.00	1.00	1.00	1.00	1.00 1.	00 1.00
MLF AQ]:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.0	1.00
Final Vol.:	0			L = = =	U	د ا ـ ـ ـ	, 2	52		1 0 4	17 93
Saturation Fl	Low Me	dule:	- H	1			1 =		1		1
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.0	00 1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00 1.0	0 1.00
Final Sat.:	0	0	0	647	0	819	576	1252	0	0 66	54 764
Capacity Anal	ysis	Modul	e:								
Vol/Sat:	XXXX	XXXX	XXXX	0.36	xxxx	0.01	0.00	0.04	XXXX	XXXX 0.0	0.12
UTIE MOVES:	0.0	0 0	0.0	****				****	0.0	a <b>c</b> -	****
Delay Adi	1 00	1 00	1 0.0	1 00	1 00	1 00	U./	8.4 1 00	1 00		.3 /.8
AdiDel/Veh	1.00	1.00 n n	0.00	11 1	1.00	1.00 7 A	2.00	8 4	1.00	1.00 1.0	,0 1.00 1 7 P
LOS by Move:	*	*		 B	*	۰. ب ک	Δ.,	A A	*	* <u>1</u>	) /.D
ApproachDel:	xx	xxxx		-	11.0		**	8.4		ร์	0
Delay Adj:	х	xxxxx			1.00			1.00		1.0	0
ApprAdjDel:	XX	xxxxx			11.0			8.4		8.	0
LOS by Appr:		*			в			Ă		P	L
* * * * * * * * * * * * * *	*****	*****	* * * * * *	* * * * * *	* * * * *	* * * * * *	* * * * * *	****	*****	*******	*******

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Default Scen	ario		м	Ion Jar	7, 2	002 16	5:05:22				Page	<b>7</b> - 1			
		Y	'ear 20	Etiw 20 Wit A	anda hout M Pea	Proper Projec k Hour	ties t Cond	ition	s		•				
1	997 H	CM Un	Level signal	Of Ser ized M	vice lethod	Comput (Futu	ation re Vol	Repor ume A	t lternat	ive)					
********	<pre>************************************</pre>														
Intersection	<pre>Intersection #107 Etiwanda Ave East (NS) / Wilson Ave. (EW) ************************************</pre>														
Averanc Dela	Average Delay (sec/veh): 10.6 Worst Case Level Of Service: B														
********	.y (DC *****	*****	/ - * * * * * * *	*****	*****	n ******	*****	436 µ *****	******	. 361V.	LUC. *****				
Approach: Movement:	No L	rth B - T	ound - R	Sc L	uth B - T	ound - R	E L	ast B - T	ound - R	We L	est Bo - T	ound - R			
Control:	S	top S	ign	S	top S	ign	Un	contr	olled	Und	contro	olled			
Rights:		Incl	ude		Incl	ude		Incl	ude		Inclu	ıde			
Lanes:	, 0	0 1!	D D	0	0 0	0 0	0	0 0	1 0	0 1	L 0	0 0			
Volumo Madul	1						11					!			
Race Moluli	ניני גיני	0	0		۰ ۱			23	242	• •	17	0			
Growth Adi	1 00	0 1	1 00	1 00	1 00	1 00	1 00	1 00	247	1 00	1 00	1 00			
Initial Beer	132	1.00	1.00	1.00	1.00	1.00	1.00	1.00	247	1.00 <b>כו</b>	1.00	1.00			
Added Vol:	1 J J	0	2	0	0	0	0	~ ~ ~	247	1.1 1.1	1 / 0	0			
PasserByVol	0	ŏ	0	0	0	0	0	0	0	ő	0	n n			
Initial Fut.	1 7 7	0	9 9	0	Ő	0	0	21	247	ט גו	17	0			
User Adi.	1 00	1 00	່າກ	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00			
PHF Adi:	0.95	0.95	0 95	0 95	0.95	0 95	0.95	0.95	0.95	0.95	0.95	0.95			
PHF Volume:	140	0	9	0.22	0.20	0.22	0.22	22	260	14	18	0			
Reduct Vol:	0	0	D	0	0	Ō	ō	0	0	0	0	Ō			
Final Vol.:	140	0	9	0	ō	0	Ő	22	260	14	18	0			
Critical Gap	Modu]	le:													
Critical Gp:	6.4	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	6.2	xxxxx	xxxx	xxxxx	xxxxx	кххх	xxxxx	4.1	xxxx	xxxxx			
FollowUpTim:	3.5	xxxx	3.3	$\infty \cos \alpha$	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx			
				1	• <b>-</b> - <b>-</b>			<b></b> .			• • • •				
Capacity Modu	le:														
Cnflict Vol:	197	XXXX	152	XXXX	$\infty \infty \infty$	XXXXX	XXXX	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXXX	282	XXXX	XXXXX			
Potent Cap.:	796	XXXX	899	XXXX	XXXX	XXXXXX	XXXX	XXXX	XXXXX	1292	XXXX	XXXXXX			
Move Cap.:	789	XXXX	899	XXXXX	$\infty \infty \infty$	XXXXX	XXXX	XXXX	XXXXX	1292	XXXX	xxxxx			
				ļ <b>-</b>		• •									
Level Of Serv	ice M	lodule	:							_					
top by Have	XXXX	XXXX	XXXXX	XXXXX	XXXX	XXXXX	XXXXX	XXXX	XXXXX	7.B	хххх	XXXXX			
Movement.	τœ	- 	- 		1 000	*	*	*	*	A	*	- -			
Shared Can -	- 111 -	70£	- KI	- 11 -	T.I.K	- KT	- `L`L	LIR	- KT	шт	- LIK	- KI			
Shrd StoDel	****	10 E	*****	XXXX XXXXX	XXXX	AXXXX	XXXX	XXXX	XXXXX		XXXX				
Shared LOS:	*	-0.0 R	*	*	*	*	*	*	*	7.0 N	*	*			
ApproachDel:		10.6		YY	XXXX		 			~ •	XXXX				
ApproachLOS:		в			+		~	*		~	*				

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Default Scen	ario		Mo	on Jan	7,2	002 16	:05:22	!			Page	3-1
		Ŷ	ear 202	Etiw 20 Wit A	anda hout M Pea	Proper Projec k Hour	ties t Cond	lition	15			
			a	)f Sor		 Comput		Perer				
	1997 H	CM 4	-Way St	OD Me	thod	COMPUE (Putur	ation e Volu	me Al	ternat	ive)		
********	******	****	* * * * * * *	*****	*****	*****	*****	****	*****	*****	*****	*****
Intersection	#3 Et	iwan( ****	da Ave. ******	(NS)	/ Sui *****	mmít A *****	ve. (E *****	:W) *****	*****	*****	* * * * *	******
Cycle (sec):		10	0		I	Critic	al Vol	./Cap	). (X):		2.1	32
Loss Time (s	ec):		0 (Y+R	= 4.	sec),	Averag	e Dela	y (se	c/veh)	:	321	.7
Optimal Cycl	e:	I	0		-	Level	Of Ser	vice:				F
* * * * * * * * * * * * * *	*****	* * * *	* * * * * * *	*****	****	*****	* * * * * *	****	* * * * * *	*****	****	******
Approach:	Nor	th Ba	ound	So	uth Bo	ound	E	ast B	ound	W	est B	ound
Movement:	L -	Т	- R	L L	- T	- R	L	- T	- R		- T	- R ,
			 i.an	1			<b>-</b>			1		 i.am
CONCTOI:	50	op S: Incl	ude	5	top s: Trol	rdu	5	LOP S	rdu	5	Lop S	ude ude
Min Green	n	n Dirt	1112 1	0	111010	n n	0	11101		n	THCT	uue 0
Lanes:	0 <b>0</b>	1!	0 0	0	0 1	ດດັ	0	0 1!	ົດ ດັ	٥	0 11	ດດັ
Volume Modul	e:		•	•								
Base Vol:	335	89	147	59	279	32	15	134	421	410	303	86
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	335	89	147	59	279	32	15	134	421	410	303	86
Added Vol:	0	0	0	0	0	D	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0.	0	0	0	0	0	0	0
Initial Fut:	335	89	147	59	279	32	15	134	421	410	303	86
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF AC]:	0.95 (	0.95	1.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PAR VOLUME. Reduct Vol:	272	24 0	100	02	294 0	- <u>1</u>	10	141	443	432	212	
Reduced Vol:	353	94	155	62	294	34	16	141	443	432	319	91
PCE Adi:	1.00 1	L . 00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00 1	L.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	353	94	155	62	294	34	16	141	443	432	319	91
			<b>-</b>									
Saturation Fl	Low Mod	lule:										
Adjustment:	1.00 1	00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.59 0	).15	0.26	0.16	0.75	0.09	0.03	0.23	0.74	0.51	0.38	0.11
Final Sat.:	233	62	T05	- <b>6</b> 3	299	34	11	98	307	202	150	42
Connector bool	voie N	(										1
Vol/Sat.	.yaia 15 1 51 1	51	ย. 1 51	0.98	0 00	0 99	3 44	1 4 4	1 44	<b>5 1 5</b>	רו כ	2 1 7
Crit Moves:	****		+.21	0.00	****	0.90	****	1.49	1-44	2.13	****	2.13
Delay/Veh: 2	266.3	266	266.3	72.3	72.3	72.3	235.5	236	235.5	538.3	538	538.3
Delay Adj:	1.00 1	.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh: 2	66.3	266	266.3	72.3	72.3	72.3	235.5	236	235.5	538.3	538	538.3
LOS by Move:	F	F	F	F	F	F	F	F	F	F	F	F
ApproachDel:	26	6.3			72.3		2	235.5		5	38.3	
Delay Adj:	1	.00			1.00			1.00			1.00	
ApprAdjDel:	26	6.3			72.3		2	:35.5		5	38.3	
LOS by Appr:		F	*****		F			F			F	
					* * * * *	* * * * * *	*****	*****		*****	****	*****

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Default Scen	ario		Mo	on Jan	7,2	002 16	:05:22				Page	4-1
		Ŷ	ear 202	Etiw 20 Wit A	anda hout M Pea	Proper Projec k Hour	ties t Cond:	itions	;			
			Level C	of Ser	vice	Computa	ation J	leport				
	1997	нсм ој	peratic	ons Me	thod	(Future	e Volu	ne Alt	ernati	ve)		
********	* * * * *	*****	******	*****	****	*****	*****	*****	*****	*****	*****	*****
Intersection	#4 E	tiwand	da Ave.	(NS)	/ Hi	ghland	Ave.	(EW)	*****	*****	*****	******
Cycle (sec):		130	D			Critica	al Vol	./Сар.	(X):		1.44	17
Loss Time (s	ec):		6 (Y+R	= 3	sec)	Averag	e Delag	y (sec	/veh):		178.	. 0
Optimal Cycl	e:	130	0			Level	Of Ser	vice:				F
*********	* * * * *	* * * * * *	* * * * * * *	* * * * *	* * * * *	*****	******	* * * * * *	*****	*****	*****	******
Approach:	No	rth Bo	ound	So	uth B	ound	Ea	ast Bo	ound	We	est Bo	bund
Movement:		- T	- R	ь ,	- T	- R		- T	- R	, Ъ -	- T	- R
Control		Bormit	 	I	i		1   · D		·			 -od
Rights		Incl	ude		Incl	ude	Υ.	Inclu	.eu Ide	P.	Taclı	ide
Min. Green:	15	15	15	15	11101	15	10	11010	15	10	15	15
Lanes:	1	0 0	1 0	1	0 0	1 0	1 0	J 1	0 1	1 (	0 0	10
					<b></b>					<b>-</b> -		
Volume Module	e:											
Base Vol:	69	298	33	68	465	616	196	409	127	148	985	86
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	69	298	33	68	465	616	196	409	127	148	985	86
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1 00	298	33	68	465	616	196	409	127	148	985	1 00
DUE Ddi.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume	0.93	314	25	72	490	649	205	د <del>د</del>	174	156	1037	91
Reduct Vol:	, , , 0	0	55	, <u>,</u>	409 N	040	200 n	4.51	134	150	1057	0
Reduced Vol:	73	314	35	72	489	648	206	431	134	156	1037	91
PCE Adj:	1,00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	73	314	35	72	489	648	206	431	134	156	1037	91
			[									
Saturation Fl	ow Mo	dule:										
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1900	1800	1800	1800
Aajustment:	0.94	1.00	2.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes: Einel Cat	1,00	0.90	120	1.00	0.43	0.57	1.00	1.00	1.00	1.00	1.05	145
 	1700	1621	ł	1	174	1026	1700	1800	1800	1700	1000	T#3
Capacity Anal	veie	Modul	<u>ا</u>	1					!	1		
Vol/Sat:	0.04	0.19	0.79	0.04	0.62	0 63	0.12	0.24	0.07	0.09	0.63	0.63
Crit Moves:			<i>- 2</i>	¥.91	****	0.00	****	V. K. 3	0,07	v.v.	****	
Green/Cycle:	0.44	0.44	0.44	0.44	0.44	0.44	0.08	0.37	0.37	0.14	0.43	0.43
Volume/Cap:	0.10	0.44	0.44	0.10	1.45	1.45	1.45	0.64	0.20	0.64	1.45	1.45
Delay/Veh:	21.6	25.9	25.9	21.6	245	244.7	295.4	35.6	27.7	58.2	245	245.1
Jser DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
\djDel/Veh: :	21.6	25.9	25.9	21.6	245	244.7	295.4	35.6	27.7	58.2	245	245.1
DesignQueue:	3	13	1	3	24	31	14	21	6	10	50	4
* * * * * * * * * * * * * *	****	* * * * *	* * * * * * *	*****	****	******	*****	* * * * *	*****	*****	*****	******

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Default Scena	irio		М	ion Ja <b>n</b>	7,2	002 16	:05:22				Page	8-1	
		Ŷ	ear 20	Etiw 20 Wit A	anda hout M Pea	Proper Projec k Hour	ties t Cond	ition	s				
	97 H	CM Un	Level signal	Of Ser ized M	vice ethod	Comput: (Futu:	ation re Vol	Repor ume A	t lternat	ive)			
· · · · · · · · · · · · · · · · · · ·	****	*****	*****	*****	* * * * *	*****	*****	****	******	*****	*****	******	
Intersection #108 East Ave. (NS) / Wilson Ave. (EW)													
here and Deler	. /	- /web		DELOW		<b>U</b> .	oret C	aco I	aval Of	Com		F	
Average Deray	*****	*****	.). UVD ******	*****	* * * * *	******	*****	*****	******	. DELV.	*****		
**************************************													
Movement,	т.	- т	- R	τ.	- Tr	- R	τ.	с <i>эс р</i> - т	- R	L	- T	- P	
				11			11			1			
Control·	S	top S	ian	5	top S	ian	Սո	contr	olled	Und	contro	bled	
Dichte.	5	Incl	ude	-	Incl	ude	•••	Incl	ude		ĭncl	ıde	
Lanes.	n	1 3	0 0	ο	0 11	0 0	D	0 0	1 0	0 1	0	0 0	
				11						1		!	
Volume Module							11		I	1		•	
Pace Vol-		n	1.06	n	n	0	0	14	17	983	27	D	
Crowth Adi.	1 00	1 00	1 00	1 00	1 00	ากถึ	า กล้	1 00	1 00	1 00	1 00	1 00	
Growin Auj: Initial Dec.	1.00	1.00	106	200	1.00	1.00	1.00	1.00	17	1.00	2.00	1.00	
Initial BSC:		0	100	n n	0	ň	0		1,	0	<u>ب</u> _ `	Ô	
Raded Vol:	0	0	0	0	0	0	0	ň	0	0	0	n	
Taisiel Dyvol:	2	0	106	ő	0	0	0	14	17	500	27	0	
Inicial Ful:	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	
USEL ADJ:	1.00	1.00	n as	0.95	1.00	1.00 0.05	0.05	1.00 0.0E	0.05	0.00	1.00	0.00	
PHF Auj:	2	0.95	112	0.55	0.75	0.00	0.95	15	10.00	1025	0.35 90	0.33	
PHF VOIUNE:	2	0	112	0	0	0	0	- 1-) 0	10 10	1000	<u>40</u>	, ,	
	2	0	110	, v		0	۰ ۵	15	10	1075	- V - NG	0	
final vol.:	v.a.du."		112	U	0	U	U	10	10	1032	20	U	
Critical Gap	moau.	Le:	<i>с</i> 2					bd an and a c					
Critical Gp:	0.4		0.2	~~~~~		XXXXX			XXXXX	4.1	XXXX	XXXXX	
FOLIOWODITH:	د.د	~~~~	د.د		~~~~		1 .	****	1	1 2.2	2002	XXXXX	
Capacity Modu	 1			[]			ļ					1	
Coflict Vol:	7177	****	24	****	× × × ×	*****	××××	****	VYYYY	22	~~~~	*****	
Dotent Can -	56	XXXX	1059	XXXX	YYYY	XXXXX	****	~~~~	*****	1592	~~~~	xxxxx	
Move Can	0	XXXX	1059	XXXX	XXXX	XXXXX	****	TYTY	XXXXX	1592	XXXX	****	
Hove cap										1			
Level Of Serv	ice M	(odul e	e:	ł		ł	I		I	1		ł	
Stopped Del:x	xxxx	xxxx	XXXXX	XXXXX	XXXX	XXXXXX	XXXXX	XXXX	XXXXX	7.3	xxxxx	XXXXX	
LOS by Move:	*	*	*	*	*	*	*	*	*	А	*	*	
Movement:	LT -	LTR	- RT	LT -	LTR	- RT	LT -	LTR	- RT	LT -	LTR	- RT	
Shared Cap.: :	xxxx	0	XXXXXX	XXXX	0	XXXXX	XXXX	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXXX	xxxx	XXXX	XXXXX	
Shrd StpDel:x	XXXX	XXXX	XXXXX	XXXXX	XXXX	XXXXX	XXXXX	XXXX	XXXXX	11.3	XXXX	XXXXX	
Shared LOS:	*	*	*	*	*	*	*	ŧ	±	В	*	*	
ApproachDel:	xx	XXXX		x>	XXXX		20	xxxx		xx	xxxx		
ApproachLOS:		F			*			*			*		

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Default Sce	nario		ł	ion Jan	n 7, 2	002 16	:05:22				Page	5-1
		Ŷ	ear 20	Etiw 20 Wit A	anda hout M Pea	Proper: Projec k Hour	ties t Cond	ition:	5			<b> </b>
			Level	Of Ser	více	Computa	ation 1	Report	<b></b>	,		
	1997	HCM 4	-Way S	top Me	thod	(Future	e Volu	me Alt	ternat	ive)		
********	*****	*****	*****	*****	*****	*****	******	*****	******	******	*****	******
Intersection	n #5 E	Sast A	ve. (N	(S) / S	ummit	Ave.	(EW)					
**********	*****	*****	*****	*****	****	******	******	*****	******	******		******
Lycie (sec)	:	TO	0 (V.D	- 4	665 \	Critica Average	ai voi n Dolou	/Cap	. (X): ./		2.5	1
Doss lime (: Optimal Curi	sec/:		0 (1+R	. = 4	seci	Average Level (	e Delaj Of Com	y (sec	27 Ven)	:	576	 P
transferrer	12:	*****	U *****	*****	*****	Tevet (	******	******	*****	******	*****	5 ******
Approach -	No	Th B	ound	50	uth B	ound	F	act Br	hund	W		bnuc
Movement ·	T.	- T	- 8	т.	- Т	- P	Т.	- T		τ.	- T	- R
novemente.	. <b>i</b>			11			• • • • • • • • • • •					
Control ·	5	top S	ian		ton S	ion	L1 S1	ton S	ion	LI SI	op S	ion ,
Rights:	-	Incl	ude		Incl	ude	5	Incl	ıde	<b>.</b>	Incl	ude
Min. Green:	0	0	0	0	0	0	0	0		0	0	0
Lanes:	0	0 1:	0 0	0	0 1!	0 0	0 0	0 1!	0 0	0 0	5 11	0 0
Volume Modul	e:									• •		
Base Vol:	128	123	101	180	766	228	43	140	149	365	434	104
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	128	123	101	180	766	228	43	140	149	365	434	104
Added Vol:	0	0	D	0	0	0	0	0	0	Û	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	Ô
Initial Fut:	128	123	101	180	766	228	43	140	149	365	434	104
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	135	129	106	189	806	240	45	147	157	384	457	109
Reduct Vol:	0	0	0	0	0	0	Ô	0	0	0	0	0
Reduced Vol:	135	129	106	189	806	240	45	147	157	384	457	109
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	135	129	106	189	806	240	45	147	157	384	457	109
Papumanian P	1 1 Mu			1			! - <b></b>			[   - <b></b> -		
Adjustment.	1 00			1 00	1 00	1 00	1 00	1 00	1 00	1 00	2 00	1 00
lanee.	1.00	0.35	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.40	1.00	0.12
final Car	150	144	110	0.15	0.00	0.19	0.13 F 7	174	105	170	202	10.12
		174 	و <b>د</b> د		210	ده ا ـ ـ ـ ـ ـ ـ	دو ماريد ما	1/4	100	1,0 1	203	
apacity Anal	lvsis	Modul	P.	11		1	I					1
ol/Sat:	0.90	0.90	0.90	2.90	2 90	2 90	0.85	n 85	0.85	2 25	2 25	2.25
rit Moves:		****			****	5.70	****	0.05	0.05	0.00	****	
elay/Veh:	50.9	50.9	50.9	877.8	878	877.8	42.9	42.9	42.9	590.8	591	590.B
elay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
djDel/Veh:	50.9	50.9	50.9	877.8	878	877.8	42.9	42.9	42.9	590.8	591	590.8
OS by Move;	F	F	F	F	F	F	E	Е	Е	F	F	F
pproachDel:		50.9		E	377.8			42.9		5	590.8	
elay Adj:		1.00			1.00			1.00			1.00	
pprAdjDel:		50.9		8	177.8			42.9		5	8.00	
OS by Appr:		F			F			Ē			F	
*********	****	* * * * *	*****	*****	* * * * *	*****	*****	*****	*****	******	****	******

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Default Scen	м	on Ja	n 7, 2	002 16	:05:22	:		P	age	6-1			
Etiwanda Properties Year 2020 Without Project Conditions AM Peak Hour												-	
Level Of Service Computation Report													
1997 HCM Operations Method (Future Volume Alternative)													
Intersection #7 East Ave. (NS) / Victoria St. (EW)													
**********************													
Cycle (sec):		6	0			Critic	al Vol	./Cap	. (X):		0.43	12	
Loss Time (s	ec):		6 (Y+R	≠ 3	sec)	Averag	e Dela	y (se	c/veh)		16	.0	
Optimal Cycl	e:	61 *****	0 * * * * * * *	*****	*****	Level	Ot Ser	V1Ce:	******		***	B ******	•
Approach	No	rth B	ound	Sc	hith B	പപ	E	ast Be	nund	Weg	t Br	hand	•
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L -	T	- R	
Control:	. Þ	roteci	ted	· •	rotec	ted	••	Permi	tted	Pe	rmit	tted .	
Rights:		Inclu	ıde		Incl	ude		Inclu	ıde	Ovl			
Min. Green:	10	16	16	10	16	16	21	21	21	21	21	21	
Lanes:	1	02	0 1	1	01	01	. 1	0 0	1 0	1 0	1	0 1	
										l			
Volume Module	e:	1.05	100					76	<b>C7</b>	222	240	(3	
Growth Adi	297	1 00	1 00	1 00	טס י	4.3	8 1 00	1 00	1 00	1 00 1	260	1 00	
Initial Bser	297	195	188	17	, 1.00 , EU	1.00	1.00	1.00	1.00	1.00 I	260	67	
Added Vol-	2,0	122	100	 	i 00	4.5 N	0	ر, م	07	- <u></u>	200	0, n	
PasserByVol:	õ	ő	0	0	0	0	0	0	ő	0	õ	0	
Initial Fut:	297	195	188	17	60	43	8	75	67	223 2	260	67	
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.	.00	1.00	
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95 0.	. 95	0.95	
PHF Volume:	313	205	198	18	63	45	8	79	71	235 2	274	71	
Reduct Vol:	O	0	0	0	0	O	0	0	0	0	0	0	
Reduced Vol:	313	205	198	18	63	45	8	79	71	235 2	274	71	
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.	00	1.00	
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.	00	1.00	
Final Vol.:	ک ا د	205	198	18	53	45	, 8	79	71	235 2	74	71	
Saturation Fl		dula		1									
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800 18	00	1800	
Adjustment:	0.94	1.00	1.00	0.94	1.00	1 00	0 94	1 00	1 00	0.94 1.	00	1.00	
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.53	0.47	1.00 1.	00	1.00	
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	951	849	1700 18	00	1800	
••••••				[	• • •							1	
Capacity Anal	ysis	Modul	e:										
Vol/Sat:	0.18	0.06	0.11	0.01	0.04	0.03	0.00	0.08	0.08	0.14 0.	15	0.04	
Crit Moves:	***				****					* *	* *		
Green/Cycle:	0.28	0.34	0.34	0.21	0.27	0.27	0.35	0.35	0.35	0.35 0.	35	0.56	
volume/Cap:	V.65	0.17	0.32	0.05	0.13	0.09	0.01	0.24	0.24	0.39 0.	43	0.07	
Delay/Ven:	22.V 1 00	14.0	15.1	18.8	16.8	16.6	12.7	14.0	14.0	15.1 15	.4	6.0	
AdiDel/Veb	1.UU 22 A	14 0	15 1	100	1.00	1.00	12 7	1.00	1.00	1.00 1.	00	1.00	
DesignOueue	22.U B	17.V 5	19.1 4	то.Э	10.0 2	10.6 1	12-7	14.U 2	14.U 2	12-1-12	-4 5	ъ.U 1	
**********	* * * * *	- * * * * * *		*****	ے *****	******	******	ے * * * * *	ے * * * * * *	ر ******	***	_ * * * * * *	

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Default Scen	ario		Mo	on Jan	7, 2	002 16:	05:49				Page	2-1		
		<b>-</b> У	ear 202	Etiw 20 Wit P	anda i hout i M Peal	Propert Project k Hour	ies Cond:	it ion	5					
			Lovel (	f Cor			tion I		 +					
	1997 J	BCM 4	-Way St	n ser op Me	vice ( thod	lompuca (Future	Volu	me Al	ternati	ve)				
*******	*****	*****	*****	*****	* * * * * *	******	*****	*****	******	*****	****	*****		
Intersection	#1 Et	tiwand	da Ave.	- We	st (N	s) / Wi	lson A	Ave.	(EW)					
**********	* * * * * *	*****	******	* * * * *	****	******	*****	*****	******* /vr\.	*****	***** ^ 25	*****		
Cycle (sec): 100 Critical Vol./Cap. (X): Loss Time (sec): 0 (ViP - 4 cool Average Delay (sec/web):											15.	7		
Optimal Cvcl	e.		0 (1+1		aec/ i	Level C	f Ser	vice:	c/ven/.		10.	c		
********	*****	*****	~ * * * * * * * *	****	* * * * *	******	*****	* * * * *	* * * * * * *	** * * * *	*****	*****		
Approach:	Not	rth Be	ound	So	uth B	ound	Ea	ast B	ound	We	est Bo	und		
Movement:	Ŀ	- 1'	- R	L	- т	- R	L	- T	- R	L -	Т	- R		
			<b></b>	[			[			<b>-</b>		ļ		
Control:	St	top S:	ign	S	top S:	ign	S	top S	ign	St	op Si	gn		
Rights:		Inclu	ude		Inch	ude	<u> </u>	lncl	uae	0	Include			
min. Green: Lange:	0	U N O		0 1	0 0	U n 1	י ר	ט ר ר		0 0	) 1	1 0		
Dalles,	1		1	1			 			1	·			
Volume Modul	i e:		I	i			I		,	I		,		
Base Vol:	0	0	0	142	0	2	33	748	0	0	88	247		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	0	0	0	142	0	2	33	748	D	0	88	247		
Added Vol:	0	0	Q	0	0	0	0	0	0	0	0	0		
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0		
Initial Fut:	0	0	0	142	0	2	33	748	0	0	88	247		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
PHF VOlume:	0	0	0	149	0	2	35	787	0	0	<del>ر د</del>	200		
Reduced Vol	0	0	0	140	0	U 2	25	0 797	0	0	9.7 9.7	260		
PCE Adi	1 00	1 00	1 00	147	1 00	1 00	00 1	1 00	1 00	1.00	1.00	1.00		
MLF Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Final Vol.;	0	0	0	149	¢.	2	35	787	0	0	93	260		
						· <b>-</b> -			{					
Saturation Fl	ow Mo	dule:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00		
Final Sat.:	0	0	0	464	0	542	, 552	1212	0	0	569	645		
				]		!								
Capacity Andi Vol/Sat:	7212 7777	NOGUI	.e: .vvvv	0 22		0 00	0.04	0 45	~~~~~	× • • • •	0 16	0 40		
Crit Moves-	~~^^	~~~~	~~~~	∪.3∠ ****	****	0.00	0.08	****	~~~~	~~~~	5.10	****		
Delay/Veh:	0.0	0.0	0.0	13.7	0.0	8.9	9.5	18.5	0.0	0.0	9.9	11.4		
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
AdjDel/Veh:	0.0	0.0	0.0	13.3	0.0	8.9	9.5	18.5	0.0	0.0	9.9	11.4		
LOS by Move:	*	*	*	в	*	А	А	С	*	*	A	В		
ApproachDel:	xx	xxxx			13.3			18.1			11.0			
Delay Adj:	x	xxxx			1.00			1.00			1.00			
ApprAdjDel:	XX	XXXX			13.3			18.1			11.0	•		
LOS DV ADDT.		*			я			С			в			

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Default Scena	aric		м	lon Jan	7, 2	2002 16	:05:49	•			Page	7-1
		Y	'ear 20	Etiw 20 Wit P	anda hout M Pea	Proper Projec k Hour	ties t Cond	lition	15			
Level Of Service Computation Report 1997 HCM Unsignalized Method (Future Volume Alternative)												
***************************************												
<pre>Intersection #107 Etiwanda Ave East (NS) / Wilson Ave. (EW) ************************************</pre>												
Average Delay (sec/veh): 136.0 Worst Case Level Of Service: F												
*********	; ( *****	*****	*****	*****	* * * * *	*****	******	****	******	******	*****	- ******
Approach:	No	rth B	ound	, So	uth B	ound	E	ast B	ound	W.	est B	ound
NOVEMENC:	ц <u>р</u>	- 1	- K	11 L	- 1	- R	1	- 1	- r	41	- 1	- R.
Control: Rights:	5 (	top S Incl	ign ude	s	top S Incl	ign ude	 נות נות	contr Incl	olled ude	Un	contr Incl	olled ude
Lanes:	0	0 l!	0 0	Ó	0 0	0 0	0	0 0	1 0	0	10	0 0
										- <b>-</b>		
Volume Module	2:											
Base Vol:	281	0	71	0	0	0	D	689	165	5	79	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	281	0	71	0	0	0	D	689	165	5	79	0
Added Vol:	0	0	Ð	0	0	0	0	0	0	0	Ð	0
FasserBvVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	281	0	71	0	0	D	0	689	165	5	79	0
User Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adi:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	296	0	75	0	D	0	0	725	174	5	83	0
Reduct Vol:	0	0	0	0	0	ō	0	0	0	0	0	Ō
Final Vol.:	296	0	75	Û	0	0	D	725	174	5	83	0
Critical Gap	Modu)	le:										
Critical Gp:	6.4	xxxx	6.2	XXXXX	$\infty \infty \infty$	xxxxx	xxxxx	XXXX	ххххх	4.1	xxxx	xxxxx
FollowUpTim:	3.5	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
									[			1
Capacity Modu	le:									•		,
Cnflict Vol:	906	xxxx	812	xxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	899	xxxx	xxxxx
Potent Cap.:	309	хххх	382	XXXX	xxxx	xxxxx	xxxx	xxxx	$\infty \infty \infty \infty$	764	xxxxx	xxxxx
Move Cap.:	308	xxxx	382	xxxx	xxxx	xxxxx	xxxx	xxxxx	xxxxx	764	xxxx	xxxxx
			}	•			1					
Level Of Serv	ice M	odule	3:	•			,		•			•
Stopped Del:x:	XXXX	xxxx	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXXX	XXXX	XXXXX	XXXXX	xxxx	XXXXX	9.7	xxxx	XXXXX
LOS by Move:	t	*	٠	*	÷	±	*	*	*	А	*	*
Movement:	LT -	LTR	- RT	LT -	LTR	- RT	LT ·	LTR	- RT	LT -	LTR	- RT
Shared Cap.: :	xxxx	320	xxxxx	XXXX	xxxx	xxxxx	xxxx	хххх	XXXXX	XXXX	xxxx	xxxxx
Shrd StpDel:x:	xxxx	136	XXXXX	XXXXX	XXXX	xxxxx	xxxxx	xxxx	XXXXX	9.7	xxxx	xxxxx
Shared LOS:	*	F	•	*	*	*	*	*	*	A	*	*
ApproachDel:	1	36.0		хx	xxxx		xx	xxxx		xx	xxxx	
ApproachLOS:		F			*			*			*	

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Default Scen	ario	М	on Jan	7,2	002 16:	:05:49				Page	3-1
Etiwanda Properties Year 2020 Without Project Conditions PM Peak Rour											
		Toyol (	 Df Com			tion 1					
	Level Of Service Computation Report										
1997 ACH 4-may SCOP HELLOU (FULUFE VOLUME ALTEENdLIVE)											
Intersection #3 Etiwanda Ave. (NS) / Summit Ave. (EW)											
***************************************											
Cycle (sec):	3	.00			Critica	1 Vol	./Cap	. (X):		1.96	0
Loss Time (s	ec):	0 (Y+R	<b>= 4</b>	sec)	Average	Delay	Y_(se∉	c/veh):		258.	3
Optimal Cycl	e: ********	0			Level C	)f Ser	vice:				F
Annie ant	North	Bound		veb ¤							und
Movement:	I T		t.	<u>асы в</u>		L.	151 DI - T				
Piovemenc,					- K	1	- 1				
Control:	Stop	Sign	S	top S	ian '	' SI	top S:	ian	່ St	op Si	.qn
Rights:	Inc	lude		Inch	ude		Incl	Jde		Inclu	ide
Min. Green:	Ð	0 0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 1	! 0 0	0	0 1!	0 0	0 (	) <u>]</u>	0 0	0 0	1!	0 0
		• •									
Volume Module	в:										
Base Vol:	341 27	6 401	22	125	14	17	97	277	199	55	47
Growth Adj:	T.00 T.0	0 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Inicial Bse:	341 27	10 401 0 0	22	125	14	17	97	2//	199	55	47
PasserByVol:	0	0 0	0	0	0	0	0	0	0	0	0
Inizial Fur	341 27	6 401	22	125	14	17	- -	277	100	55	47
User Adi:	1.00 1.0	0 1.00	1.00	1.00	1 00	1 00	1 00	1 00	1 00	1 00	1.00
PHF Adi:	0.95 0.9	5 0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	359 29	1 422	23	132	15	18	102	292	209	58	49
Reduct Vol:	0	0 0	0	0	0	0	0	0	0	0	0
Reduced Vol:	359 29	1 422	23	132	15	18	102	292	209	58	49
PCE Adj:	1.00 1.0	0 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00 1.0	0 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	359 29	1 422	23	132	15	18	102	292	209	58	49
Opturption D1	ou Modul										
Adjustment -		=: 	1 00	1 00	1 00	1 00		1 00	1 00	1 00	1 00
Lanes.	1.00 1.00 1.20 2.00	7 0 4 0	0.34	0 77	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Sat.:	183 148	3 215	58	329	17	0.04 23	131	0.71 676	114	87	74
			1			1		1	1		
Capacity Anal	ysis Modu	ile: '			,	1		I	•		L
Vol/Sat:	1.96 1.96	5 1.96	0.40	0.40	0.40	0.78	0.78	0.7В	0.67	0.67	0.67
Crit Moves:		* * * *	****					* * * *		****	
Delay/Veh: 4:	54.5 455	454.5	15.2	15.2	15.2	28.7	28.7	28.7	22.9	22.9	22.9
Delay Adj:	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh: 4	54.5 455	454.5	15.2	15.2	15.2	28.7	28.7	28.7	22.9	22.9	22.9
LUS by Move:	F F	F	С	C	С	D	D	D	С	¢	С
ApproachDel:	454.5			15.2			28.7			22.9	
Appradinel.	45.4 C			15 00			1.00			1.00	
LOS by Annry	404.0 F			10.2			28.7			22.9	
**********	· * * * * * * * * *	******	* * * * * *	ر * * * * *	******	* * * * * *	⊥ *****	*****	*****	ب *****	*****

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Etiwanda Properties           Year 2020 Without Project Conditions           PM Peak Hour           Level Of Service Computation Report           1997 HCM Operations Method (Future Volume Alternative)           Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)           Critical Vol./Cap. (X): 0.794           Loss Time (sec):         6 (Y-R = 3 sec) Average Delay (sec/veh): 25.3           Optimal Cycle:         80         Critical Vol./Cap. (X): 0.794           Loss Time (sec):         6 (Y-R = 3 sec) Average Delay (sec/veh): 25.3           Optimal Cycle:         80         Critical Vol./Cap. (X): 0.794           Loss Time (sec):         6 (Y-R = 3 sec) Average Delay (sec/veh): 25.3           Approach:         North Bound         South Bound         East Bound         West Bound           Movement:         L - T - R         L - T - R         L - T - R         I - T - R         I - T - R           Sights:         Include         Include         Include         Include         Include           Min. Green:         15         15         15         163         535         254         54         15         84         91           Growth Adj:         1.00         1.00         1.00         1.00	Default Scenario			Mon Jan 7, 2002 16:05:49								Page 4-1			
Level Of Service Computation Report 1997 HCM Operations Method (Future Volume Alternative) Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW) Cycle (sec): B0 Critical Vol./Cap. (X): 0.794 Loss Time (sec): G (Y+R = 3 sc) Average Delay (sec/veh): 25.3 Optimal Cycle: 80 Level Of Service: C Approach: North Bound South Bound East Bound West Bound Movement: L - T - R L - T - R L - T - R L - T - R Control: Permitted Permitted Protected Protected Rights: Include Include Include Include None Module: Base Vol: 53 384 45 71 351 163 535 254 54 15 84 91 Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0			Ŷ	Etiwanda Properties Year 2020 Without Project Conditions PM Peak Hour											
1997 HCM Operations Method (Furure Volume Alternative)         Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)         Cycle (sec):       80       Critical Vol./Cap. (X1:       0.794         Coptimal Cycle:       80       Critical Vol./Cap. (X1:       0.794         Coptimal Cycle:       80       Level Of Service:       C         Approach:       North Bound       South Bound       East Bound       West Bound         Approach:       North Bound       South Bound       East Bound       West Bound         Approach:       North Bound       Formitted       Protected       Protected         Control:       Permitted       Permitted       Include       Include       Include         Min. Green:       15       15       15       10       1       0				Level (	Of Ser	vice	Computa	ation	Repor	 t					
Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)         Cycle (sec):       B0       Critical Vol./Cap. (X):       0.794         Loss Time (sec):       6 (Y+R = 3 sec) Average Delay (sec/veh):       25.3         Optimal Cycle:       80       Level Of Service:       C         Approach:       North Bound       South Bound       East Bound       West Bound         Movement:       L - T - R       L - T - R       L - T - R       L - T - R       C         Control:       Permitted       Protected       Protected       Protected       Min. Green:       15       15       15       10       1       0<		1997	нсм оз	perati	ons Me	thod	{Future	e Volu	ime Al	ternati	ive)				
Cycle (sec):       B0       Critical Vol./(ap. (X):       0.794         Cycle (sec):       6 (Y+R = 3 sec) Average Delay (sec/veh):       25.3         Optimal Cycle:       80       Level Of Service:       C         Approach:       North Bound       South Bound       East Bound       West Bound         Movement:       L - T - R       L - T - R       L - T - R       L - T - R       C         Control:       Permitted       Protected       Protected       Rocetted         Rights:       Include       Include       Include       Include         Min. Green:       15       15       15       163       535       254       54       15       84       91         Growth Adj:       100       1.00 <td>*************</td> <td>**** #4 F</td> <td>***** !tiwaπı</td> <td>ttttt</td> <td>***** (NG)</td> <td>***** / Hi</td> <td>*******</td> <td>***** Δυρ</td> <td>(EW)</td> <td>*****</td> <td>******</td> <td>****</td> <td>******</td>	*************	**** #4 F	***** !tiwaπı	ttttt	***** (NG)	***** / Hi	*******	***** Δυρ	(EW)	*****	******	****	******		
Cycle (sec):       B0       Critical Vol./Cap. (X):       0.794         Loss Time (sec):       6 (Y+R = 3 sec) Average Delay (sec/veh):       29.3         Optimal Cycle:       80       Level Of Service:       C         Approach:       North Bound       South Bound       East Bound       West Bound         Movement:       L - T - R       L - T - R       L - T - R       L - T - R       L - T - R         Control:       Permitted       Permitted       Protected       Protected       Include         Min. Green:       15       15       15       15       15       10       1       0       1	*********	*****	*****	******	*****	*****	******	*****	*****	******	******	* * * *	*****		
Loss Time (sec): 6 (Y+R = 3 sec) Average Delay (sec/veh): 29.3 Oprimal Cycle: 80 Level Of Service: C Mayement: L - T - R L - T - R L - T - R 	Cycle (sec):	Cycle (sec): B0 Critical Vol./Cap. (X):									0.7	94			
Optimal Cycle:         80         Level of Service:         C           Approach:         North Bound         South Bound         East Bound         West Bound           Movement:         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         T         -         R         L         -         T         -         R         L         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         R         L         -         T         R         L         -         R         L         R	Loss Time (s	ec):		6 (Y+R	= 3	sec)	Average	e Dela	iy (se	c/veh)	:	29	.3		
Approach:         North Bound         South Bound         East Bound         West Bound           Movement:         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         -         R         L         -         T         R         L         -         T         R         L         -         T         R         L         -         T         R         L         -         T         R         L         -         T         R         L         -         T         R         L         -         T         R         L         -         T         R         L         Include         Include <t< td=""><td>Optimal Cycl</td><td>е:</td><td>8</td><td>0</td><td></td><td></td><td>Level (</td><td>Of Ser</td><td>vice:</td><td></td><td></td><td></td><td>С</td></t<>	Optimal Cycl	е:	8	0			Level (	Of Ser	vice:				С		
Approach:         North Bound         South Bound         Last Bound         West Bound           Movement:         L         T         R         L	**********	* * * * *	*****	* * * * * * *	*****	*****	*****	*****	****	******	******	* * * * *	******		
Movement:         L         L         I	Approach:	, NO	rth Bo	ound	50	uth B	ound	, <sup>µ</sup>	ast B	ound	West Bound				
Control:         Permitted         Permitted         Protected         Protected         Include	Movement:	1 1	- T	- к	L.	- T	- K	<u>ь</u>	- T	- ĸ	<u>ь</u> -	T	- ĸ		
Control.       Fermittee       Fermittee       Frotecto       Frotecto       Frotecto         Min. Green:       15       15       15       15       15       10       1       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0       0       1       0 <t< td=""><td>Control</td><td></td><td>Dermi</td><td></td><td>  </td><td>Dermi</td><td>rtod</td><td> T</td><td>rotec</td><td>red</td><td>ידייין   מינס</td><td></td><td>red</td></t<>	Control		Dermi			Dermi	rtod	 T	rotec	red	ידייין   מינס		red		
Highling       Highling <th< td=""><td>Pichre</td><td></td><td>Inclu</td><td>nde</td><td></td><td>Inch</td><td>ude</td><td></td><td>Inch</td><td>ude</td><td></td><td>Incl</td><td>ude</td></th<>	Pichre		Inclu	nde		Inch	ude		Inch	ude		Incl	ude		
Lanes: 1 0 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	Min. Green:	15	1.102	15	15	115	15	10	15	15	10	15	15		
Volume Module:       Base Vol:       53       384       45       71       351       163       535       254       54       15       84       91         Growth Adj:       1.00	Lanes:	1	0 0	1 0	1	0 0	1 0	1	0 1	0 1	1 0	0	1 0		
Volume Module:       Signature       Signature<													1		
Base Vol:       53       384       45       71       351       163       535       254       54       15       84       91         Growth Adj:       1.00       1.0	Volume Module	2:													
Growth Adj:       1.00       0<	Base Vol:	53	384	45	71	351	163	535	254	54	15	84	91		
Initial Bse:       53       384       45       71       351       163       535       254       54       15       84       91         Added Vol:       0 <td>Growth Adj:</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00 1</td> <td>L.00</td> <td>1.00</td>	Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1	L.00	1.00		
Added Vol:       0	Initial Bse:	53	384	45	71	351	163	535	254	54	15	84	91		
PasserByVol:       0 <t< td=""><td>Added Vol:</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></t<>	Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0		
Initial Fut:       53       384       45       71       351       163       535       254       54       15       64       91         User Adj:       1.00       0	PasserByVol:	0	0	D	0	0	0	0	0	0	0	0	0		
User Adj:       1.00       0 </td <td>Initial Fut:</td> <td>53</td> <td>384</td> <td>45</td> <td>71</td> <td>351</td> <td>163</td> <td>535</td> <td>254</td> <td>54</td> <td>15</td> <td>84</td> <td>91</td>	Initial Fut:	53	384	45	71	351	163	535	254	54	15	84	91		
PHF Adj:       0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1	00	1.00		
PHF Volume:       56       404       47       75       369       172       563       267       57       16       88       96         Reduct Vol:       0 <td>PHF Adj:</td> <td>0.95</td> <td>0.95</td> <td>0.95</td> <td>0.95</td> <td>0.95</td> <td>0.95</td> <td>0.95</td> <td>0.95</td> <td>0.95</td> <td>0.95 0</td> <td>.95</td> <td>0.95</td>	PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95 0	.95	0.95		
Reduct Vol:       0 <td< td=""><td>PHF Volume:</td><td>56</td><td>404</td><td>47</td><td>75</td><td>369</td><td>172</td><td>563</td><td>267</td><td>57</td><td>16</td><td>88</td><td>96</td></td<>	PHF Volume:	56	404	47	75	369	172	563	267	57	16	88	96		
Reduced vol:       56       404       47       75       369       172       563       267       57       16       88       98         PCE Adj:       1.00       1.0	Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0		
PCE Adj:       1.00	Reduced Vol:	56	404	47	75	369	172	563	267	57	16	88	96		
Mair       1.00	PCE Ad]: MIE Adi	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1	.00	1.00		
Saturation Flow Module:         Saturation Flow Module:         Saturation Flow Module:         Saturation Flow Module:         Saturation Flow Module:         Saturation Flow Module:         Saturation Flow Module:         Saturation Flow Module:         Saturation Flow Module:         Saturation Flow Module:         Saturation Flow Module:         Saturation Flow Module:         Saturation Flow Module:         1.00 0.90 0.10 1.00 0.68 0.32 1.00 1.00 1.00 0.94.1.00 1.00         Saturation Flow Module:         Capacity Analysis Module:         /ol/Sat:       0.03 0.25 0.25 0.04 0.30 0.30 0.33 0.15 0.03 0.01 0.10 0.10         Chi/Sat:       0.03 0.25 0.25 0.04 0.30 0.30 0.33 0.15 0.03 0.01 0.10 0.10         Chi/Sat:       0.03 0.25 0.35 0.35 0.35 0.35 0.35 0.35 0.39 0.34 0.34 0.23 0.19 0.19         Colume/Cap:       0.09 0.72 0.72 0.13 0.86 0.86 0.86 0.43 0.09 0.04 0.55 0.55         Delay/Veh:       17.5 26.4 26.4 17.7 35.3 35.3 33.3 20.7 17.8 24.0 31.3 31.3         Ser DelAdj:       1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Pubr Auj: Pinal Vol	1.00	1.00	1.00	1,00	200	1.00	1.00	1.00	1.00	1.00 1	.00	1.00		
Saturation Flow Module:         Sat/Lane:       1800 1800 1800 1800 1800 1800 1800 1800			404	47	15		112	1	267	57 	1		96		
Sat/Lane:       1800	Saturation Fl	ow Mr	പ്പിലം	1	1			1		1	1		1		
Adjustment:       0.94 1.00       1.00       0.94 1.00       1.00       0.94 1.00       1.00       0.94 1.00       1.00       1.00       0.94 1.00       1.0	Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800 1	800	1800		
Lanes:       1.00 0.90 0.10 1.00 0.68 0.32 1.00 1.00 1.00 1.00 0.48 0.52         Final Sat.:       1700 1611 189 1700 1229 571 1700 1800 1800 1700 864 936         Capacity Analysis Module:	Adiustment:	0.94	1.00	1.00	0.94	1.00	1.00	0 94	1 00	1 00	0.94.1	.00	1 00		
Final Sat.:       1700 1611       189 1700 1229       571 1700 1800       1800 1700 864       936         Capacity Analysis Module:	Lanes:	1.00	0.90	0.10	1.00	0.68	0.32	1.00	1.00	1.00	1.00 0	.48	0.52		
Capacity Analysis Module:         /ol/Sat:       0.03       0.25       0.25       0.04       0.30       0.33       0.15       0.03       0.01       0.10       0.10         Crit Moves:       ****       ****         Green/Cycle:       0.35       0.35       0.35       0.35       0.39       0.34       0.34       0.23       0.19       0.19         Volume/Cap:       0.09       0.72       0.72       0.13       0.86       0.86       0.43       0.09       0.04       0.55       0.55         Delay/Veh:       17.5       26.4       26.4       17.7       35.3       35.3       33.3       20.7       17.8       24.0       31.3       31.3         Jser DelAdj:       1.00	Final Sat.:	1700	1611	189	1700	1229	571	1700	1800	1800	1700	864	936		
Capacity Analysis Module:         Vol/Sat:       0.03       0.25       0.25       0.04       0.30       0.33       0.15       0.03       0.01       0.10       0.10         Crit Moves:       ****       ****         Green/Cycle:       0.35       0.35       0.35       0.35       0.35       0.35       0.39       0.34       0.34       0.23       0.19       0.19         Volume/Cap:       0.09       0.72       0.72       0.13       0.86       0.86       0.43       0.09       0.04       0.55       0.55         Delay/Veh:       17.5       26.4       26.4       17.7       35.3       35.3       33.3       20.7       17.8       24.0       31.3       31.3         Jser DelAdj:       1.00							!	1		[					
Vol/Sat:       0.03       0.25       0.25       0.04       0.30       0.33       0.15       0.03       0.01       0.10       0.10         Crit Moves:       ****       ****       ****         Green/Cycle:       0.35       0.35       0.35       0.35       0.35       0.35       0.39       0.34       0.34       0.23       0.19       0.19         Volume/Cap:       0.09       0.72       0.72       0.13       0.86       0.86       0.43       0.09       0.04       0.55       0.55         Oelay/Veh:       17.5       26.4       26.4       17.7       35.3       35.3       33.3       20.7       17.8       24.0       31.3       31.3         Ser DelAdj:       1.00<	Capacity Anal	ysis	Modul	e:						'	•				
Crit Moves:       *****       *****       *****       *****       *****         Green/Cycle:       0.35       0.35       0.35       0.35       0.35       0.36       0.39       0.34       0.34       0.23       0.19       0.19         Volume/Cap:       0.09       0.72       0.72       0.13       0.86       0.86       0.86       0.43       0.09       0.04       0.55       0.55         Delay/Veh:       17.5       26.4       26.4       17.7       35.3       35.3       33.3       20.7       17.8       24.0       31.3       31.3         Jser DelAdj:       1.00 <t< td=""><td>Vol/Sat:</td><td>0.03</td><td>0.25</td><td>0.25</td><td>0.04</td><td>0.30</td><td>0.30</td><td>0.33</td><td>0.15</td><td>0.03</td><td>0.01 0</td><td>.10</td><td>0.10</td></t<>	Vol/Sat:	0.03	0.25	0.25	0.04	0.30	0.30	0.33	0.15	0.03	0.01 0	.10	0.10		
Green/Cycle:0.350.350.350.350.350.350.390.340.340.230.190.19Volume/Cap:0.090.720.720.130.860.860.860.430.090.040.550.55Delay/Veh:17.526.426.417.735.335.333.320.717.824.031.331.3User DelAdj:1.001.001.001.001.001.001.001.001.001.00AdjDel/Veh:17.526.426.417.735.335.333.320.717.824.031.331.3DesignQueue:212121251782134	Crit Moves:					****		****			*	* * *			
Volume/Cap:       0.09       0.72       0.72       0.13       0.86       0.86       0.43       0.09       0.04       0.55       0.55         Delay/Veh:       17.5       26.4       26.4       17.7       35.3       35.3       33.3       20.7       17.8       24.0       31.3       31.3         Jser DelAdj:       1.00	Green/Cycle:	0.35	0.35	0.35	0.35	0.35	0.35	0.39	0.34	0.34	0.23 0	.19	0.19		
Delay/Veh:       17.5       26.4       26.4       17.7       35.3       35.3       33.3       20.7       17.8       24.0       31.3       31.3         Jser DelAdj:       1.00       1.	/olume/Cap:	0.09	0.72	0.72	0.13	0.86	0.86	0.86	0.43	0.09	0.04 0	.55	0.55		
Jser DelAdj:       1.00 <td>Delay/Veh: :</td> <td>17.5</td> <td>26.4</td> <td>26.4</td> <td>17.7</td> <td>35.3</td> <td>35.3</td> <td>33.3</td> <td>20.7</td> <td>17.8</td> <td>24.0 3</td> <td>1.3</td> <td>31.3</td>	Delay/Veh: :	17.5	26.4	26.4	17.7	35.3	35.3	33.3	20.7	17.8	24.0 3	1.3	31.3		
ajDei/Veh:       17.5       26.4       26.4       17.7       35.3       33.3       20.7       17.8       24.0       31.3       31.3         DesignQueue:       2       12       1       2       12       5       17       8       2       1       3       4	User DelAdj: :	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1	.00	1.00		
esignuueue: 2 12 1 2 12 5 17 8 2 1 3 4	ajDel/Veh: :	17.5	26.4	26.4	17.7.	35.3	35.3	33.3	20.7	17.8	24.0 33	1.3	31.3		
	vesignQueue:	2	12		2	12	5	17	8	2	1	3	4		

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Default Scen	M	Mon Jan 7, 2002 16:05:49							Page 8-1			
	Year 20					Proper Projec k Hour	ties t Cond:	ition	s			
Level Of Service Computation Report												
_ *********	997 n	*****	******	1200 M	*****	(Fulu. ******	******	11112 A.	*******	v <del>,</del> , : * * * * * * *	*****	******
Intersection	#108	East	Ave.	(NS) /	Wils	on Ave	. (EW)	*****	******	*****	****	******
Average Dela	y (se	c/veh	): *****	19.1	*****	W:	orst C	ase L	evel Of	Serv:	ice:	C
Approach -	No	rrh P	ound	So	սեհ թ.	ound	E:	ast B	ound	Wa	est Br	ound
Movement:	L	- T	- R	L	- Т	- R	Ъ	- T	- R	L	- т	- R
							11		!	1		
Control:	' s	top S	iqn	'' S	top S	ian	Un	contr	olled	Une	contro	olled
Rights:		Incl	ude		Inch	ude		Incl	ude		Inclu	ude
Lanes:	0	0 1!	0 0	0	0 1!	0 0	0	0 0	1 0	0 3	1 0	0 0
Volume Module	e:			••			• •					
Base Vol:	1	0	113	0	0	0	0	767	21	159	79	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	0	113	0	0	0	0	767	21	159	79	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
fnitial Fut:	1	0	113	0	0	0	0	767	21	159	79	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	1	0	119	0	0	0	0	807	22	167	83	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol.:	1	0	119	0	0	0	0	807	22	167	83	0
Critical Gap	Modu]	le:										
Critical Gp:	6.4	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	6.2	XXXXX	XXXX	XXXXXX	XXXXXX	XXXX	XXXXX	4.1	XXXX	XXXXX
FollowUpTim:	3.5	XXXX	3.3	XXXXXX	XXXX	XXXXXX	XXXXX	XXXX	XXXXX	2.2	XXXX	XXXXX
					• • •							
Capacity Modu	ile:											
Cnflict Vol:	1236	xxxx	810	XXXX	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXXX	XXXX	XXXX	XXXXX	829	XXXX	XXXXX
Potent Cap.:	196	xxxx	379	XXXX	xxxx	XXXXX	XXXX	XXXX	XXXXXX	811	xxxx	XXXXXX
Move Cap.:	162	XXXX	379	XXXX	XXXX	XXXXXX	XXXX	XXXX	XXXXXX	. 811	XXXX	XXXXX
Level Of Serv	ice M	lodule	 }:	1						<b>!</b>		!
Stopped Del:x	XXXX	XXXX	XXXXX	XXXXX	хххх	xxxxx	xxxxxx	xxxx	xxxxx	9.4	$\infty \infty$	XXXXX
LOS by Move:	*	*	*	*	*	*	*	*	*	А	*	*
Movement:	LT -	LTR	- RT	LT -	LTR	- RT	LT -	LTR	- RT	LT -	- LTR	- RT
Shared Cap.:	XXXX	374	XXXXX	XXXX	0	xxxxx	XXXX	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXXX	xxxx	XXXX	XXXXX
Shrd StpDel:x	XXXX	19.1	XXXXX	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	xxxx	xxxxx	xxxxxx	$\mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x}$	000000	10.6	XXXX	XXXXX
Shared LOS:	*	C	*	*	*	*	*	*	*	в	*	*
ApproachDel:		19.1		xx	xxxx		20	$\infty \infty \infty$		x	coxxx	
ApproachLOS:		С			*			*			*	
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<u>:</u>:

Default Scen	nario	· • •	M	on Jar	17,2	002 16	:05:49				Page	5-1
		Y	ear 20:	Etiv 20 Wit F	vanda :bout M Pea	Proper Projec k Hour	ties t Cond	lition	S			
	• • • -		Level (	of Ser	vice	Comput	ation	Repor	t.			
	1997	HCM 4	-Way St	op Me	thod	(Futur	e Volu	me Al	cernat:	ive)		
Intersection	1 #5 E	ast A	ve. (N9	5) / S	ummit	Ave.	(EW)	*****	*****	******	****	******
*******	* * * * * *	****	*****	*****	*****	*****	*****	****	* * * * * *	******	****	******
Cycle (sec):	:	10	0			Critic	al Vol	./Cap	(X):		1.14	19
Loss Time (s	sec):		0 (Y+R	<b>≖</b> 4	sec)	Averag	e Dela	y (se	c/veh)	:	74	.1
Optimal Cycl	le: *****	****	U * * * * * * * *	*****	*****	Leve⊥ ******	VI Ser	vice:	*****	* * * * * * * *	****	£ ******
Approach:	No	rth B	ound	Sc	uth B	ound	Е	ast B	ound	We	st Bo	ound
Movement:	L	- T	- R	L L	- T	- R	L	- T	- R	L -	T	- R
	-											
Control:	S	top S	ign	5	top S	ign	S	top S	ign	St	op Si	Ign
Rights:	-	Incl	ude		Incl	ude		lncl	ude		Inclu	ıde
Min. Green:		0 1	0	0	0 1	0 0		0 11	0	0	1,	0
	-1				• I: 		11	· · · · · ·		11		
Volume Modul	le:						11					1
Base Vol:	87	68	308	105	76	30	22	407	74	130	203	40
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	87	68	308	105	76	30	22	407	74	130	203	40
Added Vol:	0	O	Q	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	3 00	1 00	308	105	1 00	30	22	407	14	130	203	40
DHE Adj:	0.95	1.00	0.95	0.95	0.95	1.00	1,00	1.00	1.00	1.00 n 95 i	1.00 0.95	1.00
PHF Volume:	92	72	324	111	80	32	23	428	78	137	214	42
Reduct Vol:	D	D	0	0	D	0	0	0	0	0	0	0
Reduced Vol:	92	72	324	111	80	32	23	428	78	137	214	42
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	92	72	324	, 111	80	32	23	428	78	137	214	42
Saturation P	1		1				11		į	1		!
Adjustment:	1.00	1.DO	1.00	1.00	1 00	1 00	1 00	1 00	1 00	: 00 1		1 00
Lanes:	0.19	0.15	0.66	0.50	0.36	0.14	0.04	0.81	0.15	0.35 (	).54	0.11
Final Sat.:	90	70	318	196	142	56	20	373	68	154	241	47
•••••				] •					·			
Capacity Ana	lysis	Modul	e:									
Vol/Sat:	1.02	1.02	1.02	0.56	0.56	0.56	1.15	1.15	1.15	0.89 0	.89	0.89
Urit Moves:	<b>7</b> 7 0	****	70 r	<b>-</b>	****	<b></b>	116 1		****	4 77 1 1	****	
Delay Mdi	13.8	1 00	100	22.1	<b>∠</b> ∠.⊥	22.1 T 00	110.1	116	116.1	47.4 4	4/.4	47.4
AdiDel/Veh	73 B	73 8	73 R	22 1	22 1	22 1	116 1	116	116 1	47 / 4	1.00 17 A	47 4
LOS by Move:	F	F	F	C	C	C	 F	F	F		. / .ч Е	47.4 E
ApproachDel:	-	73.8	-	-	22.1	2	, 1	.16.1	•	- 4	7.4	-
Delay Adj:		1.00			1.00		-	1.00		1	. 00	
ApprAdjDel:		73.B			22.1		1	16.1		4	7.4	
LOS by Appr:		F			С			F			Е	
*********	* * * * * *	****	*****	* * * * * *	*****	* * * * * *	*****	****	*****	******	****	*****

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Default Scen	ario		M	on Jan	7, 2	002 16	:05:49				Page	6-1
		 У	ear 20:	Etiw 20 Wit P	anda hout M Pea	Propert Project k Hour	ies Cond	ition	s		# # # #	
			Level (	of Ser	vice	Computa	ation (	Report				
******	1997	HCM 0	peratio *******	ons Me	tnoa	(Future	2 VOLU *****	me Ali *****	ternati	.ve) *****	*****	*******
Intersection	. #7 E	ast A	ve. (N9	3) / V	ictor	ia St.	(EW)	*****	******	*****	*****	******
Cycle (sec): Loss Time (s Optimal Cycl	ec): .e:	6	0 6 (Y+R 0	= 3	sec)	Critica Average Level (	al Vol e Dela Df Ser	/Cap y (sec vice:	. (X): c/veh):		0.58	31 .0 B
Approach	No	rth B	വനർ	So	uth F	ound	E.	act Br		، است بالس	est Bo	hund
Movement:	L	- T	- R	L	- T	- R	L,	азс Д. - Т	- R	L	- T	- R
												• <b>-</b>
Control: Rights:	F	rotec <sup>.</sup> Incl	ted u <b>de</b>	P	rotec Incl	ted ude		Permi) Inclu	tted ude		Permit Ovl	ted
Min. Green:	10	16	16	10	16	16	21	21	21	21	21	21
Lanes:	1	02	01	1	01	01	1	0 0	1 0	1 (	0 1	0 1
	1											
Volume Modul	e:											
Base Vol:	122	317	336	80	296	43	8	214	255	279	165	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	122	317	336	80	296	43	8	214	255	279	165	55
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	U 1	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	122	317	336	80	296	43	8	214	255	279	165	1 00
DUE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1,00	1.00	1.00	0.00
PHF Molume.	179	0.95	254	0.95	0.95	0.95	0.95	0.95	0.95	0.95	174	U.95 E0
Paduct Vol:	120	224	334	04 0	212	*>		225	266	294	1/4	0
Reduced Vol	178	334	354	о 9.4	217	0 4 E	0	225	260	204	174	58
PCE Adi	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
MLF Adi	1 00	1 00	1 66	1 00	1 00	1 00	1.00	1 00	1 00	1.00	1 00	1.00
Final Vol.:	128	334	354	84	312	45	1.00	225	268	294	174	58
			!	1						1		
Saturation F	Low Mo	odule:		•		,	1		I	1		,
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.46	0.54	1.00	1.00	1.00
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	821	979	1700	1800	1800
Capacity Apal	veie	Modul	•					<b></b>	· <b>-</b>			[
Vol/Sat	0 08	0 09	6: 0 20	0.05	0 17	0.02	0 00	0 27	0 27	0 17	0 10	<b>6</b> 03
Crit Moves	****	0.02	0.20	0.00	****	0.03	0.00	****	0.27	0.17	0.10	0.05
Green/Cvcle:	0.17	0.28	0.28	0 17	0.28	0 28	0 45	n 45	0 45	0 45	0.45	0.62
Volume/Cap:	0.45	0.33	0.71	0.29	0.61	0.09	0.01	0.61	0.40	0.38	0.21	0.05
Delay/Veh:	23.7	17.5	24.2	22.1	20.R	15.9	9.1	13.9	13.9	11.3	10.2	4.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1,00	1.00	1.00	1.00	1,00	1.00	1.00
AdjDel/Veh:	23.7	17.5	24.2	22.1	20.8	15.9	9.1	13.9	13.9	11.3	10.2	4.4
DesignQueue:	4	в	9	2	8	1	0	4	5	6	3	1
**********	****	*****	* * * * * *	* * * * * *	****	*****	*****					*****

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### **APPENDIX I**

## YEAR 2020 CONDITIONS INTERSECTION ANALYSIS WITH PROJECT (WITHOUT IMPROVEMENTS)

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Service and

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Default Scen	ario		T	hu Jar		₽age	e 3-1								
				Etiw	anda	Propert	cies			•••••					
			Year 2	2020 W	lith P	roject	Condi	tions							
				A	M Pea	k Hour									
						~									
	1997 HCM 4-Way Stop Method (Future Volume Alternative)														
1777 New Y-way Stop Methods (Fiture Volume Alternative)															
<pre>Intersection #1 Etiwanda Ave West (NS) / Wilson Ave. (EW) ************************************</pre>															
********	*****	*****	******	*****	*****	******	*****	*****	*****	*******	******				
Cycle (sec):		100	) . /v.n	_ 4		Critica	i voi	./Cap	. (X):	0.4	35				
Doss lime (s	ec/:		) (I÷R	= 4	sec)	Average Lovol (	)f Cor	y (sec vice:	27 ven):		v.4. D				
******	*****	*****	, *******	*****	****	******	*****	*****	******	*****	******				
Approach:	NOI	rth Bo	ound	So	uth B	ound	Е	ast Bo	ound	West B	lound				
Movement:	L -	T	- R	L	- T	- R	L	- T	- R	L - T	- R				
	]														
Control:	St	op St	ign	S	top S	ign '	Ś	top S:	ign <sup>'</sup>	Stop S	ign				
Rights:		Inclu	ıde		Incl	ude		Inclu	ıde	Incl	ude				
Min. Green:	0	0	0	0	0	0	0	0	0	0 0	0				
Lanes:	, 0 (	0 0	0 0	1	0 0	01,	1	02	0 0	0 0 1	1 0				
Malusa Madul	1						1								
Pace Vol.	e: 0	0	0	ורר	0	F	J	40	0	0 45	90				
Growth Adir	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00 1 00	1 00				
Initial Bse	1.00	1,00	1.00	271	1.00	1.00	2.00	1.00 49	1.00	1.00 1.00	1.00				
Added Vol:	0	0 0	ő	40	õ	20	7	6	n	0 18	14				
PasserBvVol:	Ō	ō	D	0	0		0	ō	ō	0 0	0				
Initial Fut:	0	0	0	261	0	25	9	55	Ō	0 63	102				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00				
PHF Adj.	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95 0.95	0.95				
PHF Volume:	0	0	0	275	0	<b>2</b> 6	9	58	0	0 66	107				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0 0	0				
Reduced Vol:	0	0	0	275	0	26	9	58	0	0 66	107				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00				
Final Vol.:	0	0	υ,	275	0	26	. 9	58	0	0 66	107				
Caturation Fl		dula.					1				1				
Adjustment ·		l on	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00 1 00	1 00				
Lanes:	0.00	0.00	0.00	1 00	0.00	1.00	1 00	2.00	D.00	0.00 1.00	1.00				
Final Sat.:	0	0	0	632	0	794	548	1189	0	0 637	728				
							[		1						
Capacity Anal	ysis l	Modul	e: .			•	L L		•	•	•				
Vol/Sat:	xxxxx :	xxxx	xxxx	0.43	xxxx	0.03	0.02	0.05	XXXX	<b>XXXX</b> 0.10	0.15				
Crit Moves:				****				****			****				
Delay/Veh:	0.0	0_0	0.0	12.4	0.0	7.2	9.1	8.7	0.0	0.0 8.7	8.2				
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00				
AdjDel/Veh:	0.0	0.0	0.0	12.4	0.0	7.2	9.1	8.7	0.0	0.0 8.7	8.2				
LUS Dy Move:	*	*	*	₽	*	A	A	A	*	* A	A				
Approachuel:	XXX	XXXX			11.9			8.8		8.4					
Delay Auj: Appradipal.	XI VIII				11 0			1.00		1.00					
105 by Approx	20	*			тт.Э Т			0.0 M		8.4 ×					
**************	*****	*****	*****	* * * * * *	ں *****	******	*****		*****	^^ *********	******				

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Default Scena	ario		Ţ	hu Jan	3, 2	002 15	:12:28				Page	7-1
			Year	Etiw 2020 W AJ	anda 1 ith P: M Peal	Proper( roject k Hour	ies Condit	ions				
			Level (	Of Ser	vice (	Computa	ation F	Report				
19	997 H	CM Un	signal:	ized M	ethod	(Futu)	re Volu	ime A	lternat	ive)		
********	*****	*****	******	*****	*****	******	******	*****	******	*****	*****	*****
intersection	#107	Etiwa	anda A	ve 1	East	(NS) /	W1150I	n Ave	. (EW) 	*****		******
		~/woh	, .	17 O	****	5 T T T T T T T			aval Of	Sorvi	ce.	B
************	*****	*****	/ - * * * * * * *	12.U ******	* * * * *	******	*******	196 14	******	*****	*****	******
Approach:	No	rth B	ound	So	uth B	ound	Eá	ast Be	วมกต้	We	est Bo	bund
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L -	т	- R
Control:	់ទ	top S	ign	'' s	top S	ign	Uno	contre	olled	Unc	ontro	olled
Rights:		Incl	ude		Inch	ude		Incl	ude		Inclu	ıde
Lanes:	0	0 1!	0 0	0	0 0	C 0	0 (	0 0	1 0	0 1	0	0 0
											· ·	
Volume Module	₽:											
Base Vol:	133	0	9	0	0	0	0	21	247	13	17	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	133	0	9	0	0	0	0	21	247	13	17	0
Added Vol:	14	0	10	0	0	0	0	6	40	30	18	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Put:	147	0	19	0	0	0	0	27	287	43	35	1 00
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.33
PHF VOlume:	122	0	20	U 0	0	0	U	28	302	45	37	0
Reduct Vol:	150	0	0 20	0	0	0	0	70	0	45	37	õ
Critical Can	Modu	U Ler	20	0	0	U	u	20	292	45		U
Critical Gap	6 4	vvvv	6.2	~~~~~	~~~~	****	~~~~~	~~~~	*****	<b>a</b> 1	xxxx	xxxxx
FollowipTim:	3.5	****	য় ২ ২ ২	~~~~~	~~~~	XXXXXX	*****	XXXX	XXXXX	2.2	XXXX	XXXXXX
				11			11			1		
Capacity Modu	le:			• 1			1			•		
Cnflict Vol:	307	xxxx	179	xxxx	xxxxx	XXXXX	xxxx	xxxx	xxxxx	331	$\infty \infty x$	XXXXX
Potent Cap.:	689	xxxx	869	XXXX	xxxx	xxxxx	XXXX	xxxx	XXXXX	1240	$\mathbf{x}$	XXXXX
Move Cap :	670	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	869	xxxx	XXXX	xxxxxx	xxxx	xxxx	XXXXX	1240	XXXX	XXXXX
										<b></b>		1
Level Of Serv	ice N	lodule	2:									
Stopped Del:x	xxxx	XXXX	XXXXX	XXXXX	$\mathbf{x}\mathbf{x}\mathbf{x}\mathbf{x}$	XXXXX	$\mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x}$	XXXX	XXXXX	7.9	XXXX	XXXXXX
LOS by Move:	*	*	*	*	*	*	*	*	*	А	*	*
Movement:	LT -	LTR	- RT	LT ·	- LTR	- RT	LT ·	- LTR	- RT	$\mathbf{LT}$	- LTR	- RT
Shared Cap.:	xxxx	688	XXXXXX	XXXX	XXXX	XXXXX	XXXX	XXXX	XXXXX	XXXX	XXXXX	XXXXXX
Shrd StpDel:x	xxxx	12.0	XXXXX	XXXXX	xxxx	XXXXX	XXXXX	XXXXX	XXXXXX	8 - 0	xxxx	XXXXXX
snared LOS:	*	В	*	*	*	*	*	*	*	A	*	*
ApproachDel:		12.0		XX	00000		x	xxxx		x	00000	
Approachus:		B			*			*				

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Default Sce	nario		I	<b>hu</b> Jan	13, 2	2002 11	:53:57	7			Page	4-1
			Year	Etiw 2020 K A	vanda Vith P M Pea	Proper Toject k Hour	ties Condi	ítions	;			
	1997	н <b>см</b> 4	Level	Of Ser	vice	Comput	ation e Volu	Repor	ternat	ive)		
********	*****	*****	*****	******	*****	*****	*****	*****	*****	*****	****	******
Intersection	n #3 1	Etiwar ******	nda Ave	. (NS)	/ Su *****	mmit A	.ve. (H *****	EW) *****	*****	*****	****	******
Cycle (sec) Loss Time ( Optimal Cyc	: sec): le:	10	0 0 (Y+R 0	= 4	sec)	Critic Averag Level	al Vol e Dela Of Ser	l./Cap ay (se tvice:	). (X): c/veh)	:	2.1 332	40 .1 F
********	*****	* * * * * *	*****	*****	****	*****	*****	* * * * * *	*****	*****	* * * * *	******
Approach: Movement:	No L	orth E - T	Bound - R	So L	uth B - T	lound - R	L L	Cast B - T	ound - R	W L	est B - T	ound - R
	-			[[			[ <b> </b>					
Control:	S	Stop S	lign	S	top S	ign	9	Stop S	ign	S	cop S	ign
Rights:			ude o		Incl	ude	-	Incl	ude	0	inci	ude
Min. Green:	n	, u	, , , ,	n U	0 31			, U 0 1	0 0	0	יי ה	0 0
	_ [				·							
Volume Modu	le:			1.1			1.)			ļi		1
Base Vol:	335	5 89	147	59	279	32	15	5 134	421	410	303	86
Growth Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse	: 335	5 89	147	59	279	32	15	134	421	410	303	86
Added Vol:	C	20	0	0	60	2	1	. 0	0	0	0	0
PasserByVol:	: 0	) 0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	: 335	109	147	59	339	34	16	134	421	410	303	86
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	353	115	155	62	357	36	17	141	443	432	319	91
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	353	115	155	62	357	36	17	141	443	432	319	91
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	1 22	115	155	-⊻d ⊺⊺	357	36	1/	141	443	432	319	91
Saturation F	low M	odule	:				1			1		
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.57	0.18	0.25	0.14	0.78	0.08	0.03	0.23	0.74	0.51	0.38	0.11
Final Sat.:	224	13	98	54	310	١٤	12	97	306	202	149	42
	1	Modul	 1 a				1					
Capacity Ana	1 2 2 2	1 57	1 67	1 16	1 10	1 15	1 45	1 4 5	1 45	0 14	<b>•</b> • • •	2 14
Crit Moves	1.07	1.57	****	1.15	1.15	****	1.40	1.40	1.40	4.14	2.14	2.14
Delav/Veb:	291.7	292	291.7	122.3	122	122 3	239 2	239	239 2	541 9	542	541 9
Delav Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh.	291.7	292	291.7	122.3	122	122.3	239.2	239	239.2	541.9	542	541.9
LOS by Move:	F	F	F	F	F	F	F	F	F	F	F	F
ApproachDel:	:	291.7		1	22.3		2	239.2		5	41.9	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:	:	291.7		1	22.3		:	239.2		5	41.9	
LOS by Appr:		F			F			F			F	
*********	* * * * * *	* * * * + +	* * * * * * *	* * * * * *	****	*****	*****	* * * * * *	******	*****	* * * * *	*****

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Default Scen	ario		F	ri Jan	4, 2	002 09	:55:35				Page	5-1			
			Year	ELIW 2020 W A	anda ith P M Pea	Proper roject k Hour	ties Condi	tions							
			(	of Cor		Comput	ation		. <b></b>						
	1997	НСМ О	bevei ( neratio	JI SEF	rice Fbod	(Futur	ation e Volu	Report me blt	: ernati	vel					
*********	*****	*****	******	*****	*****	******	******	*****	******	· • - ; · * * * * * * *	*****	******			
Intersection	Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW)														
Cycle (sec): Loss Time (s Optimal Cycl	ec): e:	13 13	0 6 (Y+R 0	= 3	sec)	Critic Averag Level	al Vol e Dela Of Ser	/Cap. y (sec vice:	. (X): c/veh):		1.49 192	91 . 4 F			
********	****	*****	******	*****	*****	******	*****	*****	******	*****	*****				
Approach:	NO	rth Ba	ound	, So	uth B	ound	E	ast Bo	bund	We	est Bo	ouno			
Movement:	ц Г	- 1	- R	ы Т	- T	- K	-1 1-1	- 1	- K	ь. 1	- 1	- K.			
Control: Rights:	1	Permit Inclu	tted ude		Permi Incl	tted ude	[] P	rotect	ied ide	P1	cotect Inclu	ide			
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15			
Lanes:	1	0 0	1 0	1	0 0	1 0	1	0 1	0 1	1 (	0 0	1 0			
				1					·			!			
Volume Modul	e:														
Base Vol:	69	298	33	68	465	616	196	409	127	148	985	86			
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Initial Bse:	69	298	33	68	465	616	1 <b>9</b> 6	409	127	148	985	86			
Added Vol:	0	9	0	0	26	34	12	0	0	0	0	0			
PasserByVol:	O	O	0	0	0	0	0	0	0	0	0	0			
Initial Fut:	69	307	33	68	491	650	208	409	127	148	985	86			
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
PHF Volume:	73	323	35	72	517	684	219	431	134	156	1037	91			
Reduct Vol:	0	0	0	Ô	0	0	0	0	0	0	0	0			
Reduced Vol:	73	323	35	72	517	684	219	431	134	156	1037	91			
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Final Vol.:	73	323	35	72	517	684	219	431	134	156	1037	91			
						;	[]			{	• <b></b> •				
Saturation Fl	ow Mo	odule:													
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800			
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00			
Lanes:	1.00	0.90	0.10	1.00	0.43	0.57	1.00	1.00	1.00	1.00	0.92	0.08			
Final Sat.:	1700	1625	175	1700	775	1025	1700	1800	1800	1700	1655	145			
		N		1					1						
Val/gas	ysis	MOQUI	e:												
VUL/Sac: Crit Mount:	0.04	0.20	0.20	0.04	0.67	U.67	0.13	0.24	0.07	0.09	0.63	0.63			
Green/Cycle-	0 45	0 4 5	0 46	0 45	0 × F	0 45	****	0 77	0.77	0 7 4	****	0 40			
Volume/Care:	0 10	0.45	0.40	0.45	V.45	U.45	0.09	0.37	0.37	0.14	0.42	1 40			
Delay/Vob.	20 9	0.44 05 0	0.44 0E 0	20.09	1.49	1.49	1,49	0.65	0.20	0,65	1.49	1.49			
User Del Mati	1 00	1 00	1 00	20.8	1 00	1 00	312.9	30./	20.4	59.2	265	200./			
Adinal/Vah.	70 P	25 2	1.00 75 7	1.00 20 0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
DesignOueve	20.0 7	م، ريم 14	23.2 1	20.0	204	ב.נס∠ רר	4.2גנ ייר	/.טנ	∠8.4	59.2	266 €1	205./			
	 * * * * *	*****	+ + + + + + +	ر • • • • • •	20	دن 	CT CT	_, <b>∠⊥</b>	ь		51	4 			

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Default Scena	ario		Т	'hu Jan	3, 2	002 11	:53:57				Page	8-1	
			Year	Etiw 2020 W A	anda ith P M Pea	Proper roject k Hour	ties Condi	tions					
1	997 H	CM Un	Level signal	Of Ser ized M	vice ethod	Comput (Futu	ation re Vol	Repor ume A	t lterna	tive)			
********	****	* * * * *	*****	****	****	* * * * * *	*****	****	*****	******	*****	******	
Intersection #108 East Ave. (NS) / Wilson Ave. (EW)													
Average Delay	/ (se	c/veh *****	): OVE	RFLOW	*****	W * * * * * *	orst C *****	ase L *****	evel 0 *****	f Serv:	ice: *****	F	
Approach: Movement:	No L	rth B - T	ound - R	So L	uth B - T	ou <b>n</b> d - R	E L	ast B - T	ou <b>n</b> d - R	We L	est Bo • T	ound - R	
												{	
Control:	S	top S	ign	S	top S	ign	Un	contr	olled	Une	contro	olled	
Rights:		Incl	ude		Incl	ude		Incl	ude		Inclu	ıde	
Lanes:	0	0 1!	0 0	0	1 0	0 0	0	0 0	1 0	0 (	D 1!	0 0	
							[						
Volume Module	, 2;						r <b>I</b>						
Base Vol:	3	0	106	0	0	0	D	14	17	983	27	0	
Growth Adi:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Tritial Bee		0	106	0	0	++ 0	0	14	17	983	27	D	
Added Vol:	13	7	0	10	20	o o	0	24	38	0	- 8	3	
PasserByVol:		0	0	0		0	0	0	0	ō	0	0	
Initial Fut-	16	7	106	10	20	ñ	ů 0	าต้	55	983	35	3	
User Adi.	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1.00	1.00	1.00	
DHE Adi	0 95	0.95	0 95	0 95	0.95	0.95	0 95	0.95	0 95	0.95	0.95	0.95	
PHF Volume:	17	7	112	11	21	0.55	0.)J	40	58	1035	2.22	3	
Reduct Vol:	1.			 0	0	Ň	ň	10	0	1000	0	0	
Final Vol :	17	7	112	11	21	n 0	ň	40	58	1035	37	ĩ	
Critical Gan	Modul	, 10.	110	11		Ũ	Ŷ	•0	20	1000		2	
Critical Gap	7 1	65	6 2	<b>7</b> 1	<b>4</b> 5	*****	*****	****	*****	A 1	****	****	
Critical op:	7.2	4 0	3 3	7.1	6.0	~~~~~	~~~~~	~~~~	~~~~~		~~~~	*****	
FOILOWOPIIM:	2.2	4.0	د.د	5-5 	3.0	~~~~~		~~~~	~~~~~	2.2	~~~~		
Capacity Modu	ر م ا			11			11			1		1	
Coflict Vol:	7187	2178	60	2225	2206	*****	~~~~	~~~~	~~~~	0.0	~~~~	*****	
Potent Can :	2107	21,0	1000	2230	2200	VVVVV	~~~~	~~~~	~~~~~	1509	~~~~	VYYYY	
Move Cap	0		1000	51		~~~~~	~~~~~	~~~~	~~~~~	1509	****	XXXXXX	
Hove Cap							1	~~~~		1		!	
Level Of Serve	ice N	iodu la					1					1	
Stopped Del:x	YYYY	vvvv	·· ·······	*****	****	*****	*****	****	*****	74	****	*****	
LOS by Move:	*	*	*	*	*	*	*	*	*	л.,	*	*	
Movement.	ι <b>τ</b> -	1.ጥወ	- PT	Т.Т	T.TP	- PT	I.T -	LTP	- PT	л 1.т	LTP	- RT	
Shared Can .	****	0.17	*****	D1 -	YYYY	*****		777V	NYVYY	~~~~	****	***	
Shareu Cap.; Shrd StoDol.v	****	~~~~	*****	~~~~~	~~~~	~~~~~	~~~~	~~~~	~~~~~	~~~~	~~~~	~~~~~	
Shina Supper:A	*	*	*	*	*	*	*	*	*	*	*	**	
ApproachDal		****			~	-		-	-				
ApproachLOS:	~~	F			T T		X.X	*			****		
·		+			*								

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Default Scen	ario		7	hu Jan	3, 2	002 11:	:53:57				Page	6-1
			Year	Etiw 2020 W A	anda lith F M Pea	Propert Project k Hour	ies Condit	ions				
<b></b>	1000		Level	Of Ser	vice	Computa	tion R	leport				
* * * * * * * * * * * * *	1997	HCM 4	-way 5 *****	top me	*****	(Fucure	: VOLUN	18 AIT	ernat:	1ve) *******	****	*****
Intersection	∦5 E	ast A	ve. (N ******	S) / S	ummit *****	Ave. (	(EW)	****	*****	*****	*****	*****
Cycle (sec):		10	0	-		Critica	al Vol.	/Cap.	(X):		3.08	2
Loss Time (s Optimal Cycl	ec): e:	+++++	0 (Y+R 0 ++++++	- = 4	sec)	Average Level (	e Delay Of Serv	/ (sec /ice:	/veh)	:	624.	3 F
Approach: Movement:	Nc L	orth B - T	ound - R	So L	uth B - T	ound - R	Ea L -	ist Bo T	ound - R	We L -	st Bo T	und - R
	1		<b></b>					· ·				
Control:	S	top S	ign	S	top S	ign	St	op Si	ign	St	op Si	gn
Rights:		Incl	ude		lncl	ude		Inclu	ıde		Inclu	de
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	. 0	0 1!	0 0	0	0 1!	00	00	1!	0 0	00	1:	0 0
Volume Medul	!						1			<b>¦  </b>		
Volume Moduli Race Vel:	e: 170	100	101	100	200	220	47	140	140	365	474	104
Base Vol:	1 00	1 00	1 00	1 00	1 00	240	4.3	1 00	1 00	1 00	1 00	1 00
Growin Adj: Taitial Real	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	104
Added Vol	120	16	101	100	100	420	4.5	140	143	202 0		104
PacserByVol	0	10	0	14		0	0	0	0	ő	0	י <b>ד</b>
Initial Fut:	128	139	101	192	812	228	43	140	149	365	434	108
User Adi-	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1.00	1 00	1 00
PHF Adi:	0.95	0.95	0.95	0.95	0 95	0 95	0 95	0 95	0.95	0 95	0.95	0.95
PHF Volume:	135	146	106	202	855	240	45	147	157	384	457	114
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	135	146	106	202	855	240	45	147	157	384	457	114
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	135	146	106	202	855	240	45	147	157	384	457	114
Saturation Fl	ow Mo	odule:					•					
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1. <b>0</b> 0	1.00
Lanes:	0.35	0.38	0.27	0.16	0.66	0.18	0.13	0.42	0.45	0.40	0.48	0.12
Final Sat.:	144	156	113	66	277	78	53	172	183	168	199	50
Capacity Anal	ysis	Modul	e:									
Vol/Sat:	0.94	0.94	0.94	3.08	3.08	3.08	0.86	0.86	0.86	2.29	2.29	2.29
UTIE Moves:		<b>f n c</b>	****			****			****	****		
Delay/ven:	59.0	59.0	59.0	961.1	961	961.1	44.5	44.5	44.5	608.3	608	608.3
Delay Adj: Adibol (Moh.	1.00	1.00	1.00	1.00	T.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
LOS by Morro	ט.עכ די	59.U F	59.0	201.1	961	961.1	44.5	44.5	44.5	608.3	608	608.3
ADD Dy MOVE:	r	E0 0	F	F -	F	£.	E	E .	Е	F	F.	F
Nelaw Nela		39.0		5	01.1			44.5		6	08.3	
Deray Adj:		1.00		-	1.00			1.00		-	1.00	
TUS PA VODA		59.0		9	61.1 5			44.5		6	08.3	
**************************************	****	r *****	*****	* - + + +	F			11 E			F	

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Default Scen	ario		F	ri Jan	4,2	002 09	:55:35	5			Page	7-1
			Year	Etiw 2020 W A	anda ith P M Pea	Propert roject k Hour	ties Condi	tions.				
<b>_</b>	1997	I HCM O	Level ( peratio	Of Ser ons Me	vice thod	Computa (Future	ation 2 Volu	Report	: ternati	ive)		<b>-</b>
Intersection	***** 1 #7 E	ast A	ve. (N)	s) / v	ictor	ia St.	(EW)	*****	******	*****	*****	******
Cycle (sec): Loss Time (s Optimal Cycl	:***** :ec): .e:	6) 61	******* 0 6 (Y+R 0	****** = 3	sec)	Critica Average Level (	al Vol e Dela Of Ser	./Cap y (se vice:	(X): c/veh):	******	0.4 16	******* 30 .0 B
**************************************	***** Nc	orth Ba	vund	***** So	uth B	ound	***** E	ast B	****** ound	****** We	***** est Bo	******* ound
Movement:	L 1	- T	'- R	L 	- T	- R	L 	- T	- R	ц	- T	- R
Control: Rights:	F	rotect Inclu	ced 1de	P	rotec Incl	teđ ude		Permit	ted de	1	Permil Ovl	ted
Min. Green:	10	16	16	10	16	16	21	21	21	21	21	21
Lanes:		•		ا			د 			 	, , , , , , , , , , , , , , , , , , ,	
Volume Modul	e:			••					•			
Base Vol:	297	195	188	17	60	43	8	75	67	223	260	67
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	297	195	186	17	60	43	8	75	67	223	260	67
Added Vol:	0	10	0	18	28	0	0	0	0	0	0	6
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	297	205	188	35	88	43	8	75	67	223	260	73
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	313	216	198	37	93	45	8	79	71	235	274	77
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	313	216	198	37	93	45	8	79	71	235	274	77
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF AUJ: Final Vol :	212	216	100	1.00	1.00	1.00	1.00	1.00	1.00	225	224	1.00
					·		1	/ <del>/</del> / -	1	1	2/4	
Saturation F	low Ma	odule:	,	1		I	1		1	,		1
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.53	0.47	1.00	1.00	1.00
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	951	849	1700	1800	1800
										1		
Capacity Anal	ysis	Modul	е:									
Vol/Sat:	0.18	0.06	0.11	0.02	0.05	0.03	0.00	0.08	0.08	0.14	0.15	0.04
Crit Moves:	****				* * * *	<b>.</b>			_	_	****	
Green/Cycle:	0.28	0.34	0.34	0.21	0.27	0.27	0.35	0.35	0.35	0.35	0.35	0.56
volume/Cap:	0.65	U.1B	0.32	0.10	0.19	0.09	0.01	0.24	0.24	0.39	0.43	0.08
Deray/ven: Neoz Dolladi	22.0	1 00	12.1	19.2	1 00	100	12.7	14.0	14.0	15.1	15.4	6.1
Mdinel/Veb.	7200	14 0	15 1	100	17 7	1.00	1.00	14 0	1.00	1.00	1.00	1.00
DesignOvene	v. د م ۹	1.U L	ن. د. د ۸	م. <i>⊊</i> ⊥ ۱	4	10.0	12.1	14.U ว	14.V 5	12.1	15.4 7	р.Т 1
**********	****	- *****		+ + + + + + +	ے * * * * *	⊥ ★★ <b>★</b> ★★	U ******	ے *****	ے * * * * * *	) ******	0 *****	T *****

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Default Scer	ario		T.	hu Jan	3, 2	002 11:	52:17				Page	3-1
	Etiwanda Properties Year 2020 With Project Conditions PM Peak Hour											
••··•			Level (	of Ser	vice (	Computa	tion 3	Report	 2			
	1997	HCM 4	-Way St	top Me	thod.	(Future	Volu	me Alı	cernati	ve)		
********	*****	*****	******	*****	****	******	*****	*****	******	*****	*****	*****
Intersection	. #1 E	tiwan	da Ave	We	st (N	S) / Wi	lson .	Ave.	(EW)	*****		*****
Cycle (sec): Loss Time (s	ec):	10	0 0 (Y+R	= 4	sec)	Critica Average	l Vol Dela	./Cap y (se	. (X): c/veh):	* * * * * *	0.70	)5 .9
Optimal Cycl	e:		0		1	Level C	f Ser	vice:				С
*********	*****	*****	******	*****	*****	******	****	*****	******	*****	*****	******
Approach:	NC T	ortn B - T	ouna	50 T.	ися в - т	ouna P	E. T.	ast Bo		We T	est Bo - T	Juna - P
	1	- 1		 		- r.	J <b>-</b>	- I 		1	- <b>.</b>	
Control:	י 5	top S	ign	ŝ	top S	ign	' s	top S:	ian 1	់នា	top Si	ign '
Rights:		Incl	ude		Incl	ude		Inclu	ıde		Inclu	ude
Min. Green:	0	0	0	0	0	D	0	0	0	0	O	0
Lanes:	0	0 0	0 0	1	0 0	0 1	1	02	0 0	0 (	) 1	1 0
								<b>-</b>				<b>-</b> - <b>-</b>
Volume Modul	e:											
Base Vol:	0	0	0	142	0	2	33	748	0	0	88	247
Growth Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	142	0	2	33	748	0	0	88	247
Added Vol:	U	0	0	26	0	13	23	21	0	0	12	4/
PasserByvol:	0	0	0	100	0	10	0 5 C	760	U	0	200	204
User Adi.	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00
PHF Adj.	0 95	0 95	0 95	0 95	0.95	n 95	0.95	0.95	0.95	n 95	0 95	0.95
PHF Volume:	0.55	0	0.25	177	0.22	16	59	809	0.55	Q.95 0	105	309
Reduct Vol:	o O	ō	õ	0	ŏ	õ	0	0	õ	õ	0	0
Reduced Vol:	Ō	0	0	177	0	16	59	809	0	0	105	309
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	0	0	177	0	16	59	809	0	0	105	309
• • • • • - • - •									!			
Saturation F:	low Mo	dule:	:									
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	452	0	525	525	1149	0	0	545	618
Capacity Real		Modul		1		!						
Vol/Sat	YSIS	MOUUI VVVV	. = :	0 29	~~~~	0.02	0 11	0 70			0.10	0 50
Crit Moves	~~~~	~~~~	~~/~	****	~~~~	0.05	0.11	****	XXXX		0.19	****
Delav/Veh:	0.0	0.0	0.0	14.8	0.0	ъż	10.2	22 O	0 0	0.0	10 5	13.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1 00	1 00	1 00	1 0.0	1.00
AdjDel/Veh:	0.0	0.0	0.0	14.8	0.0	9.3	10.2	22.0	0.0	0.0	10.5	13.6
LOS by Move:	*	*	*	в	*	A	В	C	*	*	В	В
ApproachDel:	xx	xxxx			14.3			21.2			12.8	
Delay Adj:	x	$\infty \infty \infty$			1.00			1.00			1.00	
ApprAdjDel:	ХX	$\mathbf{x}$			14.3			21.2			12.8	
LOS by Appr:		*			В			С			в	
* * * * * * * * * * * * *	* * * * *	****	*****	*****	* * * * *	*****	* * * * * *	*****	******	*****		*****

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Default Scen	ario		Ť	hu Jan	3, 2	2002 15	5: <b>13</b> :36				Page	7-1	
			Year	Ετίω 2020 Ψ Ρ	anda ith F M Pea	Proper Project Ik Hour	ties Condi	tions	5				
*	997 H	icm Un	Level : signal	Of Ser ized M	vice ethod	Comput (Futu	ation re Vol	Repor	lterna	tive)			
*********	*****	****	*****	*****	****	*****	*****	****	*****	******	*****	******	
Intersection	#107 *****	Etiw *****	anda A	ve *****	East *****	(NS) /	Wilsc ******	n Ave	e. (EW)	*****	****	*****	
Average Delay	y (se	c/veh	): *****	318.3 *****	****	W * * * * * *	orst C	ase I	evel 0	f Serv:	ice:	F ******	
Approach.	No	Th B	ound		սեր թ	hound	F	ast B	ound	ω,	et R	ഡനർ	
Approach: North Bound South Bound East Bound West Bound Movement: L - T - R L - T - R L - T - R L - T - R													
MOVEMENT:	ы 1		- 1	11			11			11			
Control	Г" С	top S	ian	11 c	ton S	ton	11	contr	olled	4 I [[776	ontro	alled	
Dichte.	5	Incl	ude	5	Incl	vde	011	Incl	ude	OIII	Incl	ude	
tapag.	0	0 11	0 0	0	0 0	0 0	0	0 0	1 0	0 1	1	0 0	
Lanes:	1	· · ·		11			11					1	
Volumo Modula	1			11			11 .			•		I	
Page Nel:	בי: רמכ	0	71	0	0	0	0	689	165	5	79	0	
Dase VUI:	1 00	1 00	1 00	1 00	1 00	3 00	1 00	1 00	1 00	1 00	1 00	1 00	
Growen Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1-00		1.00	1.00	1.00	1.00	
Initial Ase:	201 47	0	71	0	0	0	0	200	105	10	10	0	
Added Vol:	4 / ^	0	55 N	0	0	0	0	21	20	19	12	0	
PasserByvol:	220	~	106	0	0 D	0	ں م	710	101	24	01	0 0	
Maar Adi.	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	
DUE Ddi.	A 95	1.00	1.00 0 05	n 05	0 95	0.05	1.00	0.05	1.00	1.00 n 95	1.00	0.95	
FRF Huj: DUE Volumo.	345	0.55	117	0.95	0.23	0.55	0.22	747	201	25	96	0.99	
Port Volume:	0			ŭ N	0	0	ň	0	201 N	0	-0	Ő	
Reduct Vol:	345	0	112	0	ň	Ň	0	747	201	25	95	0	
Critical Car	Modu	1	112	Ū	Ŭ	v	U	/4/	201	25	50	U	
Critical Cap	F1000	LC.	6 3	~~~~~	****	*****	*****	****	~~~~	4 3	~~~~	*****	
Eollo domin.	0.4 2 E	XXXX	2.2	~~~~~	~~~~	*****	~~~~~	~~~~	~~~~	*·1 7 7	~~~~	*****	
FOILOWOPTIM.				1			lises.			1			
Capacity Modu	10.			1		1	11			1		1	
Cuflict Vol:	994	XXXX	84 B	XXXX	****	*****	XXXX	****	*****	948	xxxx	TYYYY	
Potent Can :	274	XXXX	364	XXXX	XXXX	XXXXX	XXXX	XXXX	XXXXX	732	XXXX	YYYYY	
Move Can	267	XXXX	364	XXXX	XXXX	XXXXX	XXXX	XXXX	XXXXX	732	XXXX	XXXXX	
										1			
Level Of Serv	i⊂e N	lodule	: :	I		I	I		1	1		,	
Stopped Del:x	XXXX	XXXX	XXXXX	XXXXX	XXXX	XXXXXX	XXXXX	XXXX	XXXXX	9.9	xxxx	XXXXX	
LOS by Move:	*	*	*	t	*	*	*	*	*	Ą	*	*	
Movement:	LT -	LTR	- RT	LT -	LTR	- RT	LT ·	LTR	- RT	LT -	LTR	- RT	
Shared Cap.:	XXXX	285	xxxxx	XXXX	xxxx	xxxxx	xxxxx	xxxx	XXXXXX	XXXXX	XXXX	XXXXX	
Shrd StpDel:x	xxxx	318	ххххх	XXXXX	XXXX	XXXXX	XXXXXX	XXXXX	XXXXX	10.1	xxxx	XXXXX	
Shared LOS:	*	F	*	*	*	*	*	*	*	в	*	*	
ApproachDel:	3	18.3		XX	xxxx		X	$\infty \infty \infty$		XX	XXXX		
ApproachLOS:		F			*			*			*		

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Default Scen	ario		T	hu Jan	3, 2	002 11:	52:17				Page	4-1
			Year :	Etiw 2020 W P	anda ith P M Pea	Propert roject k Hour	ies Condi	tions				*
									<b></b>			
			Level (	Of Ser	vice (	Computa	tion I	Report	t ,			
	1997	HCM 4	-Way St	сор Ме	thod	(Future	Volur	ae Alt	ternati	ve)		
********	*****	*****	******	*****	*****	******	*****	*****	******	*****	*****	*****
Intersection	#3 E	tiwan	ida Ave	. (NS)	/ 5นเ	mmit Av	e. (El	R) 				
	*****	7 7 7 7 7			****	******	1 10-1	/	(V).	*****	<b>5</b> 15	10
Loss Time (sec):	ec).	10	0 (V1R	- 4	sec)	Dverage	Delar	./Cap v (se	. (A); c/veh);		315	n in
Optimal Cycl	ec.		0 (176		560)	nverage Level ()	if Sem	y tac. Vice:	c/ ven/ .			F
*******		* * * * *	******	*****	*****	******	*****	*****	******	*****	*****	- :*****
Approach:	No	rth B	Sound	So	uth B	ound	Ea	ast Be	ound	We	est Bo	und
Movement:	L	- T	- R	L	- T	- R	г	- т	- R	L ·	- T	- R
		<b>-</b> -								1		
Control:	່ ຣ	top S	lign	ີ ຣ	top S	ign .		top S:	ign '	់ នេះ	cop Si	gn
Rights:		Incl	ude		Inclu	ude		Inclu	ude		Inclu	nde
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0 1!	0 0	0	0 1!	0 0	0 (	D 1!	0 0	0 (	1!	0 0
						!						
Volume Modul	ė:											_
Base Vol:	341	276	401	22	125	14	17	97	277	199	55	47
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	341	276	401	22	125	14	17	97	277	199	55	47
Added Vol:	0	70	0	0	39	1	2	0	0	0	0	U
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	141	346	401	22	164	15	19	97	277	199	55	47
DUE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume.	250	264	470	0.95	0.95	0.95	0.95	102	0.95	200	0.95	40
Reduct Vol:	כבנ ח	- 204 0	422	23	1/3	10	20	102	292	209	_⊃o ∩	وب 0
Reduced Vol	359	364	422	23	173	16	20	102	202	209	58	49
PCE Adi:	1.00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1.00
MLF Adi:	1.00	1 00	1 00	1 00	1 00	1 00	1.00	1 00	1 00	1.00	1 00	1.00
Final Vol.:	359	364	422	23	173	16	20	102	292	209	58	49
			!				1					!
Saturation Fl	ow Mo	dule	: '	•		1			'	1		•
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.31	0.32	0.37	0.11	0.82	0.07	0.05	0.25	0.70	0.66	0.18	0.16
Final Sat.:	165	167	194	46	345	32	25	126	359	303	84	72
					· •							
Capacity Anal	ysis	Modu]	le:									
Vol/Sat:	2.18	2.18	2.18	0.50	0.50	0.50	0.81	0.81	0.81	0.69	0.69	0.69
Crit Moves:	****				****		****				****	
Delay/Veh: 5	52.4	552	552.4	17.6	17.6	17.6	32.1	32.1	32. <b>1</b>	24.7	24.7	24.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Aujuei/Ven: 5	52.4	552	552.4	17.6	17.6	17.6	32.1	32.1	32.1	24.7	24.7	24.7
Nove:	F -	۲ ۲	F.	Ç	C	С	D	D	D	С	C -	С
Approacemer:	5	⊃∡.4 1 ^^			1/.6			32.1			24.7	
veray Auj: Approdipel-	F	1.VV 50 A			1.00			1.00			1.00	
DS by Approx	5	⊃∠.4 F			1/.6			32.1			24./	
**************************************	* * * * *		*****	* * * * * *	*****	******	* * * * * * *	<u>ب</u> + + + +	*****	*****	ب • • • • • •	*****

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Default Scer	nario		Мо	on Jan	7,	2002 16	:02:23	ŀ			Page	5-1	
				Etiw	anda	Proper	ties						
			Year 3	2020 W	ith 1	Project	Condi	tions					
				P	M Pea	ak Hour							
	1007	HCM OF	neratio	JI SEF	vice thod	(Futur	ation e Volu	Repor	c ternati	vae)			
********	*****	*****	******	******	****	******	*****	*****	******		****	******	
Intersection	1 #4 E	Stiwan	da Ave	. (NS)	/ н	ighland	Ave.	(EW)					
*****	*****	*****	* * * * * * * *	*****	****	******	*****	****	******	*****	*****	******	
Cycle (sec):		8	0			Critic	al Vol	./Cap	. (X):		Ο.Β	45	
Loss Time (s	sec):		6 (Y+R	= 3	sec)	Averag	e Dela	y (se	c/veh):		34	. 2	
Optimal Cycl	e:	8	0			Level	Of Ser	vice:				С	
******	*****	*****	******	*****	****	******	*****	*****	******	*****	*****	******	
Approach:North BoundSouth BoundEast BoundWest BoundMovement:L - T - RL - T - RL - T - RL - T - R													
movement:	ں ا	- 1	- r	ير 	- I 	- r.	ىر <b>ا</b>	- 1	- ĸ	1	- 1	- ĸ	
Control:	1	Permi	tted		Perm	itred	1+ q	roter	ted	1 P	rotec	teđ	
Rights:		lncl	ude		Incl	lude	-	Incl	ude	-	Inch	ıde	
Rights:         Include         Include         Include           Min. Green:         15         15         15         15         10         15         15													
Lanes:	1	0 0	1 0	1	0 0	10	1	01	01	1	0 0	1 0	
					<b></b> -								
Volume Modul	e:												
Base Vol:	53	384	45	71	353	1 163	535	254	54	15	84	91	
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	53	384	45	71	351	l 163	535	254	54	15	84	91	
Added Vol:	0	30	0	0	17	7 22	40	0	0	0	0	0	
PasserByVol:	50	414	0		ا م د د			0	0	10	0	0	
Hear Adi.	00 r	1 00	1 00	1 00	1 00		1 00	1 00	1 00	1 00	1 00	1 00	
DHE Adi	0 95	0.95	0 95	0.95	0.95	0 95	1.00	0 95	0.95	0 95	1.00 0.95	0.95	
PHF Volume:	56	436	47	75	387	195	605	267	57	16	88	96	
Reduct Vol:	0	0	0	0	0	) 0	0	0	0	0	0	0	
Reduced Vol:	56	436	47	75	387	195	605	267	57	16	88	96	
PCE Adj;	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1,00	1.00	
Final Vol.:	56	436	47	75	387	195	605	267	57	16	88	96	
				<b>-</b>									
Saturation F	low M	odule:											
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	
Lanes: Final Car	1700	1604	126	1700	0.67	0.33	1.00	1.00	1.00	1700	0.48	0.52	
FINAL SAL.:	1700	1024 		1	TT28	6UZ	1700	1800	1800	1	864	936	
Capacity Ana	lvsis	Modul	.e:			[	1					· • • • • •	
Vol/Sat:	.0.03	0.27	0.27	0.04	0.32	0.32	0.36	0.15	0.03	0.01	0.10	0.10	
Crit Moves:					****		****		2.00		****		
Green/Cycle:	0.35	0.35	0.35	0.35	0.35	0.35	0.39	0.34	0.34	0.23	0.19	0.19	
Volume/Cap:	0.09	0.76	0.76	0.13	0.92	0.92	0.92	0.43	0.09	0.04	0.55	0.55	
Delay/Veh:	17.5	28.6	28.6	17.7	43.9	43.9	41.8	20.7	17.8	24.0	31.3	31.3	
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
AdjDel/Veh:	17.5	28.6	28.6	17.7	43.9	43.9	41.8	20.7	17.8	24.0	31.3	31.3	
DesignQueue:	2	13	1	2	12	6	18	8	2	1	З	4	
********	****	* * * * * *	* * * * * *	* * * * * *	* * * *	******	*****	*****	******	*****	*****	*****	

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	Etiwanda Properties Year 2020 With Project Conditions PM Peak Hour													
1	Level Of Service Computation Report 1997 HCM Unsignalized Method (Future Volume Alternative)													
*********	*****	*****	******	******	*****	******	******	*****	*****	*****	*****	*****		
Intersection	₿108 *****	East *****	Ave. *****	(NS) /	Wils *****	on Ave	. (EW)	****	******	*****	*****	*****		
Average Dela **********	y (se *****	c/veh *****	): *****	110.0	* * * * *	W(	orst Ca	ase L( *****	evel Of	Serv:	Lce:	F *****		
Approach:	No	rth B	ound	So	uth B	ound	E	ast Bo	ound	We	est Bo	und		
Movement:	Ъ	- T	- R	L	- T	- R	L	- т	- R	Ŀ	- Т	- R.		
	1		<b>. .</b>								<b></b>			
Control:	' s	top S	iqn	 S	top S	ign	Un	contro	blled		contro	olled		
Rights:		Incl	ude		Incl	ude		Incl	ıde		Inclu	ıde		
Lanes:	0	0 1!	0 0	0	1 0	0 0	0	0 0	1 0	0 (	1!	0 0		
••••• <b>••</b> ••••												· <b></b> [		
Volume Modul	e:													
Base Vol:	1	0	113	0	0	0	0	767	21	159	79	0		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	1	0	113	0	0	0	0	767	21	159	79	0		
Added Vol:	44	23	0	6	13	D	0	16	24	0	28	11		
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0		
Initial Fut:	45	23	113	6	13	0	0	783	45	159	107	11		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1,00	1.00		
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
PHF Volume:	47	24	119	б	14	0	0	824	47	167	113	12		
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0		
Final Vol.:	47	24	119	6	14	0	0	824	47	167	113	12		
Critical Gap	Modu.	le:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	XXXXX	XXXXX	XXXX	XXXXX	4.1	xxxx	XXXXX		
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	XXXXX	XXXXX	XXXX	XXXXX	2.2	xxxx	XXXXX		
	<b>- -</b> -		1											
Capacity Modu	ile:													
Unflict Vol:	1308	1307	848	1373	1325	XXXXX	XXXX	xxxxx	XXXXX	872	XXXX	XXXXX		
Potent Cap.:	138	161	364	124	157	XXXXX	XXXX	XXXX	XXXXX	782	xxxxx	XXXXX		
Move Cap.:	103	123	364	. 59	120	XXXXX	xxxx	XXXX	XXXXX	782	XXXX	XXXXX		
Lovel Of Form		(odul)		!						[]				
Stopped Delvy	VVVVV		~~~~~	*****	~~~~				~~~~~	о <i>с</i>	~~~~	*****		
LOS by Move-	*	*	*	*	*	*****	*	*	*	ס.פ א	*	*		
Movement -	LT -	פידען .	- <b>TG</b>		LTP	- - २ <b>ग</b>	τ. τ. Υτ	- פידי ד	- рт		_ 1.TP	- PT		
Shared Can ·	XXXX	194	XXXXX	- 12	ALC: A	~ /\   • • • • • • •	- 1-1 - 1-1	MAAA MIK	- KI	7777	AAAA	*****		
Shrd StoDel v	XXXX	110	XXXXX	55 90	~~~~	VVVVV	~~~~	~~~~	XXXXXX	VYYYY	~~~~	XXXXX		
Shared LOS	*	F	*		*	*	*	*	*	*	*	*		
ApproachDel·	r	10.0			55 9		~			~	*****			
ApproachLOS:	1	F					~	*		~	*			

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Default Scenar	io		Tì	nu Jan	3, 2	002 11	:52:17			Page	6-1	
Etiwanda Properties Year 2020 With Project Conditions PM Peak Hour Level Of Service Computation Report												
Level Of Service Computation Report 1997 HCM 4-Way Stop Method (Future Volume Alternative)												
Intersection #	5 Ea	ist A	ve. (NS	s) / S	ummit	Ave.	(EW)					
***********************************												
Approach: Movement:	Nor L -	th B T	ound - R	So	uth Ba - T	ound - R	Ea L	ast B - T	ound - R	West Bo L - T	ound - R	
Control: Rights:	St	op S: Incl	 ign ude	 S	top S: inclu	ign Ide	51 St	top S. Inclu	ign ude	Stop S: Inclu	ign ide	
Min. Green: Lanes:	0 0 0	0 1!	0 0 0	0 0	0 0 1!	0 0 0	0	0 0 1!	0 0 0	0 0 0 0 1!	0 0 0	
								• • •				
Volume Module: Base Vol: Growth Adj: 1 Initial Bse:	87 .00 87	68 1.00 68	308 1.00 308	105 1.00 105	76 1.00 76	30 1.00 30	22 1.00 22	407 1.00 407	74 1.00 74	130 203 1.00 1.00 130 203	40 1.00 40	
PasserByVol: Initial Fut:	0 87	0 122	0 308	0 113	0 106	0 30	0 22	0 407	0 74	0 0 130 203	0 54	
User Adj: 1 PHF Adj: 0 PHF Volume:	.00 .95 92	1.00 0.95 128	1.00 0.95 324	1.00 0.95 119	1.00 0.95 112	1.00 0.95 32	1.00 0.95 23	1.00 0.95 428	1.00 0.95 78	1.00 1.00 0.95 0.95 137 214	1.00 0.95 57	
Reduced Vol: Reduced Vol: PCE Adj: 1	92 .00	128 1.00	324 1.00	119 1.00	112 1.00	32 1.00	23 1.00	428	7B 1.00	137 214 1.00 1.00	57 1.00	
Final Vol.:	92	128	324	119	112	32	23	428	78	137 214	57	
Saturation Flo Adjustment: 1	• <b>M</b> O(	dule: 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Lanes: 0 Final Sat.:	.17 ( 77	0.24 107	0.59 271	0.45 179	0.43 168	0.12	0.04	0.81 357	0.15 65	0.34 0.52 145 226	0.14 60	
Capacity Analy	sis l	Modul	.e:	1					!		,	
Vol/Sat: 1 Crit Moves: **	.20	1.20	1.20	0.67	0.67	0.67	1.20	1.20 ****	1.20	0.94 0.94 ****	0.94	
Delay/Veh: 13 Delay Adj: 1 AdjDel/Veh: 13	3.5 .00 : 3.5	134 1.00 134	133.5 1.00 133.5	27.6 1.00 27.6	27.6 1.00 27.6	27.6 1.00 27.6	135.9 1.00 135.9	136 1.00 136	135.9 1.00 135.9	59.1 59.1 1.00 1.00 59.1 59.1	59.1 1.00 59.1	
LOS by Move: ApproachDel: Delay Adj:	F 13	F 33.5 1.00	F	D	D 27.6 1.00	Ð	F 1	F 35.9 1.00	F	F F 59.1 1.00	F	
Appraduel: LOS by Appr: *********	13	د د د F * * * * *	*****	*****	47.6 D *****	*****	1:	35.9 F *****	******	59.1 F *******	* * * * * *	

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Default Scen	ario		F	ri Jan	4, 2	002 09:	58:00				Page	7-1		
Etiwanda Properties Year 2020 With Project Conditions PM Peak Hour														
••			Level (	Of Ser	vice	Computa	tion 1	Report	 t					
	1997	HCM O	peratio	ons Me	thod	(Future	Volu	me Alt	ternati	ve)				
Intersection	#7 E	ast A	ve. (NS	5) / V	ictor	ia St.	(EW)	*****	******	*****	*****	******		
Cycle (sec): Loss Time (s Optimal Cycl	***** ec): e:	*** <b>*</b> * 6	****** 0 6 (Y+R 0	****** = 3	***** sec)	******* Critica Average Level C	l Vol Dela f Ser	***** ./Cap y (sec vice:	(X): /veh):	****	0.5	******* 93 .0 B		
Approach:North BoundSouth BoundEast BoundMovement:L - T - RL - T - RL - T - R												West Bound		
Movement:	ovement: L - T - R L - T - R L - T - R											- ĸ		
Control: Rights:	ntrol: Protected Protected Permitted ghts: Include Include Include													
Min. Green:	10  freen: 10 16 16 16 16 16 21 21 21													
Lanes:	$\begin{array}{cccccccccccccccccccccccccccccccccccc$													
							1			1				
Volume Modul	e:													
Base Vol:	122	317	336	80	296	43	8	214	255	279	165	55		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	122	317	336	80	296	43	8	214	255	279	165	55		
Added Vol:	0	33	0	12	18	0	0	0	0	0	0	21		
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0		
Inicial Fut:	122	350	336	92	314	43	8	214	255	279	165	76		
USER ADJ:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
PHF Adj:	120	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
Peduct Vol:	120	000	354	97	757	45	0	425	205	294	1/4	00		
Reduced Vol	128	368	754	0	221	0 1 C	0	225	269	204	174	80		
PCE Adi-	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00		
MLF Adi:	1.00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00		
Final Vol.:	128	368	354	97	331	45	1.00	225	268	294	174	80		
							1							
Saturation Fl	ow Mo	dule:		•		'	1		•	1		I		
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	180 <b>0</b>	1800	1800		
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00		
Lanes:	1.00	2.00	1.00	1.00	1.00	1.00	1.00	0.46	0.54	1.00	1.00	1.00		
Final Sat.:	1700	3600	1800	1700	1800	1800	1700	821	979	1700	1800	1800		
						]			· <b></b>					
Capacity Anal	ysis I	Modul	e:											
/ol/Sat:	0.08	0.10	0.20	0.06	0.18	0.03	0.00	0.27	0.27	0.17	0.10	0.04		
TIL MOVES:	****	0 0 7	0 00		****	0 0 0	<b>.</b>	****	<b>.</b>					
Alume (Come	0.17   0.45 -	0.28	U.28	0.18	0.29	0.29	0.44	0.44	0.44	0.44	0.44	0.62		
alay/Vob	0.45 ( 75 7 1	0.36 .7	0.69	0.32	0.62	0.09	0.01	0.62	0.62	0.39	0.22	0.07		
ser Delladi.	23.7. 1 00 7	1 00	2.2.2	1 00	∠U.Б	15.4	У.5 , ^^	14.6	14.6	11.7	10.6	4.6		
diDel/Veh	1.00 . 12 7 1	17 4	22.00	1.UU 77 7	1.00 20 C	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
esionOueue.	εο.ΙΙ Δ	L / . 4 Q	د.د <i>ی</i> ۵	44.4 د	∠U.5 0	15.4	У.5 О	⊥4.6 ⊏	±4.6 ⊑	11.7	TA 'A	4.5		
***********			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ل *****	0 *****	_ *******		5 *****	⊐ ******	0 ******	ۍ ۲۰۰۰ ۲۰۰۰	 * * * * * * *		

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## APPENDIX J

# YEAR 2020 CONDITIONS INTERSECTION ANALYSIS WITH PROJECT (WITH IMPROVEMENTS)

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Etiwanda Properties Year 2020 With Project Conditions (With Improvements) AM Peak Hour													
Level Of Service Computation Report													
1997 HCM Operations Method (Future Volume Alternative)													
**************************************													
***************************************													
Cycle (sec):       60       Critical Vol./Cap. (X):       0.237         Loss Time (sec):       4 (Y+R = 3 sec) Average Delay (sec/veh):       9.9         Optimal Cycle:       60       Level Of Service:       A         ************************************													
Approach: North Bound South Bound East Bound West Bound Movement: 1. T. R. 1. T. P. J. T. T. R. J. T. P.													
Control: Split Phase Split Phase Permitted Permitted													
Rights: Include Include Include Include													
Min. Green: 15 15 15 15 15 15 15 15 15 15 15 15 15													
Volume Module:													
Base Vol: 0 0 0 221 0 5 2 49 0 0 45 88													
Growth Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0													
Initial Bse: 0 0 0 221 0 5 2 49 0 0 45 88													
Added Vol: 0 0 0 40 0 20 7 6 0 0 18 14													
PasserByVol: 0 0 0 0 0 0 0 0 0 0 0 0													
Initial Fut: 0 0 0 261 0 25 9 55 0 0 63 102													
User Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0													
PHF Adj: 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95													
PHF Volume: 0 0 0 275 0 26 9 58 0 0 66 107													
Reduct Vol: 0 0 0 0 0 0 0 0 0 0 0 0													
Reduced Vol: 0 0 0 275 0 26 9 58 0 0 66 107													
PCE Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0													
MLF Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0													
Final Vol.: 0 0 0 275 0 26 9 58 0 0 66 107													
Saturation Flow Module.													
Saturation Fibw Modure.													
Lanes: 0.00 0.00 0.00 1.00 0.00 1.00 1.00 1.0													
Final Sat.: 0 0 0 1700 0 1800 1700 3600 0 0 1800 1800													
Capacity Analysis Module:													
Vol/Sat: 0.00 0.00 0.00 0.16 0.00 0.01 0.01 0.02 0.00 0.00 0.04 0.06													
Crit Moves: **** ****													
Green/Cycle: 0.00 0.00 0.00 0.68 0.00 0.68 0.25 0.25 0.00 0.00 0.25 0.25													
Volume/Cap: 0.00 0.00 0.00 0.24 0.00 0.02 0.02 0.06 0.00 0.00 0.15 0.24													
Delay/Veh: 0.0 0.0 0.0 3.7 0.0 3.1 16.9 17.1 0.0 0.0 17.5 18.0													
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0													
AdjDel/Veh: 0.0 0.0 0.0 3.7 0.0 3.1 16.9 17.1 0.0 0.0 17.5 18.0													
DesignQueue: V V V 3 V 0 0 1 0 0 2 3													

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	Yea	r 2020	) With	Etiv Projec P	vanda st Cor M Pea	Proper dition k Hour	ties s (Wit	h Imp	roveme	nts)			
			Level	Of Ser	vice	Comput	ation	Repor	t				
********	1997	HCM C	perati	ons Me ******	ethod	{Futur	e Volu ******	me Al	ternat	1ve) *******	****	*****	**
Intersection	n #13 1	Etiwan	ida Ave	. (NS)	/ Si	ummit A	ve. (E	EW)					
*********	****	*****	*****	* * * * * *	****	******	*****	*****	*****	*******	****	*****	f #
Cycle (sec):		/	2 A (V.D	_ >	ren)	Average	ai voi a Dal-	L./Cap	(X): (xeb)		0.88	18	
Dotimal Cvcl	sec): le	7	4 (1+K	= 3	sec;	Level (	e Deia Of Ser	iy (se vice:	c/ven/		22.	. 5 C	
***********		, *****	******	* * * * * *	*****	******	******	*****	* * * * * *	******	****	- ******	t zł
Approach:	No	orth B	ound	Sc	outh E	Bound	E	Cast B	ound	Wes	t Bo	ound	
Movement:	L	- Т	- R	L	- Т	– R	$\mathbf{L}$	- T	- R	L ~	т	- R	
	-									[			•
Control:		Permi	tted		Permi	tted		Permi	tted	Pe	rmit	ted	
Rights:		Incl	ude	_	Incl	ude		Incl	ude	I	nclu	ude	_
Min. Green:	19	5 15	15	15	15	15	15	15	15	15	15	15	i .
Lanes:	0	0 11	οu	0	0 11	0 0	U	0 11	0 0		Τ ;	υu	
Volume Modul				[]						11			1
Nace Vol.		5 89	147	59	279	1 32	15	174	421	410	202	86	
Growth Adi-	1.00	, 07 100	1.00	1 00	1 00	1 00	1 00	1 00	1.00	1.00 1	00	1.00	
Initial Bse:	135	5 1.00 5 89	147	59	279	32	15	134	421	410	303	86	
Added Vol:	 C	20	0	0	60	2		0	0	0	0	0	
PasserByVol:	0	0 0	0	Ō	0	ō	0	ō	0	Ō	Ō	0	
Initial Fut:	335	109	147	59	339	34	16	134	421	410	303	86	
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1	.00	1.00	
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95 0	. 95	0, <b>9</b> 5	
PHF Volume:	353	115	155	62	357	36	17	141	443	432	319	91	
Reduct Vol:	0	0	0	0	0	0	0	0	D	0	0	0	
Reduced Vol:	353	115	155	62	357	36	17	141	443	432	319	91	
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1	. 00	1.00	
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1	.00	1.00	
Final Vol.:	و و د	115	155	1 62	357	36	17	141	444	432 .	319	91	
Saturation F	 ໄດພ Mi	odule		1						; <b>-</b>			I
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800 38	300	1800	
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94 1.	.00	1.00	
Lanes :	0.58	0.18	0.24	0.14	0.78	0.08	0.03	0.23	0.74	0.53 0.	37	0.10	
Final Sat.:	987	321	433	244	1401	141	50	422	1325	897 £	563	188	
	{ ·												
Capacity Anal	lysis	Modul	e:			•	•					·	
Vol/Sat:	0.36	0.36	0.36	0.25	0.25	0.25	0.33	0.33	0.33	0.48 0.	48	0.48	
Crit Moves:		* * * *								**	***		
Green/Cycle:	0.40	0.40	0.40	0.40	0.40	0.40	0.54	0.54	0.54	0.54 0.	54	0.54	
Volume/Cap:	0.89	0.89	0.89	0.63	0.63	0.63	0.62	0.62	0.62	0.89 0.	89	0.89	
Delay/Veh:	33.2	33.2	33.2	19.1	19.1	19.1	12.5	12.5	12.5	24.8 24	. 8	24.8	
user DelAdj: MaiDel(W-)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.	00	1.00	
nujver/veh:	33.2	33.2	33.2	19.1	19.1	19.1	12.5	12.5	12.5	24.8 24	. 8	24.8	
************************	9 *****	د *****	<u>4</u> ******	2	9	]	0		9 + + + + + + + -	9 • • • • • • • • •	7	2	

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Default Scen	Default Scenario Thu Jan 10, 2002 16:37:51										Page 4-1		
	Vac		 With	Etiv	vandā	Propers	ties /Wiel						
	real	L 2020	MICH	rtojec A	M Pea	k Hour	5 (W1C)	а тирі	lovemen	165)			
		• <b>-</b>							<b></b>				
	1997	HCM O	Level   Derati	DI SEI ODS Me	vice ·	Computa	ation s > Volum	keport ne Ali	: ernar i	vel			
********		*****	******	*****	*****	******	******	*****	******	****	*****	*****	
Intersection	1 <b>#4 E</b>	Etiwan	da Ave	. (NS)	/ Hi	ghland	Ave.	(EW)					
********	*****	*****	* * * * * *,	*****	****		*****	* * * * * *	******	*****	*****	*****	
Cycle (sec):	. 1	8	1		,	Critica	al Vol	./Cap	. (X) :		0.88	8	
Loss Time (s	29.8												
optimal Cycl	.e:	8 ******	i * * * * * * *	* * * * * *	*****	Level (	UI SEF	vice:			*****	******	
approach :	Nic					ound	т. Т		ound			ามากกิ	
Movemenr ·	Ŧ.	- T	- P	Т.	- T	- P	T. J	азсы. - т	- P	τ	. T	- R	
				ير ا ا		к 			I			. <b>.</b>	
Control:	1	Permi	tted		Permi	tted	P:	rotecl	ted	, Pi	otect	.ed	
Rights:		Incl	ude		1ncl	ude		Inch	ıde		Inclu	ıde	
Min. Green:	15	5 15	15	15	15	15	10	15	15	10	15	15	
Lanes:	1	0 0	1 0	1	0 1	C 1	1 (	01	01	1 (	1	10	
	1			l							· •		
Volume Modul	e:												
Base Vol:	69	298	33	68	465	616	196	409	127	148	985	86	
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	69	298	33	68	465	616	196	409	127	146	985	86	
Added Vol:	0	9	0	0	26	34	12	0	0	0	0	D	
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0	
Initial Fut:	69	307	33	68	491	650	208	409	127	148	985	86	
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PHE Maluma.	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.90	
Part Volume:	<i>د</i> ، 0	د∡د 0	35	/2	517	654	219	431	134	720	1037	21	
Reduced Vol-	72	222	25		¢ 17	694	ט סור	0	124	160	1027	0 01	
PCE Adi	1 00	1 00	1 00	1 00	1 00	1 004	1 00	1 00	1 00	1 00	1 00	1 00	
MLF Adi	1 00	1 00	1 00	1 00	1 00	1.00	1.00	1 00	1 00	1 00	1 00	1 00	
Final Vol.:	73	323		72	517	684	219	431	174	156	1037	91	
			!	1			 						
Saturation F	low M	odule:	,	·		1	1		'	1			
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	
Lanes:	1.00	0.90	D.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.84	0.16	
Final Sat.:	1700	1625	175	1700	1800	1800	1700	1800	1800	1700	3311	289	
			i			[							
Capacity Anal	lysis	Modul	е:										
Vol/Sat:	0.04	0.20	0.20	0.04	0.29	0.38	0.13	0.24	0.07	0.09	0.31	0.31	
Tit Moves:	<u> </u>		<b>.</b> . –			****	****				****		
sreen/Cycle:	0.43	0.43	0.43	0.43	0.43	0.43	0.15	0.37	0.37	0.12	0.35	0.35	
vorume/Cap:	U.10	0.46	0.46	0.10	0.67	0.89	0.89	0.64	0.20	0.74	0.89	0.89	
Jeray/Veh:	13.9	17.0	17.0	13.9	20.9	33.6	63.8	22.9	17.3	47.5	32.7	32.7	
dipal/web	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
NegionOueur	ע.נו ר	11.0	17.0	13.9	20.9	33.6	63.B	22.9	17.3	47.5	32.7	32.7	
		3	1	2	14	19	9	13	4	6	33	3	

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Default Scen	nario		Т	ue Jan	в, 2	002 12	:42:42	2		Page	e 8-1			
	Etiwanda Properties Year 2020 With Project Conditions (With Improvements) AM Peak Hour Level Of Service Computation Report 1997 HCM Operations Method (Future Volume Alternative)													
Level Of Service Computation Report 1997 HCM Operations Method (Future Volume Alternative)														
**********	****	*****	*****	*****	*****	*****	* * * * * *	*****	* * * * * * *	*********	******			
Intersection	1 #106 *****	8 East *****	Ave. ******	(NS) / *****	Wils *****	on Ave ******	. (EW) *****	*****	* * * * * * *	** * * * * * * * * *	******			
Cycle (sec):		8	5			Critica	al Vol	./Cap	. (X):	0.7	718			
Loss Time (s	sec):		4 (Y+R	<b>=</b> 3.	sec)	Average	e Dela	ıy (se	c/veh):	: 10	).8			
Optimal Cycl	e:	8	5			Level (	Of Ser	wice:			В			
******	*****	*****	*****	* * * * * *	****	******	*****	*****	******	*********	******			
Approach:	No	orth B	ound	So	uth B	ound	E	Cast Bo	ound	West H	Bound			
Movement:	, L	- T	- R	Ŀ	- T	- R	L	- Т	- R	L - T	- R			
Contro1:		Permi	ctea ude		Permi	cteq		Permit	rcea .de	Permi	.ccea			
Kights: Min Croon.	15	1001	100	15	1101	ude 15	16	111611	106 16					
Lanes	n	0 11	0 0	0 10	1 0	n n	1	0 0	1 0		1 0			
	. ]				÷ •		 							
Volume Modul	1 .e:			11					I		· 1			
Base Vol:	3	3 0	106	0	0	0	0	14	17	983 27	0			
Growth Adj:	1,00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
Initial Bse:	3	0	106	0	0	0	0	14	17	983 27	0			
Added Vol:	13	7	0	10	20	0	0	24	38	0 8	3			
PasserByVol:	σ	0	O	0	0	0	0	0	0	0 0	0			
Initial Fut:	. 16	7	106	10	20	0	0	38	55	983 35	3			
User Adj:	Ĩ.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
PHF Adj:	0.95	0.95	0.95	0,95	0.95	0.95	0.95	0.95	0.95	0.95 0.95	0.95			
PHF Volume:	17	7	112	11	21	0	0	40	58	1035 37	3			
Reduct Vol:	0	0	0	0	0	0	0	0	0	0 0	0			
Reduced Vol:	17	7	112	11	21	0	0	40	58	1035 37	3			
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
FINAL VOL.:	17	/	112	11	21	Ū,	0	40	58	1035 37	3			
Saruration F	1 Low M	പപ					1		!					
Saculation r. Sar/Lane	1800	1800	1800	1900	1900	1900	1000	1800	1800	1800 1900	1900			
Adjustment	0 94	1 00	1 00	n 94	1 00	1 00	0 94	1 00	1 00	0 94 1 00	1 00			
Lanes:	0.13	0.05	0.82	0.35	0.65	0.00	1 00	0.41	0.59	1.00 0 92	0.08			
Final Sat.:	222	97	1468	588	1177	0.00	1700	735	3065	1700 1658	142			
	[					!	1							
Capacity Anal	İysis	Modul	e: '	•		•			F		I			
Vol/Sat.	0.08	0.08	0.08	0.02	0.02	0.00	0.00	0.05	0.05	0.61 0.02	0.02			
Crit Moves:		****								* * * *				
Green/Cycle:	0.18	0.18	0.18	0.18	0.18	0.00	0.00	0.78	0.78	0.78 0.78	0.76			
Volume/Cap:	0.43	0.43	0.43	0.10	0.10	0.00	0.00	0.07	0.07	0.78 0.03	0.03			
Delay/Veh:	32.1	32.1	32.1	29.5	29.5	0.0	0.0	2.3	2.3	8.6 2.2	2.2			
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00			
AdjDel/Veh:	32.1	32.1	32.1	29.5	29.5	0.0	0.0	2.3	2.3	8.6 2.2	2.2			
uesignQueue: ************	1 *****	0 ******	4 * * * * * * *	0 ******	1	0 ******	0 + + + - + -	0	1	13 0	0			
											*******			

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Attachment 3, Page 596 of 608

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Default Scen		We	d Jan	9, 20	002 11:	06:52				Page	5-1		
	Etiwanda Properties Year 2020 With Project Conditions (With Improvements) AM Peak Hour												
		I	Level C	f Serv	vice (	Computa	tion F	Report	:				
	1997 1	нсм ог	peratio	ns Met	thod	(Future	Volum	ne Alt	ernati	ve)			
*********	*****	*****	******	******	******	******	****** (12527)	****	*****	*****	****	*****	
intersection	₩⊃ ⊑ *****	451 AV	/e. (N2 ******	) / 51 *****	105001] C * * * * * * *	Ave.	(LW) ******	*****	*****	*****	****	*****	
Cycle (sec);		6(	כ		c	Irítica	al Vol.	/Cap.	(X):		0.78	6	
Loss Time (s		29.3											
Optimal Cycle: 60 Level Of Service:												C	
*********	****	*****	******	*****	* * * * * *	******	******	*****	*****	*****	*****	*****	
Approach: North Bound South Bound East Bound												nnq	
Movement:	. L. ·	- T	- R	. L ·	- Т	- R	L -	- T	- R	_ L -	- T	- K	
Control.	1	Dormi 1	 -=		bernei (		!		!	(			
Control:PermittedPermittedProtectedProtectedRights:IncludeIncludeIncludeInclude													
Rights:     Include     Include     Include       Min. Green:     15     15     15     15     10     15     10     15													
Min. Green:       15       15       15       15       15       16       15       16       17       18         Lanes:       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       1       0       0 <td< td=""></td<>													
				1					·		<b></b>	• • • • • • •	
Volume Modul	e:												
Base Vol:	128	123	101	180	766	228	43	140	149	365	434	104	
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Initial Bse:	128	123	101	180	766	228	43	140	149	365	434	104	
Added Vol:	0	16	0	12	46	0	0	0	0	0	0	4	
PasserByVol:	100	1.20	101	0	0	0	0	0	0	0	424	109	
Unitial fut:	1 00	1 00	1 00	192	1 00	228	4.3 1.00	140	149	202	4 3 4	1 00	
DSEL Muj. PHF Adi	1.00 0 95	1.00	1.00	1.00	1,00	0.05	1.00	1.00	1.00 n QS	n 95	0 95	0.95	
PHF Volume:	135	146	106	202	855	240	45	147	157	384	457	114	
Reduct Vol:	0	0	Î.	0	0.0	240	17	0	0	0	0	Ō	
Reduced Vol:	135	146	106	202	855	240	45	147	157	384	457	114	
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Final Vol.:	135	146	106	202	055	240	45	147	157	384	457	114	
			!	1					1	1			
Saturation Fl	LOW MO	odule:										1000	
Sat/Lane:	1800	1800	1 00	1800	1800	1000	1800	1800	1800	1800	1800	1800	
Lanes	0.72	0.74	0.54	0.94	1.00	1.00	1 00	0.49	1.00	1 00	0.80	0.20	
Final Sat ·	1227	1333	968	556	2261	660	1700	972	0.32	1700	1441	359	
				1			1700		l	1~~~			
Capacity Anal	lysis	Modul	.e: '						1	•		'	
Vol/Sat:	0.11	0.11	0.11	0.36	0.36	0.36	0.03	0.17	0.17	0.23	0.32	0.32	
Crit Moves:					****		* * * *				****		
Green/Cycle:	0.39	0.39	0.39	0.39	0.39	0.39	0.17	0.25	0.25	0.26	0.34	0.34	
Volume/Cap:	0.28	0.28	0.28	0.93	0.93	0,93	0.16	0.68	0.68	0.88	0.93	0.93	
Delay/Veh:	12.6	12.6	12.6	28.4	28.4	28.4	21.7	24.4	24.4	38.9	39.5	39.5	
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
AajDel/Veh:	12.6	12.6	12.6	28.4	28.4	28.4	21.7	24.4	24.4	38.9	39.5	39.5	
**************************************	• • • • • •	ر *****	ـــــــــــــــــــــــــــــــــــــ	4	19	5	1	4	4	10	11	<b>ر</b> • د س ب د د د	

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Default Scen	nario		Т	ue Jai	n 8, 2	002 11	:33:49	1			Page	2-1		
	Etiwanda Properties Year 2020 With Project Conditions (With Improvements) PM Peak Hour Level Of Service Computation Report													
	1997	нсмо	Level (	Of Sen ons Me	rvice ethod	Comput.	ation e Volu	Repor	t ternat;	ive)				
* * * * * * * * * * * *	****	* * * * * *	* * * * * *	*****	*****	*****	*****	****	*****	*****	*****	*****		
Intersection	1 #1   *****	Etiwan ******	da Ave	We *****	est (N ******	S) / W *****	ilson ******	Ave. *****	(EW) ******	*****	****	*****		
Cycle (sec): Loss Time (s Optimal Cycl	: ec): le:	6 6 * * * * * *	0 4 (Y+R 0	= 3	sec)	Critic Average Level (	al Vol e Dela Of Ser *****	./Cap y (se vice: *****	. (X): c/veh)	:	0.3 6 *****	52 .5 A ******		
Approach: Movement:	No L	orth B - T	ound - R	So L	outh B - T	ound - R	E L	ast B - T	ound - R	พ 	est Bo - T	ound - R		
Control: Rights:	S]	plit P Incl	hase ude	 S <u>r</u>	lit P Incl	hase ude	11	Permi Incl	tted ude	<b> </b>	Permi <sup>1</sup> Incl	 tted ude		
Min. Green:	1	5 15	15	15	5 15	15	15	15	15	15	15	15		
Lanes:			0 0	1			1 	0 Z		0 []		1 U		
Volume Modul	۱ م.			]					·			1		
Base Vol:		0 0	0	142	2 0	2	33	748	0	0	88	247		
Growth Adi:	1.00	0 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	(	0	0	142	. 0	2	. 33	748	0	ο	88	247		
Added Vol:	C	) 0	Ū	26	; o	13	23	21	0	0	12	47		
PasserByVol:	C	) 0	0	0	0	0	0	0	Ð	0	0	0		
Initial Fut:	C	) 0	0	168	0	15	56	769	0	0	100	294		
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
PHF Volume:	C	0	0	177	0	16	59	809	0	0	105	309		
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0		
Reduced Vol:	0	0	0	177	0	16	59	809	0	0	105	309		
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Final Vol.:	, 0	0	0,	, 177	0	16	59	809	°.	, 0	105	309		
Conversion F	 1 M			l										
Saturation F.			1000	1900	1000	1900	1000	1000	1000	1000	1 0 0 0	1000		
Sat/Lane:	1800	1 00	1 00	1800	1 00	1800	1800	1800	1 00	1800	1900	1 00		
Lanecs	0.24	n on	0.00	1 00	1.00	1.00	1 00	2.00	1,00	0.94	1.00	1.00		
Final Sat	0.00	0.00	0.000	1700	0.00 n	1800	1700	3600	0.00	0.00	1800	1800		
	<b>.</b>			1		1	1		1					
Capacity Anal	' lvsis	Modul	.e; 1	1		1	1		4	1		. – 1		
Vol/Sat:	0.00	0.00	0.00	0.10	0.00	0.01	0.03	0.22	0.00	0.00	0.06	0 17		
Crit Moves:		+		****				****				¥ - 1 '		
Green/Cycle:	0.00	0.00	0.00	0.30	0.00	0.30	0.64	0.64	0.00	0.00	0.64	0.64		
Volume/Cap:	0.00	0.00	0.00	0.35	0.00	0.03	0.05	0.35	0.00	0.00	0.09	0.27		
Delay/Veh:	0.0	0.0	0,0	17.1	0.0	15.1	4.1	5.2	0.0	0.0	4.2	4.8		
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
AdjDel/Veh:	0.0	0.0	0.0	17.1	0.0	15.1	4.1	5.2	0.0	0.0	4.2	4.8		
DesignQueue:	0	0	0	4	0	D	1	10	0	0	1	4		
*********	****	*****	* * * * * *	*****	*****	*****	*****	* * * * *	* * * * * * *	*****	* * * * *	*****		

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Default Scen	nario		Т	ue Jar	a 8, 2	002 12	32:28			Page 7-1			
Etiwanda Properties Year 2020 With Project Conditions (With Improvements) PM Peak Hour													
			Level (	of Ser	vice	Computa	tion	Report	- <b></b>				
	1997	HCM O	peratio	ons Me	thod	(Future	volu	me Alt	ernati	ve)			
******	*****	*****	******	*****	*****	******	*****	*****	******	*****	* * * * * *	******	
Intersection	1 #107	Etiwa	anda A	ve	East	(NS) /	Wilso	n Ave	(EW)				
*****	****	*****	* * * * * * *	* * * * * *	* * * * *	******	****	****	*****	*****	* * * * * *	*****	
Cycle (sec):		6	0			Crítica	l Vol	./Cap	. (X):		0.84	19	
Loss Time (s	sec):		4 (Y+R	= 3	sec)	Average	e Dela	y (seo	c/veh):		19	. 3	
Optimal Cycle: 60 Level Of Service:												в	
******	*****	*****	* * * * * * *	*****	****	*****	*****	* * * * * *	*****	*****	*****	******	
Approach: North Bound South Bound East Bound												ound_	
Movement:	, L	- T	- R	Ľ	- T	- R	Ĺ	- T	~ R	L	- T	- R ,	
·····						{ `			!			 	
Control:	sp	ALLE PL	nase	5 <u>p</u>	lit P	nase		Permit	tea		Permit	sted	
Rights:		10010	Ide										
$\begin{array}{llllllllllllllllllllllllllllllllllll$												0 0	
Danes:	1	0 13	u u		0 0	U U I	1	U U	1 0			l	
Volume Modul				11			1			1		1	
Base Vol-	281	0	71	0	0	n	0	689	165	5	79	0	
Growth Adi	1 00	1 00	1 00	3 00	1 00	1 00	1 00	1 00 0	1 00	1 00	1 00	1 00	
Initial Bro-	281	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	79	1.00	
Added Voly	201 17		71	0	0	0	0	200	205	19	17	0	
PaccarBullol.	י <del>ני</del> ח	0	0	0	0	0	0	21	20	12	14	0 0	
Inizial Fut:	328	0	105	0	0	0	0	710	191	24	91	n	
liser Adi-	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	
PHF Adi.	0.95	0.95	0.95	0.95	1.00	1.00	0 95	0 95	0.95	1.00 n 95	0 95	0 95	
PHE Volume	345	0.50	112	0.22	0.55	0.00	0.55	747	201	25	96	0	
Reduct Vol:	015	n	0	0	ň	0	ň	, <u>,</u> , 0	201		, 0	ŏ	
Reduced Vol:	345	ő	112	0	0	0	Ő	747	201	25	96	0	
PCE Adi	1 00	1.00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 . 00	1.00	
MLF Adi:	1.00	1.00	1.00	1.00	1 00	1 00	1.00	1 00	1 00	1 00	1.00	1.00	
Final Vol.:	345	0	112	2.00	1.00	1.00	1.00 n	747	201	25	96	0	
••••	1			1									
Saturation F	low M	odule:	'	,		I	1		I	1			
Sat/Lane:	1800	1800	1800	1600	1800	1800	1800	1800	1800	1800	1800	1800	
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	
Lanes:	0.77	0.00	0.23	0.00	0.00	0.00	0.00	0.79	0.21	0.22	0.78	0.00	
Final Sat.:	1302	0	421	0	0	0	0	1418	382	371	1407	0	
		<b>-</b>							!	j ·			
Capacity Anal	lysis	Modul	e: ,				•		,	•			
/ol/Sat:	0.27	0.00	0.27	0.00	0.00	0.00	0.00	0.53	0.53	0.07	0.07	0.00	
Crit Moves:	****							****					
Freen/Cycle:	0.31	0.00	0.31	0.00	0.00	0.00	0.00	0.62	0.62	0.62	0.62	0.00	
/olume/Cap:	0.85	0.00	0.85	0.00	0.00	0.00	0.00	0.85	0.85	0.11	0.11	0.00	
elay/Veh:	31.4	0.0	31.4	0.0	0.0	0.0	0.0	15.4	15.4	4.7	4.7	0.0	
ser DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
djDel/Veh:	31.4	0.0	31.4	0.0	0.0	0.0	0.0	15.4	15.4	4.7	4.7	0.0	
esignQueue:	8	D	3	D	D	0	0	11	З	0	1	0	
*****	* * * * *	*****	*****	* * * * * *		* * * * * *				*****	*****	******	

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Default Scenario Tue Jan 8, 2002 11:33:49											Page	3-1		
	Etiwanda Properties Year 2020 With Project Conditions (With Improvements) PM Peak Hour Level Of Service Computation Report													
			Level (	Of Ser	vice	Computa	ation	Repor	 C					
	1997	нсм о	peratio	ons Me	thod	(Future	e Volu	ume Al	ternat:	ive)				
*******	*****	*****	*****	*****	*****	******	*****	*****	*****	******	*****	******		
Intersection	. # 3 E	5ElWan	da Ave ******	. (NS) *****	/ Su *****	mmic A' ******	VE. (Ľ ******	;W) *****	******	*****	*****	*******		
Cycle (sec):		9	5			Critica	al Vol	./Cap	. (X):		0.93	17		
Loss Time (s	ec):		4 (Y+R	= 3	sec)	Average	e Dela	y (se	c/veh)	:	30	.1		
Optimal Cycle; 95 Level Of Service:												C		
**************************************												*****		
Approach: North Bound South Bound East Bound												bund		
Movement: L - T - R L - T - R L - T - R												- R		
Control:	1	Permi	rted	1]	Permi	rted	[]	Permi	rted	111	Permii	tted		
Control:PermittedPermittedRights:IncludeIncludeInclude														
Min. Green: 15 15 15 15 15 15 15 15 15 15 15														
Lanes: 0 0 1! 0 0 0 1! 0 0 0 0 1! 0 0 0 1! 0 0														
						<b>-</b> -								
Volume Modul	e:													
Base Vol:	343	276	401	22	125	14	17	97	277	199	55	47		
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Initial Bse:	341	276	401	22	125	14	17	97	277	199	55	47		
Added Vol:	0	70	0	0	19	1	2	0	0	0	0	0		
Thitial Put:	341	346	401	22	164	15	ט פר	97	0 777	190	56	0 47		
liger Adi	1 00	1 00	1 00	1 00	1 00	1 00	1 00	1 00	יי <u>י</u> ח מח	1 00	1 00	1 00		
PHF Adi:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95		
PHF Volume:	359	364	422	23	173	16	20	102	292	209	58	49		
Reduct Vol:	0	D	D	D	D	0	0	0	0	0	D	0		
Reduced Vol:	359	364	422	23	173	16	20	102	292	209	58	49		
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Final Vol.:	359	364	422	23	173	16	20	102	292	209	58	49		
Conversion Rl		 					1							
Saturation Fi	1900 PR	1800	1800	1800	1800	1800	1900	1900	1800	1800	1000	1800		
Adjustment	0 94	1.00	1.00	0.94	1 00	1 00	1800 n 94	1 00	1 00	0 94	1 00	1 00		
Lanes:	0.33	0.31	0.36	0.12	0.81	0.07	0.05	0.25	0.70	0.67	0.18	0.15		
Final Sat.:	554	562	651	196	1459	133	87	443	1265	1145	317	271		
				1					!	{		- <b>-</b>		
Capacity Anal	ysis	Modul	e: .	•								,		
Vol/Sat:	0.65	0.65	0.65	0.12	0.12	0.12	0.23	0.23	0.23	0.18	0.18	0.18		
Crit Moves:		****						****						
Green/Cycle:	0.71	0.71	0.71	0.71	0.71	0.71	0.25	0.25	0.25	0.25	0.25	0.25		
volume/Cap:	U.92	0.92	0.92	0.17	0.17	0.17	0.92	0.92	0.92	0.73	3.73	0.73		
Delay/Ven: User Deladi	1 00	22.4	24.4	4./	4./	4.7	58.1	58.1	58.1	38.7	38.7	38.7		
AdiDel/Veh-	22 4	27 4	22 4	4 7	47	1.00	7.00	1.00 59 1	7.00 T.00	1.00 . 	1.00	1.UU 28 7		
DesignOueue:	-27		8		/ 3	<b>۰۰</b>	1.00	20.1 4	12	ээ./. q	, סי י	י.טנ ל		
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1/9/2024 Board Meeting

Page 4-1 Default Scenario Thu Jan 10, 2002 16:38:25 -------Etiwanda Properties Year 2020 With Project Conditions (With Improvements) PM Peak Hour Level Of Service Computation Report 1997 HCM Operations Method (Future Volume Alternative) \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Intersection #4 Etiwanda Ave. (NS) / Highland Ave. (EW) \* Cycle (sec): 60 Critical Vol./Cap. (X): 0.748 32.8 Loss Time (sec);6 (Y+R = 3 sec) Average Delay (sec/veh):Optimal Cycle:60Level Of Service: \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Approach:North BoundSouth BoundEast BoundWest BoundMovement:L - T - RL - T - RL - T - RL - T - RControl: Permitted Permitted Protected Protected Rights: Include Include Include Include Min. Green: 15 15 15 15 15 15 10 15 15 10 15 15 Lanes: 100101011010110110 Volume Module: 84 91 Base Vol: 53 384 45 71 351 163 535 254 54 15 Initial Bse: 53 384 45 71 351 163 535 254 54 15 84 91 0 0 0 Added Vol: 0 30 0 0 17 22 40 0 0 

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 Final Vol.: 56 436 47 75 387 195 605 267 57 16 88 96 Saturation Flow Module: Sat/Lane:18001.00< Capacity Analysis Module: Vol/Sat: 0.03 0.27 0.27 0.04 0.22 0.11 0.36 0.15 0.03 0.01 0.05 0.05 Crit Moves: \*\*\*\* \*\*\*\* \*\*\*\* Green/Cycle: 0.28 0.28 0.28 0.28 0.28 0.28 0.37 0.37 0.37 0.25 0.25 0.25 Volume/Cap: 0.12 0.96 0.96 0.16 0.77 0.39 0.96 0.40 0.08 0.04 0.20 0.21 Delay/Veh: 16.2 51.5 51.5 16.4 27.0 18.0 44.8 14.3 12.3 17.1 17.9 17.9 AdjDel/Veh: 16.2 51.5 51.5 16.4 27.0 18.0 44.8 14.3 12.3 17.1 17.9 17.9 DesignQueue: 1 11 1 2 10 5 14 6 1 0 2 2 

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Default Scenario			Т	ue Jar	1 8, <b>2</b>	2002 15	:24:19	I			Page	8-1
	Yea:	r 2020	With	Etiw Projec F	vanda st Cor M Pea	Proper dition k Hour	ties s (Wít	h Imp	roveme	nts)	•	
	Level Of Service Computation Report											
*******	1997	HCM Q	perat10	ons Me ******	±****	(Futur) ******	e volu ******	me AI` ★★★★≠	ternat: ******	1ve) ******	*****	******
Intersection #108 East Ave. (NS) / Wilson Ave. (EW)												
Cycle (sec): Loss Time (s Optimal Cycl	ec): e:	8	5 4 (Y+R 5	E =	sec)	Critic Averag Level	al Vol e Dela Of Ser	./Cap у (ве vice:	. (X): c/veh)	:	0.6: 9	21 .1 A
Approach	No	hrth B	ound	50	uth P	ound	E	ast B	nund	We	est Br	ານກໍດີ
Movement:	L	- T	- R	L	- T	- R	L	- Т	- R	L ·	- T	- R
Control: Rights:	!	Permi incl	tted ude	]	Permi Incl	tted ude	[]	Permit Inclu	ted ide	 	Permít Inclu	ted de
Min. Green:	15	5 15	15	15	15	15	15	15	15	15	15	15
Lanes:	0	0 1:	0 0	U 11	1 0	0 0	1 	0 0	1 0	1 ( 	) ()	1 0 !
Volume Modul	e:			11			11			1[		
Base Vol:	1	. 0	113	0	0	0	0	767	21	159	79	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	0	113	0	0	0	0	767	21	159	79	0
Added Vol:	44	23	Q	6	13	0	0	16	24	0	28	11
PasserByVol:	0	0	0	0	0	0	0	0	0	0	D	0
Initial Fut:	45	23	113	6	13	0	0	783	45	159	107	11
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	47	24	119	6	14	0	0	824	47	167	113	12
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Required Vol:	1 00	24	119	1 00	14	1 00	1 00	824	47	167	113	12
MLE Adj:	1 00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol	47	24	119	1.00	1.00	1.00	1.00	824	1.00	167	112	1.00 לו
						!	[			1		!
Saturation Fl	low Me	odule:	1	1		•	1		1	I		1
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.94	1,00	1.00
Lanes:	0.26	0.12	0.62	0.33	0.67	0.00	1.00	0.95	0.05	1.00	0.91	0.09
Final Sat.:	441	225	1108	558	1209	0	1700	1702	98	1700	1632	168
						• • •						
Capacity Anal	ysis	Modul	e:									
VOL/SAC:	0.11	U.11	0.11	0.01	0.01	0.00	0.00	0.48	0.48	0.10	0.07	0.07
CLIL MOVES:	<b>Λ</b> 1 0	^ • • • •	0.10	0 10	0.10	0 00	0 00	****	0 70	0 30	0 50	0 70
Volume/Cap	0.10	0.10	0.18 0.61	0.18	0.18	0.00	0.00	0.78	0.78	0.78	U./8	0.78
Delav/Veh:	35 7	35 7	35 7	29 2	29 7	0.00	0.00	V.0Z	V. 5Z	2 V 1 T T T	עט.ט רר	0.09 c c
User DelAdi	1.00	1.00	1,00	1.00	1 00	1 00	1 00	1 00	1 00	1 00 1	∡.j 1 ∩∩	∡,j 1 00
AdjDel/Veh:	35.7	35.7	35.7	29.2	29.2	0.0	0 0	5 0	5 0	2 4	2.3	2.00 7 7
DesignQueue:	2	1	5	0	1	0	0	10	1	~	1	<b>2</b> 5 0
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Attachment 3, Page 602 of 608

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Default Scenario			W	Wed Jan 9, 2002 11:08:11						Page 5-1		
Etiwanda Properties Year 2020 With Project Conditions (With Improvements) PM Peak Hour												
Level Of Service Computation Report												
*********	****	*****	*****	*****	*****	******	*****	*****	*****	*****	****	****
Intersection #5 East Ave. (NS) / Summit Ave. (EW)												
Cycle (sec): $60$ C:Loss Time (sec): $6$ (Y+R = 3 sec) AOptimal Cycle: $60$ Lateral Cycle: $60$					Critica Average Level (	tical Vol./Cap. (X): erage Delay (sec/veh): vel Of Service:				0.602 17.0 B		
Approach:	No	The R	ound	50	uth R	ound	R :	set Bo	hund	We	st Br	bund
Movement:	T.	- T		- ЭО т	исл Б - т	_ ը	т	аз <i>с в</i> с - т	- 12	T	. т	- R
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Control: Permitted Permitted Protected Protected								ed				
Rights:		Incl	ude		Incl	ude		Inclu	ide Include			ıde _
Min. Green:	15	15	15	15	15	15	10	15	15	10	15	15
Lanes:	0	1 0	10	0	10	10	1 (	0 0	10	1 0	0 (	10
				~	<b>-</b>	- <b>-</b> !	! }		·	}		!
Volume Modul	e:			_								
Base Vol:	87	68	308	105	76	30	22	407	74	130	203	40
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	87	68	308	105	76	30	22	407	74	130	203	40
Added Vol:	0	54	0	8	30	0	0	0	0	0	0	14
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	87	122	308	113	106	30	22	407	74	130	203	54
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	92	128	324	119	112	32	23	428	18	137	214	5/
Reduct Vol:	0	0	0	0	0	0	0	0	0		0	
Reduced Vol:	92	128	324	119	112	32	23	428	78	137	214	57
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	T.00
rinal Vol.:	92	128	324	. 119	112	32	23	428	78	. 137	214	5/
Saturation E			1	1		!			<b>-</b>			
Saturation FJ	100 210		1000	1000	1900	1000	1000	1000	1000	1000	1900	1900
Sal/Dane: Adiustment.	1000	1 00	1800	1800	1800	1800	1800	1800	1600	1800	1 00	1 00
Aujustment:	0.74	0.57	1.00	0.94	1.00	1.00	1.00	1.00	0.36	1 00	1.00	0.21
Final Sat .	נוביד ווביד	1026	1900	1501	1402	422	1700	1600	0.10	1700	1422	278
		1026	1800	1291	1493	922	1700	1523	211	1	1442	
Capacity Analysis Module:												
Vol/Sat:	0.13	0.13	0.18	0.07	0.07	0.07	0.01	0.28	0.28	0.08	0.15	D.15
Crit Moves:			**+*					* * * *		****		
Green/Cycle:	0.29	0.29	0.29	0.29	0.29	0.29	0.25	0.45	0.45	0.17	0.37	0.37
Volume/Cap:	0.44	0.44	0.63	0.26	0.26	0.26	0.06	0.63	0.63	0.48	0.41	0.41
Delay/Veh:	17.7	17.7	20.1	16.7	16.7	16.7	17.4	14.4	14.4	24.0	14.5	14.5
Jser DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	17.7	17.7	20.1	16.7	16.7	16.7	17.4	14.4	14.4	24.0	14.5	14.5
DesignQueue:	2	3	8	3	3	1	1		2		5	1
*********	****	****	******	- * * * * * *	****	*****	*****	*****	*****	- *****	****	 ******

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### APPENDIX K

## PRELIMINARY CONSTRUCTION COST ESTIMATES FOR CMP

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	FREEWAY WIDENING	
1.	Add one lane each direction in the median (Work including Excavation, Concrete barrier, upgrade existing draining system and construct shoulder)	
	Asphalt Concrete Pavement 46' wide median 30' wide median 22' wide median	\$1,800,000/mile \$1,750,000/mile \$1,700,000/mile
	Portland Cement Concrete Pavement 46' wide median 30' wide median 22' wide median	\$2,200,000/mile \$2,150,000/mile \$2,100,000/mile
2.	Add one outside lane each direction (Work include earthwork, modify existing drainage system, construct AC shoulder section, AC dike and Metal Beam Guard Rail)	
	Asphalt Concrete Pavement	\$2,100,000/mile
	Portland Cement Concrete Pavement	\$2,400,000/mile
3.	Add one Auxiliary Lane (Work include earthwork, modify existing drainage system, construct AC shoulder section)	
	Asphalt Concrete Pavement	\$1,200,000/mile
	Portland Cement Concrete Pavement	\$1,400,000/mile
4.	Widening Existing UC structure	\$110/SQ FT
	WIDEN CONVENTIONAL HIGHWAY	
1.	Add one outside lane (Work include earthwork, modify existing drainage system and construct AC shoulder section)	

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# 1/9/2024 Board MeepreLIMINARY CONSTRUCTION COST ESTIMATES FOR Page 606 of 608 CONGESTION MANAGEMENT PLAN

	Asphalt Concrete Pavement	\$1,000,000/mile
2	Add one outside lane each direction (Work include earthwork, modify existing drainage system and construct AC shoulder section)	
	Asphalt Concrete Pavement With Median Concrete Barrier With Median Double Thrie Beam Barrier	\$2,000,000/mile \$2,200,000/mile \$2,300,000/mile
	LOCAL INTERCHANGE IMPROVEMENTS	
1	New Interchange	
	Urban Interchange	\$10,000,000 to \$17,000,000
	Partial-Cloverleaf Interchange (Work include new OC structure, earthwork, signal)	\$6,000,000
	Diamond Interchange (Work include new OC structure, earthwork, signal)	\$5,000,000
2.	Reconstruct Existing Interchange	
	Realign and widen existing ramps (to 2 lanes)	\$750,000/Each ramp
	Construct Loop on-ramps (Does not include realigning existing ramp)	\$700,000/Each ramp
	Upgrade existing Diamond IC to Partial-Cloverleaf	\$6,000,000
3.	Improve Existing Interchange	
	Widen ramps (From one to two lanes)	\$350,000/Each ramp
	Widen existing OC structure	\$110/SQ FT
	Signalize ramp intersection	\$90,000/location
	Upgrade existing signal at ramp terminal	\$75,000/Intersection
	Upgrade existing signal at ramp terminal (Add lights only)	\$25,000/Each
4.	Ramp Metering System	\$60,000/Each location

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#### 1/9/2024 Board Meeting PRELIMINARY CONSTRUCTION COST ESTIMATES FOR CONGESTION MANAGEMENT PLAN

INTERSECTION IMPROVEMENTS	· · · · · · · · · · · · · · · · · · ·					
<ol> <li>Signalization of local intersection (with some roadwork)</li> </ol>	\$250,000					
2. Upgrade existing intersection signalization	\$75,000					
3. Upgrade existing Traffic Controller/Assembles	\$40,000/Each					
4. Install new signal	\$90,000/location					
5. Add signal heads	\$25,000/Intersection					
6. Construct left-turn lane (240' long)	\$50,000/Each location					
7. Street widening (12' wide) (Pavement only)	\$180,000/mile					
8. Curb and gutter (Type A2-8)	\$15/LF					
OTHER IMPROVEMENTS						
<ol> <li>Construct new OC structure (Does not include roadway work)</li> </ol>	\$100/SQ FT					
2. Construct Retaining Walls (Type 1)	\$285/LF (H=8') \$360/LF (H=10') \$460/LF (H=12') \$560/LF (H=14')					
3. Construct Soundwall	\$1,000,000/mile (H=12')					
4. Traffic Management Plan	10% of total construction costs					
NOTE: This cost estimate does not include the following items:						

- 2. Minor items and supplemental work (10%).
- 3. Mobilization (10%).
- 4. Contingencies (25%).
- 5. Landscaping costs.

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# Draft Environmental Impact Report

City of Rancho Cucamonga Tentative Tract Map Number 16072 (State Clearinghouse 2002091053)



## Volume III Technical Appendices

November 2003



## VOLUME III Technical Appendices for

## DRAFT

## Environmental Impact Report

## Rancho Cucamonga Tentative Tract Map Number 16072

Prepared for:

#### City of Rancho Cucamonga

Community Development Department 10500 Civic Center Drive Rancho Cucamonga, CA 91729

Contact: Debra Meier

Prepared by:

#### Michael Brandman Associates

621 E. Carnegie Drive, Suite 100 San Bernardino, CA 92408 909.884.2255

Contact: Thomas J. McGill, Ph.D., Project Director Patricia Gallagher, Project Manager



November 25, 2003

#### LIST OF APPENDICES

#### Volume III

Appendix E: Air Quality Impact Analysis

Appendix F: Acoustical Report

Appendix G: Archaeological and Paleontological Resources Assessment

## AIR QUALITY IMPACT ANALYSIS REPORT TENTATIVE TRACT MAP No. 16072

Prepared for:

City of Rancho Cucamonga 10500 Civic Center Drive Rancho Cucamonga, CA 91730

Prepared by: Michael Brandman Associates 621 East Carnegie Drive, Suite #100 San Bernardino, CA 92408

Contact: Thomas J. McGill, Ph.D., Regional Manager



October 21, 2002

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### SECTION 1 -- INTRODUCTION AND SUMMARY

#### Purpose and Methods of Analysis

The following air quality assessment was prepared to evaluate whether the expected criteria air pollutant emissions generated as a result of the proposed project would cause significant impacts to air resources in the project area. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000 et seq.). The methodology follows the "CEQA Air Quality Handbook" prepared by the South Coast Air Quality Management District (SCAQMD) for quantification of emissions and evaluation of potential impacts to air resources. As recommended by SCAQMD staff, URBEMIS 2001 (version 6.2.1) and EMFAC2001 (version 2.08), computer programs developed and approved by the California Air Resources Control Board, were used to quantify project-related emissions.

#### EXECUTIVE SUMMARY

#### Site Location

The proposed project is located in the City of Rancho Cucamonga, north of Wilson Avenue (formerly 24<sup>th</sup> Street), between East Avenue and Etiwanda Avenue.

#### Development Description

The proposed project (Tentative Tract No. 16072) is a residential development of 359 singlefamily homes on a site totaling approximately 151 acres. The project will have direct access on Wilson Avenue, East Avenue, and Etiwanda Avenue. Existing and proposed zoning is L, VL, and FZ (Low, Very Low Density Residential, and Fault Zone within the Etiwanda North Specific Plan). The current City of Rancho Cucamonga General Plan Land Use designation for the project site is L, VL, and FZ (Low, Very Low Density Residential, and Fault Zone within the Etiwanda North Specific Plan). In addition to the project described above, an additional 17 single-family homes on a 10-acre site at the northwest corner of East Avenue and Wilson Avenue may also be built. Although this parcel is currently not a part of the project at this time, it is possible that it could be added to the project in the future. For analysis purposes, this study looks at both Tentative Tract No. 16072 and the additional 17 single-family homes on the 10acre parcel described above for a total of 376 single-family homes and a disturbance of 161 acres. Existing zoning and the general plan land use designation for the 10-acre parcel at the northwest corner of East Avenue and Wilson Avenue is Low Density Residential within the Etiwanda North Specific Plan.

#### Findings

The study found that emissions of nitrogen oxides (NOx), particulate matter smaller than 10 microns in diameter ( $PM_{10}$ ), and reactive organic compounds (ROC) also known as hydrocarbons are above the SCAQMD suggested significance thresholds during construction. With mitigation measures in place NOx and ROC remain above the SCAQMD suggested significance thresholds during construction. Carbon monoxide (CO), NOx, and ROC are above the SCAQMD suggested significance thresholds after mitigation measures are implemented. Estimated opening year 1-hour and 8-hour average carbon monoxide (CO) concentrations from project operation in combination with other approved projects in the area and background concentrations are below the State and Federal ambient air standards. No CO hotspots are anticipated as a result of traffic generated emissions by the proposed project in combination with other anticipated development in the area. A health risk assessment shows that exposure to diesel exhaust from the potable water treatment plant is less than significant.

The following findings are supported with regard to this project:

- The project is not in compliance with the SCAQMD Air Quality Management Plan.
- The project-generated emissions may violate Federal or State ambient air quality standards.
- The project's contribution to cumulative impacts may be significant.
- The project will not expose sensitive receptors to substantial pollutant concentrations.
- Project-generated odors will not affect a substantial number of people.

#### Mitigation Measures

- The site shall be treated with water or other soil-stabilizing agents (approved by SCAQMD and RWQCB) daily to reduce PM<sub>10</sub> emissions, in accordance with SCAQMD Rule 403.
- During construction, all haul roads shall be swept according to a schedule established by the City to reduce PM<sub>10</sub> emissions associated with vehicle tracking of soil off-site. Timing may vary depending upon time of year of construction.
- Grading operations shall be suspended when wind speeds exceed 25 mph to minimize PM<sub>10</sub> emissions from the site during such episodes.
- Chemical soil stabilizers (approved by SCAQMD and RWQCB) shall be applied to all inactive construction areas that remain inactive for 96 hours or more to reduce  $PM_{10}$  emissions.
- The construction contractor shall select the construction equipment used on-site based on low emission factors and high-energy efficiency. The construction contractor shall ensure the construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.
- The construction contractor shall utilize electric or clean alternative fuel powered equipment, where feasible.

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- The construction contractor shall ensure that construction-grading plans include a statement that work crews will shut off equipment when not in use.
- The construction contractor shall use low VOC architectural coating during the construction phase of the project.
- During construction of the proposed improvements, temporary traffic control (e.g., flag person) will be provided during soil transport activities. Contractor will be advised not to idle trucks on site for more than ten minutes
- During construction of the proposed improvements, only low volatility paints and coatings as defined in SCAQMD Rule 1113 shall be used. All paints shall be applied using either high volume low pressure (HVLP) spray equipment or by hand application.
- The proposed project will participate in the cost of off-site traffic signal installation and synchronization through payment of the traffic signal fair-share mitigation fee. This fee will be collected and utilized by the City to install and synchronize traffic lights as needed to prevent congestion of traffic flow on East Avenue between Summit Avenue and the project boundary, and Etiwanda Avenue between Highland Avenue and the north terminus of Etiwanda Avenue.
- All appliances within the residential units of the project shall be energy-efficient as defined by SCAQMD.
- The project proponent shall contact local transit agencies to determine bus routing in the project area that can accommodate bus stops at the project access points and determine locations and feasibility of bus stop shelters provided at project proponent's expense.

Other mitigation measures were evaluated and determined to be infeasible to implement or have extremely small reductions in emissions combined with high costs to implement. Mitigation measures that were evaluated and rejected include implement shuttle services to retail services and food establishments during lunch hours, include satellite telecommunications center in the residential subdivision to facilitate people working from home, use of solar water heaters, use of fuel cells in the residential neighborhood to generate electricity locally, orient all single-family residential units to the north for natural cooling and include passive solar designs.

### **SECTION 2 -- SETTING**

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#### **Project Description**

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The proposed project is located in the City of Rancho Cucamonga, north of Wilson Avenue (formerly 24<sup>th</sup> Street), between East Avenue and Etiwanda Avenue (Exhibit 1). The proposed project (Tentative Tract No. 16072) is a residential development of 359 single-family homes on a site totaling approximately 151 acres (Exhibit 2). The project will have direct access on Wilson Avenue, East Avenue, and Etiwanda Avenue.

Existing and proposed zoning is Low Density Residential (less than two dwelling units per acre), Very Low Density Residential (2-4 dwelling units per acre), and Fault Zone (associated with the Red Hill Fault that bisects the project site) within the Etiwanda North Specific Plan. The current City of Rancho Cucamonga General Plan Land Use designation for the project site is also Low, Very Low Density Residential, and Fault Zone.

In addition to the project described above, an additional 17 single-family homes on a 10-acre site at the northwest corner of East Avenue and Wilson Avenue may also be built. Although this parcel is not a part of the project at this time, it is possible that it could be added to the project in the future. Existing zoning and the general plan land use designation for the 10-acre parcel at the northwest corner of East Avenue and Wilson Avenue is Low Density Residential (2-4 dwelling units per acre) within the Etiwanda North Specific Plan.

For analysis purposes, this study looks at a total of 376 single-family homes and a disturbance of 161 acres. The following summarizes salient project features with respect to evaluation of criteria air pollutant emissions.

- Grading of 161 acres during the initial development including a maximum of 41 acres per day being disurbed.
- A total of 376 single-family homes.
- Based on the project specific traffic study (RK Engineering Group 2002), the facility is assumed to generate 3,436 vehicle trip-ends per day.

The following provides a description of the regional and local conditions affecting air quality in the project area.

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EXIHBIT 1 REGIONAL LOCATION MAP Tentative Tract Map No. 16072 City of Rancho Cucamonga, California



#### Physical Setting

The project site is located in the City of Rancho Cucamonga within the South Coast Air Basin (SCAB). The SCAB consists of Orange County, together with the coastal and mountain portions of Los Angeles, Riverside and San Bernardino counties. Regionally, the interaction of land (offshore) and sea (onshore) breezes control local wind patterns in the area. Daytime winds typically flow from the coast to the inland areas, while the pattern typically reverses in the evening, flowing from the inland areas to the ocean (SCAQMD, 1993). Air stagnation may occur during the early evening and early morning during periods of transition between day and nighttime flows. The region also experiences periods of hot, dry winds from the desert, known as Santa Ana winds. Locally, the prevailing wind is generally from northwest to southeast (Exhibit 3, Wind Rose).

Regional and local air quality within the SCAB is affected by topography, atmospheric inversions, and dominant onshore flows. Topographic features such as the San Gabriel and San Bernardino Mountains form natural barriers to the dispersion of air contaminants. The presence of atmospheric inversions limits the vertical dispersion of air pollutants. With an inversion, the temperature initially follows a normal pattern of decreasing temperature with increasing altitude, however, at some elevation, the trend reverses and temperature begins to increase as altitude increases. This transition to increasing temperature establishes the effective mixing height of the atmosphere and acts as a barrier to vertical dispersion of pollutants. Dominant onshore flow provides the driving mechanism for both air pollution transport and pollutant dispersion.

Air pollution generated in coastal areas is transported east to inland receptors by the onshore flow during the daytime until a natural barrier (the mountains) is confronted, limiting the horizontal dispersion of pollutants. The result is a gradual degradation of air quality from coastal areas to inland areas, which is most evident with the photochemical pollutants such as ozone. The greatest ozone problems are recorded at those South Coast Air Quality Management District (SCAQMD) monitoring stations located at the base of the San Gabriel and San Bernardino mountains ranging from the City of Santa Clarita, east to the City of San Bernardino.

The project site is within SCAQMD Source Receptor Area (SRA) 32. The air quality monitoring station for SRA 32 is in the City of Upland approximately 6.5 miles west of the project site. The most recent published data for SRA 32 is presented in Table 1, Air Quality Monitoring Summary 1991-2001. This data shows that the baseline air quality conditions in the project area include occasional events of very unhealthful air. Even so, the frequency of smog alerts has dropped significantly in the last decade. The greatest recognized air quality problem in the SCAB is ozone. The yearly monitoring records document that prior to 1995, approximately one-third or more of the days each year experienced a violation of the state hourly ozone standard, with around ten days annually reaching first stage alert levels of 0.20 parts per million (ppm) for one hour. It is encouraging to note that ozone levels have dropped significantly in the last few years with less than one-eighth of the days each year experiencing a violation of the state hourly ozone standard in 2001. Locally, no first stage alert (0.20 ppm/hour) has been called by SCAQMD in over two years, and no second stage alert (0.35 ppm/hour) has been called by SCAQMD in the last ten years.

Page 2-4

Although the overall air quality in SRA 32 is improving, one exception is the ambient concentrations of particulate matter smaller than 10 microns in diameter ( $PM_{10}$  and  $PM_{2.5}$ ). Over the last decade the State air quality standard for  $PM_{10}$  has been consistently exceeded in the area. The 1997 Federal standards for  $PM_{2.5}$  (annual arithmetic mean of 15 µg/m<sup>3</sup> and 24-hour average of 65 µg/m<sup>3</sup>) were recently upheld by the U.S. Supreme Court in February 2001.SCAQMD monitoring data shows SRA 32 exceeding the federal annual and 24-hour standards since SCAQMD began monitoring  $PM_{2.5}$  in 1999. Currently, there are no state standards established for  $PM_{2.5}$ . The sources contributing to particulate matter pollution include road dust, windblown dust, agriculture, construction, fireplaces and wood burning stoves, and vehicle exhaust.

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#### **Regulatory Setting**

The federal and state ambient air quality standards (AAQS) establish the context for the local air quality management plans. The state and federal AAQS are presented in Table 1.

The California Air Resources Board maintains records as to the attainment status of basins throughout the state, under both state and federal criteria. For 2001, that portion of the SCAB, within which the proposed project is located, was designated as a non-attainment area for ozone and  $PM_{10}$  under state standards, and as a non-attainment area for ozone, carbon monoxide, and  $PM_{10}$  under federal standards. The Air Quality Management Plan (AQMP) for the SCAB establishes a program of rules and regulations directed at attainment of the state and national air quality standards.

SCAQMD rules and regulations that apply to this project include SCAQMD Rule 403, which governs emissions of fugitive dust. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites. Rule 403 also requires projects that disturbs over 100 acres of soil or moves 10,000 yds<sup>3</sup>/day of materials/day to submit to SCAQMD a Fugitive Dust Control Plan. If the entire site is mass graded in the initial phase of development as this air quality analysis assumes, then the project will be required to submit a formal Fugitive Dust Control Plan.

SCAQMD Rule 1108 governs the sale and use of asphalt and limits the VOC content in asphalt used in the South Coast Air Basin. Although this rule does not directly apply to the project, it does dictate the VOC content of asphalt available for use during the construction.

SCAQMD Rule 1113 governs the sale of architectural coatings and limits the VOC content in paints and paint solvents. Although this rule does not directly apply to the project, it does dictate the VOC content of paints available for use during the construction of the buildings.

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Table 1
SOURCE RECEPTOR AREA 32
AIR QUALITY MONITORING SUMMARY- 1991-2001

	Pollutant/Standard	Monitoring Year										
	Source: CARB 1/25/99	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	Ozone <sup>a</sup> :	200			1.12						54 Sec	
	California Standard:								. g. 31			
ed a	1-Hour - 0.09 ppm	103 *	136 <sup>b</sup>	124 <sup>b</sup>	116 <sup>b</sup>	110 <sup>b</sup>	87 <sup>b</sup>	69 <sup>5</sup>	60 <sup>b</sup>	29 <sup>6</sup>	48 <sup>b</sup>	44 <sup>b</sup>
l o X	Federal Primary Standards:			546						N 1945		
Z ⊡	1-Hour - 0.12 ppm	67 <sup>b</sup>	81 <sup>b</sup>	55 <sup>°</sup>	79 <sup>6</sup>	67 <sup>b</sup>	35 <sup>b</sup>	12 <sup>b</sup>	30 <sup>b</sup>	4 <sup>6</sup>	7 <sup>6</sup>	13 <sup>b</sup>
	8-Hour - 0.08 ppm <sup>a</sup>							30 <sup>b</sup>	40 <sup>b</sup>	17 <sup>b</sup>	27 <sup>b</sup>	31 <sup>b</sup>
	Max 1-Hour Conc. (ppm)	0.27 5	0.28 <sup>b</sup>	0.24 <sup>b</sup>	0.25 <sup>b</sup>	0.24 <sup>b</sup>	0.22 <sup>b</sup>	0.19 <sup>b</sup>	0.21 b	0.15 <sup>b</sup>	0.15	0.165 <sup>b</sup>
	Max 8-Hour Conc. (ppm) <sup>a</sup>							_0.13 <sup>b</sup> _	0.17 <sup>b</sup>	0.12 <sup>b</sup>	0.125 <sup>b</sup>	0.136 •
-	Carbon Monoxide :				÷.							6- <u>-</u>
ede	California Standard:										Stage Sec	
XCe	1-Hour - 20 ppm	<u>0</u> <sup>b</sup>	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°
S E	8-Hour - 9.0 ppm	0 <sup>b</sup>	0 *	<u>0°</u> .	0°	0°	0 °	0°_	0°	0 °	0 °	0°.
Day	Federal Primary Standards:							整備為許		1		2 . A A A
	1-Hour - 35 ppm	0 <sup>b</sup>	0°	_0°	0.°	0°.	0°	0°	0°	0°	0°	<u>0°</u>
Z	8-Hour - 9.5 ppm	00	0°	<u>0</u> °	0°	0°	0°.	0°	0°	0°	0°	<u>0°</u>
	Max 1-Hour Conc. (ppm)	.7.0 <sup> h</sup>	7.0°	7.0°	9.0°	6.3°	6.0°	8.0°	6.0 °	5.0°	5.0°	4.0 °
l	Max 8-Hour Conc. (ppm)	4.6 <sup>th</sup>	<u>5.9°</u>	6.0°	6.5°	5.9°	4.6°	6.0°	4.6°	4.0°	4.3 °	3.25°
	Nitrogen Dioxide :					ж Т						1 A
ed e	California Standard:											
(o. ] XCe	<u>1-Hour - 0.25 ppm</u>	0 b	08	0 <sup>b</sup>	_0 <sup>.b</sup>	0 <sup>6</sup>	0.8	0 6	.0 <sup>b</sup>	0 <sup>th</sup>	0,0	0 6
	Federal Standard:						影响鸿	發行到		Regime		
	Annual Standard - 0.053ppm	No <sup>e</sup>	No°	No <sup>e</sup>	Not	No <sup>e</sup>	No <sup>e</sup>	No <sup>e</sup>	No <sup>e</sup>	No <sup>e</sup>	No°	_No °
	Max, 1-Hour Conc. (ppm)	0.21 b	0.14 <sup>b</sup>	0.15 <sup>°</sup>	0.17	0.20 <sup>b</sup>	0.11	0.14 <sup>b</sup>	0.11 *	0.13 <sup>b</sup>	0.15	0.13 <sup>b</sup>
	Sulfur Dioxide:	Sec. Sec.										
s p	California Standards:		1944 (P4			Sector Con			er in herrie		De La Cart	
Day	<u>1-Hour – 0.25 ppm</u>	0 d	0 d	0 <sup>d</sup>	0 <sup>d</sup>	0 <sup>d</sup>	0 d	04	0 <sup>d</sup>	0 <sup>d</sup>	0 d	0 d
40. XCE	<u>24-Hour – 0.04 ppm</u>	0 <sup>d</sup>	0 <sup>d</sup>	04	0 đ	0 d	0. <sup>d</sup>	0 d	04	U d	0 d	0 d
	Federal Primary Standards:		12.02.2		1 <b>4</b>	N. 4 - 1	是漂船。			af i tre i	1997 (A. ).	
	24-Hour – 0.14 ppm	0 <sup>d</sup>	0 <sup>d</sup>	.0 <sup>d</sup>	0 <sup>d</sup>	0 d	0 <sup>d</sup>	0 4	_0 <sup>d</sup>	0 <sup>d</sup>	0 4	0 4
	Annual Standard – 0.03 ppm	No <sup>e</sup>	Not	. No <sup>e</sup>	No <sup>e</sup>	Not	_No <sup>e</sup>	No <sup>¢</sup>	No <sup>e</sup>	No	No <sup>e</sup>	No <sup>e</sup>
	Max. 1-Hour Conc. (ppm)	0.05 <sup>d</sup>	0.02 4	0.01 d	0.03 d	0.02 <sup>d</sup>	0.01 <sup>d</sup>	0.01 <sup>d</sup>	0.02 <sup>d</sup>	0.01 <sup>d</sup>	0.02 <sup>d</sup>	0.01 <sup>d</sup>
	Max. 24-Hour Conc. (ppm)	0.01 d	0.012 d	l. 0.001 <sup>d</sup>	0.009 <sup>d</sup>	0.010 <sup>d</sup>	0.007 4	0.001.4	0.010 <sup>d</sup>	0.010 4	0.010 <sup>d</sup>	0.010 <sup>d</sup>
led	Inhalable Particulates (PM10):		4 4									
ĕ.	California Standards:		See.	P. See				前非正确			8 2.5 M	
E S	24-Hour - 50 $\mu$ g/m <sup>3</sup>	35 <sup>d</sup>	31 °	34°	38°	35°	35°	29°	28°.	36°	31°	34°

	Annual Geometric Mean (µg/m <sup>3</sup> )	57.7 <sup>d</sup>	48.9°	46.3 °	52.7°	50.6°	48.2 °	47.6°	41.3°	54.3°	47.1 °	43.8°
S.	Federal Primary Standards:	1, <sup>6</sup> ., 5.		an isa				ar is de				
No Co	24-Hour – 150 µg/m <sup>3</sup>	0 4	0 <b>d</b>	04	04	2 <sup>d</sup>	0 q	0 <sup>d</sup>	0 d	0 <sup>d</sup>	0 d	0 <sup>d</sup>
	<u>Annual Arithmetic Mean (µg/m<sup>3</sup>)</u>	. 63.1 <sup>d</sup>		57.1ª	60.0 <sup>d</sup>	61.0 <sup>d</sup>	55.1 <sup>d</sup>	53.7 <sup>d</sup>	50.2 <sup>d</sup>	60.2 <sup>d</sup>	52.6 <sup>d</sup>	60.5 <sup>d</sup>
	Max, 24-Hour Cone, (µg/m <sup>3</sup> )	127 <sup>d</sup>	105 <sup>d</sup>	143 <sup>d</sup>	147 <sup>d</sup>	178 <sup>d</sup>	130 <sup>d</sup>	122 <sup>d</sup>	101 <sup>d</sup>	.116 <sup>d</sup>	_108 <sup> d</sup>	105 <sup>d</sup>
	Inhalable Particulates (PM25):	1.			a starter							
lys ded	Federal Primary Standards:	$M_{\rm eff} > 2$			a start a st	Sec. 25	Car of all	n in Said			C State Const	
G Da	Annual Standard – 15µg/m <sup>3</sup>									Yesf	Yesf	Yes <sup>f</sup>
2 é	<u>24-Hour – 65 μg/m<sup>3</sup></u>									3*	2°	4 <sup>e</sup>
	Annual Arithmetic Mean (11g/m <sup>3</sup> )									25.9 °	24.5°	24.3°
	Max. 24-Hour Conc. (ug/m <sup>3</sup> )								l	<u>98.0 °</u>	72.9°	7 <u>4.6</u> °

7-10

Note:<sup>a</sup> 1997 is first year of SCAQMD records for federal 8-hour Ozone standard.

Upland air monitoring station (SRA 32) data summaries for ozone, NO2, and Ozone during all years, and CO in 1991.

0 San Bernardino monitoring station (also in SRA 34 data summaries for CO during 1992 through 2001.

đ Fontana air monitoring station (SRA 34) data summaries for SOx and PM-10 during all years

c Fontana monitoring station data summaries (SRA 34) for PM-2.5. 1999 is first year of SCAQMD records for federal 24-hour PM-2.5 slandard.

ſ Exceedance of the Annual Standards are expressed as either Yes or No indicating whether or not the standard has been exceeded for that year.

## **SECTION 3 -- EMISSIONS ESTIMATES**

#### THRESHOLDS OF SIGNIFICANCE

Air quality impacts may be considered significant if:

- The project does not conform to the rules and regulations of the South Coast Air Quality Management District.
- Project-generated emissions contribute substantially to an existing or projected air quality violation of a federal or state ambient air quality standard.
- A project contributes a cumulatively considerable net increase of a criteria pollutant in a non-attainment area.
- Project-generated emissions expose sensitive receptors to substantial pollutant concentrations.
- The project creates objectionable odors affecting a substantial number of people.

#### IMPACTS

Air quality impacts can be described in a short-term and long-term perspective. Short-term impacts will occur during site grading and project construction. Long-term air quality impacts will occur once the project is in operation.

#### Short-term Impacts

Short-term impacts will include fugitive dust and other particulate matter, as well as exhaust emissions generated by earthmoving activities and operation of grading equipment during site preparation (demolition and grading). Short-term impacts will also include emissions generated during construction of the buildings as a result of operation of equipment, operation of personal vehicles by construction workers, electrical consumption, and coating and paint applications.

Assumptions relevant to model input for short-term emissions estimates are calculated assuming the entire tentative tract will be built in a single phase. They are as follows:

- Approximately 161 acres (151 acres in TTM 16072 plus 10 acres) will be graded during the initial phase of the development including a maximum of 41 acres per day being disturbed.
- Approximately 20,000 cubic yards of boulder sized rocks (15,000 cubic yards in TTM 16072 plus 1,0000 cubic yards on an additional 10 acres) and demolition material (approximately 4,000) will be exported off-site during grading. As a worst-case scenario,

as many as 55 heavy-duty truck trips per workday were assumed to transport the material off-site.

- Foundation construction of up to 376 single-family homes (359 homes in TTM 16072 plus 17 homes on ten acres) will entail placement of approximately 18,000 cubic yards of concrete. As a worst-case scenario, as many as 41 truckloads of concrete per day will be transported to the site during foundation construction.
- Approximately 33.5 acres of surface area will be covered in asphalt (32 acres in TTM 16072 plus 1.5 acres on the northwest corner of East Avenue and Wilson Avenue).

Short-term emissions were evaluated with the URBEMIS 2001 for Windows computer program. The URBEMIS 2001 model sets default values for worker trips and the use of asphalt and architectural coatings. Model inputs include the projected types of land uses and their square footage areas, the year in which construction is to begin, and the length of the construction period. For the purposes of this analysis as a worst-case scenario, construction is slated to begin in the year 2003 and the construction period is anticipated to require approximately 12 months. Table 2, Estimated Short-Term Emissions, summarize the results of these evaluations.

Pollution Source	NOx	СО	ROC	SOx	PM <sub>10</sub>
Grading and Demolition	NGʻ	NG'	NG <sup>1</sup>	NG <sup>1</sup>	122.63
Mobile Grading Equipment	286.93	151,25°	26.20	41.72	41.77
Stationary Equipment	10.28	39.90°	12.60	0.15	0.60
Mobile Construction Equipment	97.96	39.32 <sup>2</sup>	7.49	8.00	7.13
Commuting Traffic	9.86	18.71	6.97	NG'	1.89
Architectural Coatings	NG	NG'	122.11	NG	NG'
Asphalt Paving	NG'	NG	8,34	NG <sup>1</sup>	NG <sup>1</sup>
Emissions Totals (lbs/day)	405.03	249,18	183.71	49.87	174.02
Emissions Totals (tons/quarter)3	13.16	8.10	5.97	1.62	5.65
SCAQMD Thresholds	100 lbs/day	550 lbs/day	75 lbs/day	150 lbs/day	150 lbs/day
	2.5 tons/qtr	24.75 tons/qtr	2.5 tons/qtr	6.75 tons/qtr	6.75 tons/qtr

TABLE 2ESTIMATED SHORT-TERM EMISSIONS

Notes: <sup>1</sup>Criteria pollutants that have estimated negligible values are designated NG (negligible emissions).

<sup>2</sup>CO emissions for mobile equipment were calculated from the CEQA Air Quality Handbook.

<sup>3</sup> Quarterly emission totals for all criteria pollutants reflect 65 workdays per quarter of construction activity.

Bold = Above SCAQMD Thresholds,

See Appendix B for model output report.

The URBEMIS 2001 model assumes all aspects of construction of the project is additive. In actuality, initial grading, subsequent structure installation, and the application of paints and coatings are typically phased over the construction period and are not strictly additive; though in some large-scale projects these phases may have overlap. Evaluation of the preceding tables indicates that projected NOx, ROC, and PM<sub>10</sub> emissions are above the SCAQMD recommended daily thresholds and NOx and ROC are above the quarterly thresholds during construction of the first phase of the project. The primary sources of NOx emissions are trucks used for rock

removal and importation of concrete. The primary source of ROC emissions is the application of architectural coatings, and the primary source of  $PM_{10}$  is fugitive dust from earthmoving activities.

In an effort to reduce estimated short-term emissions of NOx, ROC, and PM<sub>10</sub> emissions a range of reduction measures was considered. Effective emission reduction measures were narrowed to include properly maintaining mobile construction equipment (5% reduction of all mobile equipment emissions), provide temporary traffic control (e.g., flag person) during rock removal and concrete transport activities (5% reduction of all mobile equipment emissions), prohibit truck idling in excess of ten minutes (4% reduction of all mobile equipment emissions), apply low volatility paints as defined in SCAQMD Rule 1113 using either high volume low pressure (HVLP) spray equipment or by hand application (minimum of 65% reduction of architectural coating ROC emissions), and water all unpaved haul roads during construction three times a day (46% reduction in fugitive dust). These emission reduction measures are anticipated to reduce all criteria pollutant emissions from mobile grading and construction equipment by approximately 14 percent, architectural coatings application by 65 percent, and fugitive dust emissions by 46 percent. However, as shown in Table 3, even with these reductions the daily and quarterly emissions of NOx and ROC remain above the SCAQMD suggested thresholds.

TABLE 3 MITIGATED SHORT-TERM EMISSIONS

Pollution Source	NOx	CO	ROC	SOx	PM <sub>10</sub>
	(Lbs/Day)	(Lbs/Day)	(Lbs/Day)	(Lbs/Day)	(Lbs/Day)
Maximum Daily Emissions <sup>1</sup> (lbs/day)	351.15	222.50	99.62	42.91	110.76
Emissions Totals <sup>2</sup> (tons/quarter)	11.41	7.23	3.24	1.39	3.60
SCAQMD Thresholds	100 lbs/day	550 lbs/day	75 lbs/day	150 lbs/day	150 lbs/day
	2.5 tons/qtr	24.75 tons/qtr	2.5 tons/qtr	6.75 tons/qtr	6.75 tons/qtr

Note: NG designates criteria pollutants that have estimated negligible values. Bold TYPE indicates emissions that are above the SCAQMD Thresholds.

#### Long-term Impacts

Long-term impacts for the proposed residential subdivision consist of mobile emissions and stationary emissions. Mobile emissions estimates are derived from motor vehicle traffic. Stationary emissions estimates are derived from the consumption of natural gas, electricity, the use of landscape equipment, and the storage and use of consumer products.

Based upon the project specific traffic study (RK Engineering Group, 2002), it is estimated that 3,436 vehicle trip-ends per day will be generated at build-out of Tentative Tract No. 16072. Using a trip generation rate of 9.57 daily trip-ends per household as was used in the traffic study, it is estimated that approximately 163 vehicle trip-ends per day will be generated at build out of the additional 10-acres at the northwest corner of East Avenue and Wilson Avneue, and a total of 3,599 vehicle trip-ends per day will be generated at buildout of both Tentative Tract No. 16072 and the 10-acre parcel. According to the CEQA Air Quality Handbook, Table A9-5-D, the

average work related round trip is 13.6 miles in San Bernardino County and the average nonwork related round trip length is 7.9 miles. Assuming that four trip ends per household are work related, a project daily total of 37,005 vehicle miles daily is derived. Table 4, Composite Longterm Emissions, presents estimated emissions of each of the criteria pollutants as a result motor vehicle trips at project build-out in the year 2006 (See Appendix C).

Electric usage rates for single-family residential are presented in Table A9-11-A of the CEQA Air Quality Handbook. Table A9-11-B of the CEQA Air Quality Handbook lists the emission factors for each criteria pollutant from the consumption of electricity. Table 4, Composite Long-term Emissions, presents anticipated emissions of criteria pollutants from electrical consumption as a result of this project (376 homes) based on these CEQA Air Quality Handbook factors.

Natural gas consumed by water heaters and space heating in residential units of the proposed project will produce emissions of criteria air pollutants. The anticipated project emissions (376 homes) estimated by the URBEMIS 2001 for Windows computer program are listed in Table 4, Composite Long-term Emissions.

The URBEMIS 2001 for Windows computer program estimates emissions generated by landscape maintenance equipment as a result of fuel combustion and evaporation of unburned fuel. Equipment in this category includes lawn mowers, roto-tillers, shredders, blowers, trimmers, chain saws, and hedge trimmers used in commercial applications. These emission estimates are listed in Table 4, Composite Long-term Emissions.

Consumer product emissions are generated by a wide range of product categories, including air fresheners, automotive products, household cleaners, and personal care products. Emissions associated with these products primarily depend on the increased population associated with residential development. URBEMIS 2001 was used to estimate consumer product emissions for an increased population of 1,309 persons within the proposed residential development (376 homes) at build-out of the project (3.48 persons per residential unit as shown in the Rancho Cucamonga General Plan).

An estimate of the daily total long-term project emissions is derived by combining both mobile (vehicle traffic) and stationary emissions (electrical, natural gas and consumer product consumption; and landscape maintenance). Table 4, Composite Long-term Emissions, presents the estimated daily total emissions at project build out.

Pollution Source	NOx (Lbs/Day)	CO (Lbs/Day)	ROC (Lbs/Day)	SOx (Lbs/Day)	PM <sub>10</sub> (Lbs/Day)
Mobile Emissions	59.06	774.62	64.44	0.47	36.20
Electrical Consumption	0.87	1.16	0.06	0.70	0.23
Natural Gas Consumption	4.71	2,00	0.36	NG	0.01
Landscape Emissions	0.06	5.39	0.64	0.16	0.01
Consumer Products	NG	NG	22.38	NG	NG
Emissions Totals	64.70	783.17	87.88	1.33	36,45
SCAQMD Thresholds	55	550	55	150	150

TABLE 4
<b>COMPOSITE LONG-TERM EMISSIONS</b>

Note: NG designates criteria pollutants that have estimated negligible values.

When unmitigated emissions projections are compared with the SCAQMD suggested thresholds for significance, it is shown that long-term emissions exceed the applicable thresholds for NOx, CO and ROC. The primary source of these emissions is mobile emissions from vehicle traffic. In an effort to reduce estimated NOx, CO and ROC emissions, a range of mitigation measures were considered. Mitigation measures for on-road mobile source emissions are listed in the CEQA Air Quality Handbook, Table 11-6a. These mitigation measures include synchronizing traffic lights on streets impacted by the project (reduction of 6% for all emissions) and construct on-site bus turnouts and/or bus stop shelters (reduction of 0.85% for all emissions). Stationary source mitigation measures are listed in the CEQA Air Quality Handbook, Table 11-7a and include the use of energy-efficient appliances (reduction of 3%for NOx and CO, 2.5% for ROC, and 6.5% for  $PM_{10}$ ) and double-glass-paned windows (reduction of 4.5% for ROC and CO, 4% for NOx, and 2.5% for  $PM_{10}$ ). Table 5 shows the estimated total mitigated long-term emissions. The specific details of each of these mitigation measures are listed on page 3-10.

MITIOATED LONG-TERMI EMISSIONS								
Pollution Source	NOx (Lbs/Day)	CO (Lbs/Day)	ROC (Lbs/Day)	SOx (Lbs/Day)	PM <sub>10</sub> (Lbs/Day)			
Mobile Emissions	55.01	721.56	60.03	1.10	33.72			
Electrical Consumption	0.85	1.11	0.06	0.70	0.22			
Natural Gas Consumption	4.36	1,94	0.34	NG	0.01			
Landscape Emissions	0.06	5.39	0.64	0.16	0.01			
Consumer Products	NG	NG	22,38	NG	NG			
Emissions Totals	60.28	730.00	83.45	1.33	33.96			
SCAQMD Thresholds	55	550	55	150	150			

TABLE 5 MITIGATED LONG-TERM EMISSIONS

Note: NG designates criteria pollutants that have estimated negligible values.

With mitigation measures incorporated into the project NOx, CO, and ROC emissions remain above the SCAQMD recommended threshold. However, further mitigation measures were not feasible and/or practical to implement.

7-10

#### **CO** Hotspots

Carbon Monoxide (CO) is a localized problem requiring additional analysis beyond total project emissions quantification. The SCAQMD recommends that projects with sensitive receptors or projects that could negatively impact levels of service (LOS) of existing roads use the screening procedures outlined in the SCAQMD CEQA Air Quality Handbook to determine the potential to create a CO hot spot. A CO hot spot is a localized concentration of CO that is above the State or Federal 1-hour or 8-hour ambient air standards. Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. The proposed project includes sensitive receptors and has the potential to negatively impact the LOS on adjacent roadways and therefore, requires a CO hotspot analysis.

The SCAQMD CEQA Air Quality Handbook recommends using CALINE4, the fourth generation California Line Source Roadway Dispersion Model developed by the California Department of Transportation (Caltrans), to estimate 1-hour CO concentrations from roadway traffic. Input data for this model includes meteorology, street network geometrics, traffic information, and emissions generation rates. Meteorological data required includes average temperatures, wind direction, sigma theta (standard deviation of wind direction), and wind speed. Street network geometrics require the use of an x,y coordinate system onto which the modeled roadways can be overlain in order to identify the relative location of traffic lanes to nearby receptors. Total traffic volume of the adjacent roadway segments was calculated using total projected volumes of generated from 376 homes combined with future traffic volumes for the year 2020 from the sub-regional travel demand model currently in use for long range planning in San Bernardino County. These calculations were estimated from intersection volumes found in the project specific traffic study for year 2020 (R K Engineering Group 2002) with traffic from the 17 homes (for a total of 376 homes) added to the roadway segments. Additional trips that may be generated from the 17 homes at the northwest corner of East Avenue and Wilson Avenue were added to the roadway network by using the PM peak hour generation rate (0.65 trip-ends in and 0.36 trip-ends out per residential unit) and project distribution of traffic used in the traffic study. Emission factors were calculated in grams/mile/vehicle using the EMFAC2001 computer model.

Roadway segments in this analysis include:

- East Ave. from Victoria St. to the north project boundary (future north terminus of East St.),
- Etiwanda Ave. from Highland Ave. to the north terminus of Etiwanda Ave.,
- Wilson Ave. from Day Creek Blvd. to Wardman Bullock Rd.,
- Proposed "A" St. from Wilson Ave. to the proposed north terminus within the project,
- Proposed "N" St. from East Ave. to the proposed west terminus within the project,
- Proposed "Q" St. and "U" St. from Etiwanda Ave. to the east terminuses within the project.

The PM peak hour traffic volumes were used in this analysis because they represent the highest traffic volumes. Receptor placement in the CALINE4 model also took into account the location to the roadway network in relation to the planned and existing residential developments.

The model procedure that was followed combined the results of the traffic analysis for year 2020 with traffic from 376 homes assuming very restrictive dispersion conditions in order to generate a worst-case impact assessment.

Output from the CALINE4 model is in 1-hour CO concentrations in parts per million (ppm) at the selected receptor locations shown in Exhibit 4. The predicted 1-hour CO concentrations were determined by adding the ambient background 1-hour CO concentrations to the model projected 1-hour CO concentration. The 8-hour CO concentration was estimated by multiplying the 1-hour model estimate by the persistence factor for the project area (0.6) and adding the ambient background 8-hour CO concentration. The results from this screening procedure are presented in Table 6. Assuming worst-case conditions, the estimated 1-hour and 8-hour average CO concentrations in combination with background concentrations are below the State and Federal ambient air quality standards. No CO hot spots are anticipated as a result of traffic generated emissions by the proposed project in combination with other anticipated development in the area. 7-10

Т	able 5		
ESTIMATED CO	CONCENTRA	TIONS	

7-10

Receptor/	Number of	Traffic	Distance to	Background CO	Estimated CO	State	Federal
Closest Intersection	Vehicles/hr <sup>1</sup>	Generated CO	Intersection	Concentration	Concentration <sup>4</sup>	Standards	Standards
		Concentration <sup>4</sup>	(Exhibit 4)	 			
Worst Case 1-hour Average CO Conce	entrations						
Receptor 1		0.60 ppm		4.00 ppm	4.60 ppm	20 ppm	35 ppm
East Av./ Wilson Av.	1756		60 A.		· · ·		
Receptor 2		0.30 ppm		4.00 ppm	4.30 ppm	20 ppm	35 ppm
East Av./ North Boundary APN 225-083-14.	1756		30 ft.t.				
Receptor 3	i	0.00 ppm		4.00 ppm	4.00 ppm	20 ppm	35 pp.m
East Av./Proposed "N"St.	1756		30 ft.		·	<u> </u>	
Receptor 4	1767	0.00 ppm	30.0	4.00 ppm	4.00 ppm	20 ppm	35 ppm
East AV./Proposed "N" St.	1756	0.00	30 ft	100			25
Receptor 5 Wilson As /West Boundary APN 275 082-14	208	0.00 ppm	60.9	4.00 ppm	4.00 ppm	20 ppm	or a construction of the c
Recentor 6	500	0.00 mm	00 11.	4.00 mm	4.00 mm	20 mm	35 000
Wilson Av /Proposed "A"St.	308	0.00 ppm	60 ft.	4.00 ppm		20 ppm	55 ppm
Receptor 7		0.00 ppm		4 00 ppm	4 00 ppm	20 ppm	35 ppm
Wilson Av. Proposed "A" St.	308	and ppm	60 ft	Pprix			
Receptor 8		0.20 ppm		4.00 ppm	4.20 ppm	20 ppm	35 ppm
Wilson Av./Etiwanda Av.	308		60 ft.			]	
Receptor 9		0.50 ppm		4.00 ppm	4.50 ppm	20 ppm	35 ppm
Etiwanda Av./Proposed "U" St.	296	· · · · · · · · · · · · · · · · · · ·	30 ft.			ļ <u> </u>	
Receptor 10		0.40 ppm		4.00 ppm	4.40 ppm	20 ppm	35 ppin
Etiwanda Av./Proposed "U" St.	296		<u>30 ft.</u>	<u> </u>			
Receptor 11		0.30 ppm		4.00 ppm	4.30 ppm	20 ppm	35 ppm
Etiwanda Av./Proposed U St.	296		35 ft.		1.00		26
Receptor 12	206	0.20 ppm	20.0	4.00 ppm	4.20 ppm	∠∪ ppns	35 ppm
Eliwanda AV./Proposed Q St.	290	0.10.000	20 <b>H</b> .	1.00	110	20	25
Etiwarda Av (Proposed "O" St	7329	0.10 ppm	20.8	4.00 ppm	4. to ppm	20 ppm	35 bbm
Recentor 14	2.5.2.7	0.10 mmm	20 11.	4.00 mm	4.10 ppm	20 0001	35 000
Etiwanda Av./Proposed "O" St.	2009	0.10 ppm	30 ft.	4.00 ppm	to bhu	20 ppin	55 ppm
Worst Case 8-hour Average CO Conc	entrations	······································					
Desertur 1		0.26		1 2.04	2 (1	0	0.5
Receptor 1	406/943	0.36 ppm	60.8	3.25 ppm	3.61 ppm	9 ppm	S.S ppm
East AV./ Wilson AV.		0.18		2.06	2 42	0	9.5 000
Fast Av / North Boundary APN 225-083-14	406/8	0.16 ppm	30.8+	3.25 ppm	5.45 ppm	9 ppm	ara bhu
Receptor 3	400:0	0.00 ppm		3.00	2.25	9 0000	9.5 ppm
East Av./Proposed "N"St.	53/53	i oto ppin	30 ft.	3.25 ppm	3.25 ppm	> hhu	, stopper
Receptor 4	<u> </u>	0.00 ppm		3.25 pp:u	3.25 ppm	9 ppm	9.5 ppm
East Av./Proposed "N" St.	1756		30 ft	FF		1	
Receptor 5		0.00 ppm		3.25 mm	3.25 0001	9 ppm	9.5 ppm
Wilson Av./West Boundary APN 225-083-14	308		60 ft.	One ppm		<u> </u>	

Receptor 6		0.00 ppm		3.25 ppm	3.25 ppm	9 ppm	9.5 ppm
Wilson Av./Proposed "A"St.	308		60 ft.			1	
Receptor 7 Wilson Av./Proposed "A" St.	308	0.00 ppm		3.25 ppm	3.25 ppm	9 ррт	9.5 ppm
Receptor 8 Wilson Av./Etiwanda Av.	308	0.12 ppm		3.25 ppm	3.37 ppm	9 ppm	9.5 ppm
Receptor 9 Etiwanda Av./Proposed "U" St.	296	0.30 ppm	30 ft.	3.25 ppm	3.55 ppm	9 ppm	9.5 ppm
Receptor 10 Etiwanda Av./Proposed "U" St.	296	0.24 ppm	30 fl.	3.25 ppm	3.49 ppm	מוקק פ	9.5 ppm
Receptor 11 Etiwanda Av./Proposed "U" St	296	0.18 ppm	35 ft.	3.25 ppm	3.43 ppm	9 ppm	9.5 ppm
Receptor 12 Etiwanda Av./Proposed "Q" St.	296	0.12 ppm	20 ft.	3.25 ppm	3.37 ppm	9 ppm	9.5 ppm
Receptor 13 Etiwanda Av./Proposed "Q" St.	2329	0.06 ppm	20 fl.	3.25 ppm	3.31 ppm	9 ppm	9.5 ppm
Receptor 14 Eliwanda Av./Proposed "Q" St.	2009	0.06 ppm	30 A.	3.25 ppm	3.31 ppm	9 ppm	9.5 ppm

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Note:

## **APPENDIX A**

## USE OF URBEMIS 2001 FOR WINDOWS IN DETERMINING PROJECT EMISSIONS

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#### **USE OF URBEMIS 2001 IN DETERMINING PROJECT EMISSIONS**

URBEMIS is a computer program that can be used to estimate emissions associated with land use development projects in California. URBEMIS, which stands for Urban Emissions Model, was originally created by the California Air Resources Board in the early 1980s. Since that time it has undergone several revisions.

This version (URBEMIS 2001 for Windows version 6.2.1), distributed in March 2002 in coordination with the California Air Pollution Control Officers' Association (CAPCOA), is the most current version of the URBEMIS software available at this time. Several changes in the use and defaults of URBEMIS 2001 for Windows were initiated to reflect specific conditions unique to this project. The following discussion summarizes model use and model default modifications.

<u>Short-term Emissions</u>: The model includes a default of 20 days for the application of architectural coatings. A total time of 20 days is unreasonable to paint 376 homes. For analysis purposes it is assumed that painting applications would be dispersed across the construction period after grading (approximately 60 days), foundation construction (approximately 25 days), and framing of the initial buildings (20 days) has occurred. Therefore the application of architectural coatings was increased to 260 days.

With the exception of construction worker commutes, the model does not estimate construction emissions of CO. All CO emission estimates for stationary and mobile equipment where calculated using Table A9-3-A and Table A9-8-A, respectively, from the SCAQMD CEQA Air Quality Handbook. Worksheets documenting these calculations are provided as part of Appendices B and C.

<u>Long-term Emissions</u>: The trip length was set at 13.6 miles (increased from the default of 10.3 miles) for work related trips, 7.9 miles (increase from the default of 4.87) for home to shop, and 7.9 miles (increase from the default of 6.02) for home to other to reflect the average roundtrip commute for San Bernardino County listed in the SCAQMD CEQA Air Quality Handbook.

## **APPENDIX B**

## URBEMIS 2001 FOR WINDOWS OUTPUT FILES FOR CONSTRUCTION RELATED EMISSIONS

#### URBEMIS 2001 For Windows 6.2.1

File Name: C:\Program Files\URBEMIS 2001 \Projects2k\TTM16072(Grading).urbProject Name:TTM 16072 (Grading and Demolition)Project Location:South Coast Air Basin (Los Angeles area)

7-10

DETAIL REPORT (Pounds/Day - Summer)

Total Land Use Area to be Developed (Estimated): 161 acres Retail/Office/Institutional Square Footage: 0 Single Family Units: Multi-family Units: 0

CONSTRUCTION EMISSION ESTIMATES

Source	ROG	NOx	CO	PM10	SO2
Demolition	-	-	-	1.68	-
Site Grading	0.00	0.00	-	120.95	0.00
Const. Worker Trips	4.75	6.72	12.75	1.29	-
Stationary Equip	0.00	0.00	-	0.00	0.00
Mobile Equip. ~ Gas	0.00	0.00	-	0.00	0.00
Mobile Equip Diesel	26.20	286.93	-	41.77	41.72
Architectural Coatings	0.00	-	-	-	-
Asphalt Offgassing	0.00	-	-	-	-
TOTALS (lbs/day, mitigated)	30.95	293.66	12.75	165.68	41.72

Construction-Related Mitigation Measures

Soil Erosion Measures: Water Exposed Surfaces 2x Per Day
Percent Reduction(ROG 0% NOx 0% CO 0% PM10 68% SO2 0%)
Implement Water/Paved Road Measures: Water All Haul Roads 2x Per Day
Percent Reduction(ROG 0% NOx 0% CO 0% PM10 3% SO2 0%)
Reduce Speeds on Unpaved Roads to 15 mph or less
Percent Reduction(ROG 0% NOx 0% CO 0% PM10 70% SO2 0%)

Changes made to the default values for Construction

The asphalt option switch changed from on to off. The stationary equipment option switch changed from on to off. The architectural coating option switch changed from on to off. The demolition total width in total volume changed from to 40. The demolition total length in total volume changed from to 10. The demolition total height in total volume changed from to 10. The demolition total width in maximum daily volume changed from to 40. The demolition total length in maximum daily volume changed from to 10. The demolition total height in maximum daily volume changed from to 10. The demolition days required changed from 10 to 1. The site grading max daily acreage estimate changed from to 41. The site grading annual days earth moving changed from 250 to 65. The worker average trip length changed from 10 to 13.6. The worker construction year changed from 2002 to 2003. The mobile diesel truck: off hwy total vehicles changed from to 1. The mobile diesel truck: off hwy hours/day changed from 8 to 41.25. The mobile diesel scraper total vehicles changed from to 5.

The mobile diesel wheeled dozer total vehicles changed from to 5. The mobile diesel motor grader total vehicles changed from to 5. The mobile diesel miscellaneous total vehicles changed from to 5. Mitigation measure Soil Erosion Measures: Water Exposed Surfaces 2x Per Day:0 has been changed from off to on. Mitigation measure Implement Water/Paved Road Measures: Water All Haul Roads 2x Per Day:0 has been changed from off to on. Mitigation measure Reduce Speeds on Unpaved Roads to 15 mph or less: 0

has been changed from off to on.

#### URBEMIS 2001 For Windows 6.2.1

File Name: C:\Program Files\URBEMIS 2001\Projects2k\TTM16072(Construction).urbProject Name:TTM16072(Short-term)Project Location:South Coast Air Basin (Los Angeles area)

7-10

DETAIL REPORT (Pounds/Day - Summer)

Total Land Use Area to be Developed (Estimated): Retail/Office/Institutional Square Footage: 0 Single Family Units: 376 Multi-family Units: 0

CONSTRUCTION EMISSION ESTIMATES

Source	ROG	NOx	CO	PM10	S02
Demolition	-	-	-	0.00	-
Site Grading	0.00	0.00	-	0.00	0.00
Const. Worker Trips	2.22	3.14	5.96	0.60	-
Stationary Equip	12.60	10.28	-	0.60	0.15
Mobile Equip Gas	0.00	0.00	-	0.00	0.00
Mobile Equip Diesel	7.49	97.96	-	7.13	8.00
Architectural Coatings	122.11	-	-	-	-
Asphalt Offgassing	8.34	-	-	-	-
TOTALS (lbs/day, mitigated)	152.76	111.37	5.96	8.33	8.15

Construction-Related Mitigation Measures

Architectural Coatings: Use Low VOC Coatings Percent Reduction(ROG 5% NOx 0% CO 0% PM10 0% SO2 0%) Asphalt Paving: Use Low VOC Asphalt Percent Reduction(ROG 5% NOx 0% CO 0% PM10 0% SO2 0%)

Changes made to the default values for Construction

The demolition option switch changed from on to off. The site grading option switch changed from on to off. The construction year changed from 2002 to 2003. The length of construction period changed from 250 to 365. The demolition total width in total volume changed from to 40. The demolition total length in total volume changed from to 10. The demolition total height in total volume changed from to 10. The demolition total height in total volume changed from to 10. The demolition total height in maximum daily volume changed from to 40. The demolition total length in maximum daily volume changed from to 10. The demolition total height in maximum daily volume changed from to 10. The demolition total height in maximum daily volume changed from to 10. The demolition total height in maximum daily volume changed from to 10. The demolition days required changed from 10 to 1.

The site grading annual days earth moving changed from 250 to 65. The worker average trip length changed from 10 to 13.6. The worker construction year changed from 2002 to 2003. The asphalt acres to be paved changed from 1 to 33.5. The stationary equipment equipment units changed from 2 to 75. The mobile diesel fork lift 175 HP total vehicles changed from to 1. The mobile diesel truck: off hwy total vehicles changed from to 1. The mobile diesel miscellaneous total vehicles changed from to 1. The mobile diesel miscellaneous hours/day changed from 8 to 30.75. The coatings number of days of painting changed from 20 to 260. Mitigation measure Architectural Coatings: Use Low VOC Coatings: 5 has been changed from off to on.

Mitigation measure Asphalt Paving: Use Low VOC Asphalt: 5 has been changed from off to on.

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### CO EMISSIONS ESTIMATES FOR STATIONARY EQUIPMENT

7-10

Construction Period	Emission Factor <sup>1</sup> (pounds/Hp hour)	Horsepower Hours per Day <sup>2</sup>	Number of Pieces of Equipment <sup>3</sup>	Daily Emissions (pounds/day)
Grading	0.0019	280	0	0
Construction	0.0019	280	75	39.90

Notes: Emission factor from SCAQMD CEQA Air Quality Handbook, Table A9-3-A.

<sup>2</sup> Reflects power output for each piece of stationary equipment based upon an average power rating of 35 Hp and operating 8 hours per day.
<sup>3</sup> Stationary equipment is not used during the gradient phase construction partial activities will involve the use of includent equipment.

Stationary equipment is not used during the grading phase, construction period activities will involve the use of welders, cutting torches, generators and concrete pumps.

### CO EMISSIONS ESTIMATES FOR MOBILE EMISSION SOURCES

Equipment	Emission Factor <sup>i</sup> (pounds/hour)	Hours per day <sup>2</sup>	Daily Emissions (pounds/day)
Grading			
Scrapers	1.250	40	50.00
Dozers	NG	40	NG
Motor Graders	0.151	40	6.04
Off-Hwy Trucks	1.800	41.25 <sup>3</sup>	74.25
Water Trucks	0.675	40	27.00
Total			151.25
Construction			
Cement Trucks <sup>4</sup>	0.675	30.75 <sup>5</sup>	20.76
Fork Lifts (175 Hp)	0.520	8	4.16
Off-Hwy Trucks	1.800	8	14.40
Total			39.32

Notes: \_\_\_\_\_ Emission factor from SCAQMD CEQA Air Quality Handbook, Table A9-8-A.

Reflects daily total operation time for all pieces of equipment of applicable class.

Assumes 55 truckloads of orange trees being transported per day at 45 minutes per truckload (totaling 41.25 hours/day).

<sup>4</sup> SCAQMD CEQA Air Quality Handbook, Table A9-8-A does not have emission factors for cement trucks or cranes. Therefore, emission factors for the miscellaneous category were applied.

Assumes 41 truckloads of concrete per day at 45 minutes per truckload (totaling 30.75 hours/day).

# **APPENDIX C**

# URBEMIS 2001 FOR WINDOWS OUTPUT FILES FOR OPERATION PHASE EMISSIONS

Page: 1

#### URBEMIS 2001 For Windows 6.2.1

7-10

File Name: C:\Program Files\URBEMIS 2001\Projects2k\TTM16072 (Long-term).urb Project Name: TTM 16072 (Long-term) Project Location: South Coast Air Basin (Los Angeles area) DETAIL REPORT (Pounds/Day - Summer) AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated) Source ROG ŇŎX CO PM10 \$O2 Natural Gas 0.36 4.71 2.00 0.01 Wood Stoves - No summer emissions Fireplaces - No summer emissions Landscaping 0.64 0.06 5.39 0.01 0.16 Consumer Prdcts 22.38 TOTALS(lbs/day,unmitigated) 23.38 4.77 7.40 0.02 0.16 UNMITIGATED OPERATIONAL EMISSIONS ROG NOx CO PM10 S02 Single family housing 59.06 774.62 36.20 64.44 0.47 TOTAL EMISSIONS (lbs/day) 59.06 774.62 36.20 0.47 64.44 Includes correction for passby trips. Does not include double counting adjustment for internal trips. OPERATIONAL (Vehicle) EMISSION ESTIMATES Analysis Year: 2004 Temperature (F): 90 Season: Summer EMFAC Version: EMFAC2001 (10/2001) Summary of Land Uses: Unit Type Trip Rate Size Total Trips Single family housing 9.57 trips / dwelling units 376.00 3,599.00 Vehicle Assumptions: Fleet Mix: Vehicle Type Percent Type Non-Catalyst Diesel Catalyst 0.80 Light Auto 61.40 4.70 94.50 Light Truck < 3,750 lbs 9.30 11.00 88.90 0.10 Light Truck 3,751- 5,750 16.70 1.80 97.60 0.60 12.50 Med Truck 5,751- 8,500 7.20 79.20 8.30 Lite-Heavy 8,501-10,000 1.10 18.20 72.70 9.10 Lite-Heavy 10,001-14,000 0.30 0.00 66.70 33.30 1.10 Med-Heavy 14,001-33,000 9.10 27.30 63.60 Heavy-Heavy 33,001-60,000 0.70 0.00 0.00 100.00 Line Haul > 60,000 lbs 0.00 0.000.00 100.00 Urban Bus 0.00 0.00 0.00 100.00 Motorcycle 1.4090.90 9.10 0.00 0.00 School Bus 0.10 0.00 100.00 Motor Home 0.70 0.00 100.00 0.00 Page: 2

Travel Conditions

		Residential			Commercial	
	Home-	Home-	Home -			
	Work	Shop	Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	13.6	7.9	7.9	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			

Changes made to the default values for Area

The consumer product persons per residential unit changed from 2.861 to 3.48. Changes made to the default values for Operations

The operational emission year changed from 2002 to 2004. The home based work selection item changed from 8 to 7. The home based work urban trip length changed from 11.5 to 13.6. The home based shopping selection item changed from 9 to 8. The home based shopping urban trip length changed from 4.87 to 7.9. The home based other selection item changed from 9 to 8. The home based other urban trip length changed from 6.02 to 7.9. The commercial based commute selection item changed from 9 to 8. The commercial based non-work selection item changed from 9 to 8. The commercial based customer selection item changed from 9 to 8.

# **APPENDIX D**

# **ELECTRICITY USAGE EMISSIONS WORKSHEET**

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### AIR QUALITY EMISSIONS WORKSHEET

### **Electricity Usage Emissions**

Pollutant	Emission Factor <sup>1</sup> (lbs/megawatt hour)	Electric Use <sup>2</sup> (megawatt hours/day)	Total Emissions (pounds per day)		
CO	0.20	5.8	1.16		
ROC	0.01	5.8	0.06		
NO <sub>X</sub>	0.15 <sup>3</sup>	5.8	0.87		
SOx	0.12	5.8	0.70		
PM10	0.04	5.8	0.23		

Notes: 1

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Emission factors from SCAQMD CEQA Air Quality Handbook, Table A9-11-B.
 SCAOMD CEOA Air Quality Handbook, Table A9-11-A, conversion factors us

SCAQMD CEQA Air Quality Handbook, Table A9-11-A, conversion factors used to convert kilowatt-hours per year to megawatt-hours per day.

Emission factor for NOx is derived from SCAQMD Rule 1135 requiring SCE to emit no more than 0.15 pounds of NOx per Megawatt hour of electric power produced within the SCAB

-4-

# **APPENDIX E**

# **CALINE 4 OUTPUT FILES**

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL

PAGE 1

JOB: Tentative Tract No. 16072 RUN: Hour 1 POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	1.0	M/S	Z0=	100.	CM		ALT =	518.	(M)
BRG=	. 0	DEGREES	VD=	.0	CM/S				
CLAS=	7	(G)	VS=	. 0	CM/S				
MIXH=	1000.	М	AMB=	.0	PPM				
SIGTH=	10.	DEGREES	TEMP⊐	4.0	DEGREE	(C)			

#### II. LINK VARIABLES

	LINK	*	LINK	COORDI	NATES	(M)	*			$\mathbf{EF}$	Н	W
	DESCRIPTION	*	Xl	Yl	<b>X</b> 2	¥2	*	TYPE	VPH	(G/MI)	(M)	(M)
Α.	Link A	*	798	-2520	798	-75	*	AG	888	10.8	.0	19.2
В.	Link B	*	798	-75	798	258	*	AG	406	26.3	. 0	13.2
С.	Link C	*	798	258	798	515	*	AG	53	13.6	. 0	13.2
D.	Link D	*	798	515	798	642	*	AG	53	26.3	. 0	13.2
Ε.	Link E	*	798	642	798	797	*	AG	53	13.6	. 0	13.2
F.	Link F	*	0	-1584	0	- 75	*	AG	1710	10.8	. 0	23.4
G.	Link G	*	0	-75	0	0	*	AG	655	26.3	. 0	19.2
н.	Link H	*	-252	0	- 54	375	*	AG	533	13.6	. 0	19.2
I.	Link I	*	-54	375	0	450	*	AG	533	26.3	.0	19.2
J.	Link J	*	0	450	0	685	*	AG	533	26.3	.0	19.2
К.	Link K	*	0	685	0	797	*	AG	533	13.6	.0	19.2
L.	Link L	*	-1224	0	75	0	*	AG	943	10.8	. 0	23.4
Μ.	Link M	*	75	0	315	0	*	AG	943	13.6	. 0	23.4
Ν.	Link N	*	315	0	873	0	*	AG	943	26.3	. 0	23.4
Ο.	Link O	*	873	0	2058	0	*	AG	1182	10.8	.0	23.4
Ρ.	Link P	*	390	0	390	75	*	AG	199	26.3	. 0	13.2
Q.	Link Q	*	798	590	723	590	*	AG	54	26.3	. 0	10.8
R.	Link R	*	0	450	75	450	*	AG	54	26.3	.0	13.2
Β.	Link S	*	0	633	75	633	*	AG	54	26.3	. 0	10.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL

PAGE 2

JOB: Tentative Tract No. 16072 RUN: Hour 1 POLLUTANT: Carbon Monoxide

#### III. RECEPTOR LOCATIONS

			*	COO	(M)	
J	RECEPT	DR	*	х	Y	Z
		- <sup>:</sup> ·	*-	 		
1.	Recpt	1	*	789	18	1.5
2.	Recpt	2	*	789	174	1.5
З.	Recpt	3	*	789	594	1.5
4.	Recpt	4	*	789	602	1.5
5.	Recpt	5	*	627	15	1.5
6.	Recpt	6	*	400	15	1.5
7.	Recpt	7	*	380	15	1.5
8.	Recpt	8	*	12	15	1.5
9.	Recpt	9	*	16	447	1.5
10.	Recpt	10	*	16	465	1.5
11.	Recpt	11	*	-20	468	1.5
12.	Recpt	12	*	16	624	1.5
13.	Recpt	13	*	16	639	1.5
14.	Recpt	14	*	-18	633	1.5

### IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

			* *	PRED CONC	*					CONC/I	LINK M)				
R	ECEPTO	R	*	(PPM)	*	A	В	С	D	Е	F	G	Н	I	J
1.	Recpt	1	*	. 6	*	. 0	.5	.0	.0	. 0	.0	.0	. 0	.0	, 0
2.	Recpt	2	*	. 3	*	. 0	.3	. 0	. 0	. 0	. 0	. 0	. 0	. 0	. 0
3.	Recpt	3	*	. 0	*	. 0	.0	. 0	. 0	. 0	. 0	. 0	.0	. 0	.0
4.	Recpt	4	*	.0	*	.0	. 0	. 0	. 0	. 0	. 0	.0	. 0	.0	. 0
5.	Recpt	5	*	. 0	*	. 0	. 0	.0	. 0	. 0	. 0	. 0	. 0	. 0	.0
6.	Recpt	6	*	. 0	*	. 0	. 0	. 0	. 0	. 0	. 0	. 0	.0	. 0	. 0
7.	Recpt	7	*	. 0	*	. 0	. 0	. 0	. 0	. 0	.0	. 0	. 0	.0	. 0
8.	Recpt	8	*	. 2	*	. 0	.0	. 0	.0	. 0	- 0	. 0	. 0	. 0	. 1
9.	Recpt	9	*	.5	*	. 0	. 0	.0	. 0	. 0	. 0	.0	.0	. 0	.4
10.	Recpt	10	*	. 4	*	. 0	. 0	. 0	. 0	. 0	. 0	.0	. 0	. 0	. 3
11.	Recpt	1.1	*	.3	*	. 0	. 0	.0	. 0	. 0	. 0	. 0	. 0	.0	. 2
12.	Recpt	12	*	. 2	*	.0	. 0	. 0	. 0	. 0	. 0	. 0	. 0	.0	.0
13.	Recpt	13	*	. 1	*	.0	. 0	. 0	. 0	. 0	.0	.0	. 0	.0	. 0

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14. Recpt 14 \* .1 \* .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL

PAGE 3

JOB: Tentative Tract No. 16072 RUN: Hour 1 POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

			* *				COL	NC/LIN (PPM)	٩K			
RI	SCEPTOR	ł	*	к	L	М	N	0	Þ	Q	R	S
			. * .							· ·		
1.	Recpt	1	*	. 0	. 0	. 0	. 0	. 0	.0	. 0	. 0	. 0
2.	Recpt	2	*	. 0	.0	. 0	. 0	. 0	. 0	. 0	. 0	. 0
3.	Recpt	3	*	. 0	. 0	.0	. 0	.0	.0	.0	. 0	. 0
4、	Recpt	4	*	. 0	. 0	. 0	. 0	. 0	. 0	. 0	. 0	. 0
5.	Recpt	5	*	. 0	. 0	. 0	. 0	. 0	. 0	. 0	.0	.0
6.	Recpt	6	*	. 0	. 0	.0	. 0	. 0	. 0	.0	. 0	.0
7.	Recpt	7	*	. 0	. 0	. 0	. 0	. 0	. 0	. 0	. 0	. 0
8.	Recpt	8	*	. 0	. 0	. 0	. 0	.0	.0	. 0	.0	.0
9.	Recpt	9	*	. 0	. 0	.0	. 0	.0	.0	.0	.0	. 0
10.	Recpt	10	*	. 0	.0	.0	. 0	. 0	.0	.0	. 0	.0
11.	Recpt	11	*	. 0	. 0	. 0	. 0	.0	. 0	. 0	. 0	.0
12.	Recpt	12	*	.1	.0	.0	. 0	.0	.0	. 0	.0	.0
13.	Recpt	13	*	.1	. 0	.0	.0	. 0	. 0	. 0	. 0	. 0
14.	Recpt	14	*	.0	.0	. 0	.0	. 0	. 0	. 0	. 0	.0

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# **APPENDIX F**

# **SCREEN3 OUTPUT FILES**

10/21/02 14:47:39

\*\*\* SCREEN3 MODEL RUN \*\*\* \*\*\* VERSION DATED 96043 \*\*\*

Rancho Cucamonga TT 16043

COMPLEX TERRAIN INPUTS: SOURCE TYPE POINT = EMISSION RATE (G/S) =.694000E-04 STACK HT (M) = 3.6600 STACK DIAMETER (M) .0760 = 18.3000 STACK VELOCITY (M/S) = STACK GAS TEMP (K) = 1231.0000AMBIENT AIR TEMP (K) =293.0000 RECEPTOR HEIGHT (M) = .0000 URBAN/RURAL OPTION URBAN =

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED. THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

BUOY. FLUX = .197 M\*\*4/S\*\*3; MOM. FLUX = .115 M\*\*4/S\*\*2.

FINAL STABLE PLUME HEIGHT (M) = 16.4 DISTANCE TO FINAL RISE (M) = 200.2

TERR HT (M)	DIST (M)	MAX 24-HR CONC (UG/M**3)	*VALLEY 24-1 CONC ) (UG/M**3)	HR CALCS* PLUME HT ABOVE STK BASE (M)	**SIMPLE CONC (UG/M**3)	TERRAIN 2 PLUME HI ABOVE STK HGT (M)	4-HI SC	R CALO U10M (M/	CS** USTK (S)
		<b></b>		· · · · · ·					
6.	61.	.7952E-01	.6084E-02	9.4	.79528-01	. 6.3	4	1.0	1.0
6.	80.	.5274E-01	.8056E-02	10.6	.5274E-01	6.3	4	1.0	1.0
6.	100.	.3624E-01	.7951E-02	11.7	.3624E-01	6.3	4	1.0	1.0
7.	120.	.2625E-01	.7077E-02	12.7	.2625E-01	6.3	4	1.0	1.0
7.	140.	.2201E-01	.6091E-02	13.7	.2201E-01	14.4	6	1.0	1.0
7.	160.	.2064E-01	.5201E-02	14.6	.2064E-01	14.4	6	1.0	1.0
8.	180.	.1899E-01	.4452E-02	15.5	.1899E-01	14.4	6	1.0	1.0
8.	200.	.1730E-01	.3834E-02	16.4	.1730E-01				

# Appendix F Acoustical Report

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# Appendix F Acoustical Report

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# TENTATIVE TRACT MAP 16072 PRELIMINARY ACOUSTICAL REPORT Rancho Cucamonga, California

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1/9/2024 Board Meeting



transportation planning • traffic engineering acoustical / air quality studies

October 4, 2002

Mr. John Schafer RICHLAND COMMUNITIES 3 Imperial Promenade, Suite 150 Santa Ana, CA 92707

### Subject: TTM 16072 Preliminary Acoustical Study, Rancho Cucamonga

Dear Mr. Schafer:

RK ENGINEERING GROUP, INC. is pleased to provide RICHLAND COMMUNITIES with the attached preliminary acoustical report for proposed Tentative Tract 16072. The proposed project would consist of 359 lots, divided into a "North" and "South" phase. The proposed project would be located north of Wilson Avenue, between Etiwanda Avenue and East Avenue, in the City of Rancho Cucamonga. The objective of this acoustical study was to evaluate future noise impacts to the site from surrounding roadways. Based upon this evaluation the project is feasible from an acoustical standpoint, if the recommended mitigation measures included in this report are implemented.

RK ENGINEERING GROUP, INC. is pleased to have prepared the acoustical report for the proposed TTM 16072 project, and looks forward to assisting RICHLAND COMMUNITIES with future projects. If you have any questions regarding this report or need further analysis, please feel free to give us a call at (949) 474-0809.

Sincerely,	
RK ENGINEERING GROUP, No. 20265 EXP. 09/30/05 Mike Rosa Engineering Technician	Robert Kahn, P.E. Principal
RK:MR:kd/1255 JN:1058-02-01 Attachments	

20201 s.w. barch street, suite 250 newport beach, california 92660 tef 949.474,0809 fax 949.474,0902 **916**  •

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### TTM 16072 PRELIMINARY ACOUSTICAL STUDY RANCHO CUCAMONGA, CALIFORNIA

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Prepared for:

RICHLAND COMMUNITIES 3 Imperial Promenade, Suite 150 Santa Ana, CA 92707

Prepared by:

RK ENGINEERING GROUP, INC. 20201 S.W. Birch Street, Suite 250 Newport Beach, CA 92660

> Mike Rosa Robert Kahn, P.E.

October 4, 2002

JN:1058-02-01 RK:MR:kd/1255

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### TTM 16072 PRELIMINARY ACOUSTICAL STUDY RANCHO CUCAMONGA, CALIFORNIA

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### EXECUTIVE SUMMARY

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A preliminary acoustical study has been completed to establish future exterior/interior noise exposure to the proposed project and determine any necessary mitigation measures needed to meet City of Rancho Cucamonga noise standards. The proposed site is located north of Wilson Avenue, between Etiwanda Avenue and East Avenue, as shown on Exhibit A. The results of this analysis indicate that future motor vehicle noise from Wilson Avenue, Etiwanda Avenue and East Avenue will be the principle source of community noise that will impact the project. However, these noise impacts can be adequately mitigated with the appropriate noise control measures recommended in this report.

The proposed project consists of 359 lots contained in a "North" and "South" phase. The site plan used for this analysis is shown on Exhibit B. It is necessary to note that the southeast corner contains a "Low Density Residential" project that is not a part of TTM 16072. This unrelated project, however, acts as a noise barrier, protecting portions of TTM 16072 from noise impacts emanating from Wilson Avenue and East Avenue.

### **On-Site Noise Exposure Analysis and Control**

Based on roadway and site parameters (Table 1), the results of this study indicate that the projected exterior noise levels for a worst-case situation exceed the City of Rancho Cucamonga exterior noise standard of 60 dBA CNEL for residential uses. To reduce the projected exterior (backyard) noise levels to within acceptable levels, mitigation measures have been detailed in this report. Ultimately, noise control barriers (walls, berms or a combination of the two) will be necessary along the perimeter of portions of the proposed project. The interior noise exposure standard of 45 dBA CNEL will only be

Attachment 4, Page 57 of 367 EXHIBIT A LOCATION MAP

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### TABLE 1

### **ROADWAY AND SITE PARAMETERS**

Roadway	Lanes	Classification <sup>1</sup>	Buildout (ADT) <sup>2</sup>	Speed (MPH)	
Wilson Avenue	4	Major Arterial	13,000	40	
East Avenue	2	Collector	14,000	40	
Etiwanda Avenue	2	Collector	8,000	40	

### **ROADWAY HOURLY TRAFFIC FLOW DISTRIBUTION<sup>3</sup>**

Motor Vehicle Type	Daytime (7 AM to 7 PM)	Evening (7 PM to 10 PM)	Night (10 PM to 7 AM)	Total % Traffic Flow	
Automobiles	77.50	12.90	9.60	97.42	
Medium Trucks	84.80	4.90	10.30	1.84	
Heavy Trucks	86.50	2.70	10.80	0.74	

<sup>&</sup>lt;sup>1</sup> Roadway classification based upon typical cross sections as shown in the Rancho Cucarnonga General Plan (see Appendix "D").

<sup>&</sup>lt;sup>2</sup> ADT values provided by John Gillespie (City Traffic Engineer) on 10/01/02.

<sup>&</sup>lt;sup>3</sup> Traffic Distribution values taken from Empire Lakes Preliminary Noise Study, by RKJK, dated 12/26/00.

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met using a "windows closed" condition, which will require a means of mechanical ventilation (i.e. air conditioning), and upgraded windows for some lots. These measures are further detailed in the Summary of Recommendations section of this report.

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### SUMMARY OF RECOMMENDATIONS

### Exterior Area - Noise Exposure Control

For the proposed residential land use, the City of Rancho Cucamonga's noise standards limit livable exterior area's (backyards in this case) levels to 60 dBA CNEL. To accommodate this standard an acoustical study and design has been completed to offer a form of mitigation that will make the proposed project feasible, from an acoustical standpoint. It is important to note that while exterior mitigation (noise barriers) may have positive effects on interior areas, it is intended to satisfy exterior standards only. Interior mitigation measures will be discussed later in this section.

Table 2 shows the study's findings with regard to exterior areas while Exhibit C-1 graphically illustrates the positioning and minimum heights of the recommended noise barriers. Some lots along Wilson Avenue and East Avenue will require noise barriers of up to 6.5-feet in height to reduce exterior noise impacts to acceptable levels. Overall, noise barrier heights will range from 3.0-feet to 6.5-feet along subject roadways. The ends of these noise barriers will need to "wrap-around" to prevent flanking of noise into the exterior areas. Exhibit C-1 best details specific noise barrier heights and locations for the entire project.

A final acoustical study will need to be performed before building permits can be issued. The final study will confirm or revise the aforementioned mitigation measures based upon more complete information such as building setbacks, detailed building plans and precise grading plans. The information contained in this report should be sufficient to obtain Tentative Tract Map and Site Plan approval.

### Noise Control Barrier Construction Materials

The designed noise screening will only be accomplished if the barrier's weight is at least 3.5 pound per square foot of face area and has no decorative cutouts or

### TABLE 2

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	Unmiti dBA CN	gated Noise   NEL) at Façad	Impacts le From <sup>2</sup>	Total Combined		Minimum	
Lot Number	Wilson Avenue	East Avenue	Etiwanda Avenue	Unmitigated Exterior Noise Level <sup>3</sup>	Mitigated Exterior Noise Level <sup>4</sup>	Barrier Height (in feet) <sup>5</sup>	
17	64.7	-	-	64.7	59.7	4.5	
18	63.6		66.6	68.4	59.7	6.0/6.5	
19		-	67.3	67.3	59.5	6.0	
89	65.8	-	-	65.8	59.5	5.5	
125	-	66.7	-	66.7	59.2	6.0	
181		67.3	_	67.3	59.0	6.5	
213	-	67.0	-	67.0	59.0	6.5	
256	-	-	64.4	64.4	55.6	3.0	
262	-	-	64.3	64.3	59.2	5.0	
268	-	-	64.7	64.7	59.5	4.5	

### BUILDOUT EXTERIOR NOISE LEVELS (dBA CNEL)<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> Exterior noise levels (dBA CNEL) calculated 5-feet in from propoerly line, perpendicular to subject roadway.

<sup>&</sup>lt;sup>2</sup> In these columns, a "-" indicates there are no noise impacts from the corresponding roadway.

<sup>&</sup>lt;sup>3</sup> All impacts listed in this column are from a single roadway except Lot 18 which is impacted by noise from Wilson Avenue and Etiwanda Avenue.

<sup>&</sup>lt;sup>4</sup> Rancho Cucamonga exterior noise standards limit backyard noise levels to  $\leq$  60 dBA CNEL.

<sup>&</sup>lt;sup>5</sup> See Exhibit C and the Summary of Recommendations section of this report for further details on mitigation.

### EXHIBIT C-1 SUMMARY OF RECOMMENDATIONS BARRIER HEIGHTS



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line-of-site opening between the shielded areas and roadway. The recommended noise control barrier may be constructed using one, or any combination of, the following materials:

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- 1. Masonry block;
- 2. Stucco veneer over wood framing (or foam core), or 1-inch thick tongue and groove wood of sufficient weight per square foot;
- 3. Glass (1/4-inch thick), or other transparent material with sufficient weight per square foot;
- 4. Earthen berm

The recommended barrier must present a solid face from top to bottom. Unnecessary openings or decorative cutouts should not be made. All gaps (except for weep holes) should be filled with grout.

### Interior Area - Noise Exposure Control

For the proposed residential land use, the City of Rancho Cucamonga's noise standards limit livable interior areas' noise levels to 45 dBA CNEL. Preliminary information indicates the City's standard will be met using a "windows closed" condition, which will require a means of mechanical ventilation (i.e. air conditioning), and upgraded windows at some locations. Table 3 shows expected unmitigated and mitigated interior noise levels, while Exhibit C-2 details the lots requiring the "windows closed" condition for the entire project. It is expected that some locations' interior noise levels will not be acceptable even under the "windows closed" condition. For these lots upgraded windows will be necessary to further reduce noise impacts to the interior areas. None of the lots analyzed in this study appear to have noise impacts that cannot be mitigated in a cost-effective manner. Specific interior noise reduction values and more specific mitigation recommendations (STC ratings for windows) will be determined when the final acoustical study is performed with more detailed information.

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#### TABLE 3

### BUILDOUT INTERIOR NOISE LEVELS (dBA CNEL)1

	Noise LevelInterior No(dBA CNEL)with Windoat Façade2(dBA C		loise Level lows Open CNEL) <sup>3</sup>	Interior Noise Level with Windows Closed (dBA CNEL) <sup>4</sup>		Required Interior NoiseReduction (dBA CNEL) <sup>5</sup>		
Lot	F	100	Floor		Floor		Floor	
Number	1st	2nd	1st	2nd	1st	2nd	1st	2nd
17	57.2	63.8	45.2	51.8	37.2	43.8	12. <u>2</u>	18.8
18 <sup>6</sup>	57.8	66.9	45.8	54.9	37.8	46.9	12.8	21.9
19	57.0	65.2	45.0	53.2	37.0	45.2	12.0	20.2
89	57.6	64.7	45.6	52.7	37.6	44.7	12.6	19.7
125	57.5	65.5	45.5	53.5	37.5	45.5	12.5	20.5
181	58.0	66.0	46.0	54.0	38.0	46.0	13.0	21.0
213	58.4	65.7	46.4	53.7	38.4	45.7	13.4	20.7
256	59.9	63.3	47.9	51.3	39.9	43.3	14.9	18.3
262	57.5	63.2	45.5	51.2	37.5	43.2	12.5	18.2
268	56.1	63.4	44.1	51.4	36.1	43.4	11.1	18.4

<sup>1</sup> Includes sound attenuation provided by noise barrier, if applicable.

<sup>2</sup> Preliminary grading plans utilized for this analysis. All building facades calculated at 25-feet in from propoerty line.

- <sup>3</sup> A minimum of 12 dBA noise reduction is assumed under a "windows open" condition.
- <sup>4</sup> A minimum of 20 dBA noise reduction is assumed under a "windows closed" condition.
- <sup>5</sup> Rancho Cucamonga noise standards limit interior noise levels to < 45 dBA CNEL.

<sup>&</sup>lt;sup>6</sup> All values in this row represent combined impacts from Wilson Avenue and Etiwanda Avenue. See dB addition calculations in Appendix "C" for specifics.

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### Unit Ventilation

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With the operable door and window open, it is expected that the interior 45 dBA CNEL intrusion limit, for some lots paralleling the subject roadways, will be exceeded. Therefore, a "windows closed" condition is applicable to these lots to achieve the interior noise standard. This "windows closed" condition requires a means of mechanical ventilation. This mechanical ventilation system shall supply two (2) air changes per hour for each habitable room, with a minimum of 15 cubic feet per minute of outside air per occupant. The fresh air inlet duct shall be of sound attenuating construction and shall consist of a minimum of ten feet of straight or curved duct or six feet plus one sharp 90° bend. Exhibit D shows a typical attic vent acoustical baffle detail.

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#### **Building Shell Design**

For some lots paralleling the subject roadways, interior noise exposure standards will only be met using a "windows closed" condition. For the "windows closed" condition, a means of mechanical ventilation is required to insure satisfactory sound and ventilation control. Exhibit C-2 shows specifically which lots require the "windows closed" condition. For proper acoustical performance, all exterior windows, doors and sliding glass doors must have a positive seal, and leaks and cracks must be kept down to a minimum.

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# ATTIC VENT ACOUSTICAL BAFFLE DETAIL



**PLAN VIEW** 



**RK** engineering group, inc.

### **INTRODUCTION**

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This report presents the results of a preliminary acoustical study for proposed TTM 16072 located in the City of Rancho Cucarnonga. Included in this report is a discussion of the expected future exterior community noise environment and recommendations to control this environment's noise impacts to the outdoor and indoor areas of the proposed project.

The general location of the proposed project is shown on the Location Map, Exhibit A. The site plan used for the acoustical analysis of this project was prepared by MDS CONDSULTING, and is presented as the Site Plan on Exhibit B.

In the following sections, noise exposures expected within the planned site are reviewed and compared to the applicable noise standards. Design recommendations necessary to comply with the noise standards have been presented in the Summary of Recommendations section of this report and are illustrated on Exhibits C-1 and C-2. For your reference, a glossary of acoustical terms is included in Appendix "A".
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### NOISE STANDARDS

The City of Rancho Cucamonga uses the CNEL scale for land use/noise compatibility assessment. The proposed project's residential land use is considered to be a noise sensitive land use for which noise standards of 60 dBA CNEL exterior and 45 dBA CNEL interior are not to be exceeded. Exterior areas are defined as all livable outside areas (backyards in this case) and interior areas are defined as all habitable rooms. The City of Rancho Cucamonga Noise Standards are included in Appendix "B".

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### Noise Rating Scales

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A number of noise rating scales are used in California for land use compatibility assessment. These scales are: Equivalent Noise Level (LEQ), Day Night Noise Level (LDN), and the Community Noise Equivalent Noise Level (CNEL). These scales are described in the following paragraphs:

 A-weighted decibels (dBA) are the most common units used for measuring the loudness of a noise event. The human ear's sensitivity is different for different frequencies of sound (noise). A-weighting is an attempt to give the noise monitor the same frequency sensitivity as the human ear. Technically, it is the measurement of the energy being received when listening to (or monitoring) a source of noise. For example, the loudness of a highway may be 65 dBA when measured 50 feet away. The sound decreases as one moves away from the source, and the same highway would have a perceived noise level of 62 dBA at 100 feet.

The relationship between how one perceives a sound and the actual sound energy emitted by the source of noise is very complex. However, a good rule of thumb is if a noise increases 10 dBA, its apparent loudness will double. Therefore, a noise that is 70 dBA will be perceived as twice as loud as a 60 dBA noise.

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 The LEQ scale represents the energy average noise level over a sample period of time. It represents the decibel sound level that would contain the same amount of energy as a fluctuating sound level over the sample time period.

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- The LDN scale represents a time weighted 24-hour average noise level based on the A-weighted decibel. Time weighted means that a noise occurring during certain sensitive time periods is penalized for occurring at these times. For the LDN scale the nighttime period (10:00 PM to 7:00 AM) noises are penalized by 10 dBA.
- The CNEL scale is similar to the LDN scale except that it includes an additional 5 dBA penalty for the evening time period (7:00 PM to 10:00 PM).

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### EXTERIOR NOISE ENVIRONMENTAL ANALYSIS

It is expected that the primary source of noise to the site will be traffic noise from Wilson Avenue, Etiwanda Avenue and East Avenue. To the south (of the southwest corner of the project), there is a water treatment plant (C.C.W.D. Water Treatment Facility). After speaking with Larry Henderson (from the City's Planning Department) on 10/03/02, it has been decided that the plant does not create sufficient noise to address in this report. The plant is approximately five years old and had some noise mitigation measure built-in; such as indoor machinery.

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There are no existing railroad lines near the proposed project site. It is expected that railroad noise will not contribute to the overall noise environment.

The expected roadway noise impacts were projected using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model (FHWA-RD-77-108), as modified for CNEL and the "CALVENO" energy curves, together with several key roadway site parameters. The key input parameters, which determine the projected impact of vehicular traffic noise, include the roadway classification (e.g. collector, secondary, primary, major, freeway or transportation corridor), roadway active width (the distance between the center of the outer most travel lanes on each side of the roadway), total vehicle count per day (ADT), travel speed, percentages of automobiles, medium trucks and heavy trucks in the roadway volume, roadway grade, angle of view, site conditions ("hard" or "soft") and percentage of total average daily traffic (ADT), which flows each hour throughout a 24-hour period.

The traffic volumes and travel speeds used for this study are presented in Table 1. Jon Gillespie, the City's Traffic Engineer, provided the subject roadways' speed limits and traffic volumes on 10/01/02, which are shown in Table 1. Roadway classifications were obtained from the Rancho Cucamonga General Plan, which is included in Appendix "D". Pad and roadway elevations were obtained from the site plan. Using the FHWA Traffic Noise Prediction Model and the aforementioned parameters, calculations of the expected

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future noise impacts were completed. The computed traffic noise impact printouts are included in Appendix "C".

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# EXTERIOR AREA NOISE EXPOSURE ANALYSIS AND CONTROL

The City of Rancho Cucamonga standards for residential construction require that noise exposures for all useable outdoor areas not exceed 60 dBA CNEL. Analysis and recommendations for the control of motor vehicle noise impacts to outdoor living areas are presented in this section.

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Using the FHWA Traffic Noise Prediction Model, parameters outlined in Table 1 and other information sourced form the City, calculations of potential worst-case traffic noise impacts were completed. The computer printouts used to calculate specific unit impacts, as well as dB addition printouts are included in Appendix "C".

Determinations of maximum future traffic noise impacts for outdoor useable areas were developed using the roadway noise assumptions in Table 2 and site plan for the proposed project. Calculations were made using road and preliminary pad grades along with previously specified parameters. Hard site parameters were used for all calculations. The site exposure analysis indicates expected future unmitigated exposure to lots facing the subject roadways.

A barrier analysis was performed to determine required acoustical shielding which will be necessary to reduce the expected roadway noise impacts to below 60 dBA CNEL for the affected outdoor useable areas. This barrier analysis was completed using a version of the FHWA-RD-77-108 Noise Model. Key input data for these barrier performance equations include relative source-barrier-receiver horizontal separations; relative source-barrier-receiver horizontal separations; relative source-barrier-receiver spectra and barrier transmission loss. Following are the general assumptions used in determining the source and receiver geometry:

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Receiver Assumptions:			
Horizontal Geometry: Vertical Geometry:	Distance I Height ab	behind top-of-slope bar ove pad for ground iev	rrier: 5 feet. el receivers:
	•	Exterior noise: 1st Floor Interior:	5 feet above ground 5 feet above finished floor

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2nd Floor Interior: 15 feet above finished floor

### Source Assumptions:

Horizontal Geometry: For roadways with grades no greater than 2%, all vehicles are located at the single lane equivalent acoustic center of the full roadway. For roadways with over 2% grade, vehicle count is divided in half and is located at the single lane equivalent acoustic center for <u>each</u> side of the roadway.

Vertical Geometry: Height above road grade:

Autos	Ξ	0.0 feet
Medi <b>um Trucks</b>	=	2.3 feet
Heavy Trucks	=	8.0 feet

These assumptions and the preliminary site plan (Exhibit B) were used to fix the horizontal and vertical geometry used in the barrier analysis. For the purposes of this study, the FHWA traffic noise spectra assumptions were used in the barrier analysis.

To meet the City of Rancho Cucamonga residential exterior noise standard of 60 dBA CNEL, a preliminary exterior noise mitigation method has been developed. This mitigation consists of noise barriers along Wilson Avenue, Etiwanda Avenue and East Avenue. The barriers range in height from 3.0 to 6.5-feet. These barriers' ends will need

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to "wrap-around" to ensure no noise will flank from the sides. Exhibit C-2 illustrates the noise barrier locations and heights in detail.

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# INTERIOR AREA NOISE EXPOSURE ANALYSIS AND CONTROL

Interior noise exposure is the difference between the projected exterior dBA CNEL at the structure's facade and the noise reduction effects of the structure itself. Typical building construction will provide approximately 12 dBA noise reduction with "windows open" and a minimum 20 dBA noise reduction with "windows closed".

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The results of this preliminary analysis indicate that some lots (lots facing subject roadways) will require a noise reduction of up to 21.9 dBA CNEL. "Windows closed" conditions have been recommended for some lots (Exhibit C-2). This method of mitigation will require a means of mechanical ventilation (i.e. air conditioning) at the corresponding lots. However it is suspected that this level of mitigation will not be adequate for all lots. Lots needing further mitigation may require upgraded windows (with STC ratings >25) to meet the City's standards.

The final interior noise exposure for this project will be determined at the time of building permit application, when a final acoustical report will need to be prepared. The final noise study will evaluate the affects of the precise building placement, building design and materials used for construction. That report will make recommendations for any necessary building upgrades or other requirements necessary to meet the 45 dBA CNEL interior noise standard.

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### **CONCLUSIONS**

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A preliminary acoustical analysis and design has been completed for the proposed TTM 16072 project. The analysis indicates that the future noise environment is expected to be dominated be vehicle noise from Wilson Avenue, Etiwanda Avenue and East Avenue. The noise control findings show that the residential 60 dBA CNEL outdoor noise exposure limit is expected to be met with the implementation of the recommended mitigation contained in this report. Compliance with the 45 dBA CNEL interior noise standard will be met with the recommended noise control measures in this and the final acoustical study.

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The analysis and design presented in this report comply with applicable City of Rancho Cucamonga requirements for control of community noise impacts for outdoor/indoor living areas.

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# APPENDIX A

# GLOSSARY OF ACOUSTICAL TERMS

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### APPENDIX A

### GLOSSARY OF ACOUSTICAL TERMS

A-WEIGHTED SOUND LEVEL. The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter deemphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

AMBIENT NOISE LEVEL. The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL). The average equivalent Aweighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7 p.m. to 10 p.m. and after addition of ten (10) decibels to sound levels in the night before 7 a.m. and after 10 p.m.

DECIBEL (dB). A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A). A-weighted sound level (see definition above).

EQUIVALENT SOUND LEVEL (LEQ). The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

HABITABLE ROOM. Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms and similar spaces.

L(n). The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly L50, L90, L99 etc.

NOISE. Any unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

OUTDOOR LIVING AREA. Outdoor spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, etc. associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included in this definition are: front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and, outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas).

PERCENT NOISE LEVELS. See L(n).

SOUND LEVEL (NOISE LEVEL). The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

SOUND LEVEL METER. An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

SINGLE EVENT NOISE EXPOSURE LEVEL (SENEL). The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

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# APPENDIX B

# CITY OF RANCHO CUCAMONGA NOISE STANDARDS

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# Land Use Compatiblity - Noise Environments

# FIGURE V - 10 LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE Ldn or CNEL, db					
	55	60	65	70	75	80
Residential - Low Density Single Family, Duplex, Mobile Homes						
Residential - Multiple Family						
Transient Lodging - Motels, Hotels						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls						
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						

### INTERPRETATION

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

<u>Conditionally Acceptable</u>: 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. Outdoor environment will seem noisy. Potentially 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. Outdoor areas must be shielded.

**Normally Unacceptable:** New construction or development should generally not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.

- If site planning, architectural layout, noise barriers, or a combination of these measures do not achieve the required noise reduction for the building in question, it may be necessary to modify the building's construction. Indoor noise levels due to exterior sources are controlled by the noise reduction characteristics of the building shell. The walls, roof, ceilings, doors, windows and other penetrations are all determinants of the structure's overall noise reduction capabilities.
- The City has adopted a Noise Ordinance which address systems, mechanical construction equipment, barking dogs, etc.
- The City shall review federal and state noise control legislation and support legislation which is in the best interests of the City.
- The City should work closely with Caltrans to reduce levels along the state highways and freeways through the City. The new transportation facility in the Foothill Freeway corridor should include a minimum of 10 dB of noise attenuation in its design.
- The City shall establish noise abatement policies for each new road and for those areas of the City where future land uses would be incompatible with the noise environment. These measures could include the erection of walls or berms, restriction of building multi-story dwellings within fixed distances of the roads, using open space as a buffer, site planning or architectural treatments.
- The City should work with the surrounding communities to ensure compliance with the land use and noise compatibility goals and objectives contained in this Noise

Element at City boundaries.

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The City shall monitor and comment on any proposed changes in Ontario International Airport's operation which would affect noise levels in Rancho Cucamonga.

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# APPENDIX C

CNEL COMPUTER PRINTOUTS

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### FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT :	TTM 1607;	2 - RANCHO C	UCAMONG	A		JOB #:	1058-02-01
ROADWAY :	WILSON AV	VENUE				DATE :	03-Oct-02
LOCATION:	LOT 17 - E	BY (NO WALL)				BY:	MIKE ROSA
<u> </u>	· · · · · · · · · · · · · · · · · · ·						
ADT =	13,000					PK HR VOL :	= 1,300
SPBED =	40						
PK HR % =	10						
CTL DIST=	101						
DIST N/F=	46	(M=76,P=52,	S=36,C=	=12)	AUTO SLE (	DISTANCE =	99.69
DT WALL=	96				MED TRUCK	SLE DIST=	99.38
DT W∕OB≠	5				HVY TRUCK	SLE DIST=	98.88
HTH WALL=	0.0	*******					
OBS HTH=	5.0						
AMBIENT=	0.D						
ROADWAY VII	EW:	LF ANGLE=	-90				
		RT ANGLE=	90				
		DF ANGLE=	180				
SITE CONDIT	rions (10=	HARD SITE,	15=SOFT	SITE)			
AUTOMOBILI	ES =	10					
MEDIUM TRU	UCKS =	10			GRADE ADJI	JSTMENT=	0.00
HEAVY TRUC	CKS =	10			(ADJUSTMEN	TT TO HEAVY	TRUCKS)
BARRIER =	0	(0=WALL.1=E	ERM)		•		
PAD EL =	1684.8		· · · ·		EL AUTOMOR	ILES =	1673.5
ROAD EL =	1671.5				EL MEDIUM	TRUCKS=	1675.5
GRADE =	0.0	ŧ			EL HEAVY I	RUCKS =	1679.5
				D-11			
VEHICLE TYP	?E			DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	}	<u> </u>	<u> </u>	0.775	0.129	0.096	0.9742
MEDIUM TRUC	:KS			0.848	0.049	0.103	0.0184
HEAVY TRUCK	s			0.865	0.027	0.108	0.0074
		NOISE IMPAC	TS WITH	OUT TOPO	O OR BARRIE	R SHIELDING	1
			_				

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.0	62.1	60.3	54.3	63.5
MEDIUM TRUCKS LEQ	55.7	54.2	47.9	46.3	55.0
HEAVY TRUCKS LEQ	56.6	55.2	46.2	47.4	55.9
VEHICULAR NOISE	65.2	63.5	60.7	55.6	64.7

#### NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

PK HR LEQ	DAY	ΓΕΟ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 65.2		63.5	60.7	55.6	64.7
			W/O AMBIEN	IT	W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=		65.2		65.2
MIT PK HR LEQ WITH TOPO AND BARRIER	=		65.2	*****	65.2
CNEL WITHOUT TOPO AND BARRIER	=		64.7		64.7
MIT CNEL WITH TOPO AND BARRIER	=		64.7	******	64.7

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PROJECT: TTM 1607	2 - RANCHO CUC	AMONGA		JOB #:	1058-02-01
ROADWAY: WILSON A	VENUE			DATE :	03-Oct-02
LOCATION: LOT 17 -	BY (WITH WALL)			BY:	MIKE ROSA
ADT = 13,000				PK HR VOL =	1,300
SPEED = 40					
PK HR % = 10					
CTL DIST= 101					
DIST N/F= 46	(M=76,P=52,S	=36,C=12)	AUTO SLE	DISTANCE =	99.56
DT WALL= 96			MED TRUCK	SLE DIST=	99.25
DT ₩/OB= 5			HVY TRUCK	SLE DIST-	98.74
HTH WALL= 4.5	******				
OBS HTH= 5.0					
AMBIENT= 0.0					
ROADWAY VIEW:	LF ANGLE=	-90			
	RT ANGLE=	90			
	DF ANGLE=	180			
SITE CONDITIONS (10	=HARD SITE, 15	=SOFT SITE)			
AUTOMOBILES =	10				
MEDIUM TRUCKS =	10		GRADE ADJ	USTMENT=	0.00
HEAVY TRUCKS =	10		(ADJUSTME	NT TO HEAVY	TRUCKS)
BARRIER =	0 (0=WALL,1=BEH	(M)			
PAD EL = 1684.8			EL AUTOMO	BILES =	1673.5
ROAD EL = 1671.5			EL MEDIUM	TRUCKS=	1675.5
GRADE = 0.0	£		EL HEAVY	TRUCKS =	1679.5
VEHICLE TYPE		DAY	evening	NIGHT	DAILY
AUTOMOBILES		0 775	0 129	0.096	0.9742
MEDIUM TRUCKS		0.848	0.049	0.103	0.0184
HEAVY TRUCKS		0.865	0.027	0,108	0.0074
	<b></b>		····	<u>    .                                </u>	<u> </u>
	NOISE IMPACTS	WITHOUT TOP	O OR BARRI	ER SHIELDING	3
	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.0	62.1	60 3	54.3	63.5
			00.5	••••	
MEDIUM TRUCKS LEQ	55.7	54.2	47.9	46.3	55.0
MEDIUM TRUCKS LEQ HEAVY TRUCKS LEQ	55.7 56.6	54.2 55.2	47.9 46.2	46.3 47.4	55.0 55.9
MEDIUM TRUCKS LEQ HEAVY TRUCKS LEQ VEHICULAR NOISE	55.7 56.6 65.2	54.2 55.2 63.5	47.9 46.2 60.7	46.3 47.4 55.6	55.0 55.9 64.7
MEDIUM TRUCKS LEQ HEAVY TRUCKS LEQ VEHICULAR NOISE	55.7 56.6 65.2 NOISE IMPACTS	54.2 55.2 63.5 WITH TOPO A	47.9 46.2 60.7 ND BARRIER	46.3 47.4 55.6 SHIELDING	55.0 55.9 64.7
MEDIUM TRUCKS LEQ HEAVY TRUCKS LEQ VEHICULAR NOISE	55.7 56.6 65.2 NOISE IMPACTS PK HR LEO	54.2 55.2 63.5 WITH TOPO A DAY LSO	47.9 46.2 60.7 ND BARRIER	46.3 47.4 55.6 SHIELDING NIGHT LEQ	55.0 55.9 64.7 CNEL
MEDIUM TRUCKS LEQ HEAVY TRUCKS LEQ VEHICULAR NOISE	55.7 56.6 65.2 NOISE IMPACTS PK HR LEQ 60.3	54.2 55.2 63.5 WITH TOPO A DAY LSQ 58.5	47.9 46.2 60.7 ND BARRIER EVEN LEQ 55.8	46.3 47.4 55.6 SHIELDING NIGHT LEQ 50.7	55.0 55.9 64.7 CNEL 59.7
MEDIUM TRUCKS LEQ HEAVY TRUCKS LEQ VEHICULAR NOISE	55.7 56.6 65.2 NOISE IMPACTS PK HR LEQ 60.3	54.2 55.2 63.5 WITH TOPO A DAY LSQ 58.5	47.9 46.2 60.7 ND BARRIER EVEN LEQ 55.8 W/O AMBIEI	46.3 47.4 55.6 SHIELDING NIGHT LEQ 50.7	55.0 55.9 64.7 CNEL 59.7 W/ AMBIENT
MEDIUM TRUCKS LEQ HEAVY TRUCKS LEQ VEHICULAR NOISE VEHICULAR NOISE PK HR LEO WITHOUT TO	55.7 56.6 65.2 NOISE IMPACTS PK HR LEQ 60.3	54.2 55.2 63.5 WITH TOPO A DAY LSQ 5B.5	47.9 46.2 60.7 ND BARRIER EVEN LEQ 55.8 W/O AMBIEI 65.2	46.3 47.4 55.6 SHIELDING NIGHT LEQ 50.7	55.0 55.9 64.7 CNEL 59.7 W/ AMBIENT 65.2
MEDIUM TRUCKS LEQ HEAVY TRUCKS LEQ VEHICULAR NOISE VEHICULAR NOISE PK HR LEQ WITHOUT TO MIT PK HR LEO WITH T	55.7 56.6 65.2 NOISE IMPACTS PK HR LEQ 60.3 DPO OR BARRIER	54.2 55.2 63.5 WITH TOPO A DAY LSQ 58.5 =	47.9 46.2 60.7 ND BARRIER EVEN LEQ 55.8 W/O AMBIEN 65.2 60.3	46.3 47.4 55.6 SHIELDING NIGHT LEQ 50.7 NT	55.0 55.9 64.7 CNEL 59.7 W/ AMBIENT 65.2 60.3
MEDIUM TRUCKS LEQ HEAVY TRUCKS LEQ VEHICULAR NOISE VEHICULAR NOISE PK HR LEQ WITHOUT TO MIT PK HR LEQ WITH T CNEL WITHOUT TOPO AN	55.7 56.6 65.2 NOISE IMPACTS PK HR LEQ 60.3 DPO OR BARRIER COPO AND BARRIER	54.2 55.2 63.5 WITH TOPO A DAY LSQ 58.5 = ER =	47.9 46.2 60.7 ND BARRIER EVEN LEQ 55.8 W/O AMBIEL 65.2 60.3 64.7	46.3 47.4 55.6 SHIELDING NIGHT LEQ 50.7 NT	55.0 55.9 64.7 CNEL 59.7 W/ AMBIENT 65.2 60.3 64.7

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### FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT:	TTM 1607	2 - RANCHO CI	JCAMONGA		JOB #:	1058-02-01
ROADWAY:	WILSON A	VENUE			DATE :	03-Oct-02
LOCATION:	LOT 17 -	1ST PLOOR FACE	DE (WITH WALL)		BY:	MIKE ROSA
ADT =	13,000				PK HR VOL	÷ 1,300
SPEED =	40					
PK HR % =	10					
CTL DIST=	121					
DIST N/F=	46	(M≠76,P=52,	S=36,C=12)	AUTO SLE	DISTANCE =	119.62
DT WALL=	96			MED TRUC	K SLE DIST=	119.30
DT W/OB=	25			HVY TRUC	K SLÉ DIST=	118.78
HTH WALL=	4.5	******				
OBS HTH=	5.0					
AMBIENT=	0.0					
ROADWAY VIE	W:	LF ANGLE=	- 90			
		RT ANGLE=	90			
		DF ANGLE=	180			
SITE CONDIT	IONS (10	=HARD SITE, 1	5≈SOFT SITE)			
AUTOMOBILE	<b>S</b> =	10				
MEDIUM TRU	CKS =	10		GRADE AD	JUSTMENT=	0.00
HEAVY TRUC	KS =	10		(ADJUSTMI	ENT TO HEAVY	TRUCKS)
BARRIER =		0 (0±WALL,1=B	ERM)			
PAD EL =	1685.3			EL AUTOMO	BILES =	1673.5
ROAD EL =	1671.5			EL MEDIUN	I TRUCKS=	1675.5
GRADE =	0.0	¥		EL HEAVY	TRUCKS =	1679,5
VEHICLE TYPE	2		DAY	EVENING	; NIGHT	DAILY
						5 6 7 4 6
AUTOMOBILES			0.775	0.129	0.096	0,9742
MEDIUM TRUCK	s		0.848	0.049	0.103	0.0184
HEAVY TRUCKS	5		0.865	0.027	0.108	0.0074
		NOISE IMPACT	IS WITHOUT TOPO	OR BARRI	ER SHIELDING	
		PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES	LEQ	63.2	61,3	59. <b>5</b>	53.5	62.7
MEDIUM TRUCK	S LEQ	54.9	53.4	47.1	45.5	54.2
HEAVY TRUCKS	LEQ	55.8	<b>54</b> .4	45.4	46.6	55.1
VEHICULAR NO	ISE	64.4	62.7	59.9	54.8	63.9
		NOISE IMPACT	'S WITH TOPO AN	D BARRIER	SHIELDING	<u></u>
		PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NO	ISE	57.8	56.0	53.3	48.2	57.2

	<b>W</b> /O	AMBIENT	W	/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=	64.4		64.4
MIT PK HR LEQ WITH TOPO AND BARRIER	=	57.8	******	57.8
CNEL WITHOUT TOPO AND EARRIER	=	63.9		63.9
MIT CNEL WITH TOPO AND BARRIER	=	57.2	******	57.2

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# FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT:	TTM 1607:	2 - RANCHO CUCAMONG	A		JOB #:	1058-02-01
ROADWAY:	WILSON AV	VENUE			DATE:	03-Oct-02
LOCATION:	LOT 17 - :	2ND FLOOR FACADE (WIT	H WALL)		BY:	MIKE ROSA
ADT =	13,000	· · ····		<u> </u>	PK HR VOL	÷ 1,300
SPEED =	40					
PKHR ≹ ≃	10					
CTL DIST=	121					
DIST N/F=	46	(M=76,P=52,S=36,C=	=12)	AUTO SLE D	ISTANCE =	121.78
DT WALL=	96			MED TRUCK	SLE DIST=	121,36
DT W/OB=	25			HVY TRUCK	SLE DIST≍	120.60
HTH WALL=	4.5	****		,		
OBS HTH=	15.0					
AMBLENT=	0.0					
ROADWAY VI	CW :	LF ANGLE≠ -90				
		RT ANGLE= 90				
		DF ANGLE= 180				
SITE CONDIT	10NS (10=	HARD SITE, 15=SOFT	SITE)			
AUTOMOBILE	CS =	10				
MEDIUM TRU	JCKS =	10		GRADE ADJU	STMENT=	0.00
HEAVY TRUC	:KS =	10		(ADJUSTMEN	T TO HEAVY	TRUCKS)
BARRIER =	0	(0≠WALL,1=BERM)				
PAD EL =	1685.3			EL AUTOMOB	ILES =	1673,5
ROAD EL =	1671.5			EL MEDIUM	TRUCKS=	1675.5
GRADE =	0.0	\$		EL HEAVY T	RUCKS =	1679.5
VEHICLE TYP	E		DAY	EVENING	NIGHT	DAILY
AUTOMOBILES			0.775	0.129	0.096	0.9742
MEDIUM TRUC	K5		0.848	0.049	0.103	0.0184
HEAVY TRUCK	5		0.865	0.027	0.108	0.0074

#### NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.1	61.2	59.5	53.4	62.6
MEDIUM TRUCKS LEQ	54.9	53.3	47.0	45.4	54.1
HEAVY TRUCKS LEQ	55.8	54.4	45.3	46.6	55.0
					<u>.</u>
VEHICULAR NOISE	64.4	62.6	59.9	54.8	63.8

#### NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK HR LEQ	DAY	LEQ	EVEN	LEQ	NIGHT LEQ		CNEL
VEHICULAR NOISE	64.4		<b>6</b> 2.6		59.9	54.B		63.8
				W/O	AMBIEN	гт	w/	AMBIENT
PK HR LEQ WITHOUT	TOPO OR BARRIER	=			64.4			64.4
MIT PK HR LEQ WITH	TOPO AND BARRIER	=			64.4	******		64.4
CNEL WITHOUT TOPO	AND BARRIER	×			63.8			63.8
MIT CNEL WITH TOPO	AND BARRIER	=			63.8	*****		63.8

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# NOISE LEVEL ADDITION (dBA) LOT 18 - WILSON AVENUE AND ETIWANDA AVENUE

BACKYARD (NO WALL)	NOISE LEVEL (dBA)	10 <sup>^</sup> dBA/10
WILSON AVENUE	63.6	2,290,867.7
ETIWANDA AVENUE	66.6	4,570,881.9
TOTAL NOISE LEVEL (dBA) =	68.4	6,861,749.5

BACKYARD (W/WALL)	NOISE LEVEL (dBA)	10 <sup>^</sup> dBA/10
WILSON AVENUE (6' WALL) ETIWANDA AVENUE (6.5' WALL)	56.0 57.3	398,107.2 537,031.8
TOTAL NOISE LEVEL (dBA) =	59.7	935,139.0

1ST FLOOR FAÇADE (W/WALL)	NOISE LEVEL (dBA)	10 <sup>^</sup> dBA/10
WILSON AVENUE (6' WALL)	54.5	281,838.3
ETIWANDA AVENUE (6.5' WALL)	55.1	323,593.7
TOTAL NOISE LEVEL (dBA) =	57.8	605,432.0

2ND FLOOR FAÇADE (W/WALL)	NOISE LEVEL (dBA)	10 <sup>^</sup> dBA/10
WILSON AVENUE (6' WALL)	62.8	1,905,460.7
ETIWANDA AVENUE (6.5' WALL)	<b>64</b> .8	3,019,951.7
TOTAL NOISE LEVEL (dBA) =	66.9	4,925,412.4

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	6072	NOVOR	· · ·	TOD #	1058 02 01
PRODUCT: 110 2	BUTZ - KANCHU CUCA	MONGA			1058-02-01
LOCATION. LOT N	IN AVENUE			DATE:	U3-UCC-U2
DOCATION: DOI 10	8 - HI (NO WALL)			BI:	MIKE KUSA
ADT = 13,	000			PK HR VOL =	= 1,300
SPEED =	40				
PK HR ¥ ≕	10				
CTL DIST=	108				
DIST N/F=	46 (M=76,P=52,S=3	36,C=12)	AUTO SLE	DISTANCE =	107.13
DT WALL=	103		MED TRUCK	SLE DIST=	105.80
DT W/OB=	5		HVY TRUCK	C SLE DIST=	106.26
HTH WALL=	0.0 *******				
OBS HTH=	5.0				
AMBIENT=	0.0				
ROADWAY VIEW:	LF ANGLE= -	90			
	RT ANGLE=	50			
	DF ANGLE= 19	50			
SITE CONDITIONS	(10=HARD SITE, 15=	SOFT SITE)			
AUTOMOBILES =	10				
MEDIUM TRUCKS =	10		GRADE ADJ	TUSTMENT =	0.00
HEAVY TRUCKS =	10		(ADJUSTME	NT TO HEAVY	TRUCKS)
BARRIER =	0 (0=WALL,1=BERM	1)			
PAD EL = $168$	5.5		EL AUTOMO	BILES =	1672.0
ROAD EL = 1670	0.0		EL MEDIUM	TRUCKS=	1674.0
GRADE =	1.0 %		EL HEAVY	TRUCKS =	1678.0
VEHICLE TYPE		DAY	EVENING	S NIGHT	DAILY
AUTOMOBILES	<del></del>	<u> </u>	0 129	0.096	0 9742
MEDIUM TRUCKS		0.848	0.129	0.103	0.0184
HEAVY TRUCKS		0.865	0.027	0.108	0.0074
		•••••			
	NOISE IMPACTS	WITHOUT TOP	O OR BARRI	ER SHIELDING	
				<u> </u>	
	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBTLES LEQ	62.9	61.0	59.2	53,2	62.4
MEDIUM TRUCKS LEC	2 54.6	53.1	46.7	45.2	53.9
HEAVY TRUCKS LEQ	55.5	54.1	45.1	46.3	54.8
VEHICULAR NOISE	64.1	62.4	59.6	54.5	63.6
	NOISE IMPACTS	WITH TOPO A	ND BARRIER	SHIELDING	
VENTOIN AD NOTEE	PK HK LEQ	DAI LEO	EVEN DEQ	NIGHT LEQ	CNEL 63 6
VEHICULAR NOISE	64.1	62.4	59.0	54.5	6J.0
			W/O AMBIE	NT	W/ AMBIENT
PK HR LEQ WITHOUT	TOPO OR BARRIER	=	64.1		64.1
MIT PK HR LEQ WIT	H TOPO AND BARRIER	=	64.1	******	64.1
CNEL WITHOUT TOPO	AND BARRIER	=	63.6		63.6
MIT CNEL WITH TOP	O AND BARRIER	=	63.6	******	63.6

VEHICULAR NOISE

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### FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT :	TTM 1607	2 - RANCHO C	UCAMONGA		JOB #:	1058-02-01
ROADWAY:	WILSON AV	VENUE			DATE:	03-Oct-02
LOCATION:	LOT 18 - 1	BY (WITH WALL)			ВΥ:	MIKE ROSA
ADT =	13,000				PK HR VOL =	÷ 1,300
SPEED =	40					
PK HR % =	10					
CTL DIST=	109					
DIST N/F=	46	(M=76,P=52,	S=36,C=12)	AUTO SLE	DISTANCE =	107.37
DT WALL=	103			MED TRUCK	SLE DIST=	107.01
DT W/OB=	5			HVY TRUCK	SLE DIST=	106.40
HTH WALL=	6.0	******				
OBS HTH=	5.0					
AMBIENT=	0.0					
ROADWAY VI	EW :	LF ANGLE=	-90			
		RT ANGLE=	60			
		DF ANGLE=	150			
SITE CONDI	TIONS (10-	-HARD SITE, 1	15=SOFT SITE)			
AUTOMOBIL	ES =	10				
MEDIUM TR	UCKS =	10		GRADE ADJ	USTMENT=	0.00
HEAVY TRU	CKS =	10		(ADJUSTME	NT TO HEAVY	TRUCKS)
BARRIER =	0	(0=WALL,1=B	ERM)			
PAD EL =	1685.5			EL AUTOMO	BILES =	1672.0
ROAD EL =	1670.0			EL MEDIUM	TRUCKS=	1674.0
GRADE =	1.0	<del>\</del>		EL HEAVY	TRUCKS =	1678.0
VEHICLE TY	PE		DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	5	···	0.775	0.129	0.096	0,9742
MEDIUM TRUC	CKS		0.848	0.049	0.103	0.0184
HEAVY TRUCK	KS .		0.865	0.027	0.108	0.0074
		NOISE IMPACT	IS WITHOUT TOP	O OR BARRIN	R SHIELDING	
		PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES	5 LEQ	62.9	61.0	59.2	53.2	62.4
MEDIUM TRUC	CKS LEQ	54.6	53.1	46.7	45.2	53.9
HEAVY TRUCK	(S LEQ	55.5	54.1	45.1	46.3	54.8

64.1

notan	THORN CHECK		mana	B 3175	DEDDITED	OUTDINT
NOISE	IMPACTS	WITH	TOPO	ANU	BAKKIER	SHIELDING

62.3

59.6

54.5

63.6

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 56.5		54.7	52.0	46.9	56.0
			W/O AMBIEN	VT W	/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=		64.1		64.1
MIT PK HR LEQ WITH TOPO AND BARRIER	. =		56.5	*****	56.5
CNEL WITHOUT TOPO AND BARRIER	=		63.6		63.6
MIT CNEL WITH TOPO AND BARRIER	-		56.0	******	56.0

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FHWA-RD-77-108	HIGHWAY	NOISE	PREDICTION	MODEL	(CALVENO)

PROJECT :	TTM 1607	2 - RANCHO C	UCAMONG	A		JOB #:	1058-02-01
ROADWAY :	WILSON AV	VENUE				DATE:	03-Oct-02
LOCATION:	LOT 18 - 1	ST FLOOR FACA	DE (WIT)	WALL)		BY:	MIKE ROSA
ADT =	13,000					PK HR VOL -	= 1,300
SPEED =	40						
PK HR % =	10						
CTL DIST≂	128						
DIST N/F=	46	(M=76,P=52,	S=36,C=	12)	AUTO SLE I	DISTANCE =	127.39
DT WALL=	103				MED TRUCK	SLE DIST=	127.02
DT W/OB=	25				HVY TRUCK	SLE DIST=	126.39
HTH WALL=	6.0	** * * * * * *					
OBS HTH=	5.0						
AMBIENT=	0.0						
ROADWAY VIE	: W	LF ANGLE=	-90				
		RT ANGLE=	60				
		DF ANGLE=	150				
SITE CONDIT	IONS (10=	HARD SITE, 3	L5=SOFT	SITE)			
AUTOMOBILE	S =	10					
MEDIUM TRU	CKS =	10			GRADE ADJI	JSTMENT=	0.00
HEAVY TRUC	KS =	10			(ADJUSTMEN	IT TO HEAVY	TRUCKS }
BARRIER =	0	(0=WALL,1=B	ERM)				
PAD EL =	1686.0				EL AUTOMOE	ILES =	1672.0
ROAD EL =	1670.0				EL MEDIUM	TRUCKS=	1674.0
GRADE =	1.0	¥			el heavy t	RUCKS =	1678.0
VEHICLE TYP	Е			DAY	EVENING	NIGHT	DAILY
AUTOMOBILES				0.775	0.129	0.096	0.9742
MEDIUM TRUC	KS			0.848	0.049	0.103	0.0184
HEAVY TRUCK	5			0.865	0.027	0.108	0.0074
		NOISE IMPACT	rs with	OUT TOP	O OR BARRIE	R SHIELDING	3

	PK HR LEQ	DAY LEQ E	VEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	62.1	60.2	58.5	52.4	61.6
MEDIUM TRUCKS LEQ	53.9	52.4	46.0	44.5	53.1
HEAVY TRUCKS LEQ	54.8	53.4	44.3	45.6	54.1
VEHICULAR NOISE	63.4	61.6	58.9	53.8	62.8

# NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	PK	HR LEQ	DAY	LEQ	EVEN L	EQ NIGHT	LEQ	CNEL
VEHICULAR N	OISE	55.0		53.2	50	).5	45.4	54.5
					W/O AM	BIENT	W/	AMBIENT
PK HR LEQ W	ITHOUT TOPO	OR BARRIER	=		63	3.4		63.4
MIT PK HR L	EQ WITH TOPO	AND BARRIER	=		55	5.0 **	****	55.0
CNEL WITHOUT	T TOPO AND B.	ARRIER	=		62	2.8		62.8
MIT CNEL WI	TH TOPO AND	BARRIER	=		54	1.5 **	*****	54.5

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### FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT: TTM 1	6072 - RANCHO CUCAMONGA		JOB #:	1058-02-01
ROADWAY: WILSO	N AVENUE		DATE:	03-Oct-02
LOCATION: LOT 18	- 2ND FLOOR FACADE (WITH WAL	ե)	BY:	MIKE ROSA
ADT = 13,	000	•	PK HR VOL	= 1,300
SPEED =	40			
PKHR & =	10			
CTL D1ST=	128			
DIST N/F=	46 (M=76,P=52,S=36,C=12)	AUTO SLE	DISTANCE =	129.21
DT WALL=	103	MED TRUCK	( SLE DIST=	128.78
DT W/OB=	25	HVY TRUCK	SLE DIST=	128.00
HTH WALL=	5-0 ******			
OBS HTH= 19	5.0			
AMBIENT=	0.0			
ROADWAY VIEW:	LF ANGLE= -90			
	RT ANGLE= 60			
	DF ANGLE= 150			
SITE CONDITIONS	(10=HARD SITE, 15=SOFT SITE	2)		
AUTOMOBILES =	10			
MEDIUM TRUCKS =	10	GRADE ADJ	USTMENT=	0.00
HEAVY TRUCKS =	10	(ADJUSTME	NT TO HEAVY	TRUCKS)
BARRIER =	0 (Q=WALL, 1=BERM)			
PAD EL = 1686	i. <b>0</b>	EL AUTOMO	BILES =	1672.0
ROAD EL = 1670	1.0	EL MEDIUM	TRUCKS=	1674.0
GRADE = 0	0 %	EL HEAVY	TRUCKS =	1678.0
VEHICLE TYPE		day Evening	NIGHT	DAILY
AUTOMOBILES	0.7	75 0.129	0.096	0.9742
MEDIUM TRUCKS	0.8	48 0.049	0.103	0.0184
HEAVY TRUCKS	0.8	55 0.027	0.108	0.0074
	NOISE IMPACTS WITHOUT	TOPO OR BARRI	ER SHIELDING	
		EVEN I BO	NTONT LEO	(3)[2]
NEROMORTI DA LEO		а С пари ПрЛ	HIGHT DEA	CMELL 21 2
NETTIN TOUGHT PO METTIN TOUGHT PO		2 30.4 2 45 9	22.3 44 A	01.0 53 1
NEATAN TENCKS FEG	, 53.0 54 54 57 53	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	44.4 AE C	
UDMAI IKUCVO PEŌ	54./ 53		42.3	94.V
VEHICULAR NOISE	63.3 61	.5 58.8	53.7	62.8

#### NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 63.3		61.5	58.8	53.7	62.8
			W/O AMBIEN	Γ	W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=		63.3		63.3
MIT PK HR LEQ WITH TOPO AND BARRIER	=		63.3	******	63.3
CNEL WITHOUT TOPO AND BARRIER	=		62.8		62.8
MIT CNEL WITH TOPO AND BARRIER	=		62.8	******	62.B

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1/9/2024 Board Meeting 7-10 Attachment 4 FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

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PROJECT: TTM 160	72 - RANCHO CUC	AMONGA	· · ·	JOB #:	1058-02-01
ROADWAY: ETIWAND	A AVENUE			DATE:	03-Oct-02
LOCATION: LOT 18 -	BY (NO WALL)			BY:	MIKE ROSA
ADT = 8,000	)		······	PK HR VOL =	800
SPEED = 40	)				
PK HR % = 10	)				
CTL DIST= 42	<u>!</u>				
DIST N/F= 22	2 (M=76,P=52,S=	36,C=12)	AUTO SLE	DISTANCE =	41.87
DT WALL= 37	2		MED TRUCK	SLE DIST=	41.42
DT W/OB= 5	i		HVY TRUCK	SLE DIST=	40.78
HTH WALL= 0.0	) *******				
OBS HTH= 5.0	)				
AMBIENT= 0.0	)				
ROADWAY VIEW:	LF ANGLE= -	90			
	RT ANGLE=	90			
	DF ANGLE= 1	.80			
SITE CONDITIONS (10	=HARD SITE, 15:	SOFT SITE)			
AUTOMOBILES =	10				
MEDIUM TRUCKS =	10		GRADE ADJ	USTMENT=	1,75
HEAVY TRUCKS =	10		(ADJUSTME	NT TO HEAVY	TRUCKS)
BARRIER =	0 ( $0 = WALL$ , $1 = BER$	M)			
PAD EL = 1685.5			EL AUTOMO	BILES =	1680.0
ROAD EL = $1678.0$			EL MEDIUM	TRUCKS=	1682.0
GRADE = 6.0	8		EL HEAVY	TRUCKS =	1686.0
VEHICLE TYPE		DAY	EVENING	night	DAILY
AUTOMOBILES	· · · · · ·	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	-	0.848	0.049	0.103	0.0184
HEAVY TRUCKS		0.865	0.027	0.108	0.0074
	NOISE IMPACTS	WITHOUT TOP	O OR BARRI	ER SHIELDING	3
	PK HR LEO	DAY LEO	EVEN LEO	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	65.7	63.8	62.0	55.9	65.2
MEDIUM TRUCKS LEQ	57.4	55.9	49.5	48.0	56.7
HEAVY TRUCKS LEQ	60.1	58.7	49.7	50.9	59.4
VEHICULAR NOISE	67.2	65.4	62.5	57.6	66.6
	NOISE IMPACTS	WITH TOPO A	ND BARRIER	SHIELDING	
	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	67.2	65.4	62.5	57.6	66.6

		W/O AMBIENT	W/	AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=	67.2		67.2
MIT PK HR LEQ WITH TOPO AND BARRIER	±	67.2	*****	67.2
CNEL WITHOUT TOPO AND BARRIER	=	66.6		66.6
MIT CNEL WITH TOPO AND BARRIER	=	66.6	******	66.6

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FHWA-RD-77-108	HIGHWAY	NOISE	PREDICTION	MODEL	(CALVENO)
	01	RANGE (	COUNTY		

I ROUDEI.	TTM 1607:	2 - RANCHO C	UCAMONG	A		JOB #:	1058-02-01
ROADWAY:	ETIWANDA	AVENUE				DATE:	03-Oct-02
LOCATION:	LOT 16 - 9	BY (WITH WALL)				BY:	MIKE ROSA
ADT =	8,000				· · · · · · · · ·	PK HR VOL	= 800
SPEED =	40						
PK HR 🕈 ±	10						
CTL DIST=	42						
DIST N/F=	22	(M=76,P=52,	S=36,C=	=12)	AUTO SLE D	ISTANCE =	42.53
DT WALL=	37				MED TRUCK	SLE DIST=	41.94
DT W/OB≃	5				HVY TRUCK	SLE DIST=	41.05
HTH WALL≈	6.5	******					
OBS HTH≃	5.0						
AMBIENT=	0.0						
ROADWAY VI	EW:	LF ANGLE=	-90				
		RT ANGLE=	90				
		DF ANGLE=	180				
SITE CONDI	TIONS (10=	HARD SITE, 1	5=SOFT	SITE)			
AUTOMOBIL	ES =	10					
MEDIUM TR	UCKS =	10			GRADE ADJU	STMENT=	1.75
HEAVY TRU	CKS =	10			(ADJUSTMEN	T TO HEAVY	TRUCKS)
<b>BARRIER</b> =	0	(0=WALL,1=B	ERM)				
PAD EL =	1685.5				EL AUTOMOB	ILES =	1680.0
ROAD EL =	1678.0				EL MEDIUM	TRUCKS=	1682.0
GRADE =	6.0	8			EL HEAVY T	RUCKS =	1686.0
VEHICLE TY	PE			DAY	EVENING	NIGHT	DAIL
				0.775	0.129	0.096	0.9742
AUTOMOBILES				0.848	0.049	0.103	0.0184
AUTOMOBILES	CKS						

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	65.6	63.7	61.9	55.9	65.1
MEDIUM TRUCKS LEQ	57.4	55.9	49.5	47.9	56.6
HEAVY TRUCKS LEQ	60.1	58.7	49.6	50.9	59.4
VEHICULAR NOISE	67.1	65.4	62.4	57.6	66.6

### NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

		PK HR	LEQ	DAY	LEQ	EVEN	LEQ	NIGHT LEQ		CNEL
VEHICULAR	NOISE		57.9		56.1		53.1	48.3	1	57.3
						W/O	AMBIEN	т	W/	AMBIENT
PK HR LEQ	WITHOUT TO	PO OR	BARRIER	-			67.1			67.1
MIT PK HR	LEQ WITH TO	NA OGC	D BARRIER	÷.			57.9	*****	*	57.9
CNEL WITH	OUT TOPO AND	D BARR	IER	=			66.6			66.6
MIT CNEL W	AITH TOPO AN	D BAR	RIER	=			57.3	*****	*	<b>57</b> .3

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### FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT: TTM	16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY: ETI	WANDA AVBNUE	DATE:	03-Oct-02
LOCATION: LOT	18 - 1ST FLOOR FACADE (WITH WALL)	ВΥ:	MIKE ROSA
ADT =	8,000	PK HR VOL	= 800
SPEED =	40		
PK HR % =	10		
CTL DIST∓	62		
DIST N/F=	22 (M=76,P=52,S=36,C=12) AUTO SLE	DISTANCE =	62.52
DT WALL=	37 MED TRUC	K SLE DIST=	61.90
DT W/OB≈	25 HVY TRUC	K SLE DIST=	60.96
HTH WALL=	6.5 ******		
OBS HTH=	5.0		
AMBIENT=	0.0		
ROADWAY VIEW:	LF ANGLE= -90		
	RT ANGLE= 90		
	DF ANGLE= 180		
SITE CONDITION.	S (10=HARD SITE, 15=SOFT SITE)		
MEDIIM TRUCKS		านอาจพระมาวิ	1 75
UPAUX TRUCKS	= 10  GRADE AD	DUSIMENI= DNT TO VENUV	T.75
DADDIED -	= 10  (ADSUSIN: 0 (0_WALL 1_DEPEN)	ENT TO HEAVE	IRUCKS/
DARKIEK - 1		ORTLES -	1680 0
POND EL = 14	200.0 EL ADION 200.0 EL ADION	UBIDEO = M TRICKC	1682 0
		דעונכערם= דעונכערם -	1686 D
GRADE -		IRUCKB =	1000.0
VEHICLE TYPE	DAY EVENIN	G NIGHI	DAILY
AUTOMOBILES	0.775 0.129	0.096	0.9742
MEDIUM TRUCKS	0.848 0.049	0.103	0.0184
HEAVY TRUCKS	0.865 0.027	0.108	0.0074
	NOISE IMPACTS WITHOUT TOPO OR BARR	IER SHIELDIN	G
	PK HR LEQ DAY LEQ EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEC	63.9 62.0 60.2	54.2	63.4
MEDIUM TRUCKS I	EQ 55.7 54.2 47.8	46.3	54.9
HEAVY TRUCKS LE	Q 58.4 57.0 47.9	49.2	57.7
VEHICULAR NOISE	65.5 63.7 60.7	55.9	64.9
	NOTCE THRACTE WITH TODO AND PEPATO		·
	NOISE IMPACIS WITH TOPO AND BARKIES	K SNIEDDING	

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 55.7		53.9	51.0	46.1	55.1
			W/O AMBIEN	T	W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	÷		65.5		65.5
MIT PK HR LEQ WITH TOPO AND BARRIER	÷		55.7	******	55.7
CNEL WITHOUT TOPO AND BARRIER	=		64.9		64.9
MIT CNEL WITH TOPO AND BARRIER	=		55.1	*****	55.1

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### FHWA-RD-77-108 HIGHWAY NOISE FREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT:	TTM 1607	2 - RANCHO C	UCAMONG	A		JOB <b>#</b> :	1058-02-01
ROADWAY: ETIWANDA AVENUE				03-Oct-02			
LOCATION:	LOT 18 - 2	IND FLOOR FACA	DE (WITH	( WALL)		MIKE ROSA	
ADT =	8,000					PK HR VOL =	- 800
SPEED =	40						
PK HR 🕈 =	10						
CTL DIST=	62						
DIST N/F=	22	(M=76,P=52,	S=36,C=	12)	AUTO SLE D	ISTANCE =	<b>6</b> 4.53
DT WALL=	37				MED TRUCK	SLE DIST=	63.91
DT W/OB=	25				HVY TRUCK	SLE DIST=	62.83
HTH WALL=	6.5	******					
OBS HTH=	15.0						
AMBIENT=	0.0						
ROADWAY VI	EW:	LF ANGLE=	-90				
		RT ANGLE=	90				
		DF ANGLE=	180	1			
SITE CONDI	TIONS (10=	HARD SITE,	15=SOFT	SITE)			
AUTOMOBIL	ES =	10					
MEDIUM TR	UCKS =	10			GRADE ADJU	STMENT=	1.75
HEAVY TRU	CKS =	10			(ADJUSTMEN	T TO HEAVY	TRUCKS)
BARRIER =	o	) (0=WALL,1=B	ERM)				
PAD EL =	1686.0				EL AUTOMOB	ILES =	1680.0
ROAD EL =	1678.0				EL MEDIUM 3	rrucks =	1682.0
GRADE =	6.0	£			EL HEAVY TH	RUCKS =	1686.0
VEHICLE TY	PE			DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	 S		<del></del>	0.775	0.129	0.096	0.9742
	CKS			0.848	0.049	0.103	0.0184
MEDIUM TRUC				0 965	0 027	0 109	0 0074

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHI LEQ	CNEL	
AUTOMOBILES LEQ	63.8	61.9	60.1	54.0	63.3	
MEDIUM TRUCKS LEQ	55. <b>5</b>	54.0	47.7	46.1	54.8	
HEAVY TRUCKS LEQ	58.2	56.8	47.8	49.0	57.5	

VEHICULAR NOISE	65.3	63.6	60.6	55.7	64.8

#### NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

PK H	R LEQ	DAY	LEQ	EVEN	LEQ NI	GHT LEQ		CNEL
VEHICULAR NOISE	65.3		63.6		60.6	55.7		64.8
				W/O /	AMBIENT		w/	AMBIENT
PK HR LEQ WITHOUT TOPO OR	BARRIER	=			65.3			65.3
MIT PK HR LEQ WITH TOPO A	ND BARRIER	-		I	65.3	******		65.3
CNEL WITHOUT TOPO AND BAR	RIER	=			64.8			64.8
MIT CNEL WITH TOPO AND BA	RRIER	-			64.8	*****		64.8
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# FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT: TTM 160	72 - RANCHO CUC	AMONGA		JOB #:	1058-02-01
ROADWAY: ETIWAND	A AVENUE			DATE :	03-Oct-02
LOCATION: LOT 19 -	BY (NO WALL)			BY:	MIKE ROSA
ADT = 8,000	)			PK HR VOL =	800 ≠ 800
SPEED = 40	)				
PK HR % = 10	)				
CTL DIST= 37	,				
DIST N/F= 22	2 (M=76,P=52,S=	36,C=12)	AUTO SLE	DISTANCE =	36.11
DT WALL= 32	2		MED TRUCK	SLE DIST=	35.75
DT W/OB=	5		HVY TRUCK	SLE DIST=	35.36
HTH WALL= 0.0	) *******				
OBS HTH= 5.0	)				
AMBIENT= 0.0	)				
ROADWAY VIEW:	LF ANGLE= -	90			
	RT ANGLE=	90			
	DF ANGLE= 1	80			
SITE CONDITIONS (10	)=HARD SITE, 15:	SOFT SITE)			
AUTOMOBILES =	10				
MEDIUM TRUCKS =	10		GRADE ADJ	USTMENT=	1.75
HEAVY TRUCKS =	10		(ADJUSTME	NT TO HEAVY	TRUCKS)
BARRIER =	0 (0=WALL, 1=BER	M)			
PAD EL = 1690.5	j		EL AUTOMO	BILES =	1688.0
ROAD EL = 1686.0			EL MEDIUM	TRUCKS=	1690.0
GRADE $=$ 6.0	¥		EL HEAVY	TRUCKS =	1694.0
VEHICLE TYPE		DAY	EVENING	S NIGHT	DAILY
AUTOMOBILES		0.775	0.129	0.096	0.9742
MEDIUM TRUCKS		0.848	0.049	0.103	0.0184
HEAVY TRUCKS		0.865	0.027	0.108	0.0074
	NOISE IMPACTS	WITHOUT TOP	O OR BARRI	ER SHIELDING	3
MITOMODILES 100	EK HR TRÖ	DAY LEQ	EVEN PEÖ	NIGHT LEQ	CNEL ZE D
AUTOMOBILES LEO	66.3	64.4	62.6	56.6	65.8
MEDIUM TRUCKS LEQ	58.1	56.5	50.2	48.6	51.3
HEAVY TRUCKS LEQ	60.7	59.3	50.3	51.5	60.0
VEHICULAR NOISE	67.8	66.1	63.1	58.3	67.3
	NOISE IMPACTS	WITH TOPO AN	VD BARRIER	SHIELDING	

	PK HR LEQ	DAY	LEQ	EVEN LEQ NIC	HT LEQ	CNEL
VEHICULAR NOISE	67.8		66.1	63.1	58.3	67.3
				W/O AMBIENT	W	/ AMBIENT
PK HR LEQ WITHOUT T	OPO OR BARRIER	=		67.B		67.8
MIT PK HR LEQ WITH	TOPO AND BARRIER	×		67.8	******	67.8
CNEL WITHOUT TOPO A	ND BARRIER	÷		67.3		67.3
MIT CNEL WITH TOPO	AND BARRIER	×		67.3	******	67.3

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# FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT: TTM 160	72 - RANCHO CU	JCAMONGA		JOB #:	1058-02-01
ROADWAY: ETIWAND	A AVENUE			DATE :	03-Oct-02
LOCATION: LOT 19 -	BY (WITH WALL)			BY:	MIKE ROSA
					·····
ADT = 9,000	)			PK HR VOL =	800
SPEED = 40	)				
PK HR % = 10	3				
CTL DIST= 37	7				
DIST N/F= 22	2 (M=76,P=52,	S=36,C=12)	AUTO SLE	DISTANCE =	36.33
DT WALL= 32	2		MED TRUCK	SLE DIST=	35.84
DT W/OB= 5	5		HVY TRUCK	SLE DIST≈	35.25
HTH WALL= 6.0	) *******				
OBS HTH= 5.0	)				
AMBIENT= 0.0	)				
ROADWAY VIEW:	LF ANGLE=	-90			
	RT ANGLE=	90			
	DF ANGLE=	180			
SITE CONDITIONS (10	)=HARD SITE, 1	5=SOFT SITE)			
AUTOMOBILES =	10				
MEDIUM TRUCKS =	10		GRADE ADJ	USTMENT=	1.75
HEAVY TRUCKS =	10		(ADJUSTME)	NT TO HEAVY	TRUCKS
BARRIER =	0 (0=WALL,1=B)	ERM)			
PAD EL = 1690.5	- •• ·		EL AUTOMO	BILES =	1688.0
ROAD EL = $1686.0$	J		EL MEDIUM	TRUCKS=	1690.0
GRADE = 6.0	*		EL HEAVY	TRUCKS =	1694.0
VEHICLE TYPE		DAY	EVENING	NIGHT	DAILY
AUTOMOBILES		0.775	0.129	0.096	0.9742
MEDIUM TRUCKS		0.848	0.049	0,103	0.0184
HEAVY TRUCKS		0.865	0.027	0.108	0.0074
	NOISE IMPACT	S WITHOUT TOP	O OR BARRIE	ER SHIELDING	
	PK HR LEO	DAY LEO	EVEN LEO	NTGUT LEO	CNEL
AUTOMOBILES LEO	66 3	64 4	62 6	56 5	65 g
MEDIUM TRUCKS LEO	58.0	56 5	50.2	48.6	57 3
WEAVY TRUCKS LEO	60.8	59 3	50.2	51 5	60.0
HEAT INCOM INC	00.0	37.5	50.5	51.5	00.0
VEHICULAR NOISE	67.8	66.1	63.1	58.2	67.3
				,	
	NOISE IMPACT	S WITH TOPO A	ND BARRIER	SHIELDING	
	PK HR LEO	DAY LEO	EVEN LEO	NIGHT LEO	CNEL
VEHICULAR NOISE	60.1	58.3	55.3	50.5	59.5
			20.0		52.1

	W/O	AMBIENT	W/	AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	-	67. <b>8</b>		67.8
MIT PK HR LEQ WITH TOPO AND BARRIER	=	60.1	******	60.1
CNEL WITHOUT TOPO AND BARRIER	<del></del>	67.3		67.3
MIT CNEL WITH TOPO AND BARRIER	-	59.5	******	59.5

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# FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT: TTM 160 ROADWAY: ETIWANI LOCATION: LOT 19	)72 - RANCHO CUC DA AVENUE - 1ST FLOOR FACADE	AMONGA (WITH WALL)		JOB #: DATE: BY:	1058-02-01 03-Oct-02 MIKE ROSA
ADT = 8,00	0			PK HR VOL =	800
SPEED = 4	0				
PK HR % = 1	0				
CTL DIST= 5	7				
DIST N/F= 2	2 (M=76,P=52,S=	36,C=12)	AUTO SLE	DISTANCE =	56.39
DT WALL= 3	2		MED TRUCK	SLE DIST=	55.87
DT W/OB= 2	5		HVY TRUCK	SLE DIST=	55.22
HTH WALL= $6$ .	0 *******				
OBS HTH= 5.	0				
AMBIENT= 0.	0				
ROADWAY VIEW:	LF ANGLE=	90			
	RT ANGLE=	90			
	DF ANGLE= 1	80			
SITE CONDITIONS (1	0=HARD SITE, 15	SOFT SITE)			
AUTOMOBILES =	10				
MEDIUM TRUCKS =	10		GRADE ADJ	USTMENT=	1.75
HEAVY TRUCKS =	10		(ADJUSTME	NT TO HEAVY	TRUCKS)
BARRIER =	0 (0:WALL,1=HER	M)			
PAD EL = 1691.0	D		EL AUTOMO	BILES =	1688.0
ROAD EL = $1686.0$	0		EL MEDIUM	TRUCKS=	1690.0
GRADE = 6.0	Drana de la constante de la c		EL HEAVY	TRUCKS =	1694.0
VEHICLE TYPE		DAY	EVENING	NIGHT	DAIL
AUTOMOBILES		0.775	0.129	0.096	0.9742
MEDIUM TRUCKS		0.848	0.049	0.103	0.0184
HEAVY TRUCKS		0.865	0.027	0.108	0.0074
	NOISE IMPACTS	WITHOUT TOP	O OR BARRI	ER SHIELDING	
	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	PK HR LEQ 64.4	DAY LEQ 62.5	EVEN LEQ 60.7	NIGHT LEQ 54.6	CNEL 63.9
AUTOMOBILES LEQ MEDIUM TRUCKS LEQ	PK HR LEQ 64.4 56.1	DAY LEQ 62.5 54.6	EVEN LEQ 60.7 48.2	NIGHT LEQ 54.6 46.7	CNEL 63.9 55.4
AUTOMOBILES LEQ MEDIUM TRUCKS LEQ MEAVY TRUCKS LEQ	PK HR LEQ 64.4 56.1 58.8	DAY LEQ 62.5 54.6 57.4	EVEN LEQ 60.7 48.2 48.3	NIGHT LEQ 54.6 46.7 49.6	CNEL 63.9 55.4 58.1

	Ē	KHR	LEQ	DAY	LEQ	EVEN	LEQ	NIGHT	LEQ		CNEL	
VEHICULAR	NOISE		57.6		55.8		52.8		48.0		57.	0
						W/O.	AMBIEN	IT		₩/	AMBIENT	
PK HR LEQ	WITHOUT TOP	O OR	BARRIER	≓.			65.9				65.	9
MIT PK HR	LEQ WITH TO	PO AN	D BARRIER	=			57.6	**	****		57.	6
CNEL WITHO	UT TOPO AND	BARR	IER	<b>#</b>			65.3				65.	3
MIT CNEL W	ITH TOPO AND	) BAR	RIER	-			57.0	**	*****		57.	0

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# FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

ROADWAY:ETIWANDA AVENUEILOCATION:LOT 19 - 2ND FLOOR FACADE (WITH WALL)FADT = $6,000$ FSPEED =40FPK HR $%$ =10CTL DIST=CTL DIST=57DIST N/F=DIS N/F=22 (M=76, P=52, S=36, C=12)AUTO SLE DIDT WALL=32MED TRUCK SDT W/OB=25HVY TRUCK SDT W/OB=25HVY TRUCK SHTH WALL=6.0*******OBS HTH=15.0AMBIENT=AMBIENT=0.0RT ANGLE=ROADWAY VIEW:LF ANGLE=-90DF ANGLE=180SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)AUTOMOBILES =10GRADE ADJUSHEAVY TRUCKS =10GRADE ADJUSHEAVY TRUCKS =10CADJUSTMENTBARRIER =0 (0=WALL, 1=BERM)PAD EL =1686.0CADT EL =1686.0CADE =6.0 %VEHICLE TYPEDAYEVENINGAUTOMOBILES0.848O.049HEAVY TRUCKS0.848O.049HEAVY TRUCKSO.8650.027	ATE: Y: X HR VOL = STANCE = LE DIST= LE DIST= TMENT= TO HEAVY T	03-Oct-02 MIKE ROSA 800 58.75 58.17 57.20 1.75 TRUCKS)
LOCATION:LOT 19 - 2ND FLOOR FACADE (WITH WALL)FADT = $B,000$ ESPEED =40PK HR % =10CTL DIST=57DIST N/F=22 (M=76, P=52, S=36, C=12)AUTO SLE DIDT WALL=32MED TRUCK SDT W/OB=25HVY TRUCK SHTH WALL=6.0*******OBS HTH=15.0AMBIENT=0.0ROADWAY VIEW:LF ANGLE=PF ANGLE=180SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)AUTOMOBILES =10MEDIUM TRUCKS =10GRADE ADJUSHEAVY TRUCKS =10GRADE ADEL AUTOMOBILPAD EL =1691.0ROAD EL =1686.0CRADE =6.0 %VEHICLE TYPEDAYEVENINGAUTOMOBILES0.775O.129MEDIUM TRUCKS0.848O.049HEAVY TRUCKSAUTOMOBILESAUTOMOBILESAUTOMOBILESPAD EL =1686.0EL HEAVY TRUCKSVEHICLE TYPEDAYEVENING	Y: K HR VOL = STANCE = LE DIST= LE DIST= TMENT= TO HEAVY T	MIKE ROSA 800 58.75 58.17 57.20 1.75 FRUCKS)
ADT =  6,000  E    SPEED =  40    PK HR % =  10    CTL DIST=  57    DIST N/F=  22 (M=76, P=52, S=36, C=12)  AUTO SLE DI    DT WALL=  32  MED TRUCK S    DT WALL=  32  MED TRUCK S    DT W/OB  25  HVY TRUCK S    HTH WALL=  6.0  *******    OBS HTH=  15.0    AMBIENT=  0.0    ROADWAY VIEW:  LF ANGLE=    LF ANGLE=  90    DF ANGLE=  160    SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)    AUTOMOBILES =  10    GRADE ADJUS    HEAVY TRUCKS =  10    GRADE ADJUS TRENT    BARRIER =  0 (0=WALL, 1=BERM)    PAD EL =  1686.0    EL MEDIUM TRUCKS  EL MEDIUM TRUCKS    VEHICLE TYPE  DAY    EVENING    AUTOMOBILES  0.775    MEDIUM TRUCKS  0.848    O.94  0.848    MEDIUM TRUCKS  0.865	K HR VOL = STANCE = LE DIST= LE DIST= IMENT= TO HEAVY T	800 58.75 58.17 57.20 1.75 TRUCKS)
SPBED =  40    PK HR % =  10    CTL DIST=  57    DIST N/F=  22 (M=76, P=52, S=36, C=12)  AUTO SLE DI    DT WALL=  32  MED TRUCK S    DT WALL=  32  MED TRUCK S    DT W/OB=  25  HVY TRUCK S    HTH WALL=  6.0  *******    OBS HTH=  15.0  AMBIENT=    OAMBIENT=  0.0  RADAWAY VIEW:  LF ANGLE=    RT ANGLE=  90  DF ANGLE=  180    SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)  AUTOMOBILES =  10    AUTOMOBILES =  10  GRADE ADJUS    HEAVY TRUCKS =  10  GRADE ADJUS    PAD EL =  1691.0  EL AUTOMOBII    ROAD EL =  1686.0  EL MEDIUM TRUCKS    GRADE =  6.0 %  EL HEAVY TRU    VEHICLE TYPE  DAY EVENING    AUTOMOBILES  0.775  0.129    MEDIUM TRUCKS  0.848  0.049    HEAVY TRUCKS  0.865  0.027	STANCE = LE DIST= LE DIST= IMENT= TO HEAVY 7	58.75 58.17 57.20 1.75 TRUCKS)
PK HR $% =$ 10CTL DIST=57DIST N/F=22 (M=76, P=52, S=36, C=12)AUTO SLE DIDT WALL=32MED TRUCK SDT W/OB=25HVY TRUCK SDT W/OB=25HVY TRUCK SHTH WALL=6.0*******OBS HTH=15.0AMBIENT=AMBIENT=0.0ROADWAY VIEW:LF ANGLE=LF ANGLE=90DF ANGLE=160SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)AUTOMOBILES =10GRADE ADJUSHEAVY TRUCKS =10ADJUS TMENTBARRIER =0 (0=WALL, 1=BERM)PAD EL =1636.0CAD EL =1636.0RADE =6.0 %VEHICLE TYPEDAYEVENINGAUTOMOBILES0.775AUTOMOBILESAUTOMOBILES0.8480.049HEAVY TRUCKS0.8480.8480.049HEAVY TRUCKS0.8650.027	STANCE = LE DIST= LE DIST= IMENT= TO HEAVY T	58.75 58.17 57.20 1.75 RUCKS)
CTL DIST=57DIST N/F=22 (M=76, P=52, S=36, C=12)AUTO SLE DIDT WALL=32MED TRUCK SDT W/OB=25HVY TRUCK SDT WALL=6.0*******OBS HTH=15.0AMBIENT=OBS HTH=15.0AMBIENT=0.0ROADWAY VIEW:LF ANGLE=PANGLE=90DF ANGLE=90DF ANGLE=160SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)AUTOMOBILES =10GRADE ADJUSHEAVY TRUCKS =10AUTOMOBILES =10CADJUS TMENTBARRIER =0 (0=WALL, 1=BERM)PAD EL =1686.0CADD EL =1686.0RADE =6.0 %VEHICLE TYPEDAYEVENINGAUTOMOBILES0.775MEDIUM TRUCKS0.848OUTOMOBILES0.848AUTOMOBILES0.865OUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865AUTOMOBILES0.865 </td <td>STANCE = LE DIST= LE DIST= IMENT= TO HEAVY T</td> <td>58.75 58.17 57.20 1.75 RUCKS)</td>	STANCE = LE DIST= LE DIST= IMENT= TO HEAVY T	58.75 58.17 57.20 1.75 RUCKS)
DIST N/F= 22 (M=76, P=52, S=36, C=12) AUTO SLE DI DT WALL= 32 MED TRUCK S DT W/OB= 25 HVY TRUCK S HTH WALL= 6.0 ******* OBS HTH= 15.0 AMBIENT= 0.0 ROADWAY VIEW: LF ANGLE= -90 RT ANGLE= 90 DF ANGLE= 180 SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE) AUTOMOBILES = 10 MEDIUM TRUCKS = 10 MEDIUM TRUCKS = 10 GRADE ADJUS HEAVY TRUCKS = 10 (ADJUSTMENT BARRIER = 0 (0=WALL, 1=BERM) PAD EL = 1691.0 EL AUTOMOBIL ROAD EL = 1686.0 EL MEDIUM T GRADE = 6.0 % EL HEAVY TRUCKS AUTOMOBILES 0.775 0.129 MEDIUM TRUCKS 0.848 0.049 HEAVY TRUCKS 0.865 0.027	STANCE = LE DIST= LE DIST= IMENT= TO HEAVY 1	58.75 58.17 57.20 1.75 TRUCKS)
DT WALL=32MED TRUCK \$DT W/OB=25HVY TRUCK \$DT WALL=6.0*******OBS HTH=15.0AMBIENT=0.0ROADWAY VIEW:LF ANGLE= -90RT ANGLE=90DF ANGLE=180SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)AUTOMOBILES #10MEDIUM TRUCKS =10GRADE ADJUSHEAVY TRUCKS =10GRADE =0 (0=WALL, 1=BERM)PAD EL =1691.0ROAD EL =1686.0GRADE =6.0 %VEHICLE TYPEDAYEVENINGAUTOMOBILES0.775AUTOMOBILES0.848AUTOMOBILES0.865O.7750.129MEDIUM TRUCKS0.865AUTOMOBILES0.865OLAP0.865OLAP0.865OLAP0.865DAY0.865	LE DIST= LE DIST= IMENT= TO HEAVY 1	58.17 57.20 1.75 RUCKS)
DT W/OB= 25 HVY TRUCK S HTH WALL= 6.0 ******* OBS HTH= 15.0 AMBIENT= 0.0 ROADWAY VIEW: LF ANGLE= -90 RT ANGLE= 90 DF ANGLE= 180 SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE) AUTOMOBILES = 10 MEDIUM TRUCKS = 10 MEDIUM TRUCKS = 10 (ADJUSTMENT BARRIER = 0 (0=WALL, 1=BERM) PAD EL = 1691.0 ROAD EL = 1686.0 EL AUTOMOBIL ROAD EL = 1686.0 GRADE = 6.0 % EL HEAVY TRUCKS VEHICLE TYPE DAY EVENING AUTOMOBILES 0.775 0.129 MEDIUM TRUCKS 0.848 0.049 HEAVY TRUCKS 0.865 0.027	LE DIST= IMENT= TO HEAVY 1	57.20 1.75 RUCKS)
HTH WALL=6.0*******OBS HTH=15.0AMBIENT=0.0ROADWAY VIEW:LF ANGLE=PANGLE=90DF ANGLE=100SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)AUTOMOBILES =10MEDIUM TRUCKS =10GRADE ADJUSHEAVY TRUCKS =10GRADE L =1691.0PAD EL =1686.0ROAD EL =1686.0BARRE =6.0 %VEHICLE TYPEDAYEVENINGAUTOMOBILES0.775MEDIUM TRUCKS0.8480.8480.049HEAVY TRUCKS0.8650.8650.027	IMENT= TO HEAVY 7	1.75 RUCKS)
OBS HTH=15.0AMBIENT=0.0ROADWAY VIEW:LF ANGLE=RT ANGLE=90DF ANGLE=180SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)AUTOMOBILES =10GRADE ADJUSHEAVY TRUCKS =10GRADE ADJUSHEAVY TRUCKS =10AUTOMOBILER =0 (0=WALL, 1=BERM)PAD EL =1691.0ROAD EL =1686.0GRADE =6.0 %VEHICLE TYPEDAYEVENINGAUTOMOBILES0.775MEDIUM TRUCKS0.8480.8480.049HEAVY TRUCKS0.8650.8650.027	IMENT= TO HEAVY 1	1.75 RUCKS)
AMBIENT=0.0ROADWAY VIEW:LF ANGLE= -90RT ANGLE=90DF ANGLE=180SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)AUTOMOBILES =10MEDIUM TRUCKS =10GRADE ADJUSHEAVY TRUCKS =10AUTOMOBILER =0 (0=WALL, 1=BERM)PAD EL =1691.0ROAD EL =1686.0GRADE =6.0 %VEHICLE TYPEDAYEVENINGAUTOMOBILES0.775MEDIUM TRUCKS0.8480.8480.049HEAVY TRUCKS0.8650.8650.027	IMENT= TO HEAVY 1	1.75 RUCKS)
ROADWAY VIEW:LF ANGLE=-90 RT ANGLE=RT ANGLE=90 DF ANGLE=180SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE) AUTOMOBILES =10MEDIUM TRUCKS =10MEDIUM TRUCKS =10GRADE ADJUS HEAVY TRUCKS =0 (0=WALL, 1=BERM)PAD EL =1691.0ROAD EL =1686.0GRADE =6.0 %VEHICLE TYPEDAYEVENINGAUTOMOBILES0.775MEDIUM TRUCKS0.8480.8480.049HEAVY TRUCKS0.8650.8650.027	IMENT= TO HEAVY 1	1.75 RUCKS)
RT ANGLE=90DF ANGLE=160SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)AUTOMOBILES =10MEDIUM TRUCKS =10GRADE ADJUSHEAVY TRUCKS =10ADJUSTMENTBARRIER =0 (0=WALL, 1=BERM)PAD EL =1691.0ROAD EL =1686.0GRADE =6.0 %VEHICLE TYPEDAYEVENINGAUTOMOBILES0.775MEDIUM TRUCKS0.8480.8480.049HEAVY TRUCKS0.8650.8650.027	IMENT= TO HEAVY 1	1.75 RUCKS)
DF ANGLE= 180 SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE) AUTOMOBILES = 10 MEDIUM TRUCKS = 10 HEAVY TRUCKS = 10 (ADJUSTMENT BARRIER = 0 (0=WALL, 1=BERM) PAD EL = 1691.0 EL AUTOMOBIL ROAD EL = 1686.0 EL MEDIUM T GRADE = 6.0 % EL HEAVY TRUCKS VEHICLE TYPE DAY EVENING AUTOMOBILES 0.775 0.129 MEDIUM TRUCKS 0.848 0.049 HEAVY TRUCKS 0.865 0.027	IMENT= TO HEAVY 1	1.75 RUCKS)
SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)AUTOMOBILES #10MEDIUM TRUCKS =10GRADE ADJUSHEAVY TRUCKS =10BARRIER =0 (0=WALL, 1=BERM)PAD EL =1691.0ROAD EL =1686.0GRADE =6.0 %VEHICLE TYPEDAYEVENINGAUTOMOBILES0.775MEDIUM TRUCKS0.8480.8480.049HEAVY TRUCKS0.8650.8650.027	IMENT= TO HEAVY 7	1.75 TRUCKS)
AUTOMOBILES #10MEDIUM TRUCKS =10GRADE ADJUSHEAVY TRUCKS =10(ADJUSTMENT)BARRIER =0 (0=WALL, 1=BERM)PAD EL =1691.0EL AUTOMOBILROAD EL =1686.0EL MEDIUM T.GRADE =6.0 %EL HEAVY TRUCKSVEHICLE TYPEDAYEVENINGAUTOMOBILES0.7750.129MEDIUM TRUCKS0.8480.049HEAVY TRUCKS0.8650.027	IMENT= TO HEAVY 7	1.75 RUCKS)
MEDIUM TRUCKS =10GRADE ADJUSHEAVY TRUCKS =10(ADJUSTMENT)BARRIER =0 (0=WALL, 1=BERM)PAD EL =1691.0EL AUTOMOBILROAD EL =1686.0EL MEDIUM TOGRADE =6.0 %EL HEAVY TRUCKSVEHICLE TYPEDAYEVENINGAUTOMOBILES0.7750.129MEDIUM TRUCKS0.8480.049HEAVY TRUCKS0.8650.027	TMENT= TO HEAVY 7	1.75 CRUCKS)
HEAVY TRUCKS =10(ADJUSTMENT)BARRIER =0 (0=WALL, 1=BERM)PAD EL =1691.0ROAD EL =1686.0BARDE =6.0 %VEHICLE TYPEDAYEVENINGAUTOMOBILES0.775MEDIUM TRUCKS0.8480.8480.049HEAVY TRUCKS0.8650.8650.027	TO HEAVY 7	RUCKS)
BARRIER =  0 (0=WALL, 1=BERM)    PAD EL =  1691.0    ROAD EL =  1686.0    BARRIER =  6.0 %    VEHICLE TYPE  DAY    EURITOMOBILES  0.775    MEDIUM TRUCKS  0.848    HEAVY TRUCKS  0.865		
PAD EL =  1691.0  EL AUTOMOBI    ROAD EL =  1686.0  EL MEDIUM T    GRADE =  6.0 %  EL HEAVY TRI    VEHICLE TYPE  DAY  EVENING    AUTOMOBILES  0.775  0.129    MEDIUM TRUCKS  0.848  0.049    HEAVY TRUCKS  0.865  0.027		
ROAD EL =1686.0EL MEDIUM TGRADE =6.0 %EL HEAVY TRVEHICLE TYPEDAYEVENINGAUTOMOBILES0.7750.129MEDIUM TRUCKS0.8480.049HEAVY TRUCKS0.8650.027	LES =	1688.0
GRADE=6.0 %EL HEAVY TRVEHICLE TYPEDAYEVENINGAUTOMOBILES0.7750.129MEDIUM TRUCKS0.8480.049HEAVY TRUCKS0.8650.027	RUCKS=	1690.0
VEHICLE TYPEDAYEVENINGAUTOMOBILES0.7750.129MEDIUM TRUCKS0.8480.049HEAVY TRUCKS0.8650.027	JCKS =	1694. <b>0</b>
AUTOMOBILES    0.775    0.129      MEDIUM TRUCKS    0.848    0.049      HEAVY TRUCKS    0.865    0.027	NIGHT	DAILY
MEDIUM TRUCKS    0.848    0.049      HEAVY TRUCKS    0.865    0.027	0.096	0.9742
HEAVY TRUCKS 0.865 0.027	0.103	0.0184
	0.108	0.0074
NOISE IMPACTS WITHOUT TOPO OR BARRIER	SHIELDING	——————————————————————————————————————
PK HR LEQ DAY LEQ EVEN LEQ NI	GHT LEQ	CNEL
AUTOMOBILES LEQ 64.2 62.3 60.5	54 E	63.7
MEDIUM TRUCKS LEQ 55.9 54.4 48.1	54.5	55.2
HEAVY TRUCKS LEQ 58.7 57.2 48.2	54.5 46.5	
VEHICULAR NOISE 65.7 64.0 61.0	34.3 46.5 49.4	57.9

		PK HR	LEQ	DAY	LEQ	EVEN	LEQ	NIGHT	LEQ		CNEL
VEHICULAR	NOISE		65.7		64.0		61.0		56.1		65.2
						<b>w/</b> 0	AMBIEN	т		w/	AMBIENT
PK HR LEQ	WITHOUT TO	OPO OR	BARRIER	=			65.7				65.7
MIT PK HR	LEQ WITH 1	FOPO AN	D BARRIER	#			65.7	**	****		65.7
CNEL WITH	OUT TOPO AN	ND BARR	IER	=			65.2				65.2
MIT CNEL W	ITH TOPO A	AND BAR	RIER	=			65.2	**	****		65.2

1/9/2024 Board Meeting	7-10	Attachment 4, Page 111 of 367						
FHWA-RD-77-108	HIGHWAY NOISE PREDICTION	MODEL (CALVENO)						
ORANGE COUNTY								

ROADWAY: WILSON AVENUE	DATE :	03-Oct-02
LOCATION: LOT 89 - BY (NO WALL)	BY:	MIKE ROSA
λΠT - 12 000		- 1 200
SDEED - 40	IN HA YOL	
DIST N/F= 46 (M=76 P=52 S=36 C=12)	AUTO SLE DISTANCE -	80 65
$\frac{1}{10} = \frac{1}{10} $	MED TRUCK SLE DIST-	80.37
DT W/OB= 5	HVY TRUCK SLE DIST=	79,97
HTH WALL = 0.0 *********************************	NVI INCEN DEL DADI-	
OBS HTH= 5.0		
AMBIENT= 0.0		
ROADWAY VIEW; LF ANGLE= -90		
RT ANGLE= 90		
DF ANGLE= 180		
SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)		
AUTOMOBILES = 10		
MEDIUM TRUCKS = 10	GRADE ADJUSTMENT=	1.11
HEAVY TRUCKS = 10	(ADJUSTMENT TO HEAV)	Y TRUCKS)
BARRIER = 0 (0=WALL,1=BERM)		
PAD EL = 1655.0	EL AUTOMOBILES =	1648.0
ROAD EL = 1646.0	EL MEDIUM TRUCKS=	1650,0
GRADE = 3.0 %	EL REAVY TRUCKS =	1654.0
VEHICLE TYPE DAY	EVENING NIGH	T DAILY
AUTOMOBILES 0.775	0.129 0.096	0.9742
MEDIUM TRUCKS 0.848	0.049 0.103	0.0184
HEAVY TRUCKS 0.865	0.027 0.108	0.0074

#### NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.9	63.0	61.2	55.2	64.4
MEDIUM TRUCKS LEQ	56.6	55.1	48.8	47.2	- 55.9
HEAVY TRUCKS LEQ	50.7	57.2	48.2	49.5	57.9
VEHICULAR NOISE	66.3	64.6	61.7	56.7	65.8

## NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

PK HR LEQ	DAY	LEQ	EVEN	LEQ	NIGHT	LEQ		CNEL
VEHICULAR NOISE 66.3		64.6		61.7		56.7		65.8
			W/O	AMBIEN	т		w/	AMBLENT
PX HR LEQ WITHOUT TOPO OR BARRIER	=			66.3				<b>6</b> 6.3
MIT PK HR LEQ WITH TOPO AND BARRIER	=			66.3	**	* * * * *		66.3
CNEL WITHOUT TOPO AND BARRIER	=			65.8				65.8
MIT CNEL WITH TOPO AND BARRIER	=			65.8	**	*****		65.8

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# FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT :	TTM 16072	2 - RANCHO C	JCAMONG	A		JOB #:	1058-02-01
ROADWAY :	WILSON AV	ENUE				DATE :	03-Oct-02
LOCATION:	LOT 69 - B	Y (WITH WALL)				BY:	MIKE ROSA
ADT =	13,000		<u>.</u>			PK HR VOL :	= 1,300
SPEED =	40						
<b>₽K HR %</b> =	10						
CTL DIST=	83						
DIST N/F=	46	(M=76,P=52,	S=36,C=	12)	AUTO SLE I	DISTANCE =	80.60
DT WALL=	78				MED TRUCK	SLE DIST=	80.29
DT W/OB=	5				HVY TRUCK	SLE DIST≈	79.84
HTH WALL=	5.5	*******					
OBS HTH=	5.0						
AMBIENT=	0.0						
ROADWAY VI	EW:	LF ANGLE=	-90				
		RT ANGLE=	90				
		DF ANGLE=	180				
SITE CONDI	TIONS (10=	HARD SITE, 1	5=SOFT	SITE)			
AUTOMOBIL	ES =	10					
MEDIUM TR	UCKS =	10			GRADE ADJ	IS TMENT =	1.11
HEAVY TRU	CKS =	10			(ADJUSTMEN	IT TO HEAVY	TRUCKS)
BARRIER =	0	(0=WALL,1=B	ERM)				
PAD EL =	1655.0				EL AUTOMOE	ILES =	1648.0
ROAD EL =	1646.0				EL MEDIUM	TRUCKS=	1650.0
GRADE =	3.0	8			EL HEAVY I	RUCKS =	1654.0
VÉHICLE TY	PE			DAY	EVENING	NIGHT	DAILY
AUTOMOBILE	S		. <u></u>	0.775	0.129	0.096	0.9742
MEDIUM TRU	СКЗ			0.848	0.049	0.103	0.0184
HEAVY TRUC	KS			0.865	0.027	0.108	0.0074

#### NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.9	63.0	61.3	55.2	64.4
MEDIUM TRUCKS LEQ	56.6	55.1	48.8	47.2	55.9
HEAVY TRUCKS LEQ	58.7	57.3	48.2	49.5	57.9
VEHICULAR NOISE	66.3	64.6	61.7	56.7	65.8

PK HR LEQ	DAY	LEQ	EVEN	LEQ	NIGHT	LEQ		CNEL
VEHICULAR NOISE 60.1		58.3		55.4		5 <b>0.</b> 5		59.5
			W/0 /	AMBIEN	IT		w/	AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=			66.3				66.3
MIT PK HR LEQ WITH TOPO AND BARRIER	=			60.1	**	****		60.1
CNEL WITHOUT TOPO AND BARRIER	=			65.8				65.B
MIT CNEL WITH TOPO AND BARRIER	=			59.5	**	****		59.5

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# FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT:	TTM 16072	2 - RANCHO CUC	AMONGA		JOB #:	1058-02-01
ROADWAY :	WILSON AV	VENUE			DATE:	03-Oct-02
LOCATION:	LOT 89 - 1	IST FLOOR FACADE	(WITH WALL)		BY:	MIKE ROSA
ADT =	13,000				PK HR VOL =	1,300
SPEED =	40					
PK HR % ≖	10					
CTL DIST=	103					
DIST N/F=	46	(M=76,P=52,S=	=36,C=12)	AUTO SLE E	DISTANCE =	100.66
DT WALL=	78			MED TRUCK	SLE DIST=	100.34
DT W/OB≠	25			HVY TRUCK	SLE DIST=	99.86
HTH WALL=	5.5	*******				
OBS HTH=	5.0					
AMBIENT=	0.0					
ROADWAY VI	EW:	LF ANGLE=	- 90			
		RT ANGLE=	90			
		DF ANGLE= 1	L80			
SITE CONDIT	FIONS (10=	HARD SITE, 15	SOFT SITE)			
AUTOMOBILI	3S =	10				
MEDIUM TRU	JCKS =	10		GRADE ADJI	JSTMENT=	1.11
HEAVY TRUC	CKS =	10		(ADJUSTMEN	T TO HEAVY	TRUCKS)
BARRIER =	0	(O=WALL,1=BER	(M)			
PAD EL =	1655.5			EL AUTOMOE	ILES ≖	1648.0
ROAD EL =	1646.0			EL MEDIUM	TRUCKS=	1650.0
GRADE =	3.0	÷		EL HEAVY 7	RUCKS =	1654.0
VEHICLE TYP	)E		DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	}		0.775	0.129	0.096	0.9742
MEDIUM TRUC	:KS		0.848	0.049	0.103	0.0184
HEAVY TRUCK	S		0.865	0.027	0.108	0.0074

#### NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.0	62.1	60.3	54.2	63.5
MEDIUM TRUCKS LEQ	55.7	54.2	47.8	46.3	55.0
HEAVY TRUCKS LEQ	57.7	56.3	47.2	48.5	57.0
VEHICULAR NOISE	65.4	63.6	60.7	55.8	64.8

	PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	50.2		56.4	53.5	48.6	57.6
				W/O AMBIE	NT	W/ AMBIENT
PK HR LEQ WITHOUT TO	OPO OR BARRIS	ER =		65.4		65.4
MIT PK HR LEQ WITH :	TOPO AND BAR	RIER =		58.2	*****	58.2
CNEL WITHOUT TOPO AN	ND BARRIER	=		64.8		64.8
MIT CNEL WITH TOPO A	AND BARRIER	=		57.6	******	57.6

MIT CNEL WITH TOPO AND BARRIER

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT: TTM 16	072 - RANCHO CU	CAMONGA		JOB #:	1058-02-01
ROADWAY: WILSON	AVENUE			DATE :	03-Oct-02
LOCATION: LOT 89	- 2ND FLOOR FACAD	E (WITH WALL)		BY:	MIKE ROSA
ADT = 13,00	00			PK HR VOL	= 1,300
SPEED = 4	ŧ0				
PK HR % =	10				
CTL DIST= 10	)3				
DIST N/F=	16 (M⇒76,P=52,S	=36,C=12)	AUTO SLE	DISTANCE $\approx$	102.89
DT WALL=	78		MED TRUC	K SLE DIST=	102.47
DT W/OB= 7	25		HVY TRUCK	K SLE DIST=	101.75
HTH WALL= 5.	.5 *******				
OBS HTH= 15.	. 0				
AMBIENT= 0.	.0				
ROADWAY VIEW:	LF ANGLE=	-90			
	RT ANGLE=	90			
	DF ANGLE=	180			
SITE CONDITIONS (:	LO=HARD SITE, 15	5=SOFT SITE)			
AUTOMOBILES =	10				
MEDIUM TRUCKS -	10		GRADE AD	TUSTMENT-	1 11
HEAVY TRUCKS -	10		(AD.TUSTMI	NT TO VEAVY	TOUCKS
RADDIED -	0 (0-WALJ. 1-BE	EW)	(ADO OD I M		TROCKD?
DAD EL - 1655	5		FT. ATTOMO		1649 0
POAD E1 = 1646	0		EL MEDIUN		1650 0
	0 B		FI. HEAVY	TRUCKS -	1654 0
GIGLE - J.	0		toti linava t	IRUCKU -	1034.0
VEHICLE TYPE		DA	Y EVENING	G NIGHI	DAILY
AUTOMOBILES	<u> </u>	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS		0.848	0.049	0.103	0.0184
HEAVY TRUCKS		0.865	0.027	0.108	0.0074
	NOISE IMPACTS	WITHOUT TO	O OR BARRI	ER SHIELDING	3
	PK HR LEO	DAY LEO	EVEN LEO	NIGHT LEO	CNEL
AUTOMOBILES LEO	63.9	62.0	60.2	54.1	63.4
MEDIUM TRUCKS LEO	55.6	<b>54</b> ,1	47.7	46.2	54.9
HEAVY TRUCKS LEQ	57.6	56.2	47.2	48.4	56.9
VEHICULAR NOISE	65.3	63.5	60.6	55.7	64.7
	NOISE IMPACTS	WITH TOPO A	ND BARRIER	SHIELDING	
					·
	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	65.3	63.5	60.6	55.7	64.7
			W/O AMBIE	NT	W/ AMBIENT
PK HR LEQ WITHOUT	TOPO OR BARRIER	=	65.3		65.3
MIT PK HR LEQ WITH	TOPO AND BARRIS	ER =	65.3	*****	65.3
CNEL WITHOUT TOPO .	AND BARRIER	64.7		64.7	

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#### FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT:	TTM 1607	2 - RANCHO (	TUCAMONG	A	·	JOB #:	1058-02-01
ROADWAY:	EAST AVE	NUE				DATE:	03-Oct-02
LOCATION:	LOT 125 -	BY (NO WALL)				BY:	MIKE ROSA
<u> </u>	· · · - ·						
ADT =	14,000					PK HR VOL =	= 1,400
SPEED =	40						
PK HR 🕏 =	10						
CTL DIST=	70						
DIST N/F=	22	(M=76,P=52	,S≕36,C≕	=12)	AUTO SLE D	ISTANCE =	70.11
DT WALL=	65				MED TRUCK	SLE DIST=	69.81
DT W/OB=	5				HVY TRUCK	SLE DIST=	69.36
HTH WALL=	0.0	******	r				
OBS HTH=	5.0						
AMBIENT=	0.0						
ROADWAY VI	EW:	LF ANGLE=	-90				
		RT ANGLE=	90				
		DF ANGLE=	180				
SITE CONDI	TIONS (10=	HARD SITE,	15=SOFT	SITE)			
AUTOMOBIL	ES =	10	1				
MEDIUM TR	UCKS =	10	1		GRADE ADJU	STMENT=	1.11
HEAVY TRU	CKS =	10			(ADJUSTMEN	T TO HEAVY	TRUCKS)
BARRIER =	0	(O=WALL,1=)	BERM)				
PAD EL =	1676.7				EL AUTOMOB	ILES =	1670.0
ROAD EL =	1668.0				EL MEDIUM	TRUCKS=	1672.0
GRADE =	4.0	¥			EL HEAVY T	RUCKS =	1676.0
VEHICLE TYP	? <b>E</b>			DAY	EVENING	NIGHT	DAILY
AUTOMOBILES				0.775	0.129	0.096	0.9742
MEDIUM TRUC	CKS			0.848	0.049	0.103	0.0184
HEAVY TRUCK	s			0.865	0.027	0.108	0.0074
HEAVY TRUCK	S			0.865	0.027	0.108	_

#### NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	65.8	63. <b>9</b>	62.2	56.1	65.3
MEDIUM TRUCKS LEQ	57.6	56.1	49.7	48.2	56.9
HEAVY TRUCKS LEQ	59,6	58.2	49.1	50.4	58.9
VEHICULAR NOISE	67.3	65.5	62.6	57.7	66.7

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	PK HR LEQ	DAY	LEQ	EVEN	LEQ 1	NIGHT LEQ		CNEL
VEHICULAR NOISE	67.3		65.5	É	52.6	57. <b>7</b>		66.7
				W/O A	MBIEN?	г	W/	AMBIENT
PK HR LEQ WITHOUT TOP	O OR BARRIER	=		6	57.3			67.3
MIT PK HR LEQ WITH TO	PO AND BARRIER	Ŧ		$\epsilon$	57.3	*****		67.3
CNEL WITHOUT TOPO AND	BARRIER	=		e	56.7			66.7
MIT CNEL WITH TOPO AN	D BARRIER	×		E	56.7	*****		66.7

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#### FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

	TTM 1607;	2 - RANCHO C	UCAMONG	4		JOB #:	1058-02-01
ROADWAY:	EAST AVE	NUE				DATE:	03-Oct-02
LOCATION:	LOT 125 -	BY (WITH WALL	)			BY:	MIKE ROSA
ADT =	14,000					PK HR VOL	= 1,400
SPEED =	40						
PK HR 者 =	10						
CTL DIST=	70						
DIST N/F=	22	(M=76,P=52,	S≈36,C=	12}	AUTO SLE H	DISTANCE =	70.41
DT WALL=	65				MED TRUCK	SLE DIST=	70.05
DT W/OB=	5				HVY TRUCK	SLE DIST=	69.51
HTH WALL=	6.0	*******					
OBS HTH=	5.0						
AMBIENT=	0.0						
ROADWAY VI	EW:	LF ANGLE=	-90				
		RT ANGLE=	90				
		DF ANGLE=	180				
SITE CONDIT	TIONS (10=	HARD SITE, 1	5=SOFT	SITE)			
AUTOMOBILI	ES =	10					
MEDIUM TRI	JCKS =	10			GRADE ADJI	ISTMENT=	1.11
HEAVY TRUC	CKS =	10			(ADJUSTMEN	IT TO HEAVY	TRUCKS)
BARRIER =	O	(0=WALL,1=B)	ERM)				
PAD EL =	1676.7				EL AUTOMOS	ILES =	1670.0
ROAD EL =	1668.0				EL MEDIUM	TRUCKS=	1672.0
GRADE =	4.0	ŧ			EL HEAVY T	RUCKS =	1676.0
VEHICLE TYP	Έ			DAY	EVENING	NIGHT	DAILS
AUTOMOBILES	1			0.775	0.129	0.096	0.9742
	KS			0.848	0.049	0.103	0.0184
MEDIUM TRUC				0 865	0 027	0 108	0 0074

	_				
	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	65.8	63.9	62.2	56.1	65.3
MEDIUM TRUCKS LEQ	57.6	56.1	49.7	48.1	56.8
HEAVY TRUCKS LEQ	59.6	58.2	49.1	50.4	58.9
VEHICULAR NOISE	67.2	65,5	62.6	57.6	66.7

PK HR LEQ	DAY	reð	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 59.7		58.0	55.1	50.1	59.2
			W/O AMBIE	N'I	W/ AM81ENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=		67.2		67.2
MIT PK HE LEQ WITH TOPO AND BARRIER	=		59.7	******	59.7
CNEL WITHOUT TOPO AND BARRIER	=		66.7		66.7
MIT CNEL WITH TOPO AND BARRIER	-		59.2	******	59.2

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 1/9/2024 Board Meeting
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 FHWA-RD-77-108
 HIGHWAY
 NOISE
 PREDICTION
 MODEL
 (CALVENO)
ORANGE COUNTY

PROJECT :	TTM 1607	2 - RANCHO CUCAMO	INGA		109 #:	1058-02-01
ROADWAY:	EAST AVE	NUE			DATE:	03-Oct-02
LOCATION:	LOT 125 -	IST FLOOR FACADE (	WITH WALL)		BY:	MIKE ROSA
ADT =	14,000			· . · · · · · · · · · · · · · · · · · ·	PK HR VOL =	1,400
SPEED =	40					
PK HR 🐮 =	10					
CTL DIST=	90					
DIST N/F=	22	(M=76,P=52,S=36	,C≃12)	AUTO SLE I	ISTANCE =	90,43
DT WALL=	65			MED TRUCK	SLE DIST=	90.05
DT W/OB≃	25			HVY TRUCK	SLE DIST=	89.49
HTH WALL=	6.0	******				
OBS HTH≃	5.0					
AMBIENT=	0.0					
ROADWAY VI	EW:	LF ANGLE= -90				
		RT ANGLE= 90				
		DF ANGLE= 180				
SITE CONDI	TIONS (10=	HARD SITE, 15-SC	FT SITE)			
AUTOMOBIL	ES =	10				
MEDIUM TR	UCKS =	10		GRADE ADJI	ISTMENT-	1.11
HBAVY TRU	CKS =	10		(ADJUSTMEN	TT TO HEAVY	TRUCKS)
BARRIER =	C	(0=WALL,1=BERM)				
PAD EL =	1677.2			EL AUTOMOE	ILES =	1670.0
ROAD EL =	1668.0			EL MEDIUM	TRUCKS=	1672.0
GRADE #	4.0	£		EL HEAVY T	RUCKS =	1676.0
VEHICLE TY	PE		DAY	EVENING	NIGHT	DAILY
AUTOMOBILE	<u>s</u>		0.775	0.129	0.096	0.9742
MEDIUM TRU	CKS		0.848	0.049	0.103	0.0184
HEAVY TRUCK	KS		0.865	0.027	0.108	0.0074

NOISE	IMPACTS	WITHOUT	TOPO	OR	BARRIER	SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	64.7	62.8	61.1	55.0	64.2
MEDIUM TRUCKS LEQ	56.5	55.0	48.6	47.1	55.8
HEAVY TRUCKS LEQ	58.5	57.1	48.0	49.3	57.8
VEHICULAR NOISE	66.2	64.4	61.5	56.6	65.6

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 58.1		56.3	53.4	48.5	57.5
			W/O AMBIEN	Т	W/ AM8JENT
PK HR LEQ WITHOUT TOPO OR BARRIER	÷		66.2		66.2
MIT PK HR LEQ WITH TOPO AND BARRIER	=		58.1	*****	50.1
CNEL WITHOUT TOPO AND BARRIER	=		65.6		65.6
MIT CNEL WITH TOPO AND BARRIER	F		57.5	******	57.5

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# FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

ROADWAY:  EAST AVENUE  DATE:  03-0ct-02    LOCATION:  LOT 125 - 2ND FLOOR FACADE (WITH WALL)  BY:  MIKE ROSA    ADT =  14,000  FK HR VOL =  1,400    SPEED =  40  FK HR VOL =  1,400    SPEED =  40  FK HR VOL =  1,400    SPEED =  40  FK HR VOL =  1,400    SPEED =  40  FK HR VOL =  1,400    SPEED =  40  FK HR VOL =  1,400    SPEED =  40  FK HR VOL =  1,400    SPEED =  40  FK HR VOL =  1,400    SPEED =  40  MED TRUCK SLE DIST=  92.04    DT WALL=  65.0  MED TRUCK SLE DIST=  90.78    HTH WALL=  6.0  *******  00  RADER ADJUSTMENT=  1.11    MBIENT=  0.0  RADE HRD SITE, 15-SOFT SITE)  AUTOMOBILES =  1670.0    AUTOMOBILES =  10  GRADE ADJUSTMENT=  1.11  1.11    HEAVY TRUCKS =  10  GRADE ADJUSTMENT=  1.11    PADE EL =  1667.0  EL AUTOMOBILES =  1670.	PROJECT:	TTM 1607	2 - RANCHO C	UCAMONGA		JOB #:	1058-02-01
LOCATION: LOT. 125 - 2MD FLOOR FACADE (WITH WALL) BY: MIKE ROSA ADT = 14,000 SPEED = 40 PK HR VOL = 1,400 SPEED = 90 DIST N/F= 22 (M-76, P=52, S=36, C=12) AUTO SLE DISTANCE = 92.04 DT WALL= 65 MED TRUCK SLE DIST= 91.58 DT W/OB= 25 HVY WOB= 25 HVY TRUCK SLE DIST= 91.58 DT W/OB= 25 HVY TRUCK SLE DIST= 90.78 HTH WALL= 6.0 MBDIEMT = 0.0 ROADWAY VIEN: LF ANGLE= -90 RT ANGLE= 90 DF ANGLE= 180 SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE) AUTOMOBILES = 10 GRADE ADJUSTMENT TO HEAVY TRUCKS EARNER = 0 (0=WALL, 1=BERM) PAD EL = 1677.2 CRADE = 1677.2 CRADE = 1676.0 VEHICLE TYPE DAY EVENING NIGHT DAILY AUTOMOBILES = 0.775 0.129 0.096 0.97422 MEDIUM TRUCKS = 0.665 0.027 0.108 0.0074 AUTOMOBILES LEQ FK HR LEQ DAY LEV LEQ NIGHT LEQ CNEL AUTOMOBILES LEQ 64.7 62.8 61.0 54.9 64.2 MEDIUM TRUCKS LEQ 58.4 57.0 48.0 49.2 57.7 VEHICULAR NOISE 64.1 64.3 61.4 56.5 55.5	ROADWAY :	EAST AVE	NUE			DATE:	03-Oct-02
ADT =  14,000  PK HR VOL =  1,400    SPEED =  40  PK HR VOL =  1,400    SPEED =  40  PK HR VOL =  1,400    SPEED =  40  PK HR VOL =  1,400    SPEED =  40  PK HR VOL =  1,400    SPEED =  90  DT ST M/F=  22 (M-76, P=52, S=36, C=12)  AUTO SLE DISTANCE =  92.04    DT WALH=  65  MED TRUCK SLE DIST=  91.58  PT VY TRUCK SLE DIST=  91.58    DT WALH=  6.0  *******  00  AUTO SLE DIST=  90.78    MBIENT=  0.0  RADEE=  90  DF ANGLE=  90  DF ANGLE=  100    SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)  AUTOMOBILES =  10  GRADE ADJUSTMENT=  1.11    HEAV TRUCKS =  10  GRADE ADJUSTMENT TO HEAVY TRUCKS)  HEAVY TRUCKS =  1670.0    ROAD EL =  1667.0  EL AUTOMOBILES =  1670.0  GRADE =  1670.0    GRADE =  4.0 *  EL AUTOMOBILES =  1670.0  GRADE =  1670.0    GRADE =  4.0 *  EL AUTOMOBILES =  1676.0	LOCATION:	LOT, 125 -	2ND FLOOR FAC	ADE (WITH WALL	)	BY:	MIKE ROSA
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$							
SPEED =  40    PK HR * =  10    CTL DIST=  90    DIST N/F=  22 (M=76, P=52, S=36, C=12)  AUTO SLE DISTANCE =  92.04    DT WALL=  65  MED TRUCK SLE DIST=  91.58    DT W/OB=  25  HVY TRUCK SLE DIST=  90.78    HTH WALL=  6.0  *******  085 HTH=  15.0    AMBIENT=  0.0  RANGLE=  90  DF ANGLE=  100    ROADWAY VIEN:  LF ANGLE=  90  DF ANGLE=  100  GRADE ADJUSTMENT=  1.11    HEAVY TRUCKS =  10  GRADE ADJUSTMENT=  1.11  1.11    HEAVY TRUCKS =  10  GRADE ADJUSTMENT=  1.11    HEAVY TRUCKS =  10  (ADJUSTMENT TO HEAVY TRUCKS)    BARRIER =  0 (0=WALL, 1=BERM)  PAD EL =  1677.2  EL AUTOMOBILES =  1676.0    ROAD EL =  1666.0  EL MEDIUM TRUCKS =  1676.0  VEHICLE TYPE  DAY  EVENING  NIGHT  DAILY    AUTOMOBILES  0.775  0.129  0.096  0.9742  MEDIUM TRUCKS  0.865  0.027  0.103  0.	ADT =	14,000				PK HR VOL	<b>≖ 1,40</b> 0
PK H \$ =  10    CTL DIST=  90    DIST N/F=  22 (M=76, P=52, S=36, C=12)  AUTO SLE DISTANCE =  92.04    DT WALL=  65  MED TRUCK SLE DIST=  91.58    DT WOR=  25  HVY TRUCK SLE DIST=  90.78    HTH WALL=  6.0  *******  008  HTH  15.0    AMBIENT=  0.0  RADAWAY VIEN:  LF ANGLE=  -90    DF ANGLE=  100  GRADE ADJUSTMENT=  1.11    MEDIUM TRUCKS =  10  GRADE ADJUSTMENT=  1.11    HEAVY TRUCKS =  10  GRADE ADJUSTMENT=  1.11    PAD EL =  1677.2  EL AUTOMOBILES =  1670.0    ROAD EL =  1666.0  EL MEDIUM TRUCKS =  1676.0    RADE E =  1666.0  EL MEDIUM TRUCKS =  1676.0    VEHICLE TYPE  DAY  EVENING  NIGHT  DAILY    AUTOMOBILES  0.775  0.129  0.96  0.9742    MEDIUM TRUCKS  0.865  0.027  0.108  0.0074    VEHICLE TYPE  DAY  EVEN LEQ  NIGHT  DAILY	SPEED =	40					
CTL DIST=  90    DIST N/F=  22 (M=76, P=52, S=36, C=12)  AUTO SLE DISTANCE =  92.04    DT WALL=  65  MED TRUCK SLE DIST=  91.58    DT W/OB=  25  HVY TRUCK SLE DIST=  90.78    HTH WALL=  6.0  *******  00    OBS HTH=  15.0  AMBIENT=  0.0    ROADWAY VIEN:  LF ANGLE=  -90    RT ANGLE=  10  ADTOMOBILES  10    AUTOMOBILES  10  GRADE ADJUSTMENT=  1.11    HEAVY TRUCKS =  10  (ADJUSTMENT TO HEAVY TRUCKS)  1670.0    BARNER =  0 (0=WALL, 1=BERM)  FACLE =  1670.0  1670.0    PAD EL =  1677.2  EL AUTOMOBILES =  1672.0    GRADE =  4.0 *  EL HEAVY TRUCKS =  1676.0    VEHICLE TYPE  DAY  EVENING  NIGHT  DAILY    AUTOMOBILES  0.775  0.129  0.096  0.9742    MEDIUM TRUCKS  0.848  0.049  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    NOISE IMP	<b>PK HR %</b> =	10					
DIST N/F= 22 (M-76, P=52, S=36, C=12) AUTO SLE DISTANCE = 92.04 DT WALL= 65 MED TRUCK SLE DIST= 91.58 DT W/OB= 25 HVY TRUCK SLE DIST= 90.78 HTW WALL= 6.0 ******* OBS HTH= 15.0 AMBIENT= 0.0 ROADWAY VIEW: LF ANGLE= -90 RT ANGLE= 90 DF ANGLE= 180 SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE) AUTOMOBILES = 10 MEDIUM TRUCKS = 10 GADE ADJUSTMENT= 1.11 HEAVY TRUCKS = 10 GADE ADJUSTMENT= 1.11 HEAVY TRUCKS = 10 GADE ADJUSTMENT= 1.11 HEAVY TRUCKS = 10 GADE ADJUSTMENT= 1.11 HEAVY TRUCKS = 10 GADE ADJUSTMENT= 1.11 HEAVY TRUCKS = 10 GADE ADJUSTMENT= 1.11 HEAVY TRUCKS = 10 GADE ADJUSTMENT= 1.670.0 ROAD EL = 1667.2 EL AUTOMOBILES = 1670.0 GRADE = 4.0 % EL HEAVY TRUCKS = 1672.0 GRADE = 4.0 % DAY EVENING NIGHT DAILY AUTOMOBILES 0.775 0.129 0.096 0.9742 MEDIUM TRUCKS 0.848 0.049 0.103 0.0184 HEAVY TRUCKS IEQ 0.865 0.027 0.108 0.0074 AUTOMOBILES LEQ 64.7 62.8 61.0 54.9 64.2 MEDIUM TRUCKS LEQ 56.4 54.9 48.5 47.0 55.7 HEAVY TRUCKS LEQ 58.4 57.0 48.0 49.2 57.7 VEHICULAR NOISE 66.1 64.3 61.4 56.5 65.5	CTL DIST≍	90					
DT WALL= 65 MED TRUCK SLE DIST= 91.58 DT W/OB= 25 HVY TRUCK SLE DIST= 90.78 HTH WALL= 6.0 ******* OBS HTH= 15.0 AMBIENT= 0.0 ROADWAY VIEW: LF ANGLE= -90 RT ANGLE= 180 SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE) AUTOMOBILES = 10 MEDIUM TRUCKS = 10 (ADJUSTMENT= 1.11 HEAVY TRUCKS = 10 (ADJUSTMENT TO HEAVY TRUCKS) BARRIER = 0 (0=WALL, 1=BERM) PAD EL = 1677.2 EL AUTOMOBILES = 1670.0 ROAD EL = 1668.0 EL MEDIUM TRUCKS= 1672.0 GRADE = 4.0 * EL HEAVY TRUCKS = 1676.0 VEHICLE TYPE DAY EVENING NIGHT DAILY AUTOMOBILES 0.775 0.129 0.096 0.9742 MEDIUM TRUCKS 0.848 0.049 0.103 0.0184 HEAVY TRUCKS U.848 0.049 0.103 0.0184 HEAVY TRUCKS LEQ 56.4 54.9 48.5 47.0 55.7 HEAVY TRUCKS LEQ 56.4 57.0 48.0 49.2 57.7 VEHICULAR NOISE 66.1 64.3 51.4 55.5 65.5	DIST N/F=	22	(M=76,P=52,	S=36,C=12)	AUTO SLE	DISTANCE =	92.04
DT W/OB=  25  HVY TRUCK SLE DIST=  90.78    HTH WALL=  6.0  *******  000  00  00    OBS HTH=  15.0  .0  RT ANGLE=  -90  00  DF ANGLE=  180    SITE CONDITIONS (10-HARD SITE, 15-SOPT SITE)  AUTOMOBILES =  10  GRADE ADJUSTMENT=  1.11    HEAVY TRUCKS =  10  GRADE ADJUSTMENT=  1.11    HEAVY TRUCKS =  10  (ADJUSTMENT TO HEAVY TRUCKS)    BARRIER =  0 (0=WALL, 1=BERM)  PAD EL =  1670.0    ROAD EL =  1677.2  EL AUTOMOBILES =  1672.0    GRADE =  4.0 %  EL HEAVY TRUCKS =  1676.0    VEHICLE TYPE  DAY EVENING NIGHT  DAILY    AUTOMOBILES  0.775  0.129  0.096  0.9742    MEDIUM TRUCKS  0.848  0.049  0.103  0.0164    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    VENICUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  56.4  57.0  48.0  49.2  57.7    <	DT WALL=	65			MED TRUC	K SLE DIST=	91.58
HTH WALL=  6.0  *******    OBS HTH=  15.0    AMBIENT=  0.0    ROADWAY VIEN:  LF ANGLE=  -90    RT ANGLE=  90    DF ANGLE=  180    SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)    AUTOMOBILES =  10    GRADE ADJUSTMENT=  1.11    HEAVY TRUCKS =  10    ADJUSTMENT TO HEAVY TRUCKS  1670.0    ROAD EL =  1677.2    ROAD EL =  1666.0    GRADE =  4.0 *    VEHICLE TYPE  DAY    EVENING  NIGHT    AUTOMOBILES  0.775  0.129    MEDIUM TRUCKS  0.848  0.049  0.103    MEDIUM TRUCKS  0.865  0.027  0.106  0.0074    NOISE IMPACTS WITHOUT TOPO OR PARRIER SHIELDING  NOISE IMPACTS WITHOUT TOPO OR PARRIER SHIELDING    NOISE IMPACTS WITHOUT TOPO OR PARRIER SHIELDING  NOISE 1MPACTS & 454.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  56.4  54.9  48.5  <	DT W/OB=	25			HVY TRUC	K SLE DIST=	90.78
OBS HTH  15.0    AMBIENT=  0.0    ROADWAY VIEN:  LF ANGLE=  -90    RT ANGLE=  90    DF ANGLE=  160    SITE CONDITIONS (10-HARD SITE, 15=SOFT SITE)    AUTOMOBILES =  10    MEDIUM TRUCKS =  10    GRADE ADJUSTMENT=  1.11    HEAVY TRUCKS =  0    GRADE L =  1677.2    ROAD E =  1666.0    GRADE =  4.0 *    VEHICLE TYPE  DAY    EVENING  NIGHT    NUTOMOBILES  0.775  0.129  0.096    VEHICLE TYPE  DAY  EVENING  NIGHT    AUTOMOBILES  0.848  0.049  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    NOISE IMPACTS WITHOUT TOPO OR EARRIER SHIELDING  PK HR LEQ  DAY LEQ  EVEN LEQ NIGHT LEQ  CNEL    AUTOMOBILES LEQ  64.7  62.8  61.0  54.9  64.2    MEDIUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HENVY TRUCKS LEQ <t< td=""><td>HTH WALL=</td><td>6.0</td><td>******</td><td></td><td></td><td></td><td></td></t<>	HTH WALL=	6.0	******				
AMBIENT=  0.0    ROADWAY VIEN:  LF ANGLE=  -90    RT ANGLE=  90    DF ANGLE=  160    SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)    AUTOMOBILES =  10    MEDIUM TRUCKS =  10    GRADE ADJUSTMENT=  1.11    HEAVY TRUCKS =  10    GRADE L =  1677.2    BARRIER =  0 (0=WALL, 1=BERM)    PAD EL =  1668.0    EL AUTOMOBILES =  1670.0    ROAD EL =  1668.0    EL AUTOMOBILES =  1672.0    GRADE =  4.0 *    VEHICLE TYPE  DAY  EVENING    AUTOMOBILES  0.775  0.129  0.096  0.9742    MEDIUM TRUCKS  0.848  0.049  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING  NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING    NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING  PK HR LEQ  DAY LEQ  EVEN LEQ NIGHT LEQ  CNEL    AUTOMOBILES LEQ  64.7  62.8  61.0	OBS HTH=	15.0					
ROADWAY VIEW:  LF ANGLE= -90 RT ANGLE= 90 DF ANGLE= 180    SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE) AUTOMOBILES = 10    MEDIUM TRUCKS = 10    MEDIUM TRUCKS = 10    GRADE ADJUSTMENT TO HEAVY TRUCKS)    BARRIER = 0 (0=WALL, 1=BERM)    PAD EL = 1677.2    ROAD EL = 1668.0    GRADE = 4.0 %    VEHICLE TYPE    DAY    EVENING    NIGHT    MUTOMOBILES    0.775    0.129    0.848    0.848    0.865    0.865    0.865    0.865    0.865    0.865    0.865    0.865    0.865    0.865    0.865    0.865    0.865    0.865    0.9742    MEDIUM TRUCKS    0.865    0.865    0.996    0.9742    MEDIUM TRUCKS    0.984    0.997    0.103    0.865    0.996 <t< td=""><td>AMBIENT=</td><td>0.0</td><td></td><td></td><td></td><td></td><td></td></t<>	AMBIENT=	0.0					
RT ANGLE=  90    DF ANGLE=  180    SITE CONDITIONS (10=HARD SITE, 15=SOFT SITE)    AUTOMOBILES =  10    MEDIUM TRUCKS =  10    GRADE ADJUSTMENT=  1.11    HEAVY TRUCKS =  10    GRADE ADJUSTMENT=  1.11    HEAVY TRUCKS =  10    AUTOMOBILES =  0 (0=WALL, 1=BERM)    PAD EL =  1666.0    CRADE =  1666.0    CRADE =  4.0 %    VEHICLE TYPE  DAY    EVENING  NIGHT    AUTOMOBILES  0.775  0.129  0.096  0.9742    MEDIUM TRUCKS  0.848  0.049  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    NOISE IMPACTS WITHOUT TOPO OR EARRIER SHIELDING  NOISE IMPACTS WITHOUT TOPO OR EARRIER SHIELDING    NOISE IMPACTS WITHOUT TOPO OR EARRIER SHIELDING  NEL    MEDIUM TRUCKS LEQ  64.7  62.8  61.0  54.9  64.2    MEDIUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  58.4 <t< td=""><td>ROADWAY VI</td><td>EW:</td><td>LF ANGLE≠</td><td>-90</td><td></td><td></td><td></td></t<>	ROADWAY VI	EW:	LF ANGLE≠	-90			
DF ANGLE=    180      SITE CONDITIONS (10-HARD SITE, 15-SOFT SITE)    AUTOMOBILES =    10      AUTOMOBILES =    10    GRADE ADJUSTMENT=    1.11      HEAVY TRUCKS =    10    (ADJUSTMENT TO HEAVY TRUCKS)    BARRIER =    0 (0=WALL, 1=BERM)      FAD EL =    1677.2    EL AUTOMOBILES =    1670.0      ROAD EL =    1668.0    EL MEDIUM TRUCKS =    1676.0      CRADE =    4.0 %    EL HEAVY TRUCKS =    1676.0      VEHICLE TYPE    DAY    EVENING    NIGHT    DAILY      AUTOMOBILES    0.775    0.129    0.096    0.9742      MEDIUM TRUCKS    0.848    0.049    0.103    0.0184      HEAVY TRUCKS    0.865    0.027    0.108    0.0074      PK HR LEQ    DAY LEQ    EVEN LEQ NIGHT LEQ    CNEL      AUTOMOBILES LEQ    64.7    62.8    61.0    54.9    64.2      MEDIUM TRUCKS LEQ    56.4    54.9    48.5    47.0    55.7      HEAVY TRUCKS LEQ    58.4    57.0    48.0			RT ANGLE=	90			
SITE CONDITIONS (10-HARD SITE, 15=SOFT SITE)    AUTOMOBILES =  10    MEDIUM TRUCKS =  10    GRADE ADJUSTMENT =  1.11    HEAVY TRUCKS =  10  (ADJUSTMENT TO HEAVY TRUCKS)    BARRIER =  0 (0=WALL,1=BERM)    PAD EL =  1677.2  EL AUTOMOBILES =  1670.0    ROAD EL =  1668.0  EL MEDIUM TRUCKS =  1672.0    GRADE =  4.0 *  EL HEAVY TRUCKS =  1676.0    VEHICLE TYPE  DAY  EVENING  NIGHT  DAILY    AUTOMOBILES  0.775  0.129  0.096  0.9742    MEDIUM TRUCKS  0.848  0.049  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    MEDIUM TRUCKS  LEQ  DAY  EVEN LEQ  NIGHT  LEQ    NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING			DF ANGLE=	180			
AUTOMOBILES =  10    MEDIUM TRUCKS =  10  GRADE ADJUSTMENT=  1.11    HEAVY TRUCKS =  10  (ADJUSTMENT TO HEAVY TRUCKS)    BARRIER =  0 (0=WALL, 1=BERM)    FAD EL =  1677.2  EL AUTOMOBILES =  1670.0    ROAD EL =  1668.0  EL MEDIUM TRUCKS =  1672.0    GRADE =  4.0 %  EL HEAVY TRUCKS =  1676.0    VEHICLE TYPE  DAY  EVENING  NIGHT  DAILY    AUTOMOBILES  0.775  0.129  0.096  0.9742    MEDIUM TRUCKS  0.848  0.049  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    MEDIUM TRUCKS  IMPACTS WITHOUT TOPO OR BARRIER SHIELDING  NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING  NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING    NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING  PK HR LEQ  DAY LEQ  EVEN LEQ NIGHT LEQ  CNEL    AUTOMOBILES LEQ  64.7  62.8  61.0  54.9  64.2  57.7    MEDIUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7  57.7	SITE CONDI	TIONS (10-	HARD SITE, 3	15=SOFT SITE)			
MEDIUM TRUCKS =  10  GRADE ADJUSTMENT =  1.11    HEAVY TRUCKS =  10  (ADJUSTMENT TO HEAVY TRUCKS)    BARRIER =  0 (0=WALL, 1=BERM)    PAD EL =  1677.2  EL AUTOMOBILES =  1670.0    ROAD EL =  1668.0  EL MEDIUM TRUCKS =  1672.0    GRADE =  4.0 %  EL HEAVY TRUCKS =  1676.0    VEHICLE TYPE  DAY  EVENING  NIGHT  DAILY    AUTOMOBILES  0.775  0.129  0.096  0.9742    MEDIUM TRUCKS  0.848  0.049  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    AUTOMOBILES LEQ  DAY LEQ  EVEN LEQ NIGHT LEQ  CNEL    AUTOMOBILES LEQ  64.7  62.8  61.0  54.9  64.2    MEDIUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  58.4  57.0  48.0  49.2  57.7    VEHICULAR NOISE  66.1  64.3  61.4  55.5  65.5	AUTOMOBIL	ES =	10				
HEAVY TRUCKS =  10  (ADJUSTMENT TO HEAVY TRUCKS)    BARRIER =  0 (0=WALL, 1=BERM)  EL AUTOMOBILES =  1670.0    ROAD EL =  1668.0  EL AUTOMOBILES =  1672.0    GRADE =  4.0 %  EL HEAVY TRUCKS =  1676.0    VEHICLE TYPE  DAY  EVENING  NIGHT  DAILY    AUTOMOBILES  0.775  0.129  0.096  0.9742    MEDIUM TRUCKS  0.848  0.049  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    PK HR LEQ  DAY LEQ  EVEN LEQ NIGHT LEQ  CNEL    AUTOMOBILES LEQ  64.7  62.8  61.0  54.9  64.2    MEDIUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  58.4  57.0  48.0  49.2  57.7    VEHICULAR NOISE  66.1  64.3  61.4  55.5  65.5	MEDIUM TR	UCKS =	10		GRADE AD.	JUSTMENT≠	1.11
BARRIER =  0 (0=WALL, 1=BERM)    PAD EL =  1677.2  EL AUTOMOBILES =  1670.0    ROAD EL =  1668.0  EL MEDIUM TRUCKS =  1672.0    GRADE =  4.0 %  EL HEAVY TRUCKS =  1676.0    VEHICLE TYPE  DAY  EVENING  NIGHT  DAILY    AUTOMOBILES  0.775  0.129  0.096  0.9742    MEDIUM TRUCKS  0.848  0.049  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING  PK HR LEQ  DAY LEQ  EVEN LEQ NIGHT LEQ  CNEL    AUTOMOBILES LEQ  64.7  62.8  61.0  54.9  64.2    MEDIUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  56.4  57.0  48.0  49.2  57.7    VEHICULAR NOISE  66.1  64.3  61.4  55.5  65.5	HEAVY TRU	CKS =	10		(ADJUSTMI	ENT TO HEAVY	TRUCKS)
PAD EL =  1677.2  EL AUTOMOBILES =  1670.0    ROAD EL =  1668.0  EL MEDIUM TRUCKS =  1672.0    GRADE =  4.0 %  EL MEDIUM TRUCKS =  1676.0    VEHICLE TYPE  DAY  EVENING  NIGHT  DAILY    AUTOMOBILES  0.775  0.129  0.096  0.9742    MEDIUM TRUCKS  0.848  0.045  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    NOISE IMPACTS WITHOUT TOPO OR PARRIER SHIELDING  PK HR LEQ  DAY LEQ  EVEN LEQ NIGHT LEQ  CNEL    AUTOMOBILES LEQ  64.7  62.8  61.0  54.9  64.2    MEDIUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  56.4  54.9  48.0  49.2  57.7    VEHICULAR NOISE  66.1  64.3  61.4  55.5  65.5	BARRIER =	0	(0=WALL,1=B	ERM)			
ROAD EL =  1668.0  EL MEDIUM TRUCKS =  1672.0    GRADE =  4.0 %  EL HEAVY TRUCKS =  1676.0    VEHICLE TYPE  DAY  EVENING  NIGHT  DAILY    AUTOMOBILES  0.775  0.129  0.096  0.9742    MEDIUM TRUCKS  0.848  0.049  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING  PK HR LEQ  DAY LEQ  EVEN LEQ NIGHT LEQ  CNEL    AUTOMOBILES LEQ  64.7  62.8  61.0  54.9  64.2    MEDIUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  58.4  57.0  48.0  49.2  57.7    VEHICULAR NOISE  66.1  64.3  61.4  56.5  65.5	PAD EL =	1677.2			EL AUTOMO	DBILES =	1670.0
GRADE  =  4.0 %  EL HEAVY TRUCKS =  1676.0    VEHICLE TYPE  DAY  EVENING  NIGHT  DAILY    AUTOMOBILES  0.775  0.129  0.096  0.9742    MEDIUM TRUCKS  0.848  0.049  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING  PK HR LEQ  DAY LEQ  EVEN LEQ  NIGHT LEQ  CNEL    AUTOMOBILES LEQ  64.7  62.8  61.0  54.9  64.2    MEDIUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  58.4  57.0  48.0  49.2  57.7    VEHICULAR NOISE  66.1  64.3  61.4  56.5  65.5	ROAD EL =	1668.0			EL MEDIUN	M TRUCKS=	1672.0
VEHICLE TYPE    DAY    EVENING    NIGHT    DAILY      AUTOMOBILES    0.775    0.129    0.096    0.9742      MEDIUM TRUCKS    0.848    0.049    0.103    0.0184      HEAVY TRUCKS    0.865    0.027    0.108    0.0074      NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING    PK HR LEQ    DAY LEQ    EVEN LEQ    NIGHT LEQ    CNEL      AUTOMOBILES LEQ    64.7    62.8    61.0    54.9    64.2      MEDIUM TRUCKS LEQ    56.4    54.9    48.5    47.0    55.7      HEAVY TRUCKS LEQ    58.4    57.0    48.0    49.2    57.7      VEHICULAR NOISE    66.1    64.3    61.4    56.5    65.5	GRADE =	4.0	8		EL HEAVY	TRUCKS =	1676.0
AUTOMOBILES  0.775  0.129  0.096  0.9742    MEDIUM TRUCKS  0.848  0.049  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING    PK HR LEQ  DAY LEQ  EVEN LEQ NIGHT LEQ  CNEL    AUTOMOBILES LEQ  64.7  62.8  61.0  54.9  64.2    MEDIUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  58.4  57.0  48.0  49.2  57.7    VEHICULAR NOISE  66.1  64.3  61.4  56.5  65.5	VEHICLE TYP	?E		Dž	AY EVENING	G NIGHT	DAILY
AUTOMOBILES  0.173  0.123  0.036  0.3742    MEDIUM TRUCKS  0.848  0.049  0.103  0.0184    HEAVY TRUCKS  0.865  0.027  0.108  0.0074    NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING    PK HR LEQ  DAY LEQ  EVEN LEQ NIGHT LEQ  CNEL    AUTOMOBILES LEQ  64.7  62.8  61.0  54.9  64.2    MEDIUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  58.4  57.0  48.0  49.2  57.7    VEHICULAR NOISE  66.1  64.3  61.4  56.5  65.5	NUTCHORTLE					0 086	0 0242
HEAVY TRUCKS  0.865  0.027  0.103  0.0074    NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING    PK HR LEQ  DAY LEQ  EVEN LEQ  NIGHT LEQ  CNEL    AUTOMOBILES LEQ  64.7  62.8  61.0  54.9  64.2    MEDIUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  58.4  57.0  48.0  49.2  57.7    VEHICULAR NOISE  66.1  64.3  61.4  56.5  65.5	AUTOMOBILIES	, ve		0.77	0.129	0.058	0.3742
NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDINGPK HR LEQDAY LEQEVEN LEQNIGHT LEQCNELAUTOMOBILES LEQ64.762.861.054.964.2MEDIUM TRUCKS LEQ56.454.948.547.055.7HEAVY TRUCKS LEQ58.457.048.049.257.7VEHICULAR NOISE66.164.361.456.565.5	MEDIOM TRUC	-6-		0.840	, 0.045 ; 0.027	0.105	0.0134
NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDINGPK HR LEQDAY LEQEVEN LEQNIGHT LEQCNELAUTOMOBILES LEQ64.762.861.054.964.2MEDIUM TRUCKS LEQ56.454.948.547.055.7HEAVY TRUCKS LEQ58.457.048.049.257.7VEHICULAR NOISE66.164.361.456.565.5	HEAVI TRUCK	3		0.001	0.027	0.105	0.0074
PK HR LEQ    DAY LEQ    EVEN LEQ    NIGHT LEQ    CNEL      AUTOMOBILES LEQ    64.7    62.8    61.0    54.9    64.2      MEDIUM TRUCKS LEQ    56.4    54.9    48.5    47.0    55.7      HEAVY TRUCKS LEQ    58.4    57.0    48.0    49.2    57.7      VEHICULAR NOISE    66.1    64.3    61.4    56.5    65.5			NOISE IMPAC	TS WITHOUT TO	PO OR BARRI	IER SHIELDING	
AUTOMOBILES LEQ  64.7  62.8  61.0  54.9  64.2    MEDIUM TRUCKS LEQ  56.4  54.9  48.5  47.0  55.7    HEAVY TRUCKS LEQ  58.4  57.0  48.0  49.2  57.7    VEHICULAR NOISE  66.1  64.3  61.4  56.5  65.5			DE NE LEO	DAY LEO	EVEN LEO	NICHT LEO	CNFL.
MEDIUM TRUCKS LEQ    56.4    54.9    48.5    47.0    55.7      HEAVY TRUCKS LEQ    58.4    57.0    48.0    49.2    57.7      VEHICULAR NOISE    66.1    64.3    61.4    56.5    65.5		LEO	64 7	62 A	61 0	54 9	64 2
HEAVY TRUCKS LEQ    58.4    57.0    48.0    49.2    57.7      VEHICULAR NOISE    66.1    64.3    61.4    56.5    65.5	MEDIUM TOUC	י אייע אינ ד.די	56 4	54 9	48.5	47.0	55.7
VEHICULAR NOISE 66.1 64.3 61.4 56.5 65.5	NERVY TRUC	S LEO	58 4	57 0	48.0	49.2	57 7
VEHICULAR NOISE 66.1 64.3 61.4 56.5 65.5	NEAVI INUCK	אמת פי	50.4	57.0		12.6	
	VEHICULAR N	OISE	66.1	64.3	61.4	56.5	65.5

PK HR LEQ	DAY	LEQ	EVEN LE	CQ NIGHT	LEQ	CNEL
VEHICULAR NOISE 66.1		64.3	61.	. 4	56.5	65.5
			W/O AMB	BIENT	ω,	AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=		66.	.1		66.1
MIT PK HR LEQ WITH TOPO AND BARRIER	=		66.	.1 **	****	66.1
CNEL WITHOUT TOPO AND BARRIER	=		65.	. 5		65.5
MIT CNEL WITH TOPO AND BARRIER	¥		65.	.5 **	****	65.5

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT: TTM 160	72 - RANCHO CU	JCAMONGA	-	JOB #:	1058-02-01
ROADWAY: EAST AV	ENUE			DATE:	03-Oct-02
LOCATION: LOT 181	- BY (NO WALL)			BY:	MIKE ROSA
ADT = 14,000	)	· · · · · · · · · · · · · · · · · · ·		PK HR VOL =	1,400
SPEED = 40	)				
PK HR % = 10	)				
CTL DIST≃ 63	3				
D1ST N/F= 22	2 (M=76,P=52,	S=36,C=12)	AUTO SLE	DISTANCE =	62.68
DT WALL= 56	3		MED TRUCK	SLE DIST=	62.43
DT W/OB= 5	5		HVY TRUCK	SLE DIST=	62.10
HTH WALL= 0.0	) *******				
OBS HTH≈ 5.0	נ				
AMBIENT= 0.0	2				
ROADWAY VIEW:	LF ANGLE=	- 90			
	RT ANGLE=	90			
	DF ANGLE=	180			
SITE CONDITIONS (10	D=HARD SITE, 1	5=SOFT SITE)			
AUTOMOBILES =	10				
MEDIÚM TRUCKS =	10		GRADE ADJ	USTMENT=	1.75
HEAVY TRUCKS =	10		(ADJUSTME	INT TO HEAVY	TRUCKS)
BARRIER =	0 (0=WALL,1=B)	ERM)			
<b>PAD EL = <math>1720.0</math></b>	)		EL AUTOMO	BILES =	· 1 <b>716</b> .0
ROAD EL = $1714.0$	1		EL MEDIUM	TRUCKS=	1718.0
GRADE = 6.0	} <b>%</b> ;		EL HEAVY	TRUCKS =	1722.0
VEHICLE TYPE		DAY	EVENING	; NIGHT	DAILY
AUTOMOBILES		0,775	0.129	0.096	0.9742
MEDIUM TRUCKS		0.848	0.049	0.103	0.0184
HEAVY TRUCKS		0.865	0.027	0.108	0.0074
	NOTES TABL		0 00 03001		<u></u>
	NOISE IMPACI	S WIINOUI IOP	U OK BARRI	DK SHIEDDING	
	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	66.3	64.4	62.7	56.6	65.8
MEDIUM TRUCKS LEQ	58.1	56.6	50.2	48.6	57.3
HEAVY TRUCKS LEQ	60.7	59.3	50.3	51.5	60.0
VEHICIDAR NOISE	67 9	CC 1	63 1		67.3

PK HR LEQ	DAY	LEQ	EVEN	LEQ	NIGHT	LEQ	CNEL
VEHICULAR NOISE 67.9		66.1		63.1	Ę	58.3	67.3
			W/O A	MBIEN	T	1	W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=		ę	57.9			67.9
MIT PK HR LEQ WITH TOPO AND BARRIER	=		ť	67. <del>9</del>	***	****	67.9
CNEL WITHOUT TOPO AND BARRIER	=		e	57.3			67.3
MIT CNEL WITH TOPO AND BARRIER	=		í	67.3	* * 1	****	67.3

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PRODECT: TIM 160	2 - RANCHO CUCAMONGA		JCB #:	1058-02-01
ROADWAY: BAST AVE	INUE		DATE:	03~0ct-02
LOCATION: LOT 181 -	BY (WITH WALL)		BY:	MIKE ROSA
ADT = 14,000			PK HR VOL :	= 1,400
SPEED = 40				
PK HR 🖁 = IO				
CTL DIST= 63				
DIST N/F= 22	(M=76,P=52,S=36,C=12)	AUTO SLE	DISTANCE =	63.13
DT WALL= 58		MED TRUCK	K SLE DIST≈	62.80
DT W/OB= 5		HVY TRUCH	SLE DIST=	62.34
HTH WALL= 6.5	****			
OBS HTH= 5.0				
AMBIENT= 0.0				
ROADWAY VIEW:	LF ANGLE= ~90			
	RT ANGLE= 90			
	DF ANGLE= 180			
SITE CONDITIONS (10	=HARD SITE, 15=SOFT SITE)			
AUTOMOBILES =	10			
MEDIUM TRUCKS =	10	GRADE ADJ	USTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTME	INT TO HEAVY	TRUCKS)
BARRIER =	0 (0=WALL,I=BERM)			
PAD EL = 1720.0		EL AUTOMO	BILES =	1716.0
ROAD EL = 1714.0		EL MEDIUM	TRUCKS=	1718.0
GRADE = 6.0	8	EL HEAVY	TRUCKS =	1722.0
VEHICLE TYPE	עם	AY EVENING	NIGHT	DAILY
AUTOMOBILES	0.775	5 0.129	0.096	0.9742
MEDIUM TRUCKS	0.846	0.049	0.103	0.0184
HEAVY TRUCKS	0.865	0. <b>02</b> 7	0.108	0.0074
	NOISE IMPACTS WITHOUT TO	PO OR BARRI	ER SHIELDING	<u> </u>
	PK HR LEQ DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	66.3 64.4	62.6	56.6	65.8
MEDIUM TRUCKS LEQ	58.0 56.5	50.2	48.6	57.3
HEAVY TRUCKS LEQ	60.7 59.3	50.3	51.5	60.0

PK HR LEQ	DAY	LEQ	EVEN LEQ NI	GHT LEQ	CNEL
VEHICULAR NOISE 59.6	•	57.0	54.8	50.0	59.0
			W/O AMBIENT	ş	V/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARR	IER =		67.8		67.8
MIT PK HR LEQ WITH TOPO AND BA	RRIER =		59.6	******	59.6
CNEL WITHOUT TOPO AND BARRIER	=		67.3		67.3
MIT CNEL WITH TOPO AND BARRIER	. =		59.0	******	59.0

#### 1/9/2024 Board Meeting FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT:	TTM 1607;	2 - RANCHO C	UCAMONGA		JOB #:	1058-02-01
RUADWAY;	EAST AVE	NUE			DATE:	03-Oct-02
LOCATION;	LOT 181 -	1ST FLOOR FAC	LADE (WITH WAL	.L)	BY:	MIKE ROSA
ADT =	14,000		· · · · · · ·		PK HR VOL =	= 1,400
SPEED =	40					
PK HR % =	10					
CTL DIST=	83					
DIST N/F=	22	(M=76,P=52,	S=36,C=12)	AUTO SLE	DISTANCE =	83.04
DT WALL=	58			MED TRUCK	SLE DIST=	82.70
DT W/OB-	25			HVY TRUCK	SLE DIST=	82.21
HTH WALL=	6.5	******				
OBS HTH=	5.0					
AMBIENT=	0.0					
ROADWAY VIE	₩:	LF ANGLE=	-90			
		RT ANGLE=	90			
		DF ANGLE=	180			
SITE CONDIT	IONS (10=	HARD SITE,	15≃SOFT SITE	:)		
AUTOMOBILE	S =	10				
MEDIUM TRU	CKS =	10		GRADE ADJ	USTMENT=	1.75
HEAVY TRUC	KS =	10		(ADJUSTME	NT TO HEAVY	TRUCKS)
BARRIER =	0	(0=WALL,1=E	IERM)			
PAD EL =	1720.5			EL AUTOMO	BILES =	1716.0
ROAD EL =	1714.0			EL MEDIUM	TRUCKS=	1 <b>718</b> .0
GRADE =	6.0	8		EL HEAVY	FRUCKS =	1722.0
VEHICLE TYP	E		1	DAY EVENING	NIGHT	DAILY
AUTOMOBILES	<b>-</b>		0.7	75 0.129	0.096	0.9742
MEDIUM TRUCH	KS		0.8	48 0.049	0.103	0.0184
HEAVY TRUCKS	3		0.80	55 0.027	0.108	0.0074

#### NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
65.1	63.2	61.4	55.4	64.6
56.8	55.3	49.0	47.4	56.1
59.5	58.1	<b>49.I</b>	50.3	58.6
66.6	64.9	61.9	57.1	66.1
	PK HR LEQ 65.1 56.8 59.5 66.6	PK HR LEQ    DAY LEQ      65.1    63.2      56.8    55.3      59.5    58.1      66.6    64.9	PK HR LEQ    DAY LEQ    EVEN LEQ      65.1    63.2    61.4      56.8    55.3    49.0      59.5    58.1    49.1      66.6    64.9    61.9	PK HR LEQ    DAY LEQ    EVEN LEQ    NIGHT LEQ      65.1    63.2    61.4    55.4      56.8    55.3    49.0    47.4      59.5    58.1    49.1    50.3      66.6    64.9    61.9    57.1

#### NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 58.6		56.8	53.8	49.0	58.0
			W/O AMBIEN	Т	W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	<b>2</b>		66.6		66 <b>.6</b>
MIT PK HR LEQ WITH TOPO AND BARRIER	=		58.6	******	5B.G
CNEL WITHOUT TOPO AND BARRIER	=		66.I		66.1
MIT CNEL WITH TOPO AND BARRIER	=		58.0	******	58.0

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#### FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT :	TTM 1607	2 - RANCHO	CUCAM	onga		JOB #:	1058-02-01
ROADWAY :	EAST AVE	NUE				DATE:	03-Oct-02
LOCATION:	LOT 181 -	2ND FLOOR F.	ACADE	(WITH WALL)		BY:	MIKE ROSA
ADT =	14,000					PK HR VOL -	- 1,400
SPEED =	40						
PK HR  =	10						
CTL DIST=	83						
DIST N/F=	22	(M=76,P=5)	2,5=36	(C=12)	AUTO SLE	DISTANCE =	84.55
DT WALL=	58				MED TRUCK	SLE DIST=	84.11
DT W/OB=	25				HVY TRUCK	SLE DIST=	83.37
HTH WALL=	6.5	******	*				
OBS HTH=	15.0						
AMBIENT=	0.0						
ROADWAY VI	EW:	LF ANGLE=	- <b>9</b> Ç	1			
		RT ANGLE=	90	)			
		DF ANGLE=	180	1			
SITE CONDI	TIONS (10=	HARD SITE,	15=SC	OFT SITE)			
AUTOMOBIL	ES =	1	0				
MEDIUM TR	UCKS =	1	0		GRADE ADJ	USTMENT=	1.75
HEAVY TRU	CKS =	1	0		(ADJUSTMET	NT TO HEAVY	TRUCKS)
BARRIER =	c	) (0×WALL,1=	BERM)				
PAD EL =	1720.5				EL AUTOMOR	BILES =	1716.0
ROAD EL =	1714.0				EL MEDIUM	TRUCKS=	1718.0
GRADE =	6.0	8			EL HEAVY T	TRUCKS =	1722.0
VEHICLE TY	PE			DAY	EVENING	NIGHT	DAILY
AUTOMOBILES				0.775	0.129	0.096	0.9742
MEDIUM TRUC	CKS			0.848	0.049	0.103	0.0184
HEAVY TRUCK	KS			0.865	0.027	0.108	0.0074

	NOISE 1	IMPACTS	WITHO	UT TOP	O OR BARR	IER SHIELDING	3
	PK HR I	EQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	6	5.0		63.1	61.4	55.3	64.5
MEDIUM TRUCKS LEQ	5	6.8		55.3	48.9	47.4	56.0
HEAVY TRUCKS LEQ	5	9.4		58.0	49.0	50.2	58.7
VEHICULAR NOISE	6	6.6		64.8	61.8	57.0	66.0

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 66.6		64.8	61.8	57.0	66.0
			W/O AMBIEN	T W	/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIE	R =		66.6		66.6
MIT PK HR LEQ WITH TOPO AND BARR	IER =		66.6	*****	66.6
CNEL WITHOUT TOPO AND BARRIER	=		66.0		66.0
MIT CNEL WITH TOPO AND BARRIER	=		66.0	*** * * * *	66.0

### 1/9/2024 Board Meeting FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO), Page 123 of 367 ORANGE COUNTY

PROJECT:	TTM 1607;	2 - RANCHO C	UCAMONGA			JOB #:	1058-02-01
ROADWAY :	EAST AVE	NUE				DATE :	03-Oct-02
LOCATION:	LOT 213 -	BY (NO WALL)				BY:	MIKE ROSA
ADT =	14,000	· · · ·			• • • • • • • • • • • • • • • • •	PK HR VOL =	1,400
SPEED =	40						
PK HR ¥ ≠	10						
CTL DIST=	64						
DIST N/F=	22	(M=76,P=52,	S=36,C=1	2)	AUTO SLE I	DISTANCE =	63.39
DT WALL=	59				MED TRUCK	SLE DIST=	63.22
DT W/OB=	5				HVY TRUCK	SLE DIST=	63.05
HTH WALL-	0.0	******					
OBS HTH≖	5.0						
AMBIENT-	0.0						
ROADWAY VII	EW:	LF ANGLE=	-90				
		RT ANGLE=	90				
		DF ANGLE=	180				
SITE CONDIT	rions (10=	HARD SITE, 1	5=SOFT S	SITE)			
AUTOMOBILI	ES ⇒	10					
MEDIUM TRU	JCKS =	10			GRADE ADJ	JSTMENT=	0.00
HEAVY TRUC	CKS =	10			(ADJUSTME)	T TO HEAVY	TRUCKS)
BARRIER =	0	(0=WALL,1=B	ERM)				
PAD EL =	1759.6				EL AUTOMOR	ILES =	1758.0
ROAD EL =	1756.0				EL MEDIUM	TRUCKS=	1760.0
GRADE =	2.0	8			EL HEAVY 1	RUCKS =	1764.0
VEHICLE TYP	Æ			DAY	EVENING	NIGHT	DAILY
AUTOMOBILES				0.775	0.129	0.096	0.9742
MEDIUM TRUC	:KS			0.848	0.049	0.103	0.0184
HEAVY TRUCK	S			0.865	0,027	0,108	0.0074

#### NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	66.3	64.4	62.6	56.6	65.8
MEDIUM TRUCKS LEQ	58.0	56.5	50.1	40.6	57.3
HEAVY TRUCKS LEQ	58.9	57,5	48.5	49.7	. 58.2
VEHICULAR NOISE	67.5	65.7	63.0	57.9	67.0

#### NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

PK HR L	LEQ DAY	LEQ EVEN	LEQ NIGHT	LEQ	CNEL
VEHICULAR NOISE 67	7.5	65.7	63.0	57.9	67.0
		W/O 2	AMBIENT	W/	AMBIENT
PK HR LEQ WITHOUT TOPO OR BA	ARRIER =		67.5		67.5
MIT PK HR LEQ WITH TOPO AND	BARRIER =		67.5 **	*****	67.5
CNEL WITHOUT TOPO AND BARRIE	ER =		67.0		67.0
MIT CNEL WITH TOPO AND BARRE	IER =		67.0 **	*****	67.0

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HEAVY TRUCKS LEQ

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT: TTM 1607	2 - RANCHO CUC	MONGA		JOB #:	1058-02-01
ROADWAY: EAST AVE	NUE			DATE:	03-Oct-02
LOCATION: LOT 213 -	BY (WITH WALL)			BY:	MIKE ROSA
ADT = 14,000				PK HR VOL =	1,400
SPEED = 40					
PK HR % = 10					
CTL DIST= 64					
DIST N/F= 22	(M=76,₽=52,S=	36,C=12)	AUTO SLE	DISTANCE =	63.75
DT WALL= 59			MED TRUCH	( SLE DIST=	63.51
DT W/OB⊨ 5			HVY TRUCH	( SLE DIST≂	63.22
HTH WALL= 6.5	*******				
OBS HTH= 5.0					
AMBIENT= 0.0					
ROADWAY VIEW:	LF ANGLE= -	90			
	RT ANGLE=	90			
	DF ANGLE= 1	80			
SITE CONDITIONS (10	=HARD SITE, 15=	SOFT SITE)			
AUTOMOBILES =	10				
MEDIUM TRUCKS =	10		GRADE ADJ	USTMENT=	0.00
HEAVY TRUCKS =	10		(ADJUSTME	NT TO HEAVY	TRUCKS)
BARRIER =	0 (0=WALL,1=BER	м)			
PAD EL = 1759.6			EL AUTOMO	BILES =	1758.0
ROAD EL = 1756.0			EL MEDIUM	TRUCKS=	1760.0
GRADE = 2.0	Æ		EL HEAVY	TRUCKS =	1764.0
VEHICLE TYPE		DAY	EVENING	NIGHT	DAILY
AUTOMOBILES		0.775	0.129	0.096	0.9742
MEDIUM TRUCKS		0.848	0.049	0,103	0.0184
HEAVY TRUCKS		0.865	0.027	0.108	0.0074
	NOISE IMPACTS	WITHOUT TOP	J UK BARKI	ER SHIELDING	
	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	66.3	64.4	62.6	56.5	65.8
MEDIUM TRUCKS LEQ	58.0	56.5	50.1	48.6	57,3

VEHICULAR NOISE	67.5	65.7	63.0	57.9	67.0

58.9

#### NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

57.5

48.4

49.7

58.2

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 59.6		57.8	55.1	50.0	59.0
			W/O AMBIEN	т	W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=		67.5		67.5
MIT PK HR LEQ WITH TOPO AND BARRI	ER =		59.6	******	59.6
CNEL WITHOUT TOPO AND BARRIER	=		67.0		67.0
MIT CNEL WITH TOPO AND BARRIER	=		59.0	******	59.0

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 1/9/2024 Board Meeting
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 Attachment 4, Page 125 of 367

 FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO)
ORANGE COUNTY

PROJECT: TTM	16072 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY: EAST	AVENUE	DATE :	03-Oct-02
LOCATION: LOT	213 - 1ST FLOOR FACADE (WITH WALL)	BY:	MIKE ROSA
ADT = 14	,000	PK HR VOL	= 1,400
SPEED =	40		
PK HR 🖁 =	10		
CTL DIST=	84		
DIST N/F=	22 (M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =	83.64
DT WALL=	59	MED TRUCK SLE DIST=	83.38
DT W/OB≠	25	HVY TRUCK SLE DIST=	83.07
HTH WALL=	6.5 ******		
OBS HTH=	5.0		
AMBIENT=	0.0		
ROADWAY VIEW:	LF ANGLE= -90		
	RT ANGLE= 90		
	DF ANGLE= 180		
SITE CONDITIONS	(10=HARD SITE, 15=SOFT SITE)		
AUTOMOBILES	= 10		
MEDIUM TRUCKS	= 10	GRADE ADJUSTMENT=	0.00
REAVY TRUCKS	= 10	(ADJUSTMENT TO HEAVY	TRUCKS)
BARRIER =	0 (O≍WALL,1=BERM)		
PAD EL = $176$	50.1	EL AUTOMOBILES =	1758.0
ROAD EL = 175	56.0	EL MEDIUM TRUCKS=	1760.0
GRADE =	2.0 %	EL HEAVY TRUCKS =	1764.0
VEHICLE TYPE	DAY	EVENING NIGHT	DAIL
AUTOMOBILES	0.775	0.129 0.096	0.9742
MEDIUM TRUCKS	0.848	0.049 0.103	0.0184
HEAVY TRUCKS	0.8 <b>6</b> 5	0.027 0.108	0.0074
	NOISE IMPACTS WITHOUT TOPO	OR BARRIER SHIELDING	
	PK HR LEO DAY LEO	EVEN DEO NIGHT LEO	CNEL.
AUTOMOBILES LEO	65.1 63.2	61.4 55 3	64 F
MEDIUM TRUCKS LE	O 56.8 55.3	48.9 47.4	56.1
HEAVY TRUCKS LEQ	57.7 56.3	47.3 48.5	57.0
VEHICULAR NOISE	66.3 64.5	61.8 S6.7	65.8
	NOISE IMPACTS WITH TOPO AN	D BARRIER SHIELDING	<u></u>

PK HR LEQ	DAY	LEQ	EVEN LEO N	IGHT LEQ	CNEL
VEHICULAR NOISE 58.9		57.1	54.4	49.3	5B.4
			W/O AMBIENT		W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	Ŧ		66.3		66.3
MIT PK HR LEQ WITH TOPO AND BARRIER	=		58.9	*****	58.9
CNEL WITHOUT TOPO AND BARRIER	=		65.8		65.8
MIT CNEL WITH TOPO AND BARRIER	±.		58.4	******	58.4

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# 7-10

# FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

<u></u>					
PROJECT: TTM 160	72 - RANCHO CU	ICAMONGA		JOB #:	1058-02-01
ROADWAY: EAST AV	/ENUE			DATE:	03-Oct-02
LOCATION: LOT 213	- 1ST FLOOR FACE	ADE (WITH WALL)		BY:	MIKE ROSA
ADT = 14,00	0			PK HR VOL	<b>≖ 1,400</b>
SPEED = 4	0				
PK HR % = 1	0				
CTL DIST≠ 8	4				
DIST N/F= 2	2 (M=76,P=52,S	S=36,C=12)	AUTO SLE	DISTANCE =	85.01
DT WALL= 5	9		MED TRUCI	K SLE DIST=	84.63
DT W/OB= 2	5		HVY TRUCK	K SLE DIST=	84.01
HTH WALL= 6.	5 *******				
OBS HTH= 15.	0				
AMBIENT= 0.	0				
ROADWAY VIEW:	LF ANGLE=	-90			
	RT ANGLE=	90			
	DF ANGLE=	180			
SITE CONDITIONS (1	0=HARD SITE, 1	5=SOFT SITE)			
AUTOMOBILES =	10				
MEDIUM TRUCKS =	10		GRADE AD.	JUSTMENT≠	0.00
HEAVY TRUCKS =	10		(ADJUSTME	ENT TO HEAVY	TRUCKS)
BARRIER =	0 (0=WALL,1=BE	RM)			
PAD EL = 1760.	1		EL AUTOMO	BILES =	1758.0
ROAD EL = 1756.	0		EL MEDIUM	TRUCKS=	1760.0
GRADE = 2.0	0%		EL HEAVY	TRUCKS =	1764.0
VEHICLE TYPE		DAY	( EVENING	NIGHT	DAILY
AUTOMOBILES		0.775	0.129	0.096	0.9742
MEDIUM TRUCKS		0.848	0.049	0.103	0.0184
HEAVY TRUCKS		0.865	0.027	0.108	0.0074
	NOISE IMPACT	S WITHOUT TOP	O OR BARRI	ER SHIELDING	·
	PK HR LEO	DAY LEO	EVEN LEO	NIGHT LEO	CNEL
AUTOMOBILES LEO	65.0	63.1	61.3	55.3	64.5
MEDIUM TRUCKS LEO	56.7	55.2	48.9	47.3	56.0
HEAVY TRUCKS LEQ	57.7	56.2	47.2	48.5	56.9
VEHICULAR NOISE	66,3	64.5	61.7	56.6	65.7
	NOISE IMPACTS	5 WITH TOPO A	ND BARRIER	SHIELDING	<u>.     </u> .
	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE	66.3	64.5	61.7	56.6	65.7

	W/O	AMBIENT	W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=	66.3	66.3
MIT PK HR LEQ WITH TOPO AND BARRIER	. =	66.3 *****	** 66.3
CNEL WITHOUT TOPO AND BARRIER	-	65.7	65.7
MIT CNEL WITH TOPO AND BARRIER	=	65.7 ****	** 6S.7

# 1/9/2024 Board Martined-77-108 HIGHWAY NOISE PREDICTION MODEL Attachment)4, Page 127 of 367 ORANGE COUNTY

PROJECT: TTM 1607	2 - RANCHO CUCAMONGA	JOB #:	1058-02-01
ROADWAY: ETIWANDA	AVENUE	DATE :	03-Oct-02
LOCATION: LOT 256 -	BY (NO WALL)	BY:	MIKE ROSA
ADT = 8,000		PK HR VOL	= 800
SPEED = 40			
PK HR % = 10			
CTL DIST= 70			
DIST N/F= 22	(M=76,P=52,S=36,C=12)	AUTO SLE DISTANCE =	69.13
DT WALL= 65		MED TRUCK SLE DIST=	69.15
DT W/OB= 5		HVY TRUCK SLE $DIST=$	69.35
HTH WALL= 0.0	****		
OBS HTH= 5.0			
AMBIENT= 0.0			
ROADWAY VIEW:	LF ANGLE= -90		
	RT ANGLE= 90		
	DF ANGLE = 180		
SITE CONDITIONS (10-	HARD SITE, 15-SOFT SITE)		
AUTOMOBILES =	10		
MEDIUM TRUCKS =	10	GRADE ADJUSTMENT=	1.75
HEAVY TRUCKS =	10	(ADJUSTMENT TO HEAV!	Y TRUCKS)
BARRIER = (	) (0=WALL,1=BERM)		
PAD EL = 1017.5		EL AUTOMOBILES =	1822.0
ROAD EL = 1820.0		EL MEDIUM TRUCKS=	1824.0
GRADE = 6.0	8	EL HEAVY TRUCKS =	1828.0
VEHICLE TYPE	DAY	EVENING NIGH	T DAILY
AUTOMOBILES	0.775	0.129 0.096	0.9742
MEDIUM TRUCKS	0.848	0.049 0.103	0.0184
HEAVY TRUCKS	0.865	0.027 0.108	0.0074

#### NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ P	EVEN LEQ N	IGHT LEQ	CNEL
AUTOMOBILES LEQ	63.5	61.6	59.8	53.7	63.0
MEDIUM TRUCKS LEQ	55.2	53.7	47.3	45.8	54.5
HEAVY TRUCKS LEQ	57.8	56.4	47.4	48.6	57.1
VEHICULAR NOISE	65.0	63.2	60.3	55.4	64.4

#### NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

PI	K HR	LEQ	DAY	LEQ	EVEN	LEQ	NIGHT	LEQ		CNEL
VEHICULAR NOISE		65.0		63.2		60.3		55.4		64. <b>4</b>
					W/O	AMBIEN	T		w/	AMBIENT
PK HR LEQ WITHOUT TOPO	OR	BARRIER	=			65.0				65.0
MIT PK HR LEQ WITH TOP	O AN	D BARRIER	=			65.0	**	****		65.0
CNEL WITHOUT TOPO AND	BARR	IER	=			64.4				64.4
MIT CNEL WITH TOPO AND	BAR	RIER	=			64.4	**	****		64.4

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT:	TTM 1607;	2 - RANCHO CUCAMON	GA		JOB #:	1058-02-01
ROADWAY :	ETIWANDA	AVENUE			DATE	03-Oct-02
LOCATION:	LOT 256 -	BY (WITH WALL)			BY :	MIKE ROSA
ADT =	8,000				PK HR VOL =	= 800
SPEED =	40					
PK HR 🐐 =	10					
CTL DIST=	70					
DIST N/F=	22	(M=76,P=52,S=36,C	=12)	AUTO SLE D	ISTANCE =	69.47
DT WALL=	<b>6</b> 5			MED TRUCK	SLE DIST=	69.54
DT W/OB=	5			HVY TRUCK	SLE DIST=	69.89
HTH WALL=	3.0	****				
OBS HTH=	5.0					
AMBIENT=	0.0					
ROADWAY VI	EW:	LF ANGLE= -90				
		RT ANGLE= 90				
		DF ANGLE= 180				
SITE CONDI	TIONS (10=	HARD SITE, 15=SOFT	r site)			
AUTOMOBIL	ES =	10				
MEDIUM TR	UCKS =	10		GRADE ADJU	STMENT=	1.75
HEAVY TRU	CKS =	10		(ADJUSTMEN	T TO HEAVY	TRUCKS)
BARRIER =	0	(0=WALL,1=BERM)				
PAD EL =	1817.5			EL AUTOMOB	ILES =	1822.0
ROAD EL =	1820.0			EL MEDIUM :	rucks=	1824.0
GRADE =	б.О	÷		EL HEAVY TH	RUCKS =	1828.0
VEHICLE TYP	)E		DAY	EVENING	NIGHT	DAILY
AUTOMOBILES			0.775	0.129	0.096	0.9742
MEDIUM TRUC	KS		0.848	0.049	0.103	0.0184
HEAVY TRUCK	.5		0.865	0.027	0.108	0.0074
		NOISE IMPACTS WITH	OUT TOPO	OR BARRIER	R SHIELDING	

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.5	61.6	59.8	53.7	63.0
MEDIUM TRUCKS LEQ	55.2	53.7	47.3	45.8	54.4
HEAVY TRUCKS LEQ	57.8	56.4	47.3	48.6	57.1
VEHICULAR NOISE	65.0	63.2	60.3	55.4	64.4

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 56.1		54.4	51.4	46.5	55.6
			W/O AMBIEN	ЛТ	w/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=		65.0		65.0
MIT PK HR LEQ WITH TOPO AND BARRIER	=		56.1	******	56,1
CNEL WITHOUT TOPO AND BARRIER	=		64.4		64.4
MIT CNEL WITH TOPO AND BARRIER	=		55. <del>6</del>	*****	55.6

#### 1/9/2024 Board Meeting FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT :	TTM 1607	2 - RANCHO CU	JCAMONGA	•	JOB #:	1050-02-01
ROADWAY :	ETIWANDA	AVENUE		1	DATE:	03-Oct-02
LOCATION:	LOT 256 -	1ST FLOOR FAC	ADE (WITH WALL)	1	BY:	MIKE ROSA
ADT =	8,000				PK HR VOL =	= B00
SPEED =	40					
PK HR % =	10					
CTL DIST=	90					
DIST N/F=	22	{M=76,P=52,	S=36,C=12)	AUTO SLE D	ISTANCE =	89.15
DT WALL=	65			MED TRUCK	SLE DIST=	89.33
DT W/OB=	25			HVY TRUCK	SLE DIST=	89.47
HTH WALL=	3.0	******				
OBS HTH=	5.0					
AMBIENT=	0.0					
ROADWAY VI	EW:	LF ANGLE=	-90			
		RT ANGLE=	90			
		DF ANGLE=	180		-	
SITE CONDI	TIONS (10=	HARD SITE, 1	5=SOFT SITE)			
AUTOMOBIL	ES =	10				
MEDIUM TR	UCKS =	10		GRADE ADJU	STMENT=	1.75
HEAVY TRU	CKS =	10		(ADJUSTMEN)	T TO HEAVY	TRUCKS )
BARRIER =	0	(0=WALL,1=BH	ERM)			
PAD EL =	1818.0			EL AUTOMOBI	(LES =	1822.0
ROAD EL =	1820.0			EL MEDIUM 1	<b>TRUCKS</b> =	1824.0
GRADE =	6.0	<b>%</b>		EL HEAVY TY	RUCKS =	1828.0
VEHICLE TY	PE		DA	Y EVENING	NIGHT	DAILY
AUTOMOBILES	3		0.775	0.129	0.096	0.9742
MEDIUM TRUC	CKS		0.848	0.049	0.103	0.0184
HEAVY TRUCH	KS .		0.865	0.027	0.108	0.0074

#### NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	62.4	60.5	58.7	52.6	61.9
MEDIUM TRUCKS LEQ	54.1	<b>52</b> .6	46.2	44.7	53.4
HEAVY TRUCKS LEQ	56.7	55.3	46.3	47.5	56.0
VEHICULAR NOISE	63.9	<b>62.</b> 1	59.2	54.3	63.3

#### NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 60.4		58.7	55.7	50.9	59.9
			W/O AMBIE	NT	W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=		63.9		63.9
MIT PK HR LEQ WITH TOPO AND BARRIER	×		60.5	******	60.5
CNEL WITHOUT TOPO AND BARRIER	=		63.3		63.3
MIT CNEL WITH TOPO AND BARRIER	=		59.9	******	59.9

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT: T	TM 1607.	2 - RANCHO CU	CAMONGA		JQB #:	1058-02-01
ROADWAY: E	TIWANDA	AVENUE			DATE:	03-Oct-02
LOCATION: LA	OT 256 -	2ND FLOOR FACA	DB (WITH WALL)		BY:	MIKE ROSA
ADT =	8,000				PK HR VOL =	800
SPEED =	40					
PKHR 🖲 =	10					
CTL DIST=	90					
DIST N/F=	22	(M=76,P=52,S	S=36,C=12)	AUTO SLE	DISTANCE =	90.00
DT WALL=	65			MED TRUC	K SLE DIST⇒	89.78
DT W/OB=	25			HVY TRUC	K SLE DIST≠	89.46
HTH WALL=	3.0	*****				
OBS HTH=	15.0					
AMBIENT=	0.0					
ROADWAY VIEW	:	LF ANGLE=	-90			
		RT ANGLE=	90			
		DF ANGLE=	180			
SITE CONDITIO	ONS (10:	HARD SITE, 1	5≠SOFT SITE)			
AUTOMOBILES	=	10				
MEDIUM TRUCH	KS =	10		GRADE AD	JUSTMENT≠	1.75
HEAVY TRUCKS	5 =	10		(ADJUSTMI	ENT TO HEAVY	TRUCKS)
BARRIER =	c	) (0=WALL,1=BE	RM)			
PAD EL =	1818.0			EL AUTOMO	BILES =	1822.0
ROAD EL =	1820.0			EL MEDIUM	TRUCKS=	1824.0
GRADE =	6.0	<b>h</b>		EL HEAVY	TRUCKS =	1828.0
VEHICLE TYPE			DAY	EVENING	S NIGHT	DAILY
AUTOMOBILES			0.775	0.129	0.096	0.9742
MEDIUM TRUCKS	3		0.848	0.049	0.103	0.0184
HEAVY TRUCKS			0.865	0.027	0.108	0.0074
		NOISE IMPACT	S WITHOUT TOP	O OR BARRI	ER SHIELDING	
		PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES L	EQ	62.3	60.4	58.7	52.6	61.8
MEDIUM TRUCKS	LEQ	54.1	52.5	46.2	44.6	53.3

HEAVY TRUCKS LEQ	56.7	55.3	46.3	47.5	56.0
VEHICULAR NOISE	63.9	62.1	59.1	54.3	63.3

	PK	HR LEQ	DAY	LEQ	EVEN	LEQ	NIGHT	LEQ		CNEL
VEHICULAR N	OISE	63.9		62.1		59.1		54.3		63.3
					<b>W/O</b>	AMBIEN	т		w/	AMBIENT
PK HR LEQ W	ITHOUT TOPO O	R BARRIER	-			63.9				63.9
MIT PK HR L	EQ WITH TOPO	AND BARRIER	=			63.9	**	*****		63.9
CNEL WITHOU	T TOPO AND B	ARRIER	=			63.3				63.3
MIT CNEL WI	TH TOPO AND S	ARRIER	Ŧ			63.3	**	****		63.3

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# FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT: TTM 160	72 - RANCHO CUCAMONGA		JOB #:	1058-02-01
ROADWAY: ETIWANDA	A AVENUE		DATE:	03-Oct-02
LOCATION: LOT 262 -	BY (NO WALL)		ВΥ:	MIKE ROSA
ADT = 8,000			PK HR VOL =	= BOO
SPEED = 40	1			
PK HR % = 10				
CTL DIST= 77				
DIST N/F= 22	(M=76,P=52,S=36,C=12	) AUTO SLE	DISTANCE =	76.63
DT WALL= 72		MED TRUC	K SLE DIST=	76.45
DT W/OB= 5		HVY TRUCI	K SLE DIST=	76.24
HTH WALL= 0.0	****			
OBS HTH= 5.0				
AMBIENT= 0.0				
ROADWAY VIEW:	LF ANGLE= ~90			
	RT ANGLE= 90			
	DF ANGLE= 180			
SITE CONDITIONS (10	=HARD SITE, 15=SOFT SI	TE)		
AUTOMOBILES =	10			
MEDIUM TRUCKS =	10	GRADE AD.	JUSTMENT=	3.18
HEAVY TRUCKS =	10	(ADJUSTMI	ENT TO HEAVY	TRUCKS)
BARRIER =	0 (O=WALL, 1=BERM)			
PAD EL = 1785.0		EL AUTOM	BILES =	1782.0
ROAD BL = 1780.0		EL MEDIUN	1 TRUCKS=	1784.0
GRADE = 7.0	£	EL HEAVY	TRUCKS =	1788.0
VEHICLE TYPE		DAY EVENING	g Night	DAILY
AUTOMOBILES	0.	.775 0.129	0.096	0.9742
MEDIUM TRUCKS	0.	.848 0.049	0.103	0.0184
HEAVY TRUCKS	0.	.865 0.027	0.108	0.0074
	NOISE IMPACTS WITHOUT	TOPO OR BARR	IER SHIELDING	3
	PK HR LEQ DAY L	EQ EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.0 6	51.1 59.4	53.3	62.5
MEDIUM TRUCKS LEQ	54.8 5	<b>3.2 46.9</b>	45.3	54.0
HEAVY TRUCKS LEQ	58.8 5	67.4 48.4	49.6	58.1
VEHICULAR NOISE	64.9 6	59.9	55.3	64.3

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 64.9		63.1	59.9	\$5.3	64.3
			W/O AMBIEN	IT	W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=		64.9		64.9
MIT PK HR LEQ WITH TOPO AND BARRIES	R =		64.9	******	64.9
CNEL WITHOUT TOPO AND BARRIER	=		64.3		64.3
MIT CNEL WITH TOPO AND BARRIER	=		64.3	*****	64.3

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT:	TTM 16072	2 - RANCHO C	UCAMONG	A		JOB #:	1058-02-01
ROADWAY:	ETIWANDA	AVENUE				DATE :	03-Oct-02
LOCATION:	LOT 262 -	BY (WITH WALL	5)			BY:	MIKE ROSA
ADT =	8,000	<u> </u>				PK HR VOL	≠ <b>80</b> 0
SPEED =	40						
PK HR  =	10						
CTL DIST=	77						
DIST N/F=	22	(M = 76, P = 52)	,S=36,C=	12)	AUTO SLE	DISTANCE =	76.60
DT WALL=	72				MED TRUCK	SLE DIST $\approx$	76.41
DT W/OB=	5				HVY TRUCK	SLE DIST≈	76.18
HTH WALL=	5.0	******					
OBS HTH=	5.0						
AMBIENT=	0.0						
ROADWAY VIE	SW :	LF ANGLE=	-90				
		RT ANGLE=	90				
		DF ANGLE≓	180				
SITE CONDIT	TIONS (10=	HARD SITE,	15=SOFT	SITE)			
AUTOMOBILE	3S <del>-</del>	10					
MEDIUM TRU	JCKS =	10			GRADE ADJU	JSTMENT=	3.18
HEAVY TRUC	CKS =	10			(ADJUSTME)	NT TO HEAVY	TRUCKS)
BARRIER =	0	(O=WALL,1=E	BERM)				
PAD EL =	1785.0				EL AUTOMOR	HILES =	1782.0
ROAD EL =	1780.0				EL MEDIUM	TRUCKS=	1784.0
GRADE =	7.0	¥			EL HEAVY 1	RUCKS =	1798.0
VEHICLE TYP	Έ			DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	1			0.775	0.129	0.096	0.9742
MEDIUM TRUC	KS			0.848	0.049	0.103	0.0184
HEAVY TRUCK	5			0.865	0.027	0.108	0.0074

#### NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.0	61.1	59.4	53.3	62.5
MEDIUM TRUCKS LEQ	54.8	53.2	46.9	45.3	54.0
HEAVY TRUCKS LEQ	58.8	57.4	48.4	49.6	58.1
VEHICULAR NOISE	64.9	63.1	59.9	55.3	64.3

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 59.7		58.0	54.8	50.2	59.2
			W/O AMBIE	VT V	V/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=		64.9		64.9
MIT PK HR LEQ WITH TOPO AND BARRIER	=		59.7	******	59.7
CNEL WITHOUT TOPO AND BARRIER	=		64.3		64.3
MIT CNEL WITH TOPO AND BARRIER	=		59.2	******	59.2

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FHWA-RD-77-108	HIGHWAY	NOISE	PREDICTION	MODEL	(CALVENO)
	01	RANGE (	COUNTY		

PROJECT: TTM 160	72 - RANCHO CUCAMO	ONGA		JOB #:	1058-02-01
ROADWAY: ETIWAND	A AVENUE			DATE:	03-Oct-02
LOCATION: LOT 262	- 1ST FLOOR FACADE (	WITH WALL)		BY:	MIKE ROSA
ADT' = 8,00	0			PK HR VOL ≠	800
SPEED = 4	0				
PK HR * = 1	0				
CTL DIST= 9	7				
DIST $N/F=$ 2	2 (M≖76,₽=52,S=36	,C=12)	AUTO SLE	DISTANCE =	96.66
DT WALL= 7	2		MED TRUCK	SLE DIST=	96.45
DT W/OB= 2	5		HVY TRUCK	SLE DIST=	96.20
HTH WALL= 5.	0 *******				
OBS HTH= 5.	0				
AMBIENT= $0.$	0				
ROADWAY VIEW:	LF ANGLE= -90				
	RT ANGLE= 90				
	DF ANGLE= 180				
SITE CONDITIONS (1	0=HARD SITE, 15=SC	(FT SITE)			
AUTOMOBILES =	10				
MEDIUM TRUCKS =	10		GRADE ADJ	USTMENT=	3.18
HEAVY TRUCKS =	10		(ADJUSTME	NT TO HEAVY	TRUCKS)
HARRIER =	0 (O=WALL,1≖BERM)				
PAD EL = 1785.5			EL AUTOMO	BILES =	1782.0
ROAD BL = 1/80.0	) . E		EL MEDIUM	TRUCKS=	1700 A
GRADE = 7.0	<b>, 15</b>		SD HEAVI	IRUCKS =	1/60.0
VEHICLE TYPE		DAY	EVENING	NIGHT	DAIL
AUTOMOBILES		0.775	0,129	0.096	0.9742
MEDIUM TRUCKS		0.848	0.049	0.103	0.0184
HEAVY TRUCKS		0.865	0.027	0.108	0.0074
	NOISE IMPACTS W	THOUT TOP	O OR BARRI	ER SHIELDING	
	PK HR LEO	DAY LEO	EVEN LEO	NIGHT LEO	CNEL
AUTOMOBILES LEO	62.0	60.1	58.4	52.3	61.5
MEDIUM TRUCKS LEQ	53.7	52.2	45.9	44.3	53.0
HEAVY TRUCKS LEQ	57.8	56.4	47.4	48.6	57.1
VEHICULAR NOISE	63.9	62.1	58.9	54.Ĵ	63.3
	NOISE IMPACTS WI	TH TOPO A	ND BARRIER	SHIELDING	
	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
EHICULAR NOISE	58.0	56.3	53.1	48.5	57.5

W/O AMBIENT W/ AMBIENT PK HR LEQ WITHOUT TOPO OR BARRIER 63.9 63.9 = MIT PK HR LEQ WITH TOPO AND BARRIER = 58.0 \* \* \* \* \* \* \* 58.0 CNEL WITHOUT TOPO AND BARRIER 63.3 63.3 Ŧ MIT CNEL WITH TOPO AND BARRIER 57.5 \*\*\*\*\* 57.5 Ξ

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT :	TTM 16072	2 - RANCHO (	TUCAMONO	A		JOB #:	1058-02-01
ROADWAY :	ETIWANDA	AVENUE				DATE :	03-Oct-02
LOCATION:	LOT 262 -	2ND FLOOR FA	CADE (WI	TH WALL)		BY:	MIKE ROSA
						_	
ADT =	в,000					PK HR VOL	- 800
SPEED =	40						
PK HR € =	10						
CTL DIST=	97						
DIST N/F=	22	{M=76,P=52	,S≈36,C	=12}	AUTO SLE I	DISTANCE =	98.13
DT WALL=	72				MED TRUCK	SLE DIST=	97.78
DT W/OB=	25				HVY TRUCK	SLE DIST=	97.18
HTH WALL=	5.0	******	r				
OBS HTH=	15.0						
AMBIENT=	0.0						
ROADWAY VI	EW:	LF ANGLE=	-90				
		RT ANGLE=	90				
		DF ANGLE=	180				
SITE CONDI	TIONS (10=	HARD SITE,	15=SOFT	SITE)			
AUTOMOBIL	ES =	10	I.				
MEDIUM TR	UCKS =	10			GRADE ADJU	JSTMENT=	3.18
HEAVY TRU	CKS =	10			(ADJUSTMEN	IT TO HEAVY	TRUCKS)
BARRIER =	0	(0=WALL,1=B	BERM)				
PAD EL =	1785.5				EL AUTOMOR	ILES =	1782.0
ROAD EL =	1780.0				EL MEDIUM	TRUCKS=	1784.0
GRADE =	7.0	¥			EL HEAVY I	RUCKS =	1780.0
VEHICLE TYP	PE			DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	3		<u> </u>	0.775	0.129	0.096	0.9742
MEDIUM TRUC	CKS			0.846	0.049	0.103	0.0184
HEAVY TRUCH	s			0.865	0.027	0.108	0.0074
		NOISE IMPAC	TS WITH	OUT TOPO	OR BARRIE	R SHIELDING	

	PK HR LEO	DAY LEO	EVEN LEO	NIGHT LEO	CNEL
AUTOMOBILES LEQ	62.0	<b>60</b> .1	58.3	52.2	61.5
MEDIUM TRUCKS LEQ	53.7	52.2	45.8	44.3	53.0
HEAVY TRUCKS LEQ	57.8	56.4	47.3	48.6	57.I
VEHICULAR NOISE	63.8	62.1	58.8	54.2	63.2

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 63.8		62.1	58.8	54.2	63.2
			W/O AMBIEN	JT V	/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	<b>m</b> .		63.8		63.8
MIT PK HR LEQ WITH TOPO AND BARRIN	ER =		63.8	******	63.8
CNEL WITHOUT TOPO AND BARRIER	=		63.2		63.2
MIT CNEL WITH TOPO AND BARRIER	=		63.2	******	63.2

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FHWA-RD-77-108 HIGHWAY	NOISE PREDICTION	MODEL (CALVENO)
C	RANGE COUNTY	

PROJECT :	TTM 1607	2 - RANCHO CI	UCAMONGA			JOB #:	1058-02-01
ROADWAY :	ETIWANDA	AVENUE				DATE:	03-Oct-02
LOCATION:	LOT 268 -	BY (NO WALL)				BY:	MIKE ROSA
ADT =	9,000					PK HR VOL -	= 800
SPEED =	40						
₽K HR 🕈 =	10						
CTL DIST=	65						
DIST N/F=	22	(M=76,⊉≕52,	S=36,C=3	L2)	AUTO SLE	DISTANCE =	65.57
DT WALL=	60				MED TRUCK	SLE DIST=	65.18
DT W∕OB≂	5				HVY TRUCK	SLE DIST=	64.56
HTH WALL=	0.0	*******					
OBS HTH=	5.0						
AMBIENT=	0.0						
ROADWAY VI	EW:	LF ANGLE=	- 90				
		RT ANGLE=	90				
		DF ANGLE=	160				
SITE CONDIT	FIONS (10=	HARD SITE, 1	l5≓SOFT	SITE)			
AUTOMOBILI	ES =	10					
MEDIUM TRU	JCKS =	10			GRADE ADJU	JSTMENT=	1.75
HEAVY TRUC	CKS =	10			(ADJUSTME)	T TO HEAVY	TRUCKS)
BARRIER =	0	(0=WALL,1=B	ERM)				
PAD EL =	1751.0				EL AUTOMOR	BILES =	1742.0
ROAD EL =	1740.0				EL MEDIUM	TRUCKS=	1744.0
GRADE =	6.0	8			EL HÉAVY T	RUCKS =	1748.0
VEHICLE TYP	Έ			DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	·····			0.775	0.129	0.096	0.9742
MEDIUM TRUC	KS			0.848	0.049	0.103	0.0184
HEAVY TRUCK	S			0.865	0.027	0.108	0.0074

#### NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	63.7	61.8	60.0	54.0	63.2
MEDIUM TRUCKS LEQ	55.4	53.9	47.6	46.0	54.7
HEAVY TRUCKS LEQ	58.1	56.7	47.7	48.9	57.4
VEHICULAR NOISE	65.2	63.5	60.5	55.7	64.7

## NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 65.2		63.5	60.5	55.7	64.7
			W/O AMBIEN	ı <b>r</b>	W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIN	ER =		65.2		65.2
MIT PK HR LEQ WITH TOPO AND BAR	RIER =		65.2	*****	65.2
CNEL WITHOUT TOPO AND BARRIER	-		64.7		64.7
MIT CNEL WITH TOPO AND BARRIER	=		64.7	******	64.7

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# FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT :	TTM 1607	2 - RANCHO C	UCAMONGA			JOB #:	1058-02-01
ROADWAY:	ETIWANDA	AVENUE			1	DATE:	03-Oct-02
LOCATION:	LOT 268 -	BY (WITH WAL)	.)		1	BY:	MIKE ROSA
ADT ≈	8,000				]	PK HR VOL =	= <b>8</b> 00
SPEED =	40						
PK HR 🕏 =	10						
CTL DIST=	65						
DIST N/F=	22	(M=76, <b>P</b> =52	, <b>S</b> =36,C=12	)	AUTO SLE D	ISTANCE =	65.53
DT WALL=	60				MED TRUCK	SLE DIST=	65.12
DT W/OB=	5				HVY TRUCK	SLE DIST=	64.48
HTH WALL=	4.5	******					
OBS HTH≏	5.0						
AMBIENT=	0.0						
ROADWAY VIE	W :	LF ANGLE=	-90				
		RT ANGLE=	90				
		DF ANGLE=	180				
SITE CONDIT	IONS (10:	HARD SITE,	15=SOFT SI	(ŤE)			
AUTOMOBILE	s =	10					
MEDIUM TRU	CKS =	10			GRADE ADJU	STMENT=	1.75
HEAVY TRUC	KS =	10			(ADJUSTMEN	T TO HEAVY	TRUCKS)
BARRIER =	C	(0=WALL,1=E	ERM)				· · · ·
PAD EL =	1751.0				EL AUTOMOB	LES =	1742.0
ROAD EL =	1740.0				EL MEDIUM 1	rucks=	1744.0
GRADE =	6.0	8			EL HEAVY TR	RUCKS =	1748.0
VEHICLE TYP	2			DAY	EVENING	NIGHT	DAILY
AUTOMOBILES				.775	0.129	0.096	0.9742
MEDIUM TRUCH	(5		0	.848	0.049	0.103	0.0194
HEAVY TRUCKS	3		0	.865	0.027	0.108	0.0074
		NOISE IMPAC	TS WITHOU	TOP(	O OR BARRIER	SHIELDING	
		PK HR LEQ	DAY 1	EQ	EVEN LEQ N	IGHT LEQ	CNEL
AUTOMOBILES	LEQ	63.7		51.8	60.0	54.0	63.2
MEDIUM TRUCK	S LEQ	55.4	1	53.9	47.6	46.0	54.7
HEAVY TRUCKS	LEQ	58.1	5	56.7	47.7	48.9	57.4
VEHICULAR NO	ISE	65.2		53.5	60.5	55.7	64.7

PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR NOISE 60.0		58.3	55.3	50.4	59.5
			W/O AMBIE	NT	W/ AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=		65.2		65.2
MIT PK HR LEQ WITH TOPO AND BARRIER	×		60.0	*****	60.0
CNEL WITHOUT TOPO AND BARRIER	=		64.7		64.7
MIT CNEL WITH TOPO AND BARRIER	=		59.5	******	59.5

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FHWA-RD-77-108 HIGHWA	AY NOISE PREDICTION	MODEL (CALVENO)
	ORANGE COUNTY	

PROJECT :	TTM 1607	2 - RANCHO CO	JCAMONGA		JOB #:	1058-02-01
ROADWAY:	BTIWANDA	AVENUE		:	DATE:	03-Oct-02
LOCATION:	LOT 268 -	1ST FLOOR FAC	ADE (WITH WALL)	:	BY:	MIKE ROSA
ADT =	8,000	<u>· · · _</u>			PK HR VOL =	= <b>B</b> 00
SPEED ≠	40					
PK HR % =	10					
CTL DIST=	85					
DIST N/F=	22	(M=76,P=52,	S=36,C=12)	AUTO SLE D	ISTANCE =	85.63
DT WALL∓	60			MED TRUCK	SLE DIST=	85.20
DT W/OB=	25			HVY TRUCK	SLE DIST=	84.53
HTH WALL=	4.5	******				
OBS HTH=	5.0					
AMBIENT=	0.0					
ROADWAY VI	EW:	LF ANGLE=	- 90			
		RT ANGLE=	90			
		DF ANGLE=	180			
SITE CONDI	TIONS (10-	HARD SITE, 1	5=SOFT SITE)			
AUTOMOBIL:	ES =	10				
MEDIUM TRI	UCKS =	10		GRADE ADJU	STMENT=	1.75
HEAVY TRU	CKS =	10		(ADJUSTMEN	T TO HEAVY	TRUCKS)
BARRIER =	C	(0=WALL,1=B	ERM)			
PAD EL =	1751.5			EL AUTOMOB	ILES =	1742.0
ROAD EL =	1740.0			EL MEDIUM	TRUCKS=	1744.0
GRADE =	6.0	£		EL HEAVY T	RUCKS =	1748.0
VEHICLE TYP	₽ <b>E</b>		DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	 }	<u> </u>	0.775	0.129	0.096	0.9742
MEDIUM TRUC	KS		0.848	0.049	0.103	0.0184
HEAVY TRUCK	s		0.865	0.027	0.108	0.0074

#### NOISE IMPACTS WITHOUT TOPO OR BARRIER SHIELDING

	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	CNEL
AUTOMOBILES LEQ	62.5	60.6	58.9	52.8	62.1
MEDIUM TRUCKS LEQ	54.3	52.8	46.4	44.9	53.6
HEAVY TRUCKS LEQ	57.0	55.5	46.5	47.7	56.2
VEHICULAR NOISE	64.1	62.3	59.4	54.5	63.5

## NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

	_						
	-	PK HR LEQ	DAY	LEQ	EVEN LEQ	NIGHT LEQ	CNEL
VEHICULAR	NOISE	56.7		54.9	51.9	47.1	56.1
					W/O AMBIE	NT	W/ AMBIENT
PK HR LEQ	WITHOUT TOP	O OR BARRI	ER =		64.1		64.1
MIT PK HR	LEQ WITH TO	PO AND BAR	RIER ≠		56.7	******	56.7
CNEL WITHO	UT TOPO AND	BARRIER	=		63.5		. 63.5
MIT CNEL W	ITH TOPO AN	D BARRIER	=		56,1	******	56.1

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# FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) ORANGE COUNTY

PROJECT: TTM 16	072 - RANCHO CUC	AMONGA		JOB #:	1058-02-01
ROADWAY: ETIWAN	DA AVENUE			DATE:	03-Oct-02
LOCATION: LOT 268	- 2ND FLOOR FACAD	E (WITH WALL)		BY;	MIKE ROSA
ADT = 8,00	>0			PK HR VOL =	800
SPEED = 4	LO				
PK HR % = 1	LO				
CTL DIST= 8	35				
DIST N/F= 2	22 (M=76,P=52,S=	-36,C=12)	AUTO SLE D	ISTANCE =	87.77
DT WALL=	50		MED TRUCK	SLE DIST=	87.24
DT W/OB= 2	25		HVY TRUCK	SLE DIST=	86.29
HTH WALL= 4.	5 ******				
OBS HTH= 15.	. 0				
AMBIENT= 0.	0				
ROADWAY VIEW:	LF ANGLE=	- 90			
	RT ANGLE=	90			
	DF ANGLE= D	L80			
SITE CONDITIONS (1	0=HARD SITE, 15	=SOFT SITE)			
AUTOMOBILES =	10				
MEDIUM TRUCKS =	10		GRADE ADJU	STMENT=	1.75
HEAVY TRUCKS =	10		(ADJUSTMEN'	T TO HEAVY	TRUCKS)
BARRIER =	0 (0=WALL,1=BER	M)			·
PAD EL = 1751.	5		EL AUTOMOBI	LES =	1742.0
ROAD EL = 1740.	0		EL MEDIUM 1	rucks=	1744.0
GRADE = 6.	0 %		EL HEAVY TH	UCKS =	1748.0
VEHICLE TYPE		DAY	EVENING	NIGHT	DAILY
AUTOMOBILES	<b>.</b>	0.775	0.129	0.096	0.9742
MEDIUM TRUCKS		0.848	0.049	0.103	0.0184
HEAVY TRUCKS		0.865	0.027	0.108	0.0074
	NOISE IMPACTS	WITHOUT TOP	O OR BARRIER	SHIELDING	
	PK HR LEQ	DAY LEQ	EVEN LEQ N	IGHT LEQ	CNEL
AUTOMOBILES LEQ	62.4	60.5	58.8	52.7	61.9
MEDIUM TRUCKS LEQ	54.2	52.7	46.3	44.8	53.5
HEAVY TRUCKS LEQ	56.9	55.4	46.4	47.7	56.1
VEHICULAR NOISE	64.0	62.2	59.2	54.4	63.4

## NOISE IMPACTS WITH TOPO AND BARRIER SHIELDING

PK HR LEQ	DAY	LÉQ	EVEN	LEQ N	IGHT LEQ		CNEL
VEHICULAR NOISE 64.0		62.2	!	59.2	54.4		63.4
			w/o #	AMBIENT		W/	AMBIENT
PK HR LEQ WITHOUT TOPO OR BARRIER	=			64.0			64.0
MIT PK HR LEQ WITH TOPO AND BARRIES	₹ =			64.0	*****		64.0
CNEL WITHOUT TOPO AND BARRIER	÷		e e	63.4			63.4
MIT CNEL WITH TOPO AND BARRIER	÷		(	63.4	*****		63.4

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# APPENDIX D

# CITY OF RANCHO CUCAMONGA GENERAL PLAN

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1/9/2024 Board Meeting



The maps, data and geographic information "Information" available by and through the City of Rancho Cucamonga are presented as a public resource of general information. The City of Rancho Cucamonga are presented as a public resource of general information. The City of Rancho Cucamonga makes nor amplitis no warranty, representation or guarantees ato the content, sequence, accuracy completeness or nucleuss of any information provided to you herein. The user should not tely upon the Information for any reason and is directed to independently verify any aid all information presented herein. The City of Rancho Cucamonga explicitly and without humbition disclamic any and all representations and warantees, including, but not humber to, the implied waranties of interchantability and filmess for a particular purpose. The City of Rancho Cucamonga shall reinfor assume any hability, tegardless of file castation for (1) any errors, emissions or innecuracies in any attribution provided and or on any action or interchantable bergin due to any previse place upon the information or available bergin.

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Attachment 4. Page 144 of 367 The City of Rancho Cucamonga General Plan



Typical Roadway Cross-Sections Exhibit III-5





Typical Roadway Cross-Sections Exhibit III-5 (Continued)



III. DEVELOPING THE COMMUNITY

TABLE III-11 CLASSIFICATIONS OF GENERAL PLAN ROADWAYS					
	Boundaries			Boundaries	
East/West Street	West	East	North/South Street	North	South
Collector Streets					
Proposed Day Creek Extension	Day Creek	Etiwanda	Sapphire	Almond	19 <sup>th</sup>
Proposed East Extension	Etiwanda	Wilson	Baker	Foothill	8 <sup>1/1</sup>
Hillside	West City Boundary	Haven	Carnelian	Almond	Banyan
Banyan	West City Boundary	Youngs Canyon	Beryl	Reales	Base Line Road
Church	Hermosa	Archibald	Hellman	Hillside	Foothill
9 <sup>th</sup>	Grove	Archibald	Amethyst	Almond	Base Line Road
8 <sup>th</sup>	Grove	Haven	Archibald	City Boundary	Hillside
7 <sup>th</sup>	Hellman	Archibald	Hermosa	City Boundary	Banyan
Victoria	East	I-15	Santa Anita	6 <sup>th</sup>	4 <sup>m</sup>
Highland	Kenyan	East	Wardman Bullock	City Boundary	Wilson
Jersey	Haven	Rochester	Terra Vista Parkway	Church	Town Center Drive
Vintage	Day creek	Etiwanda			
Town Center Drive	Haven	Spruce			
W. Elm Ave.	Town Center Drive.	Church			
Mountain View Drive	Spruce Avenue	Terra Vista Parkway			
Modified Collector With Median					
Victoria Park Lane	Fairmont	Base Line Road			

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CITY OF RANCHO CUCAMONGA GENERAL PLAN

		TA CLASSIFICATIONS OF	BLE III-11 GENERAL PLAN ROADWAY	S		
East/West Street	Boundaries		1	Boundaries		
	West	East	North/South Street	North	South	
Secondary Streets		ne en la servició de la servició de la servició de la servició de la servició de la servició de la servició de	the first state of the second state of the second state of the second state of the second state of the second s			
Wilson	Camelian	Day Creek	Camelian	Banyan	Vinevard	
<u>19''</u>	West City Boundary	San Benito	Vineyard	Camelian	8 <sup>th</sup>	
Church	Archibald	Haven	Hellman	Foothill		
Miller	Etiwanda	East	Archibald	Hillside	Wilson	
6 <sup>th</sup>	Heliman	Haven	Hermosa	Banyan	4 <sup>in</sup>	
6 <sup>ln</sup>	-15	Etiwanda	Haven	City Boundary	Wilson	
Civic Center Drive	Haven	White Oak	Buffalo	6 <sup>th</sup>		
Poplar Drive	Church Street	Rochester	Etiwanda	Base Line Road	Foothill	
			East	Wilson	Foothill	
			Spruce	Base Line Road	Red Oak/White Oak	
			Etiwanda	City Boundary	Wilson	
			Red Oak	Arrow	Spruce	
			White Oak	Arrow	Spruce	
			Maytem Avenue	Church	Foothill	
			E. Elm Avenue	Church	White Oaks Avenue	
Modified Secondary Wi	th Median Manager and Ma	a determine the				
Wilson	Wardman Bullock	Cherry	Wardman Bullock	Wilson	Cherry	
Church	Victoria Park Lane	Etiwanda				
Church	Haven	Day Creek				
Terra Vista Parkway	Church	Church				
Major Arterials						
Base Line Road	West City Boundary	Haven	Archibald	Hillside	4 <sup>th</sup>	
Arrow	Grove	East	Rochester	Highland	6 <sup>in</sup>	
4 <sup>m</sup>	) Heliman	Archibald	Etiwanda	Foothill	4 <sup>in</sup>	
Modified Major With Me	dlan			e house a start and a start a start a start a start a start a start a start a start a start a start a start a s		
Wilson	Day Creek	Wardman Bullock	Day Creek	Wilson	1-210	
Wilson	Cherry	1-15	Cherry	Wilson	l-15	
Church	Day Creek	Victoria Park Lane	Milliken	Wilson	Banyan	

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# III. DEVELOPING THE COMMUNITY

TABLE III-11 CLASSIFICATIONS OF GENERAL PLAN ROADWAYS					
	Boundaries			Boundaries	
East/West Street	West	East	North/South Street	North	South
Major Divided Arterials					
Base Line Road	Haven	Etiwanda	Haven	Wilson	Trademark
Foothill	Grove	Day Creek Channel	Milliken	Banyan	4 <sup>in</sup>
Foothill	1-15	East	Day Creek	1-210	Foothill
6 <sup>1</sup> h	Haven	Rochester			
4 <sup>m</sup>	Archibald	Etiwanda			
Major Divided Highways	<ul> <li>D. Department of the second state</li> </ul>	n jaala ka Garta ka Taki Afrika	to a california da se se se se se se se se se se se se se	A second second second	
Base Line Road	Etiwanda	East	Milliken	Fifth	4 <sup>th</sup>
Foothill	Day Creek Channel	1-15	Haven	Trademark	4 <sup>th</sup>

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### APPENDIX E

### PRELIMINARY GRADING PLANS

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1/9/2024 Board Meeting



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1/9/2024 Board Meeting













1/9/2024 Board Meeting

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## Appendix G Archaeological and Paleontological Resources Assessment

Rancho Cucamonga Tentative Tract Map Number 16072 – Draft EIR

Appendix G Archaeological and Paleontological Resources Assessment An Archaeological and Paleontological Resource Evaluation and Significance Assessment for Tract 16072, Located Near Wilson and East Avenues, City of Rancho Cucamonga Sphere of Influence, County of San Bernardino, California

**Prepared for:** 

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#### ACRONYMS

- AIC .....Archaeological Information Center, San Bernardino County Museum
- APE .....Area of Potential Effect
- ARMR ......Archaeological Resource Management Report
- CEQA ......California Environmental Quality Act
- CRHP......California Register of Historic Places
- DPR523 ..... California Department of Public Resources Archaeological Recordation Form Set (523)
- EIC ...... Eastern Information Center, University of California, Riverside
- NEPA.....National Environmental Policy Act
- NAHC......Native American Heritage Commission
- NHPA ......National Historic Preservation Act
- SBBM ...... San Bernardino Base Meridian
- SBCM ...... San Bernardino County Museum
- SHPO......State Historic Preservation Office

#### SECTION 1: PUBLIC INFORMATION STATEMENT

#### 1.1 - Location and Study Area

At the request of the City of Rancho Cucamonga, California (City), Michael Brandman Associates (MBA) has conducted an archaeological resource survey, paleontological records search and archaeological/historical site significance evaluation within a proposed single-family residential tract currently located within the County of San Bernardino. Tract 16072 is located near the corner of Wilson and East Avenues and is considered to be the full cultural resource study area. The total amount of land covered by the study area is roughly 160 acres.

#### 1.2 - Purpose

The purpose of this report is to delineate the location of the study area, define the APE, identify all potentially significant cultural and paleontological resources situated within the study area, establish the significance of sites located within the Tract and, if impacted by the proposed development, propose recommendations for mitigation where necessary. Completion of this investigation fulfills the requirements of the National Environmental Policy Act (NEPA), protocols associated with the National Historic Preservation Act (NHPA) as Amended, Executive Order 11593 requirements and the California Environmental Quality Act (CEQA).

This report follows the California State Historic Preservation Office (SHPO) recommended Archaeological Resource Management Report (ARMR) format and fulfills all protocols associated with NEPA-level and CEQA-level archaeological studies.

#### 1.3 - Report Overview

This report is organized into sections and appendices, which are summarized as follows:

- Section 2 reviews the goals of this study.
- Section 3 summarizes the environmental and cultural setting.
- Section 4 presents the investigative methods.
- Section 5 reviews any previous cultural resource investigations and/or sites in or near the study area.
- Section 6 provides cultural resource survey and paleontological assessment results.
- Section 7 provides archaeological/historical significance assessments.
- Section 8 summarizes the project and provides management recommendations.
- Section 9 presents a reference list.
- Section 10 contains the project certification.
- Appendix A provides recent photographs of the Study Area,
- Appendix B presents personnel qualifications,
- · Appendix C includes reproductions of compliance documents, and
- Appendix D provides the DPR523 Data Sets.

#### 1.4 - Research

Robin Laska, Assistant Center Coordinator for the Archaeological Information Center (AIC) of the San Bernardino County Museum conducted the archaeological record search at the AIC, on September 20, 2002. The AIC research indicated that none of the study area had been directly surveyed for the existence of cultural resources. Two historic sites lie within the direct APE of the project. These sites have not yet been evaluated for significance under CEQA and Section 106 of the NHPA. Nine historic sites and one prehistoric isolated tool are located within a one-mile radius of the study area. Two of these historic sites appear to be National Register eligible and one appears to lie within the indirect APE of the project. It was determined through map research that five or more structures had been plotted on various archival maps for the project area.

MBA staff archaeologists surveyed the project area on September 19, 2002. During the cultural resources survey, two of the three cultural resource sites found by Ms. Laska were detected in the study area. One new historic flood control site (Temp #1) was also detected.

Eric Scott, PhD., Curator of Paleontology at the San Bernardino County Museum (SBCM) conducted the paleontological literature and records review at the SBCM on September 17, 2002. The SBCM research showed that the Tract is situated on "Pleistocene older fan deposits." These deposits have high potential to contain fossil resources throughout their extent.

Christeen Taniguchi M.A., MBA architectural historian and MBA staff archaeologist Dustin Kay, B.S., evaluated three historic archaeological sites for significance. None of the sites appear to be eligible for the National Register or the California Register. They may be eligible for local historical listing under certain conditions.

#### 1.5 - Findings Summary

The survey revealed that two previously known historic cultural resource sites, with one exhibiting two distinct loci, were located within the Tract. One new site, an old San Bernardino County flood control berm known as Temp #1, was also detected. The new and previously known sites were not revisited during this phase of the project for the purposes of establishing significance.

During the significance evaluation, modern DPR523 site forms were drafted for these sites; included in Appendix D. The historical significance of P1081-1/H (East and West loci), P1081-19/H (Ranch Complexes, East and West loci) and Temp #1 were established. MBA did not find these sites to be significant under CEQA, nor are they significant under Section 106 of the NHPA. However, because historical sites were detected in the project area, the chance that additional historical materials will be uncovered during grading is "moderate." Therefore, we must recommend at least part-time monitoring during earthmoving.

Monitoring mitigation measures must be in place prior to earthmoving in the Tract. In addition, should previously undetected and potentially significant cultural resources be uncovered during

earthmoving within this Tract, such resources (excluding isolated artifacts) should be tested for *historical significance* under CEQA and the national Advisory Council on Historic Preservation Criterion A, B, C and/or D prior to continued impact. In addition, California State Health and Safety Code Section 7050.5 dictates that if human remains are unearthed during construction, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to CEQA regulations and Public Resources Code Section 5097.98.

The paleontological records search revealed that no fossil resources have been recorded within the project area. The nearest deposit of fossils within sediments mapped as Pleistocene older fan deposits occurs approximately eight miles to the south, and there is another deposit located approximately nine rniles to the southeast. Dr. Scott concluded that earthmoving should take place within the project area.

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#### SECTION 2: INTRODUCTION

The following archaeological survey report has been prepared for the City of Rancho Cucamonga, California (City). Michael Brandman Associates has conducted a cultural resource records search, field survey, paleontological records search and archaeological/historical significance test for a 160acre tract located in the southwest ¼ of Section 21 of T1N, R6W (SBBM). Located a few miles northeast of the center of the City of Rancho Cucamonga (Exhibit 2-2), the study area is proposed for annexation into the City of Rancho Cucamonga, but is currently under County of San Bernardino jurisdiction. This report is associated with a tentative tract map (Tract 16072) proposing to construct 359 single-family residences.

The cultural resource survey took place on September 19, 2002, while the cultural resource records and map search took place on September 20, 2002. The paleontological resource records search took place on September 17, 2002. The study area was surveyed for cultural resources utilizing procedures noted in Section 4.0. Significance testing of three sites in the study area took place between May 25 and June 12, 2003.

The cultural resource assessment was performed at the request of the City of Rancho Cucamonga (Lead) in order to comply with 36CFR800 (Section 106) implementing regulations found in the California Environmental Quality Act (CEQA), the National Historic Preservation Act (NHPA 1999; Archnet 1999), the National Register of Historic Places (NRHP 1999, ParkNet 2001) and the National Environmental Policy Act (NEPA). This report closely follows the ARMR reporting format as is currently recommended by the California State Office of Historic Preservation (SHPO).

#### 2.1 - Assessment Goals

The goal of the project was to identify all significant cultural and paleontological resources situated within the Area of Potential Effect (APE), evaluate sites within the project area or significance, and develop mitigation recommendations, if necessary. A protocol archaeological survey in the boundaries of the Tract, which shall be directly affected by construction, was undertaken because the property had not been archaeologically surveyed in the last 10 years. The study consisted of seven distinct efforts:

- 1. Cultural resource record search conducted to determine whether any previously recorded cultural materials are present within the boundaries of the study area, or within a one-mile radius of the study area.
- 2. Protocol field reconnaissance in the form of a systematic, intensive pedestrian survey designed to identify any cultural resources within the study area.
- 3. Examination of archived aerial photographs, topographic maps and road maps that might reveal historic land use.
- 4. Intensive historical data collection for the purposes of a historical significance evaluation for sites detected during the survey.
- 5. Development of cultural mitigation recommendations.
- 6. Paleontological resource record search conducted to determine whether any previously recorded fossiliferous resources are present within the boundaries of the study area, or within

a one-mile radius of the study area.7. Development of paleontological mitigation recommendations.



SCALE IN MILES Michael Brandman Associates

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Exhibit 2-1 **Regional Location Map** 

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# SECTION 3: ENVIRONMENTAL AND CULTURAL SETTING

# 3.1 - Location

As seen in Exhibit 2-2, the project area is located in the southwest ¼ of Section 21 of T1N, R6W (SBBM) as found on the USGS *Cucamonga Peak*, *CA*. 7.5' topographic quadrangle map. The study area could be easily accessed and roughly 160 acres of land was surveyed to protocol. The study area was partly bounded by roads and fences. Because nearly all on-site vegetation was less than five feet in height, unfenced boundaries could be estimated by observing off-project topographic details.

# 3.2 - Topography

A modern aerial photograph, taken in 2001, is shown as Exhibit 3-1. The study area consists mostly of boulder-strewn alluvial fan with a strong slope running to the southeast. Ground visibility during the survey neared 75%, and the ground surfaces were exposed between natural groundcover. The elevation of the study area ranged from 1,620 to 1,850 feet above sea level.

# 3.3 - Vegetation

The study area is located in an area exhibiting natural, burned natural and various non-native plants. Density of the plants ranged from moderate to heavy site-wide. Previous biological studies indicated that the types of vegetative groups within the project area included Riversidean sage scrub of varied quality, ornamental alignments and ruderal species.

# 3.4 - Geology

The project area exhibits moderately coarse to extremely coarse deposits of alluvium that has cascaded out of Day Canyon and East Etiwanda Canyon to the north. Boulders, some weighing several tons and measuring more than 20 feet in circumference, were noted in the project area.

# 3.5 - Water Resources

The project is located in an area exhibiting occasionally severe flooding events. No local springs or seeps are found on the *Cucamonga Peak*, *CA*. topographic map. An intermittent streambed is plotted on the topographic map along the west margin of the project area. In some places, this consisted of a steep-walled canyon with 20-foot walls that was difficult to traverse. Prior to the dropping of the local water table through over-pumping of the aquifer, this might have provided near year-round water to aboriginal and historic occupants.



Source: MDS Consulting, 2001



Exhibit 3-1 2001 Aerial Photograph

TRACT 16072 • ARCHAEOLOGICAL SURVEY

# SECTION 5: PREVIOUS RESEARCH AND RECORDS REVIEW RESULTS

The record search indicated that the study area may have been directly surveyed for cultural resources in 1991, as part of a cultural resource study associated with the North Etiwanda Specific Plan (McKenna 1991). The search also indicated that two historic sites have been recorded within the search radius.

# 5.1 - Known Cultural Resources in the Project Vicinity

According to AIC files, ten known area-specific archaeological investigations have occurred within a one-mile radius of the Study Area (Baldwin 1978a, 1978b, 1978c, 1978d; Landis 1993; Lerch 1986, 1987; McKenna 1991; Padon et al 1989; TetraTech 2000). Five non-specific overviews of the project area have also been produced (Bean and Vane 1981; Carrico et al 1982; McIntyre 1986; Robinson and Risher 1990; Scott 1976). Eleven known historic archaeological sites lacking significance determinations are within the search radius, along with two National Register eligible historic archaeological sites and one isolated prehistoric artifact. Of these, site P#1081 1/H Locus west, site P#1081 1/H Locus east and site P#1081-19/H are located in the project area. Although older site recordation forms associated with these sites are available for review, they have not been previously evaluated for significance under CEQA.

Site Number	Site Description			
P1081-1/H east	Light scatter of historic artifacts and rock alignment.			
P1081-1/H west	Multiple historical components associated with irrigation pipes and refuse deposits.			
P1081-15/H	Three rock alignments and cluster of rock piles.			
P1081-16/H	Historic trash scatter located east of structure complex known as 19H.			
P1081-19/H east	Ranch complex.			
P1081-19/H west	Ranch complex.			
P1081-35/H	1880s weir box with later structural additions.			
P36-060,255	Isolated obsidian biface.			
CA-SBR-82	CPHI-82: first house utilizing hydroelectric power in California. May be considered NR-eligible if intact.			
CA-SBR-3131/H	Rock wall possibly associated with 1880s Etiwanda Water Company base camp.			
CA-SBR-4946/H	12 rectangular rock cairns.			
CA-SBR-7661/H	3 concrete structure foundations and 18 refuse dumps. Early twentieth century.			
CA-SBR-7694	Also known as PSBR-36H. Boulder 1 and Boulder 2 transmission lines. NR-eligible. Lies approximately ½ mile north of the study area.			
CA-SBR-10296/H	Three historic refuse deposits and an overgrown trail.			
CA-SBR-10297/H	Historic rock wall, rock pile and eucalyptus trees.			

Table 5-1: Known	Cultural Resource	Located Within	One Mile of th	e Study Area
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A review of the National Register Index for San Bernardino County (NRHP 2003) showed that no National Register-eligible sites are located in the study area. Review of NR-eligible sites showed that two are located within the search radius. These are noted in Table 1.

NR-eligible CA-SBR-7694 lies approximately ½ mile north of the project area. We do not believe that the development of the project will impact this site as the power lines lies well outside the direct APE. Site CA-SBR-82 is quite probably NR-eligible, but this site is also located well outside the APE and cannot be seen from the project area.

# 5.2 - Archival Aerial Photograph Review

One archival aerial photograph was purchased in order to review past land-use of the study area. Taken in February of 1953 (Exhibit 3-2), this shows that the Tract was bisected by an unusual change in existing flora. Magnified inspection of the lighter-colored area, along with the field survey, showed that a fire had burned the southeastern half of Section 21 several years prior to 1953. The fire was apparently halted by a firebreak that bisected the property from northeast to southwest: this firebreak can be seen in this aerial photograph.

A lengthy rock berm and ditch associated with flood control can also be noted in this exhibit. This feature was detected during the survey. The feature is considered an historic site as it is clearly more than 45 years old and, as noted in Section 6 and Section 7, should be documented using DPR523 forms. As noted in Section 7.0, this site was evaluated for significance under CEQA.

The two ranch complexes P1081-19/H (Locus A, West; Locus B, East) can be clearly observed in Exhibit 3-2, although magnified inspection of this area shows that the structures once located within were reduced to the foundations. It is uncertain just when the ranches were abandoned.

Irrigation features associated with the west and east loci of P1081-1/H can also be observed. Refuse associated with P1081-16/H is located just outside the eastern edge of the project area, but the location for this is clearly visible in a magnified area of this photograph.

# SECTION 6: SURVEY AND PALEONTOLOGICAL ASSESSMENT RESULTS

# 6.1 - Cultural Resources

During the survey, two previously recorded sites, and one new site were observed within the study area. The two ranch complexes P1081-19/H (Locus A, West; Locus B, East) were clearly observed and extensive photographs were taken of this site. The site is unusual as it exhibits numerous well-made rock alignments in and around the complex. Two structural complexes were observed. Locals currently use Locus B as an informal paintball course.

Irrigation features and rock alignments associated with the west loci of P1081-1/H were also observed and photographed. This appears to be relatively intact due to its isolation. No remnants of the east loci of P1081-1/H were found. A rock berm associated with flood control construction, built prior to 1953, was detected on the archival photograph and then located during the survey. The significance of both sites was determined during the 2003 phase of this study (see Section 7.0), and DPR523 form sets for all three sites are found in Appendix D.

# 6.2 - Assessment of Paleontological Resources

Eric Scott, Ph. D. of the Division of Geological Sciences of the San Bernardino County Museum completed a literature review and records search for Tract 16072 on September 17, 2002. According to Dr. Scott, the project area lies on surface exposures of Pleistocene older fan deposits. These deposits have high potential to contain fossil resources throughout their extent. No fossil resources are known for the project area and the nearest resources found in similar deposits are located approximately eight miles to the south. His report has been attached to this document (see Appendix C). Dr. Scott recommended that monitoring of the project area should occur during earthmoving. Specific mitigation recommendations can be found in Section 8.2.

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# SECTION 7: CULTURAL SIGNIFICANCE ASSESSMENTS

# 7.1 - Historical Significance Evaluation of Ranch Complex P#1081-19/H (Locus B, East)

On February 23, 1991, Jeanette McKenna recorded this site on DPR422A forms during work on the Etiwanda North Specific Plan. The AIC labeled the site P#1081-19/H. The west ranch complex was not discussed at that time. For the purposes of analysis, we are treating the two complexes separately. Locus A consists of the eastern portion with cobble foundations representing long-abandoned structures, while Locus B consists of all historical materials found in the northwest quarter of the study area. The divisions between these two Loci are clearly visible on the archival photographs reproduced as exhibits in this document. Maps associated with this site can be found in Appendix D.

Locus B exhibits the remains of two cobble wall and mortar structures, along with other features surrounding the foundations. One foundation is near the center of the property (see DPR forms, Feature 1) with low irregular wall remnants; its ground plan or use could not be determined. The second foundation (Feature 2) was most likely the main building on the property. It is located at the north end of Locus B, and has an irregular floor plan. This building remnant is relatively intact and retains some definition. Although the foundation outline remains, the walls of the eastern portion of the building, however, no longer exist. Photograph A-3 taken circa 1964-67 shows this section of the building still intact, illustrating the presence of a chimney. The primary entrance for this structure appears to be on the north elevation, facing the dirt access road; there are remnants of steps and a walkway leading up to it. Another door was found at the east elevation. There are various outlines for windows throughout the walls. A west-facing wall near the access road still has what appears to be a concrete sill. There is no longer any evidence of the roof or flooring material.

There are remnants of a concrete trough near the northwest end of the property (Feature 3). A nearly square shaped cobble wall surrounds the property (Feature 4). At the northeast corner of this wall, there is another small cobble wall enclosure (Feature 5) within the larger one; there is extensive chaparral growth within this smaller area. Both walls are low and the stones are now irregularly laid with no visible mortar. The property shares the same dirt access road running east and west as Locus A. There are eucalyptus and pepper trees planted throughout. Currently, the complex is being used informally as a paint ball course, resulting in extensive paint stains and some graffiti on the remains of the main building and nearby wall enclosure surfaces. In addition, there are various padded boards and other paint ball related gear and debris scattered throughout. This activity appears to have also resulted in there being less vegetation overgrowth within the complex as compared to the surrounding areas, including Locus A.

Based on information from William Robert Perdew, a life long resident of Etiwanda, Locus B was built by his ancestor Rufus Putnum Perdew. Popularly known as "Put," he was born on August 14,

1854, in Sioux City, Iowa, and came to Etiwanda with his family when he was six years old. His first wife was Sarah Elizabeth Day, daughter of George Day (who had played a role in securing water rights from the canyons north of Etiwanda, including Day Canyon, which is named after him). After Sarah Elizabeth died in 1889, "Put" married her sister Georgianna that same year, and they eventually had twelve children. "Put" died in 1939 and Georgianna in 1932. According to William Robert, "Put" and his family lived at this complex. They raised cattle and had an apiary. They also grew almonds, and had peach and apricot trees.

According to Larry Perdew (William Robert's son), "Put's" brother Joseph Edward Perdew and their uncle Greenberry Rufus Ferdinand Benton Perdew, lived north of this ranch complex, closer to the foothills. This information is verified in the 1919-1920 Etiwanda City Directory, which indicates "J. E. Perdew," rancher, living at the north end of Etiwanda Avenue, and "R. F. Perdew" (possibly the uncle), rancher, living at the north end of East Avenue.

By 1904, San Bernardino County Archives tax assessment records show "R. P. Perdew" as the owner of this property; no adequate documentation of ownership from the years before were found. However, based on visual observations and taking into account that "Put" married his second wife in 1889 and started a family, Locus B dates from the late nineteenth century or possibly the early twentieth century. Although "Put" was still alive, ownership of the property changed hands to his wife Georgianna in 1906. By 1917, however, the property came into the hands of W. F. Courtright, et al. In 1919, A. H. Laurence became the owner until the property transferred to Lila M. Lawrence, who owned it from 1922 to 1942. Rena Walker Main owned it from 1945 to at least 1974. It is likely that Locus B was abandoned by at least the late 1930s; 74 year old lifelong Etiwanda resident William Robert Perdew always remembers it being unused and in disrepair. A 1961 fire, which also affected Locus A, further destroyed this property.

The existence of residences exhibiting cobble foundations is common to older Etiwanda and Alta Loma structures. A few well-preserved examples of such structures can be found along Foothill Boulevard and East 19<sup>th</sup> Street in both Rancho Cucamonga and Upland. In addition, it was also very common for the early orchardists to create unreinforced walls of cobblestones that bordered parcel boundaries in the orchards of Alta Loma. Numerous examples of this practice can be found in parcels near Wilson and Hermosa Streets, and Hermosa and Banyan Streets in Rancho Cucamonga. Some of these walls were 12 feet high, and a few such walls remain to this day.

The purpose of this practice appears to be threefold: 1) the walls identified the exact boundaries of parcels created by surveyors when the Model Colonies were first subdivided in the late 1800s, 2) the stones would support growth of *Eucalyptus* windbreaks, and 3) the unreinforced nature of the walls allowed the addition of stones to the walls tops as they were brought up by the plow over time.

### Application of California Register Criteria

When evaluated within its historic context, a property must be shown to be significant for one or more of the four Criteria for Evaluation: A, B, C, or D. The Criteria describe how properties are significant for their association with important events or persons, for their importance in design or construction, or for their information potential. In addition, a property not only must be shown to be significant under the California Register of Historical Resources criteria, but it also must have integrity. The seven aspects of integrity include: location, design, setting, materials, workmanship, feeling and association.

#### **Criterion A: Event**

To be considered for listing under Criterion A, a property must be associated with one or more events important in the defined historic context. The event or trends must clearly be important within the associated context. Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A: the property's specific association must be considered important as well.

Locus B does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at the local, state or national level.

### **Criterion B: Person**

Criterion B applies to properties associated with individuals whose specific contributions to history can be identified and documented. Persons "significant in our past" refers to individuals whose activities are demonstrably important within a local, state, or national historic context. The criterion is generally restricted to those properties that illustrate, rather than commemorate, a person's important achievements. The persons associated with the property must be individually significant within a historic context. Significant individuals must be directly associated with the nominated property. Properties eligible under Criterion B are usually those associated with a person's productive life, reflecting the time period when he or she achieved significance. Speculative associations are not acceptable. Documentation must make clear how the nominated property represents an individual's significant contributions. A property must retain integrity from the period of its significant historic associations. Architects are often represented by their works, which are eligible under Criterion C. Their homes, however, can be eligible for consideration under Criterion B. if these properties were personally associated with the individual.

Locus B does not qualify under California Register Criterion B: Person, as historical research failed to identify any of the past owners or occupants of the house as historically significant at the state or national level. The resource may, however, have some local significance for its direct association with Rufus Putnum "Put" Perdew, a locally known resident of Etiwanda.

### **Criterion C: Design/Construction**

Properties may be eligible under Criterion C if they embody the distinctive characteristics of a type, period, or method of construction, 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. Properties which embody the distinctive characteristics of a type, period, or method of construction refer to the way in which a property was conceived, designed, or fabricated by a people or culture in past periods of history. Distinctive characteristics are the physical features or traits that commonly recur in individual types, periods, or methods of construction. To be eligible, a property must clearly contain enough of those characteristics to be considered a true representative of a particular type, period, or method of construction.

A master is a figure of generally recognized greatness in a field, a known craftsman of consummate skill, or an anonymous craftsman whose work is distinguishable from others by its characteristic style and quality. The property must express a particular phase in the development of the master's career, an aspect of his or her work, or a particular theme in his or her craft.

**Embodying the distinctive characteristics of a type, period, or method of construction.** Locus B does not qualify under California Register Criterion C: Design/Construction at the state or national level as a property that embodies the distinctive characteristics of a type, period, or method of construction.

### Representing the work of a master or important, creative individual.

Locus B does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as representative of the work of a master or creative individual.

### Possessing high artistic values.

Locus B does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as a structure possessing high artistic values.

### **Criterion D: Information Potential**

Properties may be eligible under Criterion D if they have yielded, or may be likely to yield, information important in prehistory or history.

It is possible that subsurface study of Locus B may lead to further information, but not likely with regard to the historical and architectural significance of the property. The history of this ranch complex has not been previously investigated. Unfortunately, most of the important data associated with historical sites in California is associated with characteristics of the superstructure. Buried historical materials, except under unusual circumstances (such as

human burials or privies), typically do not yield substantial amounts of historical information. In this case, MBA does not think that excavation would yield substantial amounts of historical information that might change the significance rating of the complex. However, if human remains or privies were uncovered during grading, such deposits would constitute features that, after analysis, might be of importance to the understanding of the historic nature of early Rancho Cucamonga.

#### Integrity

Location. Location is the place where the historic property was constructed or the place where the historic event occurred.

The location of Locus B has remained the same since its construction. It, therefore, retains its location element for integrity purposes.

**Design.** Design is the combination of elements that create the form, plan, space, structure, and style of a property.

Locus B is currently a historic archaeological ruin. The design elements are no longer clearly distinctive.

Setting. Setting is the physical environment of a historic property.

The subject ranch complex Locus B possesses a high degree of original setting.

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.

Locus B was constructed of typical materials using a common pattern for its time and location.

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

Locus B is currently a historic archaeological ruin. The workmanship, however, is reflective of early twentieth century vernacular architectural styles in southern California that used locally available building materials such as cobblestone.

*Feeling.* Feeling is a property's expression of the aesthetic or historic sense of a particular period of time.

Locus B is currently a historic archaeological ruin, but has enough structural elements to retain the aesthetic or historic sense of a particular period.

Association. Association is the direct link between an important historic event or person and a historic property.

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Locus B is not linked directly with any event or person significant in California history at the state or national level. The resource may, however, be significant for local history for its association with Rufus Putnum "Put" Perdew, a locally known resident of Etiwanda.

# 7.2 - Historical Significance Evaluation of Ranch Complex P#1081-19/H (Locus A, West)

This ranch complex (Locus A, West) consists of structures and features that appear to be of later construction than those within the other ranch complex (Locus B, East). At the northernmost side of Locus A is an aging eucalyptus wind break with a low cobble wall that parallels it just to the north (see DPR forms, Feature 1). Both are about 240 meters long and run east to west. Running perpendicular to the south of the windbreak is an irregular row of eucalyptus trees about 110 meters long (Feature 2). At the south end of the property is another cobble wall, about 140 meters long, running east to west (Feature 3). There is a dirt access road running east to west through this property; Locus B shares this road.

There are also remnants of two wall structures, one building, and a cobblestone and concrete trough at this ranch complex (Locus A, West). The wall structures are of cobble wall construction with mortar, and are located at the west end of the complex. Of the two, the one to the north of the dirt road is approximately 45 meters long. (Feature 4). The other to the south of the dirt road (Feature 5), has a symmetrical rectangular plan with an extension to the north. The areas within the wall reinnants for both are filled with chaparral growth. The building is of cobblestone construction with cement mortar (Feature 6) and supported by rebar; it has a concrete floor that has cracks, but is generally intact; although basically of similar construction as Locus B, the use of rebar and concrete tloor reflects a higher level of structural sophistication. It is located to the northeast of the two wall structure; there are not enough remains to help determine fenestration or door openings. The west wall does, however, have the remnants of a chimney, with a broken clay flue inside. Scattered throughout Locus A are historic midden concentrations exhibiting concrete rubble, ceramic pipe fragments, wood, bricks, metal and glass fragments.

An exact construction date could not be determined at this time, although the complex does exist in a 1938 aerial photograph (Exhibit 7-1). This photograph suggests that Locus A is younger than Locus B based on the size of the eucalyptus in each locus. Based on visual inspection, Locus A was most likely constructed during the first quarter of the twentieth century, some time after Locus B was built. It is possible that this was also constructed by a member of the Perdew family, since the property was

also under their ownership until 1917 (note: until 1945, the ownership record for this complex is the same as for the one to the east). By 1917, however, the property came into the hands of W. F. Courtright, et al. In 1919, A. H. Laurence became the owner until the property transferred to Lila M. Lawrence, who owned it from 1922 to 1942. From 1945 to 1953, C. D. and Emma M. Zuppan were the owners. From 1961 to at least 1974, Claudia L. Darington owned this ranch complex.

Due to the lack of public records, additional historical information could not be obtained. However, according to Larry Perdew, Locus A was abandoned for a period of time until 1958 when Lucky and Gerry Humphrey repaired and moved into the complex with their family; they lived in what is today the building ruin with the concrete floor. According to the County Archives, Claudia Darington was the owner at that time. They had some horses, but did not participate in any agricultural activities. In 1961, however, a fire destroyed their home, along with the abandoned remnants of Locus B. The complex has since remained unused.

### **Application of California Register Criteria**

When evaluated within its historic context, a property must be shown to be significant for one or more of the four Criteria for Evaluation: A, B, C, or D. The Criteria describe how properties are significant for their association with important events or persons, for their importance in design or construction, or for their information potential. In addition, a property not only must be shown to be significant under the California Register of Historical Resources criteria, but it also must have integrity. The seven aspects of integrity include: location, design, setting, materials, workmanship, feeling and association.

# **Criterion A: Event**

To be considered for listing under Criterion A, a property must be associated with one or more events important in the defined historic context. The event or trends must clearly be important within the associated context. Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A: the property's specific association must be considered important as well.

Locus A does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at either the local, state or national level.

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 SCALE IN FEET
 Michael Brandmau Associates
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Exhibit 7-1 1938 Aerial Photograph

TRACT 16072 · ARCHAEOLOGICAL SURVEY

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#### **Criterion B: Person**

Criterion B applies to properties associated with individuals whose specific contributions to history can be identified and documented. Persons "significant in our past" refers to individuals whose activities are demonstrably important within a local, state, or national historic context. The criterion is generally restricted to those properties that illustrate, (rather than commemorate,) a person's important achievements. The persons associated with the property must be individually significant within a historic context. Significant individuals must be directly associated with the nominated property. Properties eligible under Criterion B are usually those associated with a person's productive life, reflecting the time period when he or she achieved significance. Speculative associations are not acceptable. Documentation must make clear how the nominated property represents an individual's significant contributions. A property must retain integrity from the period of its significant historic associations. Architects are often represented by their works, which are eligible under Criterion C. Their homes, however, can be eligible for consideration under Criterion B, if these properties were personally associated with the individual.

Locus A does not qualify under California Register Criterion B: Person, as historical research failed to identify any of the past owners or occupants of the house as historically significant at the state or national level. It is possible that the resource has some local significance through a direct association with the Perdews, a locally known family, but this has not been established.

### **Criterion C: Design/Construction**

Properties may be eligible under Criterion C if they embody the distinctive characteristics of a type, period, or method of construction, 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. Properties which embody the distinctive characteristics of a type, period, or method of construction refer to the way in which a property was conceived, designed, or fabricated by a people or culture in past periods of history. Distinctive characteristics are the physical features or traits that commonly recur in individual types, periods, or methods of construction. To be eligible, a property must clearly contain enough of those characteristics to be considered a true representative of a particular type, period, or method of construction.

A master is a figure of generally recognized greatness in a field, a known craftsman of consummate skill, or an anonymous craftsman whose work is distinguishable from others by its characteristic style and quality. The property must express a particular phase in the development of the master's career, an aspect of his or her work, or a particular theme in his or her craft.

**Embodying the distinctive characteristics of a type, period, or method of construction.** The subject resource does not qualify under California Register Criterion C: Design/Construction at the state or national level as a property that embodies the distinctive characteristics of a type, period, or method of construction.

**Representing the work of a master or important, creative individual.** The subject resource does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as representative of the work of a master or creative individual.

**Possessing High Artistic Values.** Locus A does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as a structure possessing high artistic values.

### **Criterion D: Information Potential**

Properties may be eligible under Criterion D if they have yielded, or may be likely to yield, information important in prehistory or history.

Subsurface study of the resource may lead to further information, but likely not with regard to the historical and architectural significance of the property. The history of Locus A has not been investigated previously. Unfortunately, most of the important data associated with historical sites in California is associated with characteristics of the superstructure. Buried historical materials, except under unusual circumstances (such as human burials or privies), typically does not commonly yield substantial amounts of historical information. In this case, we do not feel that excavation would yield substantial amounts of historical information that might change the significance rating of the complex. However, if human remains or privies were uncovered during grading, we feel that such deposits would constitute features that, after analysis, might be of importance to the understanding of the historic nature of early Rancho Cucamonga.

# Integrity

Location. Location is the place where the historic property was constructed or the place where the historic event occurred.

The location of the subject resource has remained the same since its construction. It, therefore, retains its location element for integrity purposes.

Design. Design is the combination of elements that create the form, plan, space,

structure, and style of a property.

The subject is currently a historic archaeological ruin. The design elements are no longer clearly distinctive.

Setting. Setting is the physical environment of a historic property.

The subject ranch Locus A possesses a high degree of original setting.

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.

Locus A was constructed of typical materials and a common pattern for its time and location.

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

The subject is currently a historic archaeological ruin. The workmanship is, however, reflective of early twentieth century veruacular architectural styles in southern California that used locally available building materials such as cobblestone.

**Feeling.** Feeling is a property's expression of the aesthetic or historic sense of a particular period of time.

The subject is currently a historic archaeological ruin, but has enough structural elements to retain the aesthetic or historic sense of a particular period.

Association. Association is the direct link between an important historic event or person and a historic property.

The subject resource is not linked directly with any event or person significant in California history at the state or national level. Its local significance as linked with the Perdew family has not been established.

# 7.3 - Historical Significance Evaluation of Irrigation Complex P#1081-1/H

On February 23 1991, Jeanette McKenna recorded this site on DPR422A forms during work on the Etiwanda North Specific Plan. The AIC labeled the site P#1081-1/H (Locus West) and P#1081-1/H (Locus East). The eastern portions of the complex could not be observed in the field, suggesting that this portion of the site has been graded over or lost to pot hunting. Maps associated with this site can be found in Appendix D.

The site consists of remnants of a disused water irrigation system near the dirt portion of Etiwanda Avenue. The site is about 180 meters long. At the northwest end is a subsurface concrete structure (see DPR forms, Feature 1), surrounded by ceramic pipe fragments and concrete structural remains. There are also foundation remains of a nearby concrete standpipe and trash scatter. A rock berm defines the line of the system as it runs southeast (Feature 2). There are currently ceramic pipe and concrete fragments scattering the areas surrounding the berm. About 90 meters south from the concrete substructure is a concrete circular water diversion system with a subterranean ceramic pipe (Feature 3). There is a metal grate embedded within a concrete ring covering the access to the pipe. In addition, there are three diversion ceramic pipes radiating from the system. The one furthest west is currently capped. Just south of this structure is a concrete rectangular subterranean reservoir, with cobble wall construction, and clad on some of the exterior surfaces with concrete. Southwest of these two structures is a continuation of the rock berm, which runs for about 50 meters to a concrete watercap and standpipe (Feature 4). This is about 10 meters away from Wilson Avenue, which is a graded dirt road.

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This irrigation system was under the control of the Etiwanda Water Company (founded by George Chaffey Jr. and his brother William Benjamin Chaffey in 1882), and later was owned by the Cucamonga Water Control District. A construction date, however, could not be established, although it appears to be from the early quarter of the twentieth century. The irrigation system is visible in an 1938 aerial photograph (Exhibit 7-1). A pipeline leading up to a reservoir distribution point for the Etiwanda Water Company is illustrated going across Section 21 in a sketch by Robert L. Hickcox in "A History of Etiwanda." This was constructed in 1927, but it is not certain whether this is the irrigation system that exists today. Larry Perdew, an Etiwanda resident, recollects accompanying his grandfather, Robert Roland Perdew who was a "zanjero," for the Etiwanda Water Company, to regulate this irrigation system in the early 1960s. Larry Perdew also indicated that the distribution box for this system was commonly called the "Rader box," possibly in reference to F. E. Rader, who owned the land on which this system exists, from 1910 to 1919.

Starting from 1904 until 1910, A. R. Land owned this property. In 1910, it came into the hands of the above-mentioned F. E. Rader, who possessed it until 1919. B. B. and Edith B. Willson owned it from 1919 to 1923. Zilpha L. Sawyer became the owner from 1924 until 1945. Rena Walker Main became a long-time owner in 1945, still possessing the land in 1974.

# **Application of California Register Criteria**

When evaluated within its historic context, a property must be shown to be significant for one or more of the four Criteria for Evaluation-: A, B, C, or D. The Criteria describe how properties are significant for their association with important events or persons, for their importance in design or construction, or for their information potential. In addition, a property must not only must be shown to be significant under the California Register of Historical Resources criteria, but it also must have integrity. The seven aspects of integrity include: location, design, setting, materials, workmanship, feeling and association.

# **Criterion A: Event**

To be considered for listing under Criterion A, a property must be associated with one or more events important in the defined historic context. The event or trends must clearly be important within the associated context. Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A: the property's specific association must be considered important as well.

The resource does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at either the local, state or national level.

### Criterion B: Person

Criterion B applies to properties associated with individuals whose specific contributions to history can be identified and documented. Persons "significant in our past" refers to individuals whose activities are demonstrably important within a local, state, or national historic context. The criterion is generally restricted to those properties that illustrate, rather than commemorate, a person's important achievements. The persons associated with the property must be individually significant within a historic context. Significant individuals must be directly associated with the nominated property. Properties eligible under Criterion B are usually those associated with a person's productive life, reflecting the time period when he or she achieved significance. Speculative associations are not acceptable. Documentation must make clear how the nominated property represents an individual's significant contributions. A property must retain integrity from the period of its significant historic associations. Architects are often represented by their works, which are eligible under Criterion C. Their homes, however, can be eligible for consideration under Criterion B, if these properties were personally associated with the individual.

The subject resource does not qualify under California Register Criterion B: Person, because historical research failed to identify any significant person associated with this irrigation system at the local, state or national level.

# **Criterion C: Design/Construction**

Properties may be eligible under Criterion C if they embody the distinctive characteristics of a type, period, or method of construction, 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. Properties which embody the distinctive characteristics of a type, period, or method of construction refer to the way in which a property was conceived, designed, or fabricated by a people or culture in past periods of history. Distinctive characteristics are the physical features or traits that commonly recur in individual types, periods, or methods of construction. To be eligible, a property must clearly contain enough of those characteristics to be considered a true representative of a particular type, period, or method of construction.

A master is a figure of generally recognized greatness in a field, a known craftsman of consummate skill, or an anonymous craftsman whose work is distinguishable from others by its characteristic style and quality. The property must express a particular phase in the development of the master's career, an aspect of his or her work, or a particular theme in his or her craft.

**Embodying the distinctive characteristics of a type, period, or method of construction:** The subject resource does not qualify under California Register Criterion C: Design/Construction at the local, state or national level as a property which embodies the distinctive characteristics of a type, period, or method of construction.

Representing the work of a master or important, creative individual. The subject resource does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as representative of the work of a master or creative individual.

**Possessing high artistic values.** The subject resource does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as a structure possessing high artistic values.

### **Criterion D: Information Potential**

Properties may be eligible under Criterion D if they have yielded, or may be likely to yield, information important in prehistory or history.

Subsequent study of the subject resource is not likely to lead to further information regarding the historical and architectural significance of the property.

### Integrity

*Location.* Location is the place where the historic property was constructed or the place where the historic event occurred.

The location of the subject resource has remained the same since its construction. It, therefore, retains its location element for integrity purposes.

**Design.** Design is the combination of elements that create the form, plan, space, structure, and style of a property.

It appears that the irrigation system's original design elements remain intact for integrity purposes.

Setting. Setting is the physical environment of a historic property.

The subject irrigation system possesses a high degree of original setting.

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.

This irrigation system was constructed of materials typical of its likely construction period of the early quarter of the twentieth century.

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

The workmanship is reflective of irrigation system construction during the likely time at the early quarter of the twentieth century.

*Feeling.* Feeling is a property's expression of the aesthetic or historic sense of a particular period of time.

Although in ruinous condition, most of the structural elements appear intact and have not been compromised. It retains its feeling element for integrity purposes.

Association. Association is the direct link between an important historic event or person and a historic property.

The subject resource is not linked directly with any event or person significant in California history at the local, state or national level.

# 7.4 - Historical Significance Evaluation of Berm Temp #1

This man made flood control berm was the only new historic site detected during the survey. It is approximately 18 meters wide, 520 meters long and 2 meters high. It may have been initially used as a firebreak and later for control of water that runs through the intermittent stream channel that crosses the project area from northwest to southeast. Two circular concrete bench markers were detected during the survey. They have inscribed metal plates indicating that the structure was built in 1949 by the San Bernardino County Flood Control District ("S.B.C., F.C.D., 1949"). There is one marker each with pole on either side of the berm and water way located about 245 meters north of Wilson Avenue. Plans at the San Bernardino County, Department of Public Works, Flood Control District

indicate that this berm was part of an East Etiwanda and San Sevaine project from January 1949. In tax assessor records at the San Bernardino County Archives, there is a record of an easement made for flood control in 1948 by the owner at the time, Rena Walker Main.

Ownership for this property is the same as that of the irrigation system. Starting from 1904, A. R. Land owned this property until 1910. At that time, it came into the hands of the F. E. Rader, who possessed it until 1919. B. B. and Edith B. Willson owned it from 1919 to 1923. Zilpha L. Sawyer became the owner from 1924 until 1945. The abovementioned Rena Walker Main became a long time owner in 1945, still possessing the land in 1974.

# Application of California Register Criteria

When evaluated within its historic context, a property must be shown to be significant for one or more of the four Criteria for Evaluation: A, B, C, or D. The Criteria describe how properties are significant for their association with important events or persons, for their importance in design or construction, or for their information potential. In addition, a property not only must be shown to be significant under the California Register of Historical Resources criteria, but it also must have integrity. The seven aspects of integrity include: location, design, setting, materials, workmanship, feeling and association.

# **Criterion A: Event**

To be considered for listing under Criterion A, a property must be associated with one or more events important in the defined historic context. The event or trends must clearly be important within the associated context. Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A: the property's specific association must be considered important as well.

The resource does not qualify under California Register Criterion A: Event, as historical research failed to reveal any historically significant event or events at either the local, state or national level.

# **Criterion B: Person**

Criterion B applies to properties associated with individuals whose specific contributions to history can be identified and documented. Persons "significant in our past" refers to individuals whose activities are demonstrably important within a local, state, or national historic context. The criterion is generally restricted to those properties that illustrate, rather than commemorate, a person's important achievements. The persons associated with the property must be individually significant within a historic context. Significant individuals must be directly associated with the nominated property. Properties eligible under Criterion B are usually those associated with a person's productive life, reflecting the time period when he or she achieved significance. Speculative associations are not acceptable. Documentation must make clear how the nominated property represents an

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individual's significant contributions. A property must retain integrity from the period of its significant historic associations. Architects are often represented by their works, which are eligible under Criterion C. Their homes, however, can be eligible for consideration under Criterion B, if these properties were personally associated with the individual.

The subject resource does not qualify under California Register Criterion B: Person, as historical research failed to identify any significant person associated with this berm at the local, state or national level.

### Criterion C: Design/Construction

Properties may be eligible under Criterion C if they embody the distinctive characteristics of a type, period, or method of construction, 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. Properties which embody the distinctive characteristics of a type, period, or method of construction refer to the way in which a property was conceived, designed, or fabricated by a people or culture in past periods of history. Distinctive characteristics are the physical features or traits that commonly recur in individual types, periods, or methods of construction. To be eligible, a property must clearly contain enough of those characteristics to be considered a true representative of a particular type, period, or method of construction.

A master is a figure of generally recognized greatness in a field, a known craftsman of consummate skill, or an anonymous craftsman whose work is distinguishable from others by its characteristic style and quality. The property must express a particular phase in the development of the master's career, an aspect of his or her work, or a particular theme in his or her craft.

Embodying the distinctive characteristics of a type, period, or method of construction. The subject resource does not qualify under California Register Criterion C: Design/Construction at the local, state or national level as a property which embodies the distinctive characteristics of a type, period, or method of construction.

**Representing the work of a master or important, creative individual.** The subject resource does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as representative of the work of a master or creative individual.

**Possessing higb artistic values.** The subject resource does not qualify under California Register Criterion C: Design/Construction at the state, national, or local level as a structure possessing high artistic values.

### **Criterion D: Information Potential**

Properties may be eligible under Criterion D if they have yielded, or may be likely to yield, information important in prehistory or history.

Subsequent study of the subject resource is not likely to lead to further information regarding the historical and architectural significance of the property.

### Integrity

Location. Location is the place where the historic property was constructed or the place where the historic event occurred.

The location of the subject resource has remained the same since its construction. It, therefore, retains its location element for integrity purposes.

**Design.** Design is the combination of elements that create the form, plan, space, structure, and style of a property.

Although somewhat obscured with vegetation growth, the berm's original design elements remain intact for integrity purposes.

Setting. Setting is the physical environment of a historic property.

The subject berm possesses a high degree of original setting.

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.

This was constructed of material typical of berm construction.

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

The workmanship is reflective of berm construction.

*Feeling.* Feeling is a property's expression of the aesthetic or historic sense of a particular period of time.

Although obscured by vegetation, the berm is intact and has not been compromised. It retains its feeling element for integrity purposes.

Association. Association is the direct link between an important historic event or

person and a historic property.

The subject resource is not linked directly with any event or person significant in California history at the local, state or national level.

# 7.5 - Ownership Information

Unless otherwise noted, the following ownership information for Township 1N, Range 10W, SW ¼ of Section 21 was obtained at the San Bernardino County Archives:

Year	Ownership				
1868	According to an assessor's field book, the Southern Pacific Railroad owned all of Section 21.				
1 <b>868</b> and	Ownership information between 1868 and 1903 could not be traced either through deeds or county tax asses records. The following gave some possible evidence of ownership during this period:				
1903	1. Etiwanda: The First Hundred Years 1870 to 1890 notes, "The Chaffeys also purchased 640 acres				
	from the Southern Pacific Railroad." It is possible that this land bought by George Chaffey Jr. and his				
	brother William Benjamín Chaffey in the early 1880s is in reference to Section 21, which is also 640				
	acres. In addition, the assessor's field book did not indicate any other nearby land that was owned by				
	the Southern Pacific Railroad at that time. However, this information could not be confirmed through primary documentation.				
	2. In <i>A History of Etiwanda</i> , Robert L. Hickcox indicates that:				
		"Two men, a Mr. Woods and a M	r. Stafford, had	purchased considerable acreage	
	along East Etiwanda Creek and constructed a ditch and diverted flaw from the creek to their land. In 1892 (written communication, Etiwanda Water Company) Woods and Stafford claimed a portion of the flow of the creek and did not acknowledge the				
	Etiwanda Water Company claim for all the water. After considerable controversy,				
	<ul> <li>the company purchased 1,235 acres of land along the channel in Section 8, 9, 16,</li> <li>21, and 27, together with all the water rights to it for \$31,000. The company later sold the land withaut any water rights."</li> <li>This appears to indicate that at least part of Section 21 was owned by Woods and/or Stafford by at least 1892, and was then sold to the Etiwanda Water Company. This information could not be</li> </ul>				
	COI	afirmed through primary document	ation.		
1904	During this period, the SW ¼ of Section 21 was divided into N ½ and S ½.				
to	N ½, SW ¼		s ½, sw ¼		
1943	1904-1906	R. P. Perdew	1904-1910	A. R. Land	
	1906-1916	Georgiana Perdew 1917-1918	1910-1919	F. E. Rader	
		W. F. Courtright, et al.	1919-1923	B. B. and Edith B. Willson	
	1919-1922	A. H. Laurence	1924-1945	Zilpha L. Sawyer	
	1922-1942	Lila M. Lawrence			
1945	From approx	imately 1945, the SW 1/4 of Section	21 was further	divided into six parcels. They are identified by	
to	parcel numbe	ers in brackets below, taken from la	ter map books (	Exhibit 7-2).	

Table	7-1:	Ownership	Information

Year	Ownershi				
1953	N ½ NW ¼	SW ¼ [20]	S ½ SW ½ (except SE ½ SE ½ SW ½) [1]		
	1946-1953	Eskil A. and Eloise O. Johnson	1945-1953	Rena Walker Main (A record made to an	
	NE ½ SW	¼ [12]		easement for flood control in 1948)	
	1945-1953	Rena Walker Main	NE ¼ SE ¼	SW ¼ [13]	
	S ½ NW ¼	SW ¼ [15, 16]	1949-1953	Roderick and Maxine Stevenson	
	1945-1953	C. D. and Emma M. Zuppan	SE ¼ SE ¼	SW ¼ [14]	
			1946-1953	Effie A. and Mary Theresa Stanford	
1954	There is a g	ap in the county tax assessor records for	or this section	during these years.	
to			·		
1960					
1960	S <sup>1</sup> / <sub>4</sub> , NW <sup>1</sup> / <sub>4</sub> , SW <sup>1</sup> / <sub>4</sub> was further divided, so that there were seven parcels (Exhibit 7-2).				
to	N ½ NW ¼ SW ¼ [03, 18/19 or 20] West portion of S ½ NW ¼ SW ¼ [15]			on of \$ ½ NW ¼ SW ¼ [15]	
1974	(Note: In 1961, this was called parcel 03. From		1961-1965	James R. and Mildred E. Johnson	
1	1962-65, it	was divided into parcels 18 and 19.	1965	Oliver D. and Dorothy L. Angell	
	It was rejoir	ed by 1966 into parcel 20.)	1966-1974	Oliver D. Angell	
	1961	Beaumont Meadows Incorporation			
		(parcel 03)	East portio	m of S ½ NW ¼ SW ¼ [16]	
	1962-1964	Siddal Incorporated (parcel 18:	1961-1974	Claudia L. Darington	
		15.15 acres)			
	1965	S. R. Investments Incorporated	S ½ SW ¼ (except SE ¼ SE ¼ SW ¼ ) [1]		
		(parcel 18)	1961-1974	Security Title Insurance Company	
	1962-1966	Beaumont Meadows Incorporation			
		(parcel 19: 4.55 acres)	NE ½ SE ½	4 SW ¼ [13]	
	1966-1974	Arthur Brown (parcel 20)	1961-1974	Security Title Insurance Company	
	NE 'A SW	1/4 [12]	SE ¼ SE ¼	SW ¼ [14]	
	1961-1974	Rena Walker Main	1961-1974	Effie A. and Mary Theresa Stanford	





Michael Brandman Associates 00180027 • .06/2003

Exhibit 7-2 Assessor's Map Book Page for SW 1/4 of Section 21

TRACT 16072 • ARCHAEOLOGICAL SURVEY

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1/9/2024 Board Meeting



00180027 - 10/2002

# SECTION 8: PROJECT SUMMARY AND RESOURCE ASSESSMENTS

# 8.1 - Cultural Resource Management Recommendations

# Ranch Complex P#1081-19/H (Locus B, East)

Results of the study showed that the ranch complex does not qualify for the National Register or the California Register under criteria A, B, C and/or D. The property may, however, have some local significance for its direct association with Rufus Putnum "Put" Perdew, a locally known resident of Etiwanda.

### Ranch Complex P#1081-19/H (Locus A, West)

Results of the study showed that the ranch complex does not qualify for the National Register or the California Register under criteria A, B, C and/or D. The property may have some direct association with the Perdew family, but this could not be established.

### Irrigation Complex P#1081-1/H

Results of the study showed that the ranch complex does not qualify for the National Register or the California Register under criteria A, B, C and/or D.

### Berm Temp #1

Results of the study showed that the ranch complex does not qualify for the National Register or the California Register under criteria A, B, C and/or D.

As shown above, the project area exhibits three distinct historic sites, with one of the sites exhibiting two loci. With appropriate mitigation, the development of the project could result in beneficial effects, including the recovery of scientifically highly important cultural materials that would not have been exposed without earthmoving. MBA recommends that an archaeological monitor should be on-site 50 percent of the time once earthmoving commences and remain until and if the Lead Archaeologist recommends that half-time monitoring be reduced or eliminated entirely.

### Archeological Mitigations

AR-1 Prior to the issuance of a grading permit, the project applicant shall retain a Lead Agency-approved archaeologist to develop an archaeological mitigation plan and a discovery clause/treatment plan. Both of these plans shall be reviewed and approved by the Agency. The archaeological mitigation plan shall include monitoring 50% of the excavation activities on the project site by an Agency-approved archaeologist and/or his/her representative. The discovery clause/treatment plan shall include recovery and subsequent treatment of any archaeological or historical remains and associated data uncovered by brushing, grubbing or excavation. The treatment plan shall provide procedures for the curation of any detected cultural specimens. Any recovered cultural resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard professional archaeological practices. Examination by an archaeological specialist shall be included where necessary, dependent upon the artifacts, features, or

 Michael Brandman Associates
 8-1
 Project Summary And Resource Assessments

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sites that are encountered. Specialists will identify, date and/or determine significance potential.

- AR-2 Following CEQA, monitoring is not required on archaeological or historical sites once the significance of such sites has been determined. In this case, the evaluation of the sites is based upon surface characteristics only. It is possible that buried human remains or privies will be encountered during construction.
- AR-3 If the archaeological monitor discovers buried cultural deposits, earthmoving shall be diverted temporarily around the deposits until the deposits have been evaluated, recorded, excavated and/or recovered, as necessary, and in accordance with the Agency-approved recovery plan. Earthmoving shall be allowed to proceed through the area after the archaeologist determines the artifacts are recovered and/or site mitigated to the extent necessary.
- AR-4 If a previously unknown cultural site is encountered during monitoring and it is determined by the archaeologist that a significance determination is required, the site shall be evaluated and recorded in accordance with requirements of the State Office of Historic Preservation (i.e., DPR 523 form). In this case, if the site is not determined to be significant, no measures subsequent to recording the site on appropriate forms are required. If any of the sites are determined to be significant, the Agency-approved archaeologist shall collect an adequate amount of artifacts at the specific archaeological site. The archaeologist shall determine the amount of artifacts needed to be collected.
- AR-5 If human remains are encountered during excavations associated with this project, all work shall halt and the County Coroner shall be notified (Section 5097.98 of the Public Resources Code). The Coroner will determine whether the remains are of forensic interest. If the coroner, with the aid of the City-approved archaeologist, determines that the remains are prehistoric, he/she will contact the Native American Heritage Commission (NAHC). The NAHC will be responsible for designating the most likely descendant (MLD), who will be responsible for the ultimate disposition of the remains, as required by Section 7050.5 of the California Health and Safety Code. The MLD will make his/her recommendations within 24 hours of their notification by the NAHC. This recommendation may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials (Section 7050.5 of the Health and Safety Code).
- AR-6 Any recovered archaeological resources should be identified, sites recorded, mapped and artifacts catalogued as required by standard archaeological practices. Examination by an archaeological specialist should be included where necessary, dependent upon the artifacts, features or sites that are encountered. Specialists will identify, date and/or determine significance potential.
- AR-7 A final report of findings will be prepared by the Project Archaeologist for submission to the Proponent, the Lead Agency, and the Archaeological Information Center of the San Bernardino County Museum. The report will describe the history of the project area, summarize field and laboratory methods used, if applicable, and include any testing or special analysis information conducted to support the resultant findings.

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#### **Native American Commentary**

It is assumed that once the suite of environmental reports is sent to the State environmental clearinghouse, and/or routed by the local agency, local tribal jurisdictions may comment upon these findings. For this reason, Native American comments relative to the study area were not obtained prior to issuance of this report. The Native American Heritage Commission (NAHC) was contacted in writing, but their statement has not been received as of this date. Because we have issued letter requests to Gabrielino tribal authorities in the past, and the project area lies within Gabrielino tribal interests, we mailed a notice to the standardized list of tribal members in late 2002. No responses to our letters have been received as of this report.

### 8.2 - Paleontological Resource Management Recommendations

The project area has a high chance that significant paleontological resources will he impacted during earthmoving. With appropriate mitigation, the development of the project could result in beneficial effects, including the recovery of scientifically highly important fossil remains that would not have been exposed without earthmoving. MBA recommends that a paleontological monitor should be onsite full time once earthmoving commences until and if the Lead Paleontologist recommends that full-time monitoring be reduced or eliminated entirely.

#### **Paleontological Mitigations**

- PA-1 Prior to the issuance of a grading permit, the project applicant shall retain a City-approved paleontologist. The City-approved paleontologist shall monitor all excavation activities in areas of the project underlain by previously undisturbed sediments. Earthmoving in areas of the site where previously undisturbed sediments will be buried but not disturbed will not be monitored. Monitoring shall begin once earthmoving reaches five (5) feet below the original ground surface.
- PA-2 Monitoring shall be conducted on a full-time basis in areas of the project underlain by sensitive rock units associated with older alluvium being encountered by earthmoving.
- PA-3 Should fossils be found within an area being cleared or graded, divert earth-disturbing activities elsewhere until the monitor has completed salvage. If construction personnel make the discovery, the grading contractor should immediately divert construction and notify the monitor of the fmd. If too few fossil remains are found after 50 percent of earthmoving has been completed, monitoring can be reduced or discontinued in those areas at the project paleontologist's direction.
- PA-4 If paleontological resources are detected. Prepare, identify, and curate all recovered fossils for documentation in the summary report and transfer to an appropriate depository (i.e., San Bernardino County Museum).
- PA-5 A final report of findings will be prepared by the City-approved paleontologist for submission to the City, project applicant, and the San Bernardino County Museum. All collected specimens and the final report shall be provided to the San Bernardino County Museum.
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These recommended mitigation measures would be part of a program that is in compliance with Society of Vertebrate Paleontologists' standard guidelines. Implementing and adhering to these guidelines will reduce the potential adverse environmental impacts of construction on paleontologic resources to an insignificant level. The guidelines will also allow acceptance by a museum repository of a fossil collection, the result of an impact mitigation program.

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# SECTION 10: CERTIFICATION

### 10.1 - Certification

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this archaeological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

03 Signed: Date:

Michael Dice, M.A.

Date: 6/25/03 Signed: Chilos Dauger

Christeen Taniguchi, M.A. Michael Brandman Associates Irvine, CA

# APPENDIX A: PHOTOGRAPHS FROM THE STUDY AREA

Photograph A-1: View of Ranch Complex P#1081-19/H (east loci) structural foundation and cobblestone wall remnants.



Photograph A-2: View of cobblestone walls foundations located west of Ranch Complex P#1081-19/H (Locus B, East).





Photograph A-3: Taken by Harold Orr, circa 1964-1967.



Photograph A-4: View of typical landscape found during the survey.

Photograph A-5: View of site number P#1081-1/H west locus, southern section.





Photograph A-6: View to the north near the corner of Etiwanda and Wilson

Photograph A-7: View to the east near the corner of Etiwanda and Wilson





Photograph A-8: View to the west from Locus B of P#1081-19/H toward Locus A.

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Photograph A-9: View of Locus B with modern trash deposits.



Photograph A-10: View to the south of large rock alignments in southwest corner of P#1081-19H Locus A.



Photograph A-11: View of drainage as it crosses the dirt road leading to P#1081-19/H



# APPENDIX B: PERSONNEL QUALIFICATIONS

#### MICHAEL H. DICE, M.A. PROJECT SCIENTIST/SENIOR ARCHAEOLOGIST

#### EDUCATION

M.A., Anthropology - Arizona State University, Tempe, Arizona B.A., Anthropology - Washington State University, Pullman, Washington Anthropology Track, University of Washington, Seattle, Washington Professional Affiliations

Member, California Historical Society

Member, National Trust For Historic Preservation

#### **REGISTERED PROFESSIONAL ARCHAEOLOGIST (RPA 2000)**

Professional History

Michael Brandman Associates, Tustin, California - Senior Archaeologist L&L Environmental, Inc. Corona, California - Senior Archaeologist National Park Service (Pipe Spring National Monument) - Archaeologist

#### NATIONAL PARK SERVICE (MESA VERDE NATIONAL PARK) - ARCHAEOLOGIST

CRMC, Inc., Farmington, New Mexico - Archaeological Project Manager LaPlata Archaeological Consultants, Dolores, Colorado - Archaeologist CASA, Inc. Cortez, Colorado - Archaeologist, Human Skeletal Analyst

Mr. Dice is a Certified Archaeologist with more than 16 years of experience performing records searches, archaeological surveys, archaeological site testing (Phase 2) and data collection (Phase 3) projects on private and public lands in the Southwestern United States and Southern California. During his career, he has authored or co-authored more than 50 CEQA and/or NEPA level documents including several manuscripts for the National Park Service. Mr. Dice is a member of the California Historical Society, a Registered Professional Archaeologist (RPA), and is a member of the National Trust For Historic Preservation.

#### **Professional Experiences**

Project Scientist/Archaeologist for CEQA-level Phase 1, Phase 2 and Phase 3 archaeological mitigation for the Temecula Marketplace Project in the City of Temecula, California. Performed the field survey, recorded a large historic ranch complex remnant, developed testing procedures for the historic and prehistoric components of the site, then gathered a crew and performed the Phase 2 test in the field. Responsible for developing the Phase 3 data collection plan.

Project Scientist/Archaeologist for Section 106 level review of archaeological testing at Pipe Spring National Monument, Fredonia, Arizona. Produced complete report synthesizing a series of excavations (1996-1998) on an historic Mormon Fort within the Monument. Also wrote a draft plan for any future archaeological mitigation.

Project Archaeologist/Database Manager for the emergency Chapin-5 Fire Rehabilitation Project, Mesa Verde National Park, Colorado (1996-1999). Began as field crew chief (GS-7) and finished with the Park as a GS-9 Database manager. Created an ACCESS 6.0 database for the recordation or re-recordation of more than 500 archaeological sites within the rehabilitation area.

Project Scientist/Archaeologist for CEQA-level Phase 1 and Phase 4 archaeological initigation for the "The Club at Big Bear Lake" Project in the City of Big Bear Lake, California. Performed the field survey, recorded a large historic tourist complex remnant, wrote mitigation-monitoring recommendations for the City, then supervised the monitoring, analyzed the historic artifacts and wrote the final report.

Performed more than 40 CEQA-level Phase 1 archaeological surveys in Southern California, which included evaluating more than 30 bistoric and prebistoric archaeological sites per California SHPO protocol. The reports fulfill ARMR reporting guidelines, while the County of Riverside reports fulfilled both ARMR and County of Riverside protocols.

Technical skills include scientific writing, project organization, field management of archaeological personnel, personal computing, database management, and analysis of human remains.

### CHRISTEEN TANIGUCHI M.A.

#### ARCHITECTURAL HISTORIAN/ARCHEOLOGIST

#### EDUCATION

MS, Historic Preservation, University of Pennsylvania, PA

BA, History, University of California, Los Angeles, CA

Cum laude and Phi Beta Kappa honors, One year of study abroad at the University of Kent, England

#### PROFESSIONAL EXPERIENCE

- Pasadena, CA. Currently heading the assessment and treatment of a historic sandstone block bench and wall in Pasadena.
- California Missions San Juan Capistrano, San Buenaventura and San Juan Bautista. Created thorough assessment reports that detail current conditions and recommendations for the proper maintenance and conservation of artifacts and building materials at the California Missions.
- Will Rogers State Historic Park, Pacific Palisades, CA. Assisted with creating a condition assessment report of outdoor artifacts.
- Hollyhock House, Los Angeles, CA. Helped identify, document, label and pack historic artifacts and building components, as part of the restoration project at Hollyhock House in Los Angeles. Individual condition assessments and comprehensive artifact lists were a part of the work performed.
- Cypress Lawn Cemetery, Colma, CA. Assisted with determining and carrying out treatments for the conservation of a granite and marble mausoleum.
- National Park Service, Philadelphia, PA. Prepared approved HABS/HAER documents for shipment to the Library of Congress. Assisted with the organization of conferences and workshops. Helped create historic cemetery survey forms, as well as organized teams to perform survey work. Assisted with maintaining the National Historic Landmarks program. Participated in review committees for National Historic Landmarks federal grant applications.
- Historic Preservation Partners, Los Angeles, CA. Helped owners with National Register or National Register eligible buildings damaged by the Northridge Earthquake receive federal grant funds, by acting as the liaison between the owners and the federal funding agency. Organized teams of architects and engineers to survey damaged historic buildings.
- Los Angeles, CA. Prepared nomination forms for Los Angeles Historic Cultural Monuments by doing research, organizing support for the nominations, and presenting the results to the Los Angeles Cultural Heritage Commission and city council.
- Museum of Natural History, Los Angeles, CA. Inventoried and packed objects of American material to be moved.
- Santa Monica Heritage Museum, Santa Monica, CA. Helped properly maintain an extensive permanent photograph collection at the Museum. Assisted with the installation of new exhibits. Organized records of past exhibits.

#### **PROFESSIONAL HISTORY**

Michael Brandman Associates, Architectural Historian Sculpture Conservation Studio, Architectural Conservator Conde Nast Publications, Ethtorial Assistant National Park Service, Architectural Historian Los Angeles Conservancy, Intem Historic Preservation partners, Field Representative Museum of Natural History, Museum Assistant Santa Monica Heritage Museum, Intem/Museum Assistant

#### SELECTED PUBLICATIONS

- Co-presented a paper on a Damien Hirst installation at the 2002 Western Association for Art Conservation (WAAC) annual meeting
- Wrote treatment proposals for various historic architectural projects for the Sculpture Conservation Studio, Los Angeles CA.
- Presented a paper dealing with the preservation of interior plastic architectural components at Russel Wright's home, Dragon Rock in Garrison, New York, at the 1998 Association for Preservation Technology (APT) annual conference.
- Researched and wrote the text for a tour of historic houses designed by architect Paul R. Williams. An accompanying brochure was also generated.
- Master of Science thesis dealt with the identification and conservation of interior plastic architectural components at Dragon Rock, in Garrison, NY

### DUSTIN KAY, B.S. ARCHEOLOGIST

#### EDUCATION

Bachelor of Science, Archaeology Oregon State University

#### **PROFESSIONAL EXPERIENCE**

NEPA Compliance/Telecommunication Facilities. Providing cultural resource monitoring for a variety of telecommunication providers throughout southern and central California in complying with the National Environmental Policy Act (NEPA) for the implementation of cellular communication facilities. This prnject includes the preparation of NEPA compliance documents in accordance with the Federal Communication Commissions regulations pertaining to telecommunication facilities, in particular cultural resource records searches and Phase I surveys, including architectural/historical evaluations, viewshed impact assessments, and construction monitoring.

Level 3 Fiber Optics Project (Level 3/Kiewit Pacific) Served as a crew member and archaeological monitor during project activities. This project involved the construction of a fiber optic cable running from Vandenberg Air Force Base to Summerland, California and from Oakland to Burbank, California. Performed test excavations and data recovery, and completed site maps and artifact illustrations.

North Baja Pipeline (PGE) Served as lead cultural monitor for the project, which involved coordinating monitors, working directly with Environmental Coordinator, Lead Biologists and Construction Foremeu. Oversaw site location, recording, monitoring and construction activities. Conducted information record searches. Niland to Blythe Powerline Replacement Project (Greystone) Served as crew member for an intensive cultural resources survey for a portion of the project. The project involved a literature search and field survey to identify the presence and location of archaeological sites within the project boundary. Participated in recording and locating some of the new sites found during the survey, which included many historic can scatters. Conducted records search at the Eastern Information Center at the University of California, Riverside. San Dieguito River Valley Regional Park (MWWD) Served as crew member and report co-author for the project, which included many historic can active for the project, which included many historic conducted records search at the Eastern Information Center at the University of California, Riverside.

which involved cultural resource monitoring of 1.61 acres for the revegetation of a riparian habitat. San Diego, California.

San Pasqual Homes (San Pasqual Band of Mission Indians) Served as report co-author for a project involving the completion of firebreaks on the San Pasqual Indian Reservation. This involved the review of historic information, including maps and database information. Valley Center, California.

#### **PROFESSIONAL HISTORY**

Archaeological Associates - Director/Principal

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# APPENDIX C: REPRODUCED COMPLIANCE DOCUMENTS

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# SAN BERNARDINO COUNTY MUSEUM

2024 Orange Tree Lane • Redlands, California USA 92374-4560 (909) 307-2669 • Fax (909) 307-6539 • www.sbcountymuseum.org



ROBERT L. McKERNAN Director

17 September 2002

Michael Brandman Associates attn: Michael Dice 15901 Red Hill Avenue, Suite #200 Tustin, CA 92780-7318

### re: PALEONTOLOGY LITERATURE AND RECORDS REVIEW, SB TRACT #16072, CITY OF RANCHO CUCAMONGA, SAN BERNARDINO COUNTY, CALIFORNIA

Dear Mr. Dice,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named land tract in the Rancho Cucamonga area of San Bernardino County, California. The study area is located in the southwestern ¼ of section 21, Township 1 North, Range 6 West, San Bernardino Base and Meridian, as seen on the Cucamonga Peak, California 7.5' United States Geological Survey topographic quadrangle map (1966 edition, photorevised 1980).

Previous geologic mapping (Bortugno and Spittler, 1986) indicates that the land tract under study is situated on surface exposures of Pleistocene older fan deposits. These older fan sediments have high potential to contain fossil resources throughout their extent, depending upon their lithology. Older Pleistocene alluvial sediments elsewhere throughout the Inland Empire have been reported to yield significant fossils of extinct animals from the Ice Age (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer and others, 1998, 1999). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, short-faced bears, sabre-toothed cats, large and small horses, large and small canels, and bison (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Springer and others, 1991; Woodburne, 1991; Springer and Scott, 1994; Scott, 1997; Neynolds and Reynolds, 1991;

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously-known paleontologic resource localities are recorded by the SBCM from the study area, nor from within several miles in any direction. The nearest recorded paleontologic resource locality, SBCM 5.1.8, is located ~8 miles to the south. This locality yielded fossil remains of extinct mammoth (*Mammuthus*) from surface and subsurface sediments mapped (Bortugno and Spittler, 1986) as Pleistocene older fan deposits identical to those present within the boundaries of Tract #16072. Additionally, locality SBCM 5.1.11, located ~9 miles southeast of Tract #16072, yielded remains of extinct sabre toothed cat (*Smilodon*) from similar subsurface deposits of older Pleistocene fan alluvium.

JOBN F NICHAELSON County Administrative Officer JOHN GOSS Assistant County Administrator Economic Development and Public Services Group

	Search of Sup	ervisors	
SILL POSTMUS	Sinst District	DENNIS HANSBEAGER	Third District
JON D. MIKELS	Second District	FRED AGUIAR.	 Found District
	JECRY RAVES	Fifth District	

# Literature / records review, Paleontology, MBA: Tract #16072, Rancho Cucamonga 2

The results of the literature review and the check of the RPLI at the SBCM demonstrate that excavation in conjunction with development may have high potential to adversely impact significant nonrenewable paleontologic resources present within the boundaries of Tract #16072, depending upon the lithology of the Pleistocene older fan deposits present therein. A qualified vertebrate paleontologist must be retained to develop a program to mitigate impacts to such resources. This mitigation program should be consistent with the provisions of the California Environmental Quality Act, as well as with regulations currently implemented by the County of San Bernardino and the proposed guidelines of the Society of Vertebrate Paleontology. This program should include, but not be limited to:

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- 1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Based upon the results of this review, areas of concern include all previously-undisturbed sediments of fossiliferous Pleistocene older fan alluvium present within the boundaries of the property. Paleontologic monitors should be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediments which are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced if the potentially-fossiliferous units described herein are not present, or if present are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.
- 2. Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates.
- 3. Identification and curation of specimens into a museum repository with permanent retrievable storage (e.g., SBCM). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities.
- 4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency, will signify completion of the program to mitigate impacts to paleontologic resources.

### References

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- Jefferson, G.T., 1991. A catalogue of late Quaternary vertebrates from California: Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, No. 7.

Literature / records review, Paleontology, MBA: Tract #16072, Rancho Cucamonga

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Reynolds, R.E. and R.L. Reynolds, 1991. The Pleistocene beneath our feet: near-surface Pleistocene fossils in inland southern California basins, *in* Inland Southern California: the last 70 million years, M.O. Woodburne, R.E. Reynolds, and D.P. Whistler, eds. Redlands, San Bernardino County Museum Special Publication 38(3&4), p. 41-43.

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- Scott, E., 1997. A review of *Equus conversidens* in southern California, with a report on a second, previously-unrecognized species of Pleistocene small horse from the Mojave Desert." Journal of Vertebrate Paleontology 17(3): 75-A.
- Springer, K.B. and E. Scott, 1994. First record of late Pleistocene vertebrates from the Domenigoni Valley, Riverside County, California. Journal of Vertebrate Paleontology 14 (3): 47A.
- Springer, K.B., E. Scott, L.K. Murray and W.G. Spaulding, 1998. Partial skeleton of a large individual of *Mammut americanum* from the Domenigoni Valley, Riverside County, California. Journal of Vertebrate Paleontology 18(3): 78-A.
- Springer, K.B., E. Scott, J.C. Sagebiel and K.M. Scott, 1999. A late Pleistocene lake edge vertebrate assemblage from the Diamond Valley, Riverside County, California. Journal of Vertebrate Paleontology 19(3): 77-A.
- Woodburne, M.O., 1991. The Cajon Valley, in Inland Southern California: the last 70 million years, M.O. Woodburne, R.E. Reynolds, and D.P. Whistler, eds. Redlands, San Bernardino County Museum Special Publication 38(3&4), p. 41-43.

Please do not hesitate to contact us with any further questions you may have.

Eric Scott, Curator of Paleontology Division of Geological Sciences San Bernardino County Museum

Sincere

NATIVE AMERICAN HERITAGE COMMISSION 915 CAPITOL MALL, ROOM 364 SACRAMENTO, CA 95814 (916) 553-4082 Fax (916) 557-5390 Web Site www.nahe.ca.gov



January 24, 2003

Michael Dice M.A., Senior Archaeologist Michael Brandman Associates

*508- 4110* Sent By Fax: 714-<del>256-0184</del> No. Pages: 4

RE: Proposed Etiwanda Tract 16072 Project, near Rancho cucamonga, San Bernardino County.

Dear Mr. Dice:

A record search of the sacred lands file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend other with specific knowledge. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4040.

Sincerely,

Rob Wood

Environmental Specialist III

### NATIVE AMERICAN CONTACTS San Bernardino County January 24, 2003

La Jolla Band of Mission Indians Wendy Schlater, Chairperson 22000 Highway 76 Luiseno Paurna Valley , C A 92061 (760) 742-3771/72 Rincon Band of Mission Indians Culture Committee P.O. Box 68 Luiseno Valley Center - C A 92082 (760) 749-1051 (760) 749-8901 Fax

Pala Band of Mission Indians Robert Smith, Chairperson P.O. Box 50 Luiseno Pala CA 92059 Cupeno (760) 742-3784 (760) 742-1411 Fax

Pauma & Yuima Christobal C. Devers, Chairperson P.O. Box 369 Luiseno Pauma Valley , C A 92061 (760) 742-1289 (760) 742-3422 Fax

Pechanga Band of Mission Indians Mark Macarro, Chairperson P.O. Box 1477 Luiseno Temecula CA 92593 (909) 676-2768 (909) 695-1778 Fax San Manuel Band of Mission Indians Deron Marquez, Chairperson PO Box 266 Serrano Patton , C A 92369 (909) 864-8933 (909) 864-3370 Fax Bingo Hatt:(909) 864-5050

Soboba Band of Mission Indians Robert J. Salgado, Sr., Chairperson P.O. Box 487 Luiseno San Jacinto CA 92581 (909) 654-2765 Fax: (909) 654-4198

Twenty-Nine Palms Band of Mission Indians Dean Mike, Chairperson 46-200 Harrison Place Luiseno Coachilla , C A 92236 Chemehuevi (760) 775-5566 (760) 775-4639 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Netive Americans with regards to the cultural assessmet for the proposed Etwands Track 16072 Project, near Rancho Cucamonga, San Bernardino County.

# San Bernardino County January 24, 2003

Samuel H. Dunlap P.O. Box 1391 Temecula , C A 92593 (909) 699-5544 (Voice) (909) 262-9351 (Cell) (909) 693-9196 FAX

Gabrielino Cahuila Luiseno

Ti'At Society Cindi Atvitre 15600 Mulholland Dr., Apt. K Gabrielino Bel Air JCA 90077 (310) 440-0245 Gabrieleno/Tongva Tribal Council Anthony Morales, Chairperson PO Box 693 Gabrieleno Tongva San Gabriel , C A 91778 (626) 286-1632 (626) 286-1262 Fax (626) 286-1758 (Home)

San Luis Rey Band of Mission Indians Henry Contreras, Cultural Resources Representative 1763 Chapulin Lane Luiseno Falibrook , CA 92028 Cupeno (760) 728-6722 - Home (760) 207-3618 - Cell

Gabrielino Tongva Indians of California Tribal Council Robert F. Dorame, Chairperson PO Box 490 Gabrielino Tongva Belifiower , C A 90707

(562) 761-6417 - Voice 562 920-9449 - Fax

Ish Panesh United Band of Indians John Valenzuela PO Box 402597 Chu Hesperia CA 92340 Tata (760) 949-2103 Home Ton Van

Chumash Tataviam Tongva, Gabrielino Vanyume; Serrano Kitanemuk Alfred L Valenzuela 18678 Pad Court Chumash Newhall C A 91321 Tataviam (661) 252-1486 Home (661) 755-8314 Work Kitanemuk

San Luis Rey Band of Mission Indians

, CA 92056

Russell Romo, Captain

2302 Carriage Circle

(760) 757-6749 - Fax

(760) 724-8505

Oceanside

Chumash Tataviam Gabrielino Kitanemuk Vanyume ; Serrano

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This list is only applicable for contacting focal Native Americans with regards to the cultural assessmet for the proposed Etiwanda Track 19872 Project, near Rancho Cucamonga, San Bernardino County. Gabrielino/Tongva Cound / Gabrielino Tongva Nation 501 Santa Monica Blvd., Suite 500 Gabrieleno Tongva Santa Monica 90401-2415

### , CA

(310) 587-2203 (310) 587-2281 Fax

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Gabrielino Band of Mission Indians of CA Ms. Susan Frank PO Box 3022 Gabrielino Beaumont , CA 92223 (909) 845-3606

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Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section - 4997.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

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ENVIRONMENTAL SERVICES · PLANSING · NUMBER RESOURCES MANAGEMEN

January 23, 2003

Ti'At Society Cindi Alvitre 15600 Mulholland Dr., Apt. K Bel Air, CA 90077

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

7-10

Dear Ms. Alvitre:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

We have attached a topographic map showing the project location for your convenience. Please notify us of any sacred Native American sites that may be affected by the undertaking. A full description of this aspect of the project can be found in our archaeological survey report which is a part of an EIR we are developing for this project.

Sincerely,

Michael Dice M.A. Senior Archaeologist Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA. 92602

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Michael Brandman Associates 00180027 - 10/2002 Project Location Map

1/9/2024 Board Meeting



Michael Brandman Associates

ENVIRONMENTAL SERVICES : PLANNING : NATURAL KENDERTES MANOPAUNT

January 23, 2003

Craig Torres 713 E. Bishop Santa Ana, CA 92701

RE:

Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

7-10

Dear Mr. Torres:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucarnonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Michael Brandman Associates

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January 23, 2003

Gabrielino/Tongva Tribal Council Anthony Morales, Chairperson P.O. Box 693 San Gabriel, CA 91778

Sacred Lands Search for the Tract 16072 Residential Development, Rancho RE: Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Morales:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 23, 2003

Samuel H. Dunlap P.O. Box 1391 Temecula, CA 92593

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

7-10

Dear Mr. Dunlap:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Michael Brandman Associates 00180027 - 10/2002

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Michael Brandman Associates

ENTROMMENTAL SERVICES • PLANMENT • NATURAL RESOURCES MANAGEMENT

January 23, 2003

Alfred L. Valenzuela 18678 Pad Court Newhall, CA 91321

RE:

Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Valenzuela:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently nnder the jurisdiction of San Bernardino Connty. 359 homes will be constructed.

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Sincerely,

Michael Dice M.A. Senior Archaeologist Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA. 92602

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Michael Brandman Associates

ENVIRONMENTS, SERVICES · PLANNING · NATURAL RESOURCES MASAGEMENT

January 23, 2003

Coastal Gabrielino Diegueno Jim Velasquez 5776 42<sup>nd</sup> St. Riverside, CA 92509

RE:

Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

7-10

Dear Mr. Velasquez:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino Couuty. 359 homes will be constructed.

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Sincerely,

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Michael Brandman Associates

ENUROPHENTAL SERVICES • PLANNING • NATURAL RESOURCES MANAGEMENT

January 23, 2003

Gabrielino/Tongva Council/Gabrielino Tongva Nation 501 Santa Monica Blvd.,. Suite 500 Santa Monica, CA 90401

RE:

Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Sirs:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Sincerely,

Michael Dice M.A. Senior Archaeologist Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA. 92602

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Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANMING • NATURAL RENOUTED S MANAGEMENT

January 23, 2003

Gabrielino Band of Mission Indians of California Ms. Susan Frank P.O. Box 3022 Beaumont, CA 92223

RE:

Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Ms. Frank:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Sincerely,

Michael Dice M.A. Senior Archaeologist Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA. 92602

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Michael Brandman Associates

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ENGRONMENTAL SERVICES • PLANNING • NATURAL RESOURCES MAXACEMENT

January 23, 2003

Ish Panesh United Band of Indians John Valenzuela P.O. Box 402597 Hesperia, CA 92340

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Valenzuela:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucarnonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Beruardino County. 359 homes will be constructed.

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Michael Brandman Associates

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ENVIRONMENTAL SERVICES • PLANSING • NAFERAL RESOURCES MAXACEMENTS

January 23, 2003

Gabrielino Tongva Indians of California Tribal Group Robert F. Dorame, Chairperson P.O. Box 490 Bellflower, CA 90707

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucarnonga, California. (Cucarnouga Peak 7.5' Quad.)

Dear Mr. Dorame:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Michael Dice M.A. Senior Archaeologist Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA. 92602

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Michael Brandman Associates

ENTROPORTENTAL SERVICES - PLONERC - NATURAL RESOLATES MARKET APRIL

January 23, 2003

Island Gabrielino Group John Jeffredo P.O. Box 669 San Marcos, CA 92079

RE:

Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucarnonga, California. (Cucarnonga Peak 7.5' Quad.)

Dear Mr. Jeffredo:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Michael Brandman Associates 00180027 - 10/2002

Project Location Map



Michael Brandman Associates

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ENVIRONMENTAL SERVICES · PLAYNING · NATURAL RESOURCES MANACEMENT

January 23, 2003

Los Angeles City/County Native American Indian Commission 3175 West 6th Street, Room 403 Los Angeles, CA 90020

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Sirs:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

We have attached a topographic map showing the project location for your convenience. Please notify us of any sacred Native American sites that may be affected by the undertaking. A full description of this aspect of the project can be found in our archaeological survey report which is a part of an EIR we are developing for this project.

Sincerely,

Michael Dice M.A. Senior Archaeologist Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA. 92602

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Michael Brandman Associates 00180027 • 10/2002



Michael Brandman Associates

ENVIRONMENTAL SERVICES - PLANNING - NATURAL RESOURCES MANAGEMENT

January 24, 2003

Pala Band of Mission Indians Robert Smith, Chairperson P.O. Box 50 Pala, CA 92059

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Smith:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Michael Brandman Associates

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Exhibit 2 Project Location M 1133

Attachment 4, Page 268 of 367



Michael Brandman Associates

ENORMARKAR SERVICES · PLANNER · NATURAL RESOLUTION MANAGEMENT

January 24, 2003

San Luis Rey Band of Mission Indians Henry Contreras, Cultural Resources Representative 1763 Chapulin Lane Fallbrook, CA 92082

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

Dear Mr. Contreras:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Source: USGS Cucamonga Peak, 7.5' DRG, 1966, Revised 1988.

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Exhibit 2 Project Location M:1135

Michael Brandman Associates



Michael Brandman Associates

ENVROYMENTAL SERVICES · PLANNESC · NATE FOR RESOURCES MANAGEMENT

January 24, 2003

Pechanga Band of Mission Indians Mark Macarro, Chairperson P.O. Box 1477 Temecula, CA 92593

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

7-10

Dear Mr. Macarro:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Michael Brandman Associates



Michael Brandman Associates

ENVIRONMENTAL SERVICES · PLANMING · NAPURAL RESOLUCES MANAGEMENT

January 24, 2003

Pauma & Yuima Christobal C. Devers, Chairperson P.O. Box 369 Pauma Valley, CA 92061

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

7-10

Dear Mr. Devers:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Exhibit 2 Project Location M 1139



Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNING • NATURAL RESOLECES MANAGEMENT

January 24, 2003

Rincon Band of Mission Indians Culture Commitee P.O. Box 68 Valley Center, CA 92082

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

7-10

Dear Sirs:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Michael Brandman Associates



Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLAYDING • AND RAL RESOURCES MANAGEMENT

January 24, 2003

Soboba Band of Mission Indians Robert J. Salgado, Sr., Chairperson P.O. Box 487 San Jacinto, CA 92581

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucarnonga, California. (Cucarnonga Peak 7.5' Quad.)

7-10

Dear Mr. Salgado:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or uear a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Michael Brandman Associates

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Michael Brandman Associates

ENVIRONMENTAL SERVICES • PLANNES • NATURAL RESOLUCES MANAGEMENT

January 24, 2003

La Jolla Band of Mission Indians Wendy Schlater, Chairperson 22000 Highway 76 Pauma Valley, CA 92061

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucarnonga, California. (Cucarnonga Peak 7.5' Quad.)

Dear Ms. Schlater:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Michael Brandman Associates



Michael Brandman Associates

ENTRONOFINITY, SERVICES · PLANNING · NATURAL RESOURCES MANAGEMENT

January 24, 2003

San Luis Rey Band of Mission Indians Russell Romo, Captain 2302 Carriage Circle Ocenaside, CA 92056

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucarnonga, California. (Cucarnonga Peak 7.5' Quad.)

7-10

Dear Mr. Romo:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Michael Brandman Associates



Michael Brandman Associates

ENVIRONMENTAL SERVICES · PLANNING · NATURAL RESOLUTES MANAGEMENT

January 24, 2003

San Manuel Band of Mission Indians Deron Marquez, Chairperson P.O. Box 266 Patton, CA 92369

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

7-10

Dear Mr. Marquez:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Michael Brandman Associates

ENVIRONMENTAL SERVICES 🔹 PLANNING 🔹 NATURAL RESOURCES MANACEMENT

January 24, 2003

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Twenty-Nine Palms Band of Mission Indians Dean Mike, Chairperson 46-200 Harrison Place Coachilla, CA 92236

RE: Sacred Lands Search for the Tract 16072 Residential Development, Rancho Cucamonga, California. (Cucamonga Peak 7.5' Quad.)

7-10

Dear Mr. Mike:

Michael Brandman Associates (MBA) requests a consultation with individuals or organizations with regard to cultural properties that may lie on or near a proposed residential construction project. As noted, the project lies within the City of Rancho Cucamonga, and is located a few miles northeast of the center of the City of Rancho Cucamonga and is 160 acres in size. The study area is proposed for annexation into the City of Rancho Cucamonga and is currently under the jurisdiction of San Bernardino County. 359 homes will be constructed.

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Michael Brandman Associates

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## APPENDIX D: DPR523 FORM SETS
		PRIMARY RECOR	D					
Michael H	Brandman Associates		Primary# <u>xx-xxxxx</u>					
220 Com	merce, Suite 200		HKI#: Trinomial, CA-SB-VVVV					
Other Lis	tines:		NRHP Status Code:					
Review C	Codes:	Reviewer:	Date:					
Page <u>1</u> of	1 <u>14</u>	*Resource l	Name or # (Assigned by recorder): <u>P1081-1/H</u>					
P1.	Other Identifier: "I	<u>.ocus West"</u>						
P2.*	Location:	Not for PublicationX_Uns	estricted					
	a. *County: <u>San</u> ]	Bernardino (P2b and P2c or P2d; a	ttach location map)					
	b. *USGS Quad:	Cucamonga Peak Dated: J	1980. Photorev. :					
	Township: <u>1</u>	North Range: 10 West.	Section: 21 (SBBM)					
	Elevation: <u>1</u>	<u>720 feet above mean sea level (cer</u>	<u>iterpoint)</u>					
	c. Address: <u>no</u>	ne City:	Zip:					
	d.* UTM: (Give more	than one for large and/or linear res	ources)					
	Zone: <u>11S</u> :	<u>451834</u> mE / <u>3779188</u> mN	(north end point, NAD 1983)					
	<u>118</u> :	<u>451834</u> mE / <u>3779007</u> mN	(south end point, NAD 1983)					
	UTM Derivation:	<u>X</u> USGS Quad	GPS					
	GPS UTM Corrected:	Yes X_No	GPS brand/Model:					
	e. Other Locational Da	ita (e.g. parcel number, directions t	o resource, etc. as appropriate):					
	From the intersection of and 114 meters east. L	Etiwanda Avenue and Wilson Av	enue, the site is approximately 11 meters north					
	elongated (N/S) beginni	ing at the water cap and continuing	a north to structural remains for approximately					
	180 meters.							
P3a.*	Description (Describe of size, setting, and bound water irrigation system	resource and its major elements; in laries): This is a long linear histor near the dirt portion of Etiwanda A	ic-era site consisting of remnants of a disused venue. The site is about 180 meters long. At					
	the northwest end is a subsurface concrete structure (Feature 1), surrounded by ceramic pipe fragments and concrete structural remains. There are also foundation remains of a nearby concrete standpipe and							
	trash scatter. A rock berm defines the line of the system as it runs southeast (Feature 2). There are currently ceramic pipe and concrete fragments scattering the areas surrounding the berm. About 90							
	meters south from the	concrete substructure is a conc	rete circular water diversion system with a					
	subterranean ceramic pi	pe (Feature 3). There is a metal g	rate embedded within a concrete ring covering					
	one furthest west is cur	rently capped. Just south of this s	tructure is a concrete rectangular subterranean					
	reservoir, with cobble	wall construction; it is clad on a	some of the exterior surfaces with concrete.					
	Southwest of these two	structures is a continuation of the r	ock berm, which runs for about 50 meters to a					
concrete watercap and standpipe (Feature 4). This is about 10 meters away from Wilson Avenue is a graded dirt road.								
	Farlier researchers state	d that associated materials and hist	orical site components were located to the east					
	of this portion of the sit could not be found.	e. After the survey and a thorough	search of the areas to the east, such materials					
P3b.*	Resource Attributes (L	ist attributes and codes): <u>Al</u>	<u>H5, AH6</u> .					
P4.*	<b>Resources Present:</b>	BuildingStructu	reObjectX_SiteDistrict					
	Element of Dis	strictIsolateOth	er					
P5a.	Photograph or Drawin on the Photograph record	g (Required for <b>HRI</b> buildings, str <u>d page.</u>	uctures, and objects): <u>Digital photos are found</u>					
Р5Ь.	Description of Photo (V	/iew, date, accession #): See photog	graph record.					
P6.*	Date Constructed/Age	and Source:P	rehistoric <u>X</u> Historic Both					
	Likely built during the fi	irst quarter of the twentieth ceutury	<u>.</u>					
P7.*	Owner and Address:	City of Rancho Cucamonga						

ARCHAEOLOGICAL SITE RECORD						
Michael 1 220 Com Irvine, C.	Brandman AssociatesPrimary# xxmerce, Suite 200HRI#:A 92602Trinomial: CA-S	<u>-xxxxx</u> B-xxxxx				
Page <u>3</u> of	f 14 *Resource Name or # (Assigned by recorder): P1	<u>1081-1/H</u>				
A1.*	Dimensions:         Length: 180m (N-S)         Width: 60m (E-W)					
	Method of measurement:       X       Paced       Taped       Visual Estimate       X       Other         map measurement)	(topo				
	Method of determination (Check any that apply):ArtifactsFeatures	Soil				
	VegetationTopographyCut bankAnimal burrowExce	avation				
	Property boundaryOther (Explain):					
	<b>Reliability of determination:</b> <u>X</u> High <u>Medium</u> Low Explain:					
	Limitations (Check any that apply): Restricted access Paved/built over	ſ				
	Site limits incompletely definedDisturbancesVegetation					
A2.	Depth:NoneUnknown. Method of Determination: Depth of site less than 10 feet below modern grade because the cisterns were sunk perhaps 10 feet into the top digging the needed pit.	is likely soil after				
A3.*	Human Remains: Present X Absent Possible Unknown (	explain):				
A4.*	Features (Number, describe, indicate size, list associated cultural constituents, and show location of each f	feature on				
	1) subsurface concrete structure and cement rubble					
	2) rock berm with ceramic pipe and concrete fragments (subsurface water pipe)					
	3) cement subterranean reservoir and water diversion system remnant					
	4) watercap and standpipe					
	no Feature #) historic debris scatter: structural remains, ceramic pipe fragments, wood, metal, cans	s, glass.				
A5.*	<b>Cultural Constituents</b> (Describe and quantify artifacts, human-introduced organic residues, associated with features): <u>Structural remains, ceramic pipe fragments, wood, metal, cans, glass.</u> trash consisting of plastic and a cut up hot tub.	etc. not <u>Modern</u>				
A6.*	Were Specimens Collected? <u>X</u> No Yes (If yes, attach Artifact Record or cata identify where specimens are curated).	alog and				
A7.*	Site Condition:GoodX FairPoor (Describe disturbances). <u>Some site remains are in ruins while others in fairly good context.</u>	<u>tructural</u>				
A8.*	Nearest Water (Type, distance, and direction): <u>Intermittent creeks from Day and East E</u> Canyon. One intermittent creek is located about 200 meters to the east.	<u>itiwanda</u>				
A9.*	Elevation: (see P2b) <u>1720 feet above mean sea level</u>					
A10.	Environmental Setting					
	Vegetation (Site and vicinity): Coastal chaparral					
	Soil (Site and surrounding): Coarse sandy loam and numerous granite boulders					
	Landform: Coarse alluvial fan					
	Geology: Alluvium is likely composed of croded granitic basement rock and some aeolian silt.					
	Exposure/Slope: Exposed to the north on a 5 degree slope (average).	1 D				
	trees. Soil consists of a sandy loam with decomposing granites and rounded river cobbles. Location 5° slope in an open exposure.	ted on a				

#### LOCATION MAP

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602 Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

1980

# Page <u>5</u> of <u>14</u>

\*Resource Name or # (Assigned by recorder): P1081-1/H

\*Map Name: <u>Cucamonga Peak, CA.</u>

Scale: 1:24,000

Date of Map:\_\_\_\_

Tract 16072: Cucamonga Peak, CA. 7.5' USGS



\*Resource Name or # (Assigned by recorder): P1081-1/H

SKETCH MAP

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Primary# xx-xxxxx HRI#: Trinomial: <u>CA-SB-xxxxx</u>

# Page <u>6</u> of <u>14</u>

\*Drawn by: Dustin Kay

Date of Map: 5/27/03

North is up. Scale: 1"=33m



Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602 Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Page <u>7 of 14</u>

\*Resource Name or # (Assigned by recorder): P1081-1/H

Month	Day	Time	Exp/Frame	Subject/Description	View Toward	Accession#
5	27	11am	1	See below	Northwest	None
5	27	11am	2	See below	Southwest	None
5	27	11am	3	See below	Uncertain	None
5	27	11am	4	See below	Down	None
5	27	11am	5	See below	Down	None
5	27	11am	6	See below, overview	North	None
5	27		7	See below, overview	West	None

1/95; updated 1/98

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>8</u> of <u>14</u>

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

\*Resource Name or # (Assigned by recorder): P1081-1/H



Image 1: View to the northwest of Feature 4.

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\*Resource Name or # (Assigned by recorder): P1081-1/H



Image 2: View of Feature 1, a subsurface concrete structure. This is likely a small irrigation reservoir.

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Image 3: View of Feature 3 diversion system.

1/95; updated 1/98

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Image 4: Closer view of construction of Feature 3.

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Page 🔝 🗐 🗐

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>



Image 5: View of opened metal grate in Feature 3.

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\*Resource Name or # (Assigned by recorder): P1081-1/H



Image 6: View of the area where the East Locus of the site is supposed to be. We did not observe any historical materials.

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\*Resource Name or # (Assigned by recorder): P1081-1/H



Image 7: View of southern portion of site. Feature 4 standpipe can be observed in the distance.

\*Required Information

1164

			PRIN	AARY RI	ECORD		
Michae	l Brandman Assoc	iates				Primary# <u>xx-xx</u>	XXX
220 Co	mmerce, Suite 200	)				HRI#:	
Irvine, (	CA 92602					Trinomial: <u>CA-SB-</u> 2	XXXX
Other L	istings:					NRHP Status Code:	
Review	Codes:		Re	viewer:		Date:	
Page <u>1</u>	of <u>22</u>			* Reso	urce Name or #	(Assigned by recorder): P1081-	<u>19/H</u>
P1.	Other Identifi	er: " <u>1</u> !	9/H Locus A"				
P2.*	Location:	1	Not for Publicat	ion	X_Unrestricted	í	
	a. *County:	San J	Bernardino (P2b	and P2c or	P2d; attach loca	tiən map)	
	b. *USGS Qua	ıd:	_Cucamonga	Peak Dat	ed: 1980. Ph	otorev.:	
	Township:	1	North Rang	e: 10	West . Section:	21 .(SBBM)	
	Elevation:	18	320 feet above n	ean sea le	vel (centerpoint	)	
	c. Address:	non	)e	City:		Zip: .	
	d.* UTM:	: (Give m	ore than one for	large and/o	or linear resource	s)	
	Zone:	11S:	<u>451857</u> mE	1	<u>3779709</u> mN	(NW point, NAD 1983)	
		<b>11S</b> :	452141mE	1	3779724mN	(NE point, NAD 1983)	
		11S:	451870mE	1	3779607mN	(SW point, NAD 1983)	
		11S:	452129mE	1	3779611mN	(SE point, NAD 1983)	
	UTM Derivati	on:	X U	SGS Ouad		GPS	
	GPS UTM Co	rrected:		Yes	X No GPS	brand/Model:	
	e. Other Local	ional Da	ter (e. g. narrel nu	mber dire	ctions to resource	e etc. as appropriate).	<u> </u>
	Erom the interes	Tollar Da	Etime de Ameri			ito in annovimentalia 550 materia	
	and 300 meters	east I o	<u>cated within an a</u>	<u>ic anu wus</u> nan field c	on Avenue, the s	ale is approximately 550 meters	<u>norn</u>
		Cast. LU	Catcu within all (		n coasiai chapan	<u>an</u>	•
P3a.*	Description (D	escribe r	esource and its n	najor elem	enis; incluae des	ign, materials, condition, alterali	ons,

size, setting, and boundaries):

Locus A consists of structures and features that appear to be of later construction than those within the other ranch complex (Locus B, East). At the northernmost side of Locus A is an aging eucalyptus wind break with a low cobble wall that parallels it just to the north (Feature 1). Both are about 240 meters long and run east to west. Running perpendicular to the south of the windbreak is an irregular row of eucalyptus trees about 110 meters long (Feature 2). At the south end of the property is another cobble wall, about 140 meters long, running east to west (Feature 3). There is a dirt access road running east to west through this property; Locus B shares this road.

There are also remnants of two wall structures, one building, and a cobblestone and concrete trough at this ranch complex (Locus A, West). The wall structures are of cobble wall construction with mortar, and are located at the west end of the complex. Of the two, the one to the north of the dirt road is approximately 45 meters long. (Feature 4). The other to the south of the dirt road (Feature 5), has a symmetrical rectangular plan with an extension to the north. The areas within the wall remnants for both are filled with chaparral growth. The building is of cobblestone construction with cement mortar (Feature 6) and supported by rebar; it has a concrete floor that has cracks, but is generally intact; although basically of similar construction as Locus B, the use of rebar and concrete floor reflects a higher level of structural sophistication. It is located to the northeast of the two wall structures. This building has an irregular floor plan, and appears to have had three rooms. Although some lower portions of the walls still stand, many do not, especially toward the west end of the structure; there are not enough remains to help determine fenestration or door openings. The west wall does, however, have the remnants of a chimney, with a broken clay flue inside. Scattered throughout Locus A are historic midden concentrations exhibiting concrete rubble, ceramic pipe fragments, wood, bricks, metal and glass fragments.

Earlier researchers did not include this extensive set of features on the original 19/H site description.

Resource Attributes (List attributes and codes): <u>AH2, AH3, AH4, AH7, AH11.</u>

P4.\* Resources Present: \_\_\_\_\_Building \_X\_Structure \_\_\_\_Object \_\_\_X\_Site \_\_\_\_District

P3b.\*

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	PRIMARY RECORD	
Michael 220 Com Irvine, C Other Lis Review (	Brandman Associates merce, Suite 200 A 92602 stings: Codes: Reviewer:	Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxxx</u> NRHP Status Code: Date:
Page 2 o	f 22 * Resource Name or # (As	signed by recorder): P1081-19/H
1 460 2 0		Signed by recorder.j.
	Element of DistrictIsolateOther	
P5a.	Photograph or Drawing (Required for HRI buildings, structures, and on the Photograph record page.	objects): Digital photos are found
P5b.	Description of Photo (View, date, accession #): See photograph record.	
P6.*	Date Constructed/Age and Source:Prehistoric	X Historic Both
	Likely built during the first quarter of the twentieth century.	
P7.*	Owner and Address: City of Rancho Cucamonga	
P8.	Recorded by: Dustin Kay, B.S.	
	Project #: <u>MBA# 00180027</u>	
P9.*	Date recorded: May 27, 2003	
P10.*	Type of Snrvey (Describe): "Phase 1" intensive block	
P11.*	Report Citation (Documents, consultants, maps, and other references):	
	A) Rupp Aerial AXM-5K-90 (9-22-53): U.S. Dept of Agriculture (	overflight.
	B) An Archaeological And Paleontological Resource Evaluation.	And Significance Assessment For
	Tract 16072, Located Near Wilson and East Avenues, City of	of Rancho Cucamonga Sphere Of
	<u>Intuence</u> C) Modern serial photo, site map overlay	
	D) 1938 aerial photograph	
Attachm	ante: Y Location Map (7.5'USGS quadrangle)	
Attacum	X Archaeological Site Record	
	X Sketch Map	
	Linear Feature Record	
	Milling Station Record	
	Artifact Record	
	Illustration Shect	
	<b><u>X</u></b> Photograph Record (digital photos attached)	~
	Building, Structure, and Object Record	
	District Record	
	Other (List):	

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ARCHAEOLOGICAL SITE RECORD						
Michael I 220 Com Irvine, C	Brandman Associates Primary# <u>xx-xxxxx</u> merce, Suite 200 HRI#: A 92602 Trinomial: CA-SB-xxxxx					
,,						
Page <u>3</u> ol	* Resource Name or # (Assigned by recorder): P1081-19/H					
A1.*	Dimensions:         Length: 135m (N-S)         Width: 245m (E-W)					
	Method of measurement: X Paced Taped Visual Estimate X Other (topo map measurement)					
	Method of determination (Check any that apply):ArtifactsSoil					
	VegetationTopographyCut bankAnimal burrowExcavation					
	Property boundaryOther (Explain):					
	Reliability of determination: <u>X</u> High Medium Low Explain:					
	Limitations (Check any that apply):Restricted accessPaved/built over					
	Site limits incompletely definedDisturbancesVegetation					
	Other(Explain):					
A2.	<b>Depth:</b> NoneUnknown. Method of Determination: <u>Depth of site is likely</u> less than 5 feet below modern grade because the foundation excavations were sunk perhaps 5 feet into the topsoil.					
A3.*	Human Remains: Present X Absent Possible Unknown (explain):					
A4.*	Features (Number, describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map):					
	1. Windbreak and cobblestone wall					
	2. Eucalyptus windbreak					
	3. Cobblestone boundary wall 4. Cobblestone wall					
	5. Cobblestone wall enclosure					
	6. Cobblestone and concrete residential building remains					
A 5 ±	no feature #: concentrations of historic debris through the site					
A3.*	associated with features): <u>Glass, ceramics, structural remains (concrete, bricks, wood), roofing paper,</u> metal fragments, cans, ceramic pipe fragments, and remains of an abandoned automobile.					
A6.*	Were Specimens Collected? X No Yes (If yes, attach Artifact Record or catalog and					
	identify where specimens are curated).					
A7.*	Site Condition:GoodX_FairPoor (Describe disturbances). The remains of homes are in ruins while the rock walls are in fairly good condition.					
A8.*	Nearest Water (Type, distance, and direction): <u>Intermittent creeks from Day and East Etiwanda</u> Canyon. One intermittent creek is located about 10 meters east of the eastern boundary of the site.					
A9.*	Elevation: (see P2b) <u>1820 feet above mean sea level</u>					
A10.	Environmental Setting					
	Vegetation (Site and vicinity): Coastal chaparral					
	Soil (Site and surrounding): Coarse sandy loam and numerous granite boulders					
	Landform: Coarse alluvial fan					
	Geology: Alluvium is likely composed of eroded granitic basement rock and some acolian silt.					
	Exposure/Stope: Exposed to the north on a 5-degree slope (average).					
	trees. Soil consists of a sandy loam with decomposing granites and rounded river cobbles. Located on a 5° slope in an open exposure.					

#### ARCHAEOLOGICAL SITE RECORD

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

#### Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

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Resource Name or # (Assigned by recorder): P1081-19/H

A11.

Historical Information: An exact construction date could not be determined at this time, although the complex does exist in a 1938 aerial photograph. This photograph suggests that Locus A is younger than Locus B based on the size of the eucalyptus in each locus. Based on visual inspection, Locus A was most likely constructed during the first quarter of the twentieth century, some time after Locus B was built. It is possible that Locus A constructed by a member of the Perdew family, since they constructed the ranch in Locus B, and this property was under their ownership until 1917. By 1917, however, the property came into the hands of W. F. Courtright, et al. In 1919, A. H. Laurence became the owner until the property transferred to Lila M. Lawrence, who owned it from 1922 to 1942. From 1945 to 1953, C. D. and Emma M. Zuppan were the owners. From 1961 to at least 1974, Claudia L. Darington owned this ranch complex.

According to Larry Perdew, a life long resident of Etiwanda, Locus A was abandoned for a period of time until 1958 when Lucky and Gerry Humphrey repaired and moved into the complex with their family; they lived in what is today the building ruin with the concrete floor. According to the County Archives, Claudia Darington was the owner at that time. They had some horses, but did not participate in any agricultural activities. In 1961, however, a fire destroyed their home, along with the abandoned remnants of Locus B. The complex has since remained unused.

Factual or estimated dates of occupation (Explain): The cobblestone walls and foundations of this ranch complex were most likely constructed during the first quarter of the twentieth century. Locus A appears younger than Locus B.

A13. Interpretations (Discuss scientific, interpretive, ethnic, and other values of site, if known): Probably represents an agricultural complex and a set of structure foundations for tractors and possible mobile homes.

#### A14. Remarks:

- A15. Reference (Documents, consultants, maps, and other references):
  - A) Rupp Aerial AXM-5K-90 (9-22-53): U.S. Dept of Agriculture overflight.
  - B) <u>An Archaeological And Paleontological Resource Evaluation And Significance Assessment For</u> <u>Tract 16072, Located Near Wilson and East Avenues, City of Rancho Cucamonga Sphere Of</u> <u>Influence</u>
  - C) Modern aerial photo-site map overlay
  - D) 1938 aerial photograph
- A16. Photographs (List subject(s), direction of view, and accession numbers or attach a Photograph Record): see photograph record page.

Accession numbers: <u>See photographic record.</u>

LOC	ATIC	)N	MAI	P
			<b>TA WE</b>	r -

1:24,000

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602 Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

<u>1980</u>

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\*Resource Name or # (Assigned by recorder): P1081-19/H

Date of Map:\_\_

\*Map Name: Cucamonga Peak, CA.



1169

Scale:

SKETCH MAP

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#### Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

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Resource Name or # (Assigned by recorder): P1081-19/H

\*Drawn by: Dustin Kay

Date of Map: 5/27/03

\*

North is to right. Scale: 1"=33m



1/95; updated 1/98

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\* Resource Name or # (Assigned by recorder): P1081-19/H

Camera format: <u>Toshiha digital</u> Film type and speed: \_\_\_\_\_ Lens size:\_\_\_\_\_ Negative on file at:\_\_\_\_\_

Month	Day	Time	Exp/Frame	Subject/Description		Accession#
5	27		1	Wall of concrete pad structure	w	
5	27		2	Wall of concrete pad structure	S	
5	27		3	Concrete pad	Е	
5	27		4	Cobblestone trough	w	
5	27		5	Structural remains	S	
5	27		6	Cobblestone structural foundation	SW	
5	27		. 7	Cobblestone structural foundation w/ break in background	w	
5	27		8	Cobblestone structural foundation w/ break in background	N	
5	27		9	Cobblestone structural foundation w/ water tank in background	S	
5	28		10	Southern boundary wall	w	
5	28		11	Southern boundary wall w/ locus B in background	E	· · · · · · · · · · · · · · · · · · ·
5	28		12	Overview w/ tree break	w	
5	28		13	Overview w/ structure wall in background	w	
5	28		14	North rock foundation w/ tree break	Е	
5	28		15	North rock foundation w/ tree break	w	

\*

Primary# <u>xx-xxxxx</u> HRI#:

#### PHOTOGRAPHIC RECORD

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Trinomial: <u>CA-SB-xxxxx</u> Resource Name or # (Assigned by recorder): <u>P1081-19/H</u>



Image 1

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Primary# <u>xx-xxxxx</u> HRI#:

Trinomial: CA-SB-xxxxx

# PHOTOGRAPHIC RECORD

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Image 2

1/95; updated 1/98

\*Required Information

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Image 3

1/95; updated 1/98

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Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Resource Name or # (Assigned by recorder): P1081-19/H



Image 4

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### PHOTOGRAPHIC RECORD

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Image 5

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Image 6

\*Required Information

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Image 7

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Image 8

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\* Resource Name or # (Assigned by recorder): P1081-19/H



Image 9

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\* Resource Name or # (Assigned by recorder): P1081-19/H



Image 10

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\* Resource Name or # (Assigned by recorder): P1081-19/H



Image 11

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Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

\* Resource Name or # (Assigned by recorder): P1081-19/H



Image 12

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\* Resource Name or # (Assigned by recorder): P1081-19/H



Image 13

\*Required Information

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\* Resource Name or # (Assigned by recorder): P1081-19/H



Image 14

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# PHOTOGRAPHIC RECORD

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HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Primary# xx-xxxxx

Resource Name or # (Assigned by recorder): P1081-19/H



Image 15

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			Р	RIMARY R	ECORD				
Michael I 220 Com	Brandman Assoo merce, Suite 200	ciates 0				Pri HF	imary# <u>xx-xxxxx</u> U#:		
Irvine, C.	A 92602					Trinom	ial: <u>CA-SB-xxxxx</u>		
Other Lis	tings:					NRHP State	us Code:		
Review C	lodes:	·-··		Reviewer:		Dat	te:		
Page <u>1</u> of	f <u>26</u>			* Rese	ource Name or	# (Assigned by reco	rder): <u>P1081-19/H</u>		
P1.	Other Identifi	ег: " <u>19</u>	H Locus B'	-					
P2.*	Location:	N	ot for Publi	cation	X_Unrestrict	d			
	a. *County:	<u>San B</u>	ernardino (	P2b and P2c o	r P2d; attach loc	ation map)			
	b. *USGS Qua	¥d:	Сисатов	<u>ga Peak</u> Da	ted: <u>1980</u> . P	hotorev. :			
	Township:	<u>1 N</u>	<u>lorth</u> Ra	апge: <u>10</u>	West. Section	n: <u>21</u> .(SBBM)			
	Elevation:	<u>17'</u>	70 feet abov	<u>e mean sea l</u>	evel (centerpoir	<u>(t)</u>			
	c. Address:	non	<u>e</u>	City:		Zip:			
	d.* UTM	: (Give mo	ore than one i	for large and/	or linear resource	es)			
	Zone:	118:	<u>452146</u> mE	2 /	<u>3779670</u> mN	(NW point, NAI	<b>) 1983</b> )		
		<u>11S</u> :	<u>452411</u> mE	; /	<u>3779669</u> mN	(NE point, NAD	1983)		
		<u>115</u> :	<u>452145</u> mE	: /	<u>3779540</u> mN	(SW point, NAD	<b>) 1983</b> )		
		<u>115</u> :	<u>452405</u> mE	: 1	<u>3779544</u> mN	(SE point, NAD	1983)		
	UTM Derivati	ion:	<u>    X     </u>	USGS Quad		GPS			
	GPS UTM Co.	rrected:		Yes	<u>X</u> No GP	brand/Model:			
	e. Other Locat	tional Dat	a (e.g. parcel	l number, dire	ections to resour	ce, etc. as appropriat	te):		
	From the inters	ection of I	<u>Etiwanda Av</u>	enue and Wil	son Avenue, the	site is approximatel	ly 475 meters north		
	and 625 meters	east. Loc	ated within a	in open field	of coastal chapa	<u>mal.</u>			
P3a.*	Description (D	lescribe re	source and it	ts major elem	ents; include de	sign, materials, conc	dition, alterations,		
	size, setting, and boundaries): Locus B exhibits the remains of two cabble well and moster structures along with other features.								
	surrounding the foundations. One foundation is near the center of the property (Feature 1) with low								
	irregular wall re	emnants; if	ts ground pla	n or use coul	d not be determi	ned. The second for	undation (Feature		
	2) was most lik	ely the ma	<u>in building q</u>	n the propert	y. It is located	at the north end of L	ocus B, and has an		
	irregular floor p	<u>olan. This</u>	building ren	<u>inant is relati</u>	vely intact and r	etains some definitio	<u>n. Although the</u>		
	toundation out	ine remain	s, the walls (	or the eastern	the north elevat	ion facing the dirt a	Construction of the constr		
	are remnants of	steps and	a walkway h	eading up to i	the north eleval	was found at the ear	st elevation.		
	There are vario	us outlines	for window	s throughout	the walls. A we	st-facing wall near the	he access road still		
	has what appear	rs to be a c	oncrete sill.	There is no l	onger any evide	nce of the roof or flo	oring material.		
	There are remnants of a concrete trough near the northwest end of the property (Feature 3). A nearly								
	square shaped cobble wall surrounds the property (Feature 4). At the northeast corner of this wall, there is another small cobble wall englosure (Feature 5) within the larger ones there is extensive charger 1 another small cobble wall englosure (Feature 5) within the larger ones there is extensive charger 1 another small cobble wall englosure (Feature 5) within the larger ones there is extensive charger 1 another small cobble wall englosure (Feature 5) within the larger ones there is extensive charger 1 another small cobble wall englosure (Feature 5) within the larger ones there is extensive charger 1 another small cobble wall englosure (Feature 5) within the larger ones there is extensive charger 1 another small cobble wall englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there is extensive charger 1 another small englosure (Feature 5) within the larger ones there small englosure (Feature 5)								
	within this small	ller area. J	Both walls ar	e low and the	stones are now	irregularly laid with	no visible mortar.		
	The property sh	ares the sa	me dirt acce	ss road runni	ng east and west	as Locus A. There	are eucalyptus and		
	pepper trees pla	inted throu	ghout. Curre	ently, the con	<u>iplex is being u</u>	ed informally as a p	aint ball course,		
	resulting in exte	ensive pain	it stains and s	<u>some graffiti</u>	on the remains of	of the main building	and nearby wall		
	enclosure surfac	ces. In add	lition, there a	are various pa	idded boards and	other paint ball related in the second second second second second second second second second second second se	ited gear and		
	overgrowth within the complex as compared to the surrounding areas, including Locus A.								
	Earlier research	ers include	ed only <u>this</u> e	xtensive set	of features on th	e original 19/H site c	lescription.		
РЗь.*	Resource Attri	butes (Lis	t attributes a	nd codes):	AH2, AH3	, AH4, AH7, AH11.	•		
P4.*	Resources Pres	senf:	Buil	ding X	Structure	Object X Si	- te District		
1 7.	Eleme	nt of Distr	ict	Isolate	Other	A	District		

,

	ARCHAEOLOGICAL SITE RECORD					
Michael J 220 Com Irvine, C.	Brandman Associates Primary# <u>xx-xxxxx</u> merce, Suite 200 HRI#: A 92602 Trinomial: CA-SB-xxxxx					
Page 3 of	f 26 * Resource Name or # (Assigned by recorder): P1081-19/H					
A1 *	<b>Dimensions:</b> Length: $75m$ (N.S.) Width: $80m$ (E.W.)					
A1, '	Mathed a function of the funct					
	map measurement)					
	Method of determination (Check any that apply):ArtifactsSoil					
	VegetationTopographyCut bankAnimal burrowExcavation					
	Property boundaryOther (Explain):					
	Reliability of determination: <u>X</u> High Medium Low Explain:					
	Limitations (Check any that apply):Restricted accessPaved/built over					
	Site limits incompletely definedDisturbancesVegetation					
	Other (Explain):					
A2.	Less than 5 feet below modern grade because the foundation excavations were sunk perhaps 5 feet into the topsoil.					
A3.*	Human Remains: Present X Absent Possible Unknown (explain):					
<b>A</b> 4.*	Features (Number, describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map):					
	<ol> <li>Cobblestone/concrete foundation</li> <li>Cobblestone residential structure foundation</li> <li>Concrete trough</li> <li>Cobblestone boundary wall</li> <li>Interior boundary wall</li> </ol>					
A5.*	Cultural Constituents (Describe and quantify artifacts, human-introduced organic residues, etc. not associated with features): <u>Glass, ceramics, structural remains (concrete, bricks, wood), roofing paper, metal fragments, cans.</u>					
A6.*	Were Specimens Collected? <u>X</u> No Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated).					
A7.*	Site Condition:GoodX_FairPoor (Describe disturbances). The remains of homes are in ruins while the rock walls are in fairly good condition. The structure complex is currently being used as an informal paintball court.					
A8.*	Nearest Water (Type, distance, and direction): <u>Intermittent creeks from Day and East Etiwanda</u> Canyons. One intermittent creek is located about 200 meters west of the eastern boundary of the site.					
A9.*	Elevation: (see P2b) <u>1,750 feet above mean sea level</u>					
A10.	Environmental Setting					
	Vegetation (Site and vicinity): Coastal chaparral					
	Soil (Site and surrounding): Coarse sandy loam and numerous granite boulders					
	Landform: Coarse alluvial fan					
	Geology: Alluvium is likely composed of eroded granitic basement rock and some aeolian silt.					
	Exposure/Slope: Exposed to the north on a 5-degree slope (average).					
	<b>Other Associations:</b> <u>Coastal Chaparral includes white sage, and introduced Eucalyptus and Pepper</u> trees. Soil consists of a sandy loarn with decomposing granites and rounded river cobbles. Located on a 5° slope in an open exposure.					

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Scale:

LOCATION
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1:24,000

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602 Primary# <u>xx-xxxxx</u> HRI#: Trinomial: CA-SB-xxxxx

1980

#### Page 5 of 26

\*Resource Name or # (Assigned by recorder): P1081-19/H

Date of Map:\_\_

\*Map Name: Cucamonga Peak, CA.

Tract 16072: Cucamonga Peak, CA. 7.5' USGS ſ Site Location, Locus A. Site Location, Locus B. 2400 ά, ¥200 e ۲ 22 21 34.9 • last QÇ7 1675 المشتقية الم Vanter Toris . e . ğ School ົມເໝາຍ Avenue ever Stwimit 27 ిం 1534 150 28 29 B E THWAN ÷ 춖 วลั VENUE þg 14 į.  $\bigcirc$ 1 MRE TN **†**/MN //13%° 1000 METERS 0 1000 FEET 0 500 ----·· · · · Printed from TOPO! ©2001 National Geographic Holdings (www.topo.com)

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## SKETCH MAP

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

# Page <u>6</u> of <u>26</u>

\*Drawn by: Dustin Kay

\_Date of Map: <u>5/27/03</u>

North is to right. Scale: 1"=30m

Resource Name or # (Assigned by recorder): P1081-19/H



1/95; updated 1/98

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602 Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Page <u>7</u> of <u>26</u>

\* Resource Name or # (Assigned by recorder): P1081-19/H

.

Lens size:\_\_\_\_\_ Negative on file at:\_\_\_\_\_

Month	Day	Time	Exp/Frame	Subject/Description		Accession#
5	26		1	North boundary wall	NE	
5	26		2	View of locus with debris	E	
5	26		3	West boundary wall w/ tree break	E	
5	26		4	Structure with cobblestone walls	Е	
5	26		5	Structure with cobbiestone walls	N	_
5	26		6	Structure foundation with stairs	N	
5	27		7	Structure with cobblestone walls	w	
5	27		8	Southern boundary wall	Е	
5	27		9	NE corner of boundary wall	E	· ·
5	27		10	Structure with cobblestone walls	SW	
5	27		11	Structure with cobblestone walls	S	
5	27		12	Structure with cobblestone walls	sw	
5	27		13	Internal wall of structure w/ slot for wood frame	s	
5	27		14	Internal wall of structure w/ slot for wood frame	w	
5	27		15	North boundary wall w/ tree break	SE	
5	27		16	North boundary wall with tree breaks	E	
5	27		17	Overview w/ wall and structure	sw	
5	27		18	Concrete trough	-	
5	27		19	Concrete trough	N	

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>8</u> of <u>26</u>

\* Resource Name or # (Assigned by recorder): P1081-19/H



Image 1

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

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Page <u>9</u> of <u>26</u>

Resource Name or # (Assigned by recorder): <u>P1081-19/H</u>



Image 2

\*

## PHOTOGRAPHIC RECORD

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>10</u> of <u>26</u>

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Resource Name or # (Assigned by recorder): P1081-19/H



Image 3

# PHOTOGRAPHIC RECORD

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>11</u> of <u>26</u>

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Resource Name or # (Assigned by recorder): P1081-19/H



Image 4

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

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Page <u>12</u> of <u>26</u>

\* Resource Name or # (Assigned by recorder): P1081-19/H



Image 5

\*Required Information

1196

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

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Page <u>13</u> of <u>26</u>

# Resource Name or # (Assigned by recorder): P1081-19/H



Image 6

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602 Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

f 26 \* Resource Name or # (Assigned by recorder):\_P1081-19/H

Image 7

Page <u>14</u> of <u>26</u>

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>15</u> of <u>26</u>

\* Resource Name or # (Assigned by recorder): P1081-19/H



Image 8

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

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Page <u>16</u> of <u>26</u>

\* Resource Name or # (Assigned by recorder): P1081-19/H



Image 9

HRI#:

Primary# <u>xx-xxxxx</u>

Trinomial: <u>CA-SB-xxxxx</u>

# PHOTOGRAPHIC RECORD

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>17</u> of <u>26</u>

Resource Name or # (Assigned by recorder): P1081-19/H



Image 10

1/95; updated 1/98

\*Required Information

1201

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>18</u> of <u>26</u>

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>



Image 11

HRI#:

Primary# <u>xx-xxxxx</u>

Trinomial: <u>CA-SB-xxxxx</u>

PHOTOGRAPHIC RECORD

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>19</u> of <u>26</u>

Resource Name or # (Assigned by recorder): P1081-19/H



Image 12

\*Required Information

1203

## PHOTOGRAPHIC RECORD

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>20</u> of <u>26</u>

Resource Name or # (Assigned by recorder): P1081-19/H



Image 13

Resource Name or # (Assigned by recorder): P1081-19/H

PHOTOGRAPHIC RECORD

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>21</u> of <u>26</u>

HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Primary# <u>xx-xxxxx</u>



Image 14

\*Required Information

1205

Resource Name or # (Assigned by recorder): P1081-19/H

## PHOTOGRAPHIC RECORD

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>22</u> of <u>26</u>

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>



Image 15

1/95; updated 1/98

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>23</u> of <u>26</u>

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Resource Name or # (Assigned by recorder): <u>P1081-19/H</u>



Image 16

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>24</u> of <u>26</u>

\* Resource Name or # (Assigned by recorder): P1081-19/H



Image 17

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>25</u> of <u>26</u>

Resource Name or # (Assigned by recorder): P1081-19/H



Image 18

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>26</u> of <u>26</u>

\* Resource Name or # (Assigned by recorder): P1081-19/H



Image 19

PRIMARY RECORD								
Michael J 220 Com Irvine, C. Other Lis Periore C	Brandman Associates     Primary# xx-xxxxx       merce, Suite 200     HRI#:       A 92602     Trinomial: CA-SB-xxxxx       tings:     NRHP Status Code:							
Keview (	Duces: Kevlewer: Date;							
Page <u>1</u> of	f 12 * Resource Name or # (Assigned by recorder): Temp #1							
P1.	Other Identifier:							
P2.*	Location:Not for PublicationX Unrestricted							
	a. *County: <u>San Bernardino</u> (P2b and P2c or P2d; attach location map)							
	b. *USGS Quad: <u>Cucamonga Peak</u> Dated: <u>1980</u> . Photorev. :							
	Township: <u>1 North</u> Range: <u>10 West</u> . Section: <u>21</u> .(SBBM)							
	Elevation: <u>1720 feet above mean sea level (centerpoint)</u>							
	c. Address: none City: Zip:							
	<b>d.</b> <sup>*</sup> UTM: (Give more than one for large and/or linear resources)							
	Zone: <u>118:</u> <u>451878mE</u> / <u>3779368mN</u> (northwest end point, NAD 1983)							
	115: 452211mL / <u>3778976</u> mN (southeast end point, NAD 1983)							
	CPS ITTM Converted: Vec Y No CPS brand/Madal:							
	e. Other Locational Data (e.g. narce) author directions to resource etc. as annonriste):							
	From the intersection of Etiwanda Avenue and Wilson Avenue, the southeast end of the site is approximately 11 meters north and 615 meters east. Located within an open field of coastal chaparral and south of the drainage.							
РЗа.*	Description (Describe resource and its major elements; include design, materials, condition, alterations, size, setting, and boundaries): This man made flood control berm is approximately 18 meters wide, 520 meters long and 2 meters high. It may have been initially used as a firebreak and later for control of water that runs through the intermittent stream channel that crosses the project area from northwest to southeast. Two circular concrete bench markets were detected during the survey. They have inscribed metal plates indicating that the structure was built in 1949 by the San Bernardino County Flood Control District ("S.B.C., F.C.D., 1949"). There is one market each with pole on either side of the bern and water way located about 245 meters north of Wilson Avenue.							
P3b.*	Resource Attributes (List attributes and codes): HP11.							
P4.*	Resources Present:         Building         Structure         Object         X         Site         District          Element of District         Isolate         Other							
P5a.	Photograph or Drawing (Required for HRI buildings, structures, and objects): Digital photos are found on the Photograph record page.							
Р5Ь.	Description of Photo (View, date, accession #): See photograph record.							
P6.*	Date Constructed/Age and Source:         Prehistoric         X         Historic         Both           1949.							
P7.*	Owner and Address: City of Rancho Cucamonga							
P8.	Recorded by: <u>Dustin Kay, B.S.</u> Project #: <u>MBA# 00180027</u>							
P9.*	Date recorded: May 27, 2003							
P10.*	Type of Survey (Describe): "Phase 1" intensive block							

1/95; updated 1/98

	ARCHAEOLOGICAL SITE RECORD
Michael 220 Com Irvine, C	Brandman Associates     Primary# xx-xxxx       umerce, Suite 200     HRI#:       A 92602     Trinomial: <u>CA-SB-xxxxx</u>
Page <u>3</u> o	f 12 * Resource Name or # (Assigned by recorder): Temp #1
A1.*	Dimensions: Length: <u>520m (N-S)</u> Width: <u>20m (E-W)</u> Method of measurement: <u>X</u> Paced Taped Visual Estimate <u>X</u> Other (topo
	map measurement)         Method of determination (Check any that apply):
	Reliability of determination: <u>X</u> High Medium Low Explain:
	Limitations (Check any that apply):Restricted accessPaved/built overSite limits incompletely definedDisturbancesVegetation
47	Oner(Explain).
A3 #	Human Demains. Present X Absent Possible Unknown (evoluin).
A4.*	Features (Number, describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map): 1) rock flood control berm (not noted as "Feature 1" on the sketch map)
A5.*	Cultural Constituents (Describe and quantify artifacts, human-introduced organic residues, etc. not associated with features): <u>Rock berm and two bench marker caps, which date the site at 1949.</u>
A6.*	Were Specimens Collected? <u>X</u> No Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated).
A7.*	Site Condition: <u>X</u> Good Fair Poor (Describe disturbances). <u>None.</u>
A8.*	Nearest Water (Type, distance, and direction): <u>One intermittent creek is located paralleling the site to</u> the northeast.
A9.*	Elevation: (see P2b) <u>1720 feet above mean sea level (centerpoint).</u>
A10.	Environmental Setting Vegetation (Site and vicinity): <u>Coastal chaparral</u> Soil (Site and surrounding): <u>Coarse sandy foam and numerous granite boulders</u>
	Landform:       Coarse alluvial fan         Geology:       Alluvium is likely composed of eroded granitic basement rock and some acolian silt.         Exposure/Slope:       Exposed to the north on a 5 degree slope (average).         Other Associations:       Coastal Chapartal includes white sage, and introduced Eucalyptus and Pepper
	rees. Soil consists of a sandy loan with decomposing grannes and rounded river cobbles. Located on a 5° slope in an open exposure.

1/95; updated 1/98







1/95; updated 1/98

\*Required Information

1214

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>7</u> of <u>12</u>

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#### PHOTOGRAPHIC RECORD

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-XXXXX</u>

#### \* Resource Name or # (Assigned by recorder): Temp #1

Camera format: <u>Toshiba digital</u> Film type and speed:

Lens size:\_ Negative on file at;

Month	Day	Тіте	Exp/Frame	Subject/Description	View Toward	Accession#
5	27	11am	1	View to the northwest of the swale created by the berm. The thick coastal chaparral covers both the base of the drainage and the berm itself.	Northwest	None
5	27	ilam	2	View to the southwest of the swale created by the berro. The thick coastal chaparral covers both the base of the drainage and the berm itself.	Southwest	None
5	27	11am	3	View of berm feature from the southern end of the project area toward the north, with P#1081- 19/H in the background. The berm can be seen in the center of the picture as a swale of vegetation.	Uncertain	None
5	27	11am	4	Bench marker #1 (S.B.C-F.C.D 1949)	Down	None
5	27	11am	5	Bench marker #2 (S.B.C-F.C.D 1949)	Down	None

1/95; updated 1/98

\*Required Information

e

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602 Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>



Image 1

1/95; updated 1/98

\*Required Information

1216

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602 Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

Page <u>9</u> of <u>12</u>

\* Resource Name or # (Assigned by recorder): Temp #1



Image 2

1/95; updated 1/98

PHOTOGRAPHIC RECORD

Miceal Brandmassociates

2x0 commerce, Suite 200 **Primary # C-EXIXE**Primary # C-EXIXE **Primary # C-EXIXE**Page 10 of 12 **• Resource Name or # (Assigned by recorder): <u>Temp # I</u>** 

Image 3

1/95; updated 1/98

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: CA-SB-xxxxx

\* Resource Name or # (Assigned by recorder): Temp #1



Image 4

1/95; updated 1/98

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602

Page <u>12</u> of <u>12</u>

Primary# <u>xx-xxxxx</u> HRI#: Trinomial: <u>CA-SB-xxxxx</u>

\* Resource Name or # (Assigned by recorder): Temp #1



Image 5

1/95; updated 1/98



Environmental services • Planning • Natural Resources Management

September 16, 2003

Mr. Larry Henderson Principal Planner City of Rancho Cucamonga P.O. Box 807 Rancho Cucamonga, CA. 91729

# Subject: Addendum Cultural Resource Survey Results for Tract 16072, Located Near Wilson and East Avenues, City of Rancho Cucamonga Sphere Of Influence, County of San Bernardino, California

7-10

Dear Mr. Henderson:

At the request of the City of Rancho Cucamonga, Michael Brandman Associates (MBA) has conducted an additional cultural resource survey on a proposed single-family residential tract currently located within the County of San Bernardino. Tract 16072 is located near the corner of Wilson and East Avenues and is considered to be the full cultural resource study area. The total amount of land covered by the original study area is 150.8 acres. The purpose of the survey is to identify cultural resources (prehistoric and historic archaeological sites, historic buildings, structures, objects, or districts) within an area of potential effect, as required by CEQA and Section 106 of the National Historic Preservation Act (NHPA) of 1966 and its implementing regulations, 36 CFR Part 800.

A Phase 1 cultural resource survey document and a Phase 2 historical significance evaluation document was previously issued by MBA in support of this project. Once it was determined that additional lands would be impacted by construction, a qualified archaeologist surveyed the areas of direct impact. Exhibit 1 shows the original project area associated with the Phase 1 and Phase 2 cultural resource reports, and shows the additional areas (11.4 acres) surveyed as part of this addendum. Photographs of the newly surveyed areas are attached below.

# Survey Results

On September 7 2003, MBA staff archaeologist Marnie (Vianna) Aislin Kay surveyed the addendum project areas. Ms. Kay was also involved with the first Phase 1 survey, which had taken place in 2002. Ms. Kay divided the new areas into "areas" and labeled the photographs from each area accordingly. Following is a description of each area.

• Area 1 is located east of the original survey area and encompasses 0.28 acres proposed for a storm channel.

 220 Commerce, Suite 200, Irvine, CA
 92602
 714
 508
 4100
 Ex
 714
 508
 4110

 Inland Empire
 Bay Area
 Kern County

 909.884.2255
 925.830.2733
 661.334.2755

 www.brandman.com
 EMAIL mba@brandman.com

Tract 16072 Addendum Survey September 16, 2003 Page 3

We at MBA appreciate the opportunity to assist you on this project. If we can be of any further assistance, or if you have any questions concerning this letter, please do not hesitate to contact Michael Dice at 714.508.4100 ext. 111 or via his e-mail, mdice@brandman.com.

7-10

Sincerely,

MICHAEL BRANDMAN ASSOCIATES

Michael Dice, M.A. Senior Archaeologist

Attachments: Exhibit 1

MD/mh/tmg/slt H:\Client (PN-JN)\0018\00180027\Addendum Survey CR102 draft.doc



00180027 • 09/2003 | 3-3\_Site Plan.cdr

RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072

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Tract 16072 Addendum Survey September 16, 2003 Page 4

AREA I



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Michael Brandman Associates H:\Client (PN-JN)\0018\00180027\Addendum Survey CR102 draft.doc

anea e



Wood Realing where Jean 3 River conducto mid.



East facing view from the southern end of Area 3.

7-10



7-10

Worth lineing wires from the numbers and of Assa 3.



Sounds Society, show fican the newtones and of states 1, just west of the pre-od read.

Michael Brandman Associates H:\Client (PN-JN)\0018\00180027\Addendum Survey CR102 draft.doc



7-10

Southeast facing view from the northern end of Area 3, just east of the paved road.



Seatherst being view from the cost here end of Area 3.



7-10

Most facing view of the seathern and of Arm 5.





Scark faring elem of Anna 4 from the Interpretion of Wilson Ater.





Area 5: Much living more from Wilson Area of the later of the Area, of comparis sharing in ditch.



deen in Ween funding alone of William Ann., and chick on the most whic of the road.



Fast lining their of Wilson Ares. Bren conter of Arms 1.



Wage figures, where of Weissen Aver, from man the context-of Anno 4.



Area 5: East facing view of Wilson Ave., from the corner of Etiwanda.

# FINDINGS OF FACT IN SUPPORT OF FINDINGS FOR SINGIFICANT ENVIRONMENTAL EFFECTS OF THE RANCHO CUCAMONGA TENTATIVE TRACT MAP 16072

PREVIOUSLY DISTRIBUTED UNDER SEPARATE COVER (MAY 25, 2004)

EXHIBIT "F"

23L<sup>1234</sup>

#### FINDINGS OF FACT IN SUPPORT OF FINDINGS FOR SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE RANCHO CUCAMONGA TENTATIVE TRACT MAP NUMBER 16072 PROJECT AND STATEMENT OF OVERRIDING CONSIDERATIONS (May 6, 2004)

#### **INTRODUCTION**

The California Environmental Quality Act (CEQA) Public Resources Code Section 21081, and the CEQA Guidelines Section 15091 provide that:

"No public agency shall approve or carry out a project for which an environmental impact report has been certified which identifies one or more significant effects on the environment that would occur if the project is approved or carried out unless the public agency makes one or more of the following findings:

- Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.
- b. Those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency.
- c. Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final environmental impact report."

Because the Rancho Cucamonga Tentative Tract Map Number 16072 project Environmental Impact Report (EIR) identified significant effects that may occur as a result of the project, and in accordance with the provisions of CEQA and CEQA Guidelines, the City of Rancho Cucamonga hereby adopts these findings as part of the approval of the Rancho Cucamonga Tentative Tract Map Number 16072 project and related applications.

The City of Rancho Cucamonga has prepared an EIR for the project in accordance with CEQA and CEQA Guideline requirements. The EIR was subject to review and approval by the Rancho Cucamonga City Council. At a public hearing held on \_\_\_\_\_\_, 2004, the EIR was certified as adequate in accordance with CEQA procedures.

After adopting this Statement of Findings of Fact, the Rancho Cucamonga City Council can approve the Tentative Tract Map Number 16072 project. All subsequent, grading permits, mitigation implementation, and regulatory agreements and permits will be reviewed based on the documentation in the EIR.

#### MITIGATED ADVERSE IMPACTS

The potential significant adverse impacts that would be mitigated are listed in the following sections. The Rancho Cucamonga City Council finds that these potential adverse impacts would be mitigated to

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a level that is considered less than significant after implementation of the project design features and recommended mitigation measures.

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# GEOLOGY AND SOILS

# Seismic Hazards

# Fault-Induced Ground Rupture

# Significant Impact

Development of the proposed project will result in the potential for fault-induced ground rupture at the project site.

# Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

# Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• Prior to issuance of a building permit for structures adjacent to the Etiwanda Avenue Scarp thrust fault on the project site, all structures north of this fault shall be set back 100 feet from the faulted zone and all structures south of this fault shall be set back 50 feet from the fault zone.

# Seismically-Induced Slope Instability

# Significant Impact

Development of the proposed project including the interim detention basins will include graded slopes of up to 40 feet in height and gradients of 3:1 or less. Strong ground motions could induce slope instability.

# Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

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# Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• Prior to the issuance of a grading permit, engineered slopes of the project site shall be designed in accordance with the Uniform Building Code to resist seismically induced failures. Slope design shall be based on pseudo-static stability analyses using soil-engineering parameters established for the site.

### Ground Lurching

#### Significant Impact

Colluvial soils and loose cohesionless soils are present at the surface of the project site. Ground lurching due to seismic shaking could result in impacts to structures.

### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

### Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• Prior to the issuance of a grading permit, the grading plans shall state that the loose, cohesionless soils located on the surface of the site shall be removed and recompacted during grading operations.

# Seismically-Induced Settlement

#### Significant Impact

Strong ground shaking can cause settlement by allowing greater compaction of the soil particles.

#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

### Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• Prior to the issuance of a grading permit, the grading plans shall state that the native surficial and artificial fills on the project site that are of low density, shall be removed and recompacted or exported offsite.

#### Slope Stability

#### Significant Impact

Implementation of the proposed project would result in slopes at 40 feet in height.

#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

#### Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• Prior to the issuance of a final grading approval, potentially unstable graded slopes that exceed approximately 15 feet in height will require additional stabilization measures such as buttressing cut slopes with compacted fill, adding geogrid reinforcement to fill slopes, using a higher compaction standard, and/or using retaining walls.

#### **Foundation Stability**

#### Compressible Soils

#### Significant Impact

The upper few feet of the native soil onsite is potentially compressible. Uncontrolled fills that exists on the project site due to old road fills and backfills from exploratory trenches are also compressible. These materials are of low density and would settle under the weight of the proposed fills and structures.



#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

# Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• Prior to the issuance of a grading permit, the grading plans shall state that potentially compressible soils that are located on the project site shall be removed and recompacted in accordance with standard grading procedures.

### Collapsible Soils

#### Significant Impact

Due to the potential for variation in grain size within the alluvial fan deposits located on the project site, localized areas could result in potential collapse of soil material.

#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

# **Facts in Support of Finding**

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• Prior to the issuance of a grading permit, the project's soil engineer shall identify the method(s) of eliminating the potential for collapsible soils on the grading plan. Potential methods include excavation and recompaction and presaturation and pre-loading of the susceptible soils in-place to induce collapse prior to construction. After construction, infiltration of water into the subsurface soils shall be minimized by proper surface drainage which directs excess runoff from the proposed slopes and structures.



# **Rippability and Oversize Rock**

#### Significant Impact

Because there is no bedrock at or within hundreds of feet from the surface, rippability of the onsite soils is less than significant. However, due to the presence of large cobbles and boulders in the onsite alluvium, special handling of oversize rocks will be required. The removal of boulders from the site could result in deficiencies of fill material in the proposed balanced cut and fill grading design. Therefore, the presence of oversize rock could result in a potential significant impact.

#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

### Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• Prior to the issuance of a grading permit, the grading plans shall state that during grading operations, the soil engineer shall be consulted to relocate oversize rocks on the project site to reduce the potential deficiency of fill materials that could result from the removal of oversize rocks on the project site.

#### **BIOLOGICAL RESOURCES**

#### **Natural Communities**

#### **Significant Impact**

The proposed project will result in the loss of 147.7 acres of RAFSS. RAFSS is considered sensitive by the California Department of Fish and Game and loss of this plant community is considered significant.

#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.



# Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• The project proponent will acquire and convey to the County of San Bernardino at a ratio of 1:1 (or 147.7 acres) of land within or near the North Etiwanda Open Space and Habitat Preservation Program (NEOSHPP) that supports similar RAFSS habitat. This measure will mitigate the loss of habitat that may support sensitive plants and animals as well as raptor foraging habitat. The quality of offsite mitigation land may affect the total acres needing to be acquired. If the offsite mitigation area contains a higher quality habitat, less land may need to be acquired, likewise, if a lower quality habitat is acquired, more land may need to be set aside as mitigation.

If the proponent is unable to acquire all or a portion of the offsite mitigation land, the proponent will deposit the equivalent mitigation cost of \$10,000 per developable acre with City-approved agency, which acquires and maintains open space. These funds will be used to purchase and manage mitigation lands.

- To reduce impacts on adjacent offsite habitat during site preparation, grading and clearing limits shall be staked prior to issuance of the grading permits. The limits of grading and clearing shall be staked at 50-foot intervals with suitable indicators such as white PVC (polyvinylchloride) pipe with steel bases. Construction equipment shall not be operated beyond the grading and clearing limits, and a restoration program shall be incorporated to restore any disturbed offsite areas.
- Landscaping adjacent to natural areas offsite shall use native and drought-tolerant plant species. Such species shall be reflected on Project landscape plans. The use of species known to be weedy invasives, such as German ivy (Senecio milkaniodes), periwinkle (Vinca major), or iceplant (Carpobrotus spp.), shall be prohibited.
- In areas where night lighting may have adverse impacts on sensitive wildlife habitat, one or more of the following alternatives shall be utilized, recognizing the constraints of roadway lighting requirements: (1) low-intensity street lamps, (2) low-elevation light poles, or (3) shielding of internal silvering of the globes or external opaque reflectors.
- Provide residents of the future development literature pertaining to sensitive wildlife in the area and provide ways the residents can reduce effects on the wildlife, including effects pets have on native wildlife. A list of invasive plants that are commonly planted in landscaping will be included in this literature and it will be recommended that certain plants be avoided, such as giant reed (Arundo donax) castor bean (Ricinus communis) and Pampas grass (Cortaderia selloana). This literature shall be approved by the City of Rancho Cucamonga and included within the conditions, covenants, and restrictions (CC&Rs).

# **Common Plant Species**

#### Significant Impact

The City of Rancho Cucamonga has a local tree preservation ordinance that requires a City permit to remove any tree over 15 feet high and 15 inches in circumference. A total of 213 trees meet the City's "heritage tree" criteria. Approximately 175 eucalyptus trees, 11 ornamental trees, 14 pepper trees, 9 southern California black walnut trees, and 4 western sycamore trees occur on-site. All trees within the project boundary were assessed as being of fair to poor condition physiologically, structurally, and aesthetically.

# Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

### **Facts in Support of Finding**

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

All 213 "heritage trees" shall be removed and replaced with native trees within the proposed ٠ development. Replacements have been proposed at a 1:1 ratio.

#### Sensitive Plant Species

#### **Significant Impact**

Fifteen sensitive plant species have been identified as occurring within the general vicinity of the project site. Thirteen of these plants are listed as sensitive (List 1B) by the CNPS and are considered sensitive by CDFG. However, only Plummer's mariposa lilies were observed during field inventories.

#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

# **Facts in Support of Finding**



• Prior to issuance of a grading permit, focused surveys for Plummer's mariposa lily shall be conducted by a qualified biologist. Surveys shall be conducted during flowering period (May to July) in all portions of the project site containing suitable habitat. If present, the number and location(s) will be documented and the resource agencies will be notified for consultation and possible collection and relocation.

#### Sensitive Wildlife Species

#### Coastal California Gnatcatcher

#### **Potentially Significant Impact**

The project site is within the known range and within designated Critical Habitat of the federally listed threatened coastal California gnatcatcher. Although the protocol surveys conducted in both 2001and 2002 were negative, 6 recent sightings have been documented within the immediate vicinity. Because the project site supports suitable habitat for this species, and the recent sighting on adjacent lands the potential for this species to use the project site is still considered high. Therefore, the loss or fragmentation of potential coastal California gnatcatcher habitat is considered significant.

### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

#### Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

 A follow-up focused survey shall be conducted to confirm the absence of the coastal California gnatcatcher. Special focus will be placed in the northwest corner of the project site, which was not previously surveyed. If this species is determined to be present onsite, consultation with USFWS under the Endangered Species Act shall occur and USFWSapproved mitigation measures shall be implemented.

#### **Other Rodents**

### Significant Impact

Three species of rodents that were detected on the property are considered Species of Concern by CDFG. The three species present within the RAFSS habitat, include the Northwestern San Diego pocket mouse, San Diego desert woodrat, and the Los Angeles little pocket mouse. Because these three species are present onsite, the impacts to the habitat is considered significant.



### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

# Facts in Support of Finding

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The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• The project proponent will have a qualified biological monitor present during initial brush clearing to reduce mortality to sensitive species, specifically sensitive rodent species, as well as incidental species.

### Jurisdictional Areas

### Significant Impact

A jurisdictional delineation was conducted by PCR on the project site on September 8, 2001 (Appendix C of the Draft EIR). Subsequent field surveys were also conducted by PCR in 2002. The survey revealed that there are three drainages found on the property that are considered under the jurisdiction of USACE and CDFG. Impacts to USACE areas would result in the removal of 1.13 acres of "waters of the U.S.", and no loss of wetlands. Total area of jurisdiction under the CDFG would also be approximately 1.13 acres.

Jurisdictional determinations were also made for off-site portions of these drainages to the extent that they may be impacted by the proposed project. Drainages measured adjacent to the site include approximately 4,342 linear feet and 0.98 acre of ACOE and CDFG jurisdictional streambed. None of these off-site areas meet the ACOE definition of a jurisdiction wetland. The proposed project would result in the loss of jurisdictional areas, both on and off site, of 2.01 acres of "waters of the U.S." and no loss of wetlands. Compliance with the mitigations that are required through the 404 process would reduce impacts to less than significant.

# Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.



# Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• The project proponent shall obtain a Section 404 of the Clean Water Act permit from the U.S. Army Corps of Engineers and a 1603 Streambed Alteration Permit from California Department of Fish and Game prior to grading or any other groundbreaking activities, and shall comply with the permit's mitigation requirements.

# TRAFFIC AND CIRCULATION

**Trip Generation** 

**Opening Year (Year 2004)** 

# Significant Impact

The traffic generation for this project has been estimated, based upon the specific land use that has been planned for the proposed development. The proposed project consists of 358 single-family dwelling units. The proposed development is projected to generate approximately 3,436 daily trips.

The following intersections would operate at an LOS F in the AM peak hour without and with the project.

- Etiwanda Avenue at Banyan Street
- Etiwanda Avenue at Highland Avenue
- East Avenue at Banyan Street

Although the project would not change the level of service, the contribution of project traffic to these three intersections during the AM peak hour represent a significant traffic impact.

Without project traffic, all intersections would operate at LOS D or better during the PM peak hour which represents a less than significant impact. Except for the following intersection, all study area intersections operate at LOS D or better with the project during the PM peak hour.

• Etiwanda Avenue at Banyan Avenue

The intersection of Etiwanda Avenue at Banyan Avenue will operate at LOS E with the project which exceeds the City's standard and is considered a significant impact.

# Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

# **Facts in Support of Finding**

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• The project applicant shall contribute its fair share toward local off-site traffic improvements. On-site improvements will be required in conjunction with the phasing of the proposed development to ensure adequate circulation within the project itself. The fair share contribution of all off-site improvements and timing of all onsite traffic improvements shall be subject to an agreement with the City of Rancho Cucamonga. This agreement shall be in place prior to tract map approval.

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- The project applicant shall update construction cost estimates and prepare a current cost of the project's fair share contribution toward traffic improvements.
- The project applicant shall construct Wilson Avenue from Etiwanda Avenue to East Avenue as a Special Divided Secondary Arterial (165 ft. Right-of-way) in conjunction with development of the proposed project or as determined by the Development Agreement with the City.
- The project applicant shall construct the extension of East Avenue from the south project boundary with a minimum 36-foot two-way paved access to the project in conjunction with development of the proposed project or as determined by the Development Agreement with the City.
- The project applicant shall construct East Avenue from the north project boundary to Wilson Avenue to provide 44-foot two-way paved access and the full shoulder (curb, gutter, street lights, and side walks) on west side of the street in conjunction with development of the proposed project or as determined by the Development Agreement with the City.
- The project applicant shall construct Etiwanda Avenue from the north project boundary to Golden Prairie Drive at its ultimate half-section width as a Secondary Arterial (96 ft. Right-of-way) in conjunction with development of the proposed project or as determined by the Development Agreement with the City.

#### Buildout Year 2020

# Significant Impact

Table 5.3-6 depicts the level of service at the study area intersections at buildout year (Year 2020) without and with the project. Table 5.3-6 shows the following intersections would operate at an LOS F in the AM peak hour without and with the project.

- Etiwanda Avenue at Banyan Street
- Etiwanda Avenue at Highland Avenue
- East Avenue at Wilson
- East Avenue at Banyan Street

The project traffic contributed to these four study area intersections during the AM peak hour represent a significant traffic impact. Except for the following intersections, all study area intersections operate at LOS D or better during the PM peak hour without the project.

- Etiwanda Avenue (South) at Wilson Avenue
- Etiwanda Avenue at Banyan Street
- East Avenue at Banyan Street

These three intersections would operate at LOS F which exceeds the City's standard and is considered a significant impact. Except for the following intersections, all study area intersections would operate at LOS D or better during the PM peak hour with the project.

- Etiwanda Avenue (South) at Wilson Avenue
- Etiwanda Avenue at Banyan Street



- East Avenue at Wilson Avenue
- East Avenue at Banyan Street

These four intersections would operate at LOS F which exceeds the City's standard and is considered a significant impact.

#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

### Facts in Support of Finding

- Prior to issuance of building permits, the applicant shall provide funds in accordance with the City's Transportation Development Fee. Collection of these fees shall represent the project's "fair-share" toward the following transportation improvements required for opening year (Year 2004):
  - Installation of a traffic signal at Etiwanda Avenue at Banyan Street.
  - Installation of a traffic signal at East Avenue at Banyan Street.
  - Construction of a southbound right turn lane at the intersection of Etiwanda Avenue at Highland Avenue.
- Prior to the issuance of building permits, the applicant shall provide funds in accordance with the City's Trasportation Development Fee. Collection of these fees shall represent the project's "fair share" toward the following transportation improvements required for Buildout Year 2020.
  - Construction of one additional northbound lane to provide a shared left and through lane, and a shared right and through northbound lane on East Avenue at Banyon Street
  - Construction of one additional southbound lane to provide a shared left and through and a shared right and through southbound lane on East Avenue at Banyon Street.
  - Construction of a westbound through lane on Highland Avenue at Etiwanda Avenue.
  - Installation of a traffic signal at the intersection of Etiwanda Avenue (North) at Wilson Avenue.
  - Add an eastbound and westbound left turn lane and install a traffic signal at the intersection of Etiwanda Avenue (South) at Wilson Avenue.
  - Installation of a traffic signal at the intersection of East Avenue at Wilson Avenue.



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#### NOISE

### Long-Term Operational Impacts

#### **Onsite Impacts**

### Significant Impact

An impact may be significant if the project sites a land use (i.e., residential) in an incompatible area due to excessive noise. The City has set a desirable daytime level of 60 dBA CNEL for residences. Based on the future (Buildout Year 2020) traffic volumes identified in Section 5.3, noise levels were calculated along the existing and future streets adjacent to the project site. These streets include Etiwanda Avenue, Wilson Avenue, and East Avenue. All of the residences proposed on the perimeter of the project site will be exposed to future year 2020 vehicular noise that range between 64.3 to 68.4 dBA CNEL. These future noise levels would result in significant noise impacts to the residences proposed on the perimeter of the site and adjacent to Etiwanda Avenue, Wilson Avenue, and East Avenue.

### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

# Facts in Support of Finding

- The project applicant shall construct sound barriers adjacent to the project lots as shown in Exhibit 5.5-2 in the Draft EIR. The heights of the sound barriers shall be between 3 and 6.5 feet and placed at the top of the proposed slope and at the edge of pads on the residential lots that border Etiwanda Avenue, Wilson Avenue, and East Avenue. The sound barriers may be constructed of earthen berms, masonry, wood, or other similar materials, or combination of these materials to attain the total height required. These sound barriers shall be solid, with no openings from the ground to the indicated height.
- Prior to the issuance of a building permit, residential structures proposed on all lots adjacent to Etiwanda Avenue, Wilson Avenue, and East Avenue will require mechanical ventilation so that windows can remain closed. Furthermore, these residential lots will require upgraded windows such as double-pane windows, if these lots have second story structures. To ensure the specific type of mechanical ventilation and paned windows are included in the building plans, a final acoustical study shall be prepared for City approval prior to approval of Development Review applications for product development. The final acoustical study shall identify the specific requirements to reduce future interior noise levels to 45 dB CNEL or less.



#### AESTHETICS

### Significant Impact

Implementation of the proposed residential community will substantially alter the existing character of the project site as well as views of the San Gabriel Mountains.

#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

# Facts in Support of Finding

- The applicant shall install landscaping and perimeter walls prior to issuance of building permits for the following phases and locations as shown on the Project Phasing Plan (Exhibit 3-8 in the Draft EIR):
  - Phase 1-Along Wilson and Etiwanda Avenues.
  - Phase 2-Along Wilson Avenue
  - Phase 3-Along Etiwanda Avenue
  - Phase 4 Along East Avenue
- Prior to approval of a landscape plan, the project applicant shall provide transitions between the developed and natural (unbuilt) environment through landscaping techniques
- Prior to approval of a landscape plan, the project applicant shall ensure that streetscape design along the roadways adjacent to the project site create a strong landscaped edge, provides a coherent high-quality appearance along a particular route, and enhances the image of adjacent development.
- The project applicant shall provide for the undergrounding of utility lines and facilities, wherever feasible, to minimize the unsightly appearance of overhead utility lines and utility enclosures.
- Prior to approval of a landscape plan, trees and structures shall be used to frame and orient such views at key locations, and obstruction of views should be kept to a minimum along Etiwanda Avenue and East Avenue.



#### CULTURAL RESOURCES

#### Archeological/Historical Resources

#### **Potentially Significant Impact**

The results of the records search indicated that three archeological sites are within the project area, including the new site located during the site visit. It is also likely that prehistoric remains may still be buried.

#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

### Facts in Support of Finding

- Prior to the issuance of a grading permit, the project applicant shall retain a City-approved archaeologist to develop an archaeological mitigation plan and a discovery clause/treatment plan. Both of these plans shall be reviewed and approved by the City. The archaeological mitigation plan shall include monitoring 50 percent of the excavation activities on the project site by a City-approved archaeologist and/or their representative. The discovery clause/treatment plan shall include recovery and subsequent treatment of any archaeological or historical remains and associated data uncovered by brushing, grubbing or excavation. The treatment plan shall provide procedures for the curation of any detected cultural specimens. Any recovered cultural resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard professional archaeological practices. Examination by an archaeological specialist shall be included where necessary, dependent upon the artifacts, features, or sites that are encountered. Specialists will identify, date and/or determine significance potential.
- If the archaeological monitor discovers cultural deposits, earthmoving shall be diverted temporarily around the deposits until the deposits have been evaluated, recorded, excavated and/or recovered, as necessary, and in accordance with a City-approved recovery plan. Earthmoving shall be allowed to proceed through the area after the archaeologist determines the artifacts are recovered and/or site mitigated to the extent necessary.
- If a previously unknown cultural site is encountered during monitoring and it is determined by the archaeologist that a significance determination is required, the site shall be evaluated and recorded in accordance with requirements of the State Office of Historic Preservation (i.e., DPR 523 form). In this case, if the site is not determined to be significant, no measures subsequent to recording the site on appropriate forms are required. If any of the sites are determined to be significant, an adequate amount of artifacts at the specific archaeological site shall be collected by the City-approved archaeologist. The archaeologist shall determine the amount of artifacts needed to be collected.



- If human remains are encountered during excavations associated with this project, all work shall halt and the County Coroner shall be notified (Section 5097.98 of the Public Resources Code). The Coroner will determine whether the remains are of forensic interest. If the coroner, with the aid of the City-approved archaeologist, determines that the remains are prehistoric, he/she will contact the Native American Heritage Commission (NAHC). The NAHC will be responsible for designating the most likely descendant (MLD), who will be responsible for the ultimate disposition of the remains, as required by Section 7050.5 of the California Health and Safety Code. The MLD will make his/her recommendations within 24 hours of their notification by the NAHC. This recommendation may include scientific removal and nondestructive analysis of human remains and items associated with Native American burials (Section 7050.5 of the Health and Safety Code).
- Any recovered archaeological resources shall be identified, sites recorded, mapped and artifacts catalogued as required by standard archaeological practices. Examination by an archaeological specialist should be included where necessary, dependent upon the artifacts, features or sites that are encountered. Specialists will identify, date and/or determine significance potential.
- A final report of findings will be prepared by the City-approved archaeologist for submission to the City, project applicant, and the Archaeological Information Center of the San Bernardino County Museum. The report will describe the history of the project area, summarize field and laboratory methods used, if applicable, and include any testing or special analysis information conducted to support the resultant findings.

# Paleontological Resources

#### Potentially Significant Impact

According to the paleontological records search, the project area lies on surface exposures of Pleistocene older fan deposits. These deposits have high potential to contain fossil resources throughout their extent. No fossil resources are known for the project area and the nearest resources found in similar deposits are located approximately eight miles to the south. However, there is the likelihood of potential buried fossilized remains.

#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

#### **Facts in Support of Finding**

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• Prior to the issuance of a grading permit, the project applicant shall retain a City-approved paleontologist. The City-approved paleontologist shall monitor all excavation activities in

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areas of the project underlain by previously undisturbed sediments. Earthmoving in areas of the site where previously undisturbed sediments will be buried but not disturbed will not be monitored. Monitoring shall begin once earthmoving reaches five (5) feet below the original ground surface.

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- Monitoring shall be conducted on a full-time basis in areas of the project underlain by sensitive rock units associated with older alluvium being encountered by earthmoving.
- Should fossils be found within an area being cleared or graded, divert earth-disturbing activities elsewhere until the monitor has completed salvage. If construction personnel make the discovery, the grading contractor should immediately divert construction and notify the monitor of the find. If too few fossil remains are found after 50 percent of earthmoving has been completed, monitoring can be reduced or discontinued in those areas at the project paleontologist's direction.
- If paleontological resources are detected. Prepare, identify, and curate all recovered fossils for documentation in the summary report and transfer to an appropriate depository (i.e., San Bernardino County Museum).
- A final report of findings will be prepared by the City-approved paleontologist for submission to the City, project applicant, and the San Bernardino County Museum. All collected specimens and the final report shall be provided to the San Bernardino County Museum.

### PUBLIC SERVICES AND UTILITIES

#### Water Service

#### Significant Impact

The proposed project will result in the demand for approximately 220,760 gallons of water per day which represents a 0.7 percent increase in water currently demanded from existing development within the City's General Plan Planning Area. The project's demand for water is nominal; however, it will contribute to the potential significant cumulative impacts on water services.

#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

#### Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• Prior to the issuance of building permits, the project applicant will be required to submit a water services development fee to ensure that adequate water supplies and facilities are available to meet the project demand.



• Prior to the issuance of a building permit for each phase, the project applicant shall submit a landscaping and irrigation plan for common areas to the City for approval. Landscaping and irrigation within common areas shall be designed to conserve water through the principles of Xeriscape as defined in Chapter 19.16 of the Rancho Cucamonga Municipal Code.

#### Wastewater Service

#### Significant Impact

Implementation of the proposed project will result in the generation of 96,930 gallons of wastewater per day.

#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

### Facts in Support of Finding

The significant effect has been eliminated or substantially lessened to a level that is less than significant by virtue of project design features and the following mitigation measures as identified in the final EIR and incorporated into the project.

• Prior to the issuance of occupancy permits, the applicant shall provide funding to the Cucamonga County Water Agency for sewer service.

# HYDROLOGY AND WATER QUALITY (NOTICE OF PREPARATION)

# Significant Impact

The proposed residential uses have the potential to create contaminated runoff containing compounds such as landscape chemicals and automotive fluids.

#### Finding

Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

### Facts in Support of Finding



• Prior to the issuance of a grading permit, the project applicant will be required to prepare a Storm Water Pollution Protection Plan (SWPPP) and file a Notice of Intent with the Regional Water Quality Control Board (RWQCB). As part of standard construction practices, the City and RWQCB will require compliance with best management practices (BMPs) to ensure potentially harmful chemicals or pollutants are not discharged from the site. Such measures may include sandbags, temporary drainage diversion and temporary containment areas.

### SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

The potential significant adverse impacts associated with the implementation of the Tentative Tract Map Number 16072 project are listed below. The Rancho Cucamonga City Council finds that these potential significant adverse impacts would be reduced with the implementation of the project-related design features and recommended mitigation measures; however, the impacts cannot be reduced to a level less than significant. The Rancho Cucamonga City Council is adopting a Statement of Overriding Consideration per Section 15093 of the CEQA Guidelines.

### GEOLOGY AND SOILS

### Seismic Hazards

### Seismic Ground Shaking

#### **Significant Impact**

The proposed residential structures on the project site would be exposed to potentially high accelerations of ground motion.

# Finding

Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR.

# Facts in Support of Finding

Implementation of the following mitigation measures will serve to lessen project impacts; however, the impacts would remain significant. While the No Project/No Development Alternative would avoid significant and unavoidable seismic impacts, this alternative would not meet any of the project objectives. The Retention of Riversidian Alluvial Fan Sage Scrub Alternative (RAFSS) would decrease the amount of development, but would not meet any of the project objectives. The Less intense development alternative would avoid the significant and unavoidable air quality impact, but does not meet any of the project objectives.



• Prior to the issuance of a building permit, structures will be designed and constructed in accordance with the Uniform Building Code and general engineering standards for seismic safety for development within Seismic Zone 4.

The significant and unavoidable adverse impacts related to seismic hazards by the proposed project are considered to be acceptable in light of the Statement of Overriding Considerations provided herein as Attachment A.

# AIR QUALITY

#### Short-Term Construction-Related Emissions

#### Significant Impact

Short-term emissions will include fugitive dust and other particulate matter, as well as exhaust emissions, generated by earthmoving activities and operation of grading equipment during site preparation (demolition and grading). Short-term emissions will also include emissions generated during construction of the buildings as a result of operation of equipment, operation of personal vehicles by construction workers, electrical consumption, and coating and paint applications. Projected NOx, ROC, and PM10 emissions are above the SCAQMD recommended daily thresholds and NOx and ROC are above the quarterly thresholds during construction of the first phase of the project. The primary sources of NOx emissions are trucks used for rock removal and importation of concrete. The primary source of ROC emissions is the application of architectural coatings, and the primary source of PM10 is fugitive dust from earthmoving activities. Even with the reductions associated with implementation of construction related mitigation measures, the daily and quarterly emissions of NOx and ROC remain above the SCAQMD suggested thresholds.

# Finding

Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR.

# **Facts in Support of Finding**

Implementation of the following mitigation measures will serve to lessen project impacts; however, the impacts would remain significant. The No Project/No Development Alternative would avoid significant and unavoidable short-term construction related emission impacts; this alternative would not meet any of the project objectives. The Retention of Riversidian Alluvial Fan Sage Scrub Alternative (RAFSS) would decrease the amount of development, but would also not meet any of the project objectives. The Less Intense Development alternative would avoid the significant and



unavoidable air quality impact, but does not meet any of the project objectives and is not considered feasible.

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- The site shall be treated with water or other soil-stabilizing agents (approved by SCAQMD and RWQCB) daily to reduce PM10 emissions, in accordance with SCAQMD Rule 403.
- During construction, all haul roads shall be swept according to a schedule established by the City to reduce PM10 emissions associated with vehicle tracking of soil off-site. Timing may vary depending upon time of year of construction.
- Grading operations shall be suspended when wind speeds exceed 25 mph to minimize PM10 emissions from the site during such episodes.
- Chemical soil stabilizers (approved by SCAQMD and RWQCB) shall be applied to all inactive construction areas that remain inactive for 96 hours or more to reduce PM10 emissions.
- The construction contractor shall select the construction equipment used on-site based on low emission factors and high-energy efficiency. The construction contractor shall ensure the construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.
- The construction contractor shall utilize electric or clean alternative fuel powered equipment, where feasible.
- The construction contractor shall ensure that construction-grading plans include a statement that work crews will shut off equipment when not in use.
- The construction contractor shall use low VOC architectural coating during the construction phase of the project.
- During construction of the proposed improvements, temporary traffic control (e.g., flag person) will be provided during soil transport activities. Contractor will be advised not to idle trucks on site for more than ten minutes.
- During construction of the proposed improvements, only low volatility paints and coatings as defined in SCAQMD Rule 1113 shall be used. All paints shall be applied using either high volume low pressure (HVLP) spray equipment or by hand application.

The significant and unavoidable adverse impacts related to short-term construction emissions associated with the proposed project are considered to be acceptable in light of the Statement of Overriding Considerations provided herein as Attachment A.

#### Long-Term Emissions

#### Significant Impact

Long-term impacts for the proposed residential subdivision consist of mobile emissions and stationary emissions. Mobile emissions estimates are derived from motor vehicle traffic. Stationary emissions estimates are derived from the consumption of natural gas, electricity, the use of landscape equipment, and the storage and use of consumer products. When unmitigated emissions projections are compared with the SCAQMD suggested thresholds for significance, it is shown that long-term emissions exceed



the applicable thresholds for NOx, CO and ROC. The primary source of these emissions is mobile emissions from vehicles. Even with the mitigation incorporated into the project NOx, CO and ROC emissions remain above the SCAQMD recommended threshold, and therefore the project may be expected to violate an ambient air quality standard.

# Finding

Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR.

# **Facts in Support of Finding**

Implementation of the following mitigation measures will serve to lessen project impacts; however, the impacts would remain significant. The No Project/No Development Alternative would avoid significant and unavoidable long-term emission impacts; this alternative would not meet any of the project objectives. The Retention of Riversidian Alluvial Fan Sage Scrub Alternative (RAFSS) would decrease the amount of development, but would also not meet any of the project objectives. The Less Intense Development alternative would avoid the significant and unavoidable air quality impact, but does not meet any of the project objectives and is not considered feasible.

- The proposed project will participate in the cost of off-site traffic signal installation and synchronization through payment of the traffic signal fair-share mitigation fee. This fee will be collected and utilized by the City to install and synchronize traffic lights as needed to prevent congestion of traffic flow on East Avenue between Banyan Street and the project boundary, and Etiwanda Avenue between Highland Avenue and the north terminus of Etiwanda Avenue.
- All appliances within the residential units of the project shall be energy-efficient as defined by SCAQMD.
- The project proponent shall contact local transit agencies to determine bus routing in the project area that can accommodate bus stops at the project access points and determine locations and feasibility of bus stop shelters provided at project proponent's expense.

The significant and unavoidable adverse impacts related to long-term air emissions associated with the proposed project are considered to be acceptable in light of the Statement of Overriding Considerations provided herein as Attachment A.

# **Consistency Analysis**

# **Significant Impact**

The proposed project complies with the City of Rancho Cucamonga General Plan, which is consistent with the land use information that was the basis for the current AQMP. However, it is noted that the

specific analysis indicates that both short-term and long-term emissions as a result of the project are above the SCAQMD thresholds. These emissions remain above the thresholds after implementation of mitigation measures. For this reason, it is appropriate to conclude that the proposed project is not in compliance with the AQMP.

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# Finding

Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR.

### Facts in Support of Finding

Implementation of the following mitigation measures will serve to lessen project impacts; however, the impacts would remain significant. The No Project/No Development Alternative would avoid significant and unavoidable impacts; this alternative would not meet any of the project objectives. The Retention of Riversidian Alluvial Fan Sage Scrub Alternative (RAFSS) would decrease the amount of development, but would also not meet any of the project objectives. The Less Intense Development alternative would avoid the significant and unavoidable air quality impact, but does not meet any of the project objectives and is not considered feasible.

• All feasible mitigation measures for reduction of air quality impacts have been incorporated into the project. However, short-term and long-term emissions remain above threshold levels for several pollutants after implementation.

The significant and unavoidable adverse impacts related to air emissions by the proposed project are considered to be acceptable in light of the Statement of Overriding Considerations provided herein as Attachment A.

# AESTHETICS

#### **Significant Impact**

Development of the proposed project and cumulative development in the project vicinity will result in the permanent alteration of the visual landscape of the San Gabriel Mountains.

#### Finding

Specific economic, social, or other considerations make infeasible the mitigation measures or project alternatives identified in the final EIR.



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# Facts in Support of Finding

Implementation of the following mitigation measures will serve to lessen project impacts; however, the impacts would remain significant. The No Project/No Development Alternative would avoid significant and unavoidable long-term aesthetic impacts; this alternative would not meet any of the project objectives. The Retention of Riversidian Alluvial Fan Sage Scrub Alternative (RAFSS) would decrease the amount of development, but would also not meet any of the project objectives. The Less Intense Development alternative would avoid the significant and unavoidable air quality impact, but does not meet any of the project objectives.

- The applicant shall install landscaping and perimeter walls prior to issuance of building permits for the following phases and locations as shown on the Project Phasing Plan (Exhibit 3-8):
  - Phase 1-Along Wilson and Etiwanda Avenues.
  - Phase 2-Along Wilson Avenue
  - Phase 3-Along Etiwanda Avenue
  - Phase 4 Along East Avenue
- Prior to approval of a landscape plan, the project applicant shall provide transitions between the developed and natural (unbuilt) environment through landscaping techniques
- Prior to approval of a landscape plan, the project applicant shall ensure that streetscape design along the roadways adjacent to the project site create a strong landscaped edge, provides a coherent high-quality appearance along a particular route, and enhances the image of adjacent development.
- The project applicant shall provide for the undergrounding of utility lines and facilities, wherever feasible, to minimize the unsightly appearance of overhead utility lines and utility enclosures.
- Prior to approval of a landscape plan, trees and structures shall be used to frame and orient such views at key locations, and obstruction of views should be kept to a minimum along Etiwanda Avenue and East Avenue.

The significant and unavoidable adverse impacts on aesthetics and views by the proposed project are considered to be acceptable in light of the Statement of Overriding Considerations provided herein as Attachment A.



# STATEMENT OF OVERRIDING CONSIDERATIONS

The California Environmental Quality Act (CEQA) requires the lead agency to balance the benefits of a proposed project against its unavoidable environmental risks in determining whether to approve the project. The City of Rancho Cucamonga proposes to approve the Tentative Tract Map Number 16072 project although unavoidable adverse geology and soils, air quality, and aesthetic impacts have been identified in the EIR. Even though these adverse impacts are not reduced to a level considered less than significant, the Rancho Cucamonga City Council finds that those impacts are outweighed by the benefits of the Tentative Tract Map Number 16072 project. Further, the alternatives which were identified in the EIR would not provide the project benefits, as summarized below, to the same extent as the proposed project:

- 1. To provide single-family housing units consistent with the intent of the City's General Plan and the Etiwanda North Specific Plan.
- 2. To annex the proposed 150-acre tentative tract and an adjacent 10-acre area at the northwest corner of Wilson and East Avenue into the City of Rancho Cucamonga.
- 3. To be consistent with, and implement, the policies and goals of the City of Rancho Cucamonga General Plan, Etiwanda North Specific Plan, City Development Code, and all other City development guidelines.
- 4. To create a project that is generally consistent and compatible with other existing and proposed uses in the vicinity of the project and community of Etiwanda in general.
- 5. To provide project infrastructure including streets, water and sewer mains, and flood control consistent with City and regional plans related to these services.
- 6. To phase the development of the proposed project to ensure adequate utilities are provided.
- 7. Provide a system of public/community facilities, including parks, trails, open space areas, and landscaping to support the residents of the project and surrounding area in an efficient and timely manner.
- 8. To design and landscape the proposed project to create an aesthetically pleasing living environment.

Therefore, the Rancho Cucamonga City Council, having reviewed and considered the information contained in the EIR and the public record, adopts the Statement of Overriding Considerations which has been balanced against the unavoidable adverse impacts in reaching a decision on this project.


#### **RESOLUTION NO. 04-204**

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF RANCHO CUCAMONGA, CALIFORNIA, CERTIFYING THE FINAL ENVIRONMENTAL IMPACT REPORT PREPARED FOR THE **RICHLAND-PINEHURST RESIDENTIAL PROJECT, WHICH INCLUDES** ANNEXATION OF APPROXIMATELY 160 ACRES, TENTATIVE TRACT MAP SUBTT16072, AND ASSOCIATED DEVELOPMENT AGREEMENT, FOR A RESIDENTIAL SUBDIVISION OF 150.8 ACRES INTO 358 LOTS FOR SINGLE FAMILY DEVELOPMENT, WITHIN THE LOW (2-4 DWELLING UNITS PER ACRE) AND VERY LOW **RESIDENTIAL DISTRICTS (.1-2 DWELLING UNITS PER ACRE), IN** THE UPPER ETIWANDA NEIGHBORHOOD OF THE ETIWANDA NORTH SPECIFIC PLAN, LOCATED ON THE NORTH SIDE OF WILSON AVENUE BETWEEN ETIWANDA AVENUE AND EAST AVENUE - APN: 0225-083-01, 12, 13, 15, 16, AND 20.

#### A. <u>RECITALS</u>.

- Richland Pinehurst, Inc. (the "Applicant") seeks approval of a series of actions related to the annexation of land from unincorporated San Bernardino County into the City of Rancho Cucamonga, the approval of Tentative Tract Map SUBTT16072, and associated Development Agreement. The actions also include the development of 358 single-family housing units on approximately 150.8 acres. The total area to be annexed is approximately 160 acres. The average density of the development is approximately 2.38 dwelling units per gross acre for the entire site. These series of actions and approvals are hereinafter defined in this Resolution as the "Project."
- 2. The Applicant has submitted the following applications relating to the Project: Annexation DRC2002-00865, Tentative Tract Map SUBTT16072, and Development Agreement DRC2002-00156 (collectively the "Project Applications"). These Project Applications, as well as the appeal of the Planning Commission's approval of Tentative Tract Map SUBTT16072, constitute the matters involving the Project which are submitted to the City Council of the City of Rancho Cucamonga for decision and action.
- **3.** The City of Rancho Cucamonga analyzed the Project's potential impacts on the environment in accordance with the California Environmental Quality Act ("CEQA") (Cal. Pub. Res. Code § 21000 *et seq.*) and the State CEQA Guidelines (the "Guidelines") (14 Cal. Code Regs. § 15000 *et seq.*) promulgated with respect thereto.
- 4. The City prepared an Initial Environmental Study (the "Initial Study") for the Project pursuant to Section 15063 of the Guidelines. The Initial Study concluded that there was evidence that the Project may have a significant environmental impact on several specifically identified resources, including aesthetics, land use and planning, population and housing, air quality, biological resources, noise, public services, transportation and traffic, cultural resources, hydrology and water quality, geology and soils, and utilities and service systems.

- 5. Based upon the information contained in the Initial Study, the City ordered the preparation of an Environmental Impact Report (the "EIR") for the Project in accordance with the provisions of Guidelines Sections 15064 and 15081. The City prepared and issued a Notice of Preparation of the EIR on September 11, 2002.
- 6. The City sent the Notice of Preparation to the State Clearinghouse in the Office of Planning and Research for the State of California (the "State Clearinghouse") and to other interested agencies and groups in accordance with Guidelines Section 15082(a).
- 7. The City, acting as the lead agency, prepared the Draft EIR for the Project, including certain technical appendices (the "Appendices") to the Draft EIR (State Clearinghouse No. 2002091053).
- 8. The City circulated the Draft EIR and the Appendices to the public, the State Clearinghouse, and other interested persons for a 45-day public review and comment period from December 2, 2003 through January 21, 2004.
- 9. In accordance with Guidelines Section 15083, the Planning Commission conducted a duly noticed public comment session concerning the EIR on December 10, 2003, to provide an introduction to the Project and CEQA process and to afford an opportunity for the public and interested agencies to comment on the issues to be analyzed in the Draft EIR.
- 10. The City received nine written comments in response to the Draft EIR and received oral comments regarding the Draft EIR at the Planning Commission's public comment session concerning the Draft EIR on December 10, 2003.
- **11.** The City prepared written responses to all comments and made revisions and additions to the Draft EIR in response to the comments.
- 12. The City completed the responses to comments on the Draft EIR and preliminary revisions to the Draft EIR in March 2004, and distributed those responses to commenting agencies and to the public. Those comments and the responses thereto have been included in the Final EIR, as have the Appendices to the Draft EIR. Those documents together comprise the Final EIR. The Final EIR was distributed in accordance with the provisions of Public Resources Code section 21092.5, and at least ten (10) days prior to any Planning Commission consideration of the Final EIR.
- 13. On May 12, 2004, the Planning Commission of the City of Rancho Cucamonga conducted a duly noticed public hearing on the Project, and after the receipt of public testimony, closed the hearing on that date. On May 12, 2004, the Planning Commission adopted the following resolutions: (a) Resolution No. 04-56, certifying the Final EIR for purposes of approval of Tentative Tract Map SUBTT16072 and approving Tentative Tract Map SUBTT16072; and (b) Resolution No. 04-57, recommending that the City Council enter into Development Agreement DRC2002-00156.

- 14. On May 19, 2004, Craig A. Sherman, attorney for the Spirit of the Sage Council and the Habitat Trust for Wildlife, Inc., filed an appeal of the Planning Commission's approval of Tentative Tract Map SUBTT16072.
- **15.** On June 2, 2004, the City Council of the City of Rancho Cucamonga conducted a duly noticed public hearing on the Final EIR and the Project, at which time all interested parties were given an opportunity to be heard and to present evidence regarding the Final EIR and the Project. After the receipt of public testimony, the City Council continued the public hearing on the Final EIR and the Project to its regularly scheduled meeting of June 16, 2004.
- **16.** On June 16, 2004, the City Council of the City of Rancho Cucamonga conducted a continued public hearing on the Final EIR and the Project, at which time all interested parties were given an opportunity to be heard and to present evidence regarding the Final EIR and the Project, and after the receipt of public testimony, closed the hearing.
- **17.** All legal prerequisites prior to the adoption of this Resolution have occurred.

#### B. <u>RESOLUTION</u>.

**NOW, THEREFORE,** it is hereby found, determined, and resolved by the City Council of the City of Rancho Cucamonga as follows:

- 1. The City Council hereby specifically finds that all of the facts set forth in the Recitals, Part A of this Resolution, are true and correct.
- 2. Each finding herein is based upon the substantial evidence in the administrative record of proceedings before the Planning Commission and the City Council, including testimony at the City Council's public hearings on June 2, 2004, and June 16, 2004, the Final EIR, and written and oral staff reports.
- **3.** The City Council certifies that the Final EIR has been completed in compliance with CEQA and the Guidelines.
- 4. The City Council certifies that the Final EIR was presented to the City Council and that the City Council has reviewed and considered the contents of the Final EIR prior to approving the Project. The City Council has reached its own conclusions with respect to the Project and as to whether and how to approve each of the various applications comprising the Project.
- 5. The City Council certifies that the Final EIR represents the independent judgment and analysis of the City Council.
- 6. The City Council finds that the Final EIR adequately addresses the impacts of the Project and imposes appropriate mitigation measures for the Project.

- 7. The City Council finds that the additional information provided in the staff report, in attachments to the staff report, in the comments to the Draft EIR, and presented at the Planning Commission and City Council's public hearings, does not represent significant new information so as to require recirculation of the Final EIR pursuant to Public Resources Code Section 21092.1.
- 8. The City Council hereby certifies the Final EIR as the environmental document for the Project and for the City Council's action in approving Annexation DRC2002-00865, Tentative Tract Map SUBTT16072, and Development Agreement DRC2002-00156.
- 9. The documents and other materials that constitute the record of the proceedings upon which the City Council's decision is based, which include, but are not limited to, the staff reports for the Project, as well as all of the materials that comprise and support the Final EIR and all of the materials that support the staff reports for the Project, are located in the office of the City Planner of the City of Rancho Cucamonga, at 10500 Civic Center Drive, Rancho Cucamonga, California 91730. The custodian of these documents is the City Planner of the City of Rancho Cucamonga.
- **10.** The City Clerk shall certify to the adoption of this Resolution.

**PASSED, APPROVED, AND ADOPTED** this 16<sup>th</sup> day of June 2004.

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AYES: Alexander, Gutierrez, Howdyshell, Kurth, Williams

NOES: None

ABSENT: None

ABSTAINED: None

Alexander,

ATTEST:

lacons Debra J. Adams.

**I, DEBRA J. ADAMS, CITY CLERK** of the City of Rancho Cucamonga, California, do hereby certify that the foregoing Resolution was duly passed, approved and adopted by the City Council of the City of Rancho Cucamonga, California, at a Regular Meeting of said City Council held on the 16<sup>th</sup> day of June 2004.

Executed this 17<sup>th</sup> day of June 2004, at Rancho Cucamonga, California.

Debra J. Adams, CMC, City Clerk

#### CITY OF RANCHO CUCAMONGA NOTICE OF DETERMINATION

TO: Clerk of the Board County of San Bernardino 385 N. Arrowhead, 2nd Floor San Bernardino, CA 92415-0130 FROM: City of Rancho Cucamonga Planning Division P. O. Box 807 Rancho Cucamonga, CA 91729

Documentary Handling Fee (\$35.00)

Receipt Number 249379

<u>SUBJECT</u>: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

<u>PROJECT DESCRIPTION</u>: DEVELOPMENT AGREEMENT DRC2002-00156 - RICHLAND PINEHURST INC. - A proposed annexation of 160.0 acres of land into the City of Rancho Cucamonga including a proposed subdivision of approximately 150.8 acres and development agreement to address specific conditions of development and annexation.

PROJECT LOCATION: Located within the Etiwanda North Specific Plan on the north side of Wilson Avenue between Etiwanda Avenue and East Avenue - APN - 0225-083-01, 12, 13, 34, 15, 16 and 20.

- APPLICANT: (Name /Address & Phone) Richland Pinehurst, Inc.

Richland Pinehurst, Inc. 4100 Newport Place, Suite 800 Newport Beach, CA 92660 (949) 261-7010

#### STATE CLEARINGHOUSE NUMBER: N/A

This is to advise that the **City of Rancho Cucamonga** approved the above described project on July 7, 2004 with an effective date of July 7, 2004, and has made the following determinations regarding the above project. A previous Certificate of Fee exemption was filed and posted as per attached receipt dated June 17, 2004.

1. The project X will, will not, have a significant effect on the environment.

- 2. X An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
  - A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.

3. Mitigation measures X were, were not, made a condition of the approval of this project.

4. A statement of overriding considerations X was, was not, adopted for this project.

5. Findings X were, were not, made pursuant to the provisions of CEQA.

This is to certify that the final EIR or Negative Declaration and record of project approval is available to the General Public at: City of Rancho Cucamonga, 10500 Civic Center Drive, Rancho Cucamonga, California.

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- Lix lak	July 8, 2004	City Planner	(909) 477-2750 -
(Signature)	(Date)	(Title)	(Telephone)
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Attachment 7, Page 2 of 4

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#### CITY OF RANCHO CUCAMONGA NOTICE OF DETERMINATION

TO: Clerk of the Board County of San Bernardino 385 N. Arrowhead, 2nd Floor San Bernardino, CA 92415-0130 FROM: City of Rancho Cucamonga Planning Division P. O. Box 807 Rancho Cucamonga, CA 91729

Documentary Handling Fee (\$35.00)

Receipt Number

<u>SUBJECT</u>: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

<u>PROJECT DESCRIPTION</u>: ANNEXATION DRC2002-00865, TENTATIVE TRACT MAP SUBTT16072 AND DEVELOPMENT AGREEMENT DRC2002-00156 - RICHLAND PINEHURST INC. - A proposed annexation of 160.0 acres of land into the City of Rancho Cucamonga including a proposed subdivision of approximately 150.8 acres and development agreement to address specific conditions of development and annexation.

<u>PROJECT LOCATION</u>: Located within the Etiwanda North Specific Plan on the north side of Wilson Avenue between Etiwanda Avenue and East Avenue - APN - 0225-083-01, 12, 13, 14, 15, 16 and 20.

APPLICANT: (Name /Address & Phone) Richland Pinehurst, Inc.

Alchiand Pinehurst, Inc. 4100 Newport Place, Suite 800 Newport Beach, CA 92660 (949) 261-7010

#### STATE CLEARINGHOUSE NUMBER: N/A

This is to advise that the **City of Rancho Cucamonga** approved the above described project on June 16, 2004 with an effective date of June 16, 2004, and has made the following determinations regarding the above project.

1. The project X will, will not, have a significant effect on the environment.

- 2. X An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
  - \_\_\_\_ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.

3. Mitigation measures X were, were not, made a condition of the approval of this project.

4. A statement of overriding considerations X was, was not, adopted for this project.

5. Findings X were, were not, made pursuant to the provisions of CEQA.

This is to certify that the final EIR or Negative Declaration and record of project approval is available to the General Public at: City of Rancho Cucamonga, 10500 Civic Center Drive, Rancho Cucamonga, California.

n. kn	June 17, 2004	City Planner	(909) 477-2750
(Signaturo) party	(Date)	(Title)	(Telephone)
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STATE OF CALIFORNIA - THE RESOURCES AGENCY	
ENVIRONMENTAL FILING FEE CASH RECEIPT	
Lead Agency:City of Rancho Cucamonga Planning Division Date:	
County / State Agency of Filing: County of San Bernardino Document No.:	
Project Title: Annexation DRC 2002-00565 Tentative Tract Map Sals TT 6072 (949)	
Project Applicant Name: <u><u>Richland</u> Pinchurst, <u>Lvc</u>, <u>Phone Number: <u>261-7010</u></u></u>	
Project Applicant Address: <u>4100 Newport Place Suite 400 Newport Black a 12000</u>	
Project Applicant (check appropriate box): Local Public Agency School District Context State Agency Private Entity	
CHECK APPLICABLE FEES:  Check NO. 1009,704  \$850.00 \$  \$450,00    X) Environmental Impact Report  Check NO. 1009,704  \$850.00 \$  \$450,00	
( ) Negative Declaration ( ) Application ( ) Application Fee Water Diversion (State Water Resources Control Board Only) \$850.00 \$	
( ) Projects Subject to Certified Regulatory Programs \$850.00 \$	
(X) County Administrative Fee	• •
TOTAL RECEIVED \$ 85.00	
Signature and title of person receiving payment:/ OW W. /U/I/ DCPUTTY CONC	
WHITE-PROJECT APPLICANT YELLOW-DFG/FASE PINK-LEAD AGENCY GOLDENROD-STATE AGENCY OF FILING	
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STATE OF CALIFORNIA - THE RESOURCES AGENCY	<u> </u>
ENVIRONMENTAL FILING FEE CASH RECEIPT	$= - 2 H_{\rm eff}$
Lead Agency: _City of Kave ho Cucamonage Planning Division Date: 7/12/04	
County / State Agency of Filing: County of San Brenavaina Document No.:	
Project Title: Revelopment Hareement NPC 2002-001320- Kichland Pinehuver	
Project Applicant Name, Kighten A. Prister M. MC.	
Project Applicant Name. <u>Frich (Child'S)</u> , <u>Fric</u>	
Project Applicant Address: 4100 Newport Piace, Suite 500, Newport Beach Ca 97660	
Project Applicant Name. <u>Friend With Project Applicant Address</u> : <u>400 Newport Project Applicant Address</u> : <u>400 Newport Project Applicant (check appropriate box)</u> : Local Public Agency School District Other Special District	
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#### CALIFORNIA DEPARTMENT OF FISH AND GAME CERTIFICATE OF FEE EXEMPTION

#### **De Minimus Impact Finding**

Project Title/Location Name and Address of Project Proponent (include county):

DEVELOPMENT AGREEMENT DRC2002-00156 - RICHLAND PINEHURST - Located within the Etiwanda North Specific Plan on the north side of Wilson Avenue between Etiwanda Avenue and East Avenue, City of Rancho Cucamonga, County of San Bernardino - APN-0225-083-01, 12, 13, 14, 15, 16 and 20.

**Project Proponent:** Richland Pinehurst, Inc.

4100 Newport Place, Suite 800 Newport Beach, CA 92660

#### **Project Description:**

A proposed annexation of 160.0 acres of land into the City of Rancho Cucamonga including a proposed subdivision of approximately 150.8 acres and development agreement to address specific conditions of development and annexation.

#### Findings of Exemption:

- The City of Rancho Cucamonga has prepared an initial study to evaluate the potential for 1. adverse environmental impact; and
- 2. When considering the record as a whole, there is no evidence before the City of Rancho Cucamonga that the proposed project will have potential for an adverse effect on wildlife resources or the habitat upon which the wildlife depends.
- З. The City of Rancho Cucamonga has, on the basis of substantial evidence, rebutted any presumption of adverse effect on fish and wildlife resources or the habitat upon which the wildlife depends.

#### **Certification:**

I hereby certify that the lead agency has made the above findings of fact and that based upon the initial study and hearing record, the project will not individually or cumulatively have an adverse effect on wildlife resources, as defined in Section 711.2 of the Fish and Game Code.

(Chiet Planning Official) Brad Baller Title: City Planner Lead Agency: City of Rancho Cucamonga Date: July 8, 2004

### Responses to Comments on the Draft Environmental Impact Report for

7-10

City of Rancho Cucamonga Tentative Tract Map Number 16072

State Clearinghouse No. 2002091053

Prepared for:

#### **City of Rancho Cucamonga** Planning Department 10500 Civic Center Drive Rancho Cucamonga, CA 91730

Contact: Debra Meier, Associate Planner

Prepared by:

Michael Brandman Associates 220 Commerce, Suite 200 Irvine, CA 92602 714.508.4100

Contact: Michael E. Houlihan, AICP, Manager of Environmental Services



May 6, 2004

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#### SECTION 1: INTRODUCTION

#### PURPOSE

The Draft Environmental Impact Report for the City of Rancho Cucamonga Tentative Tract Map Number 16072 was circulated for public review and comment beginning on November 27, 2003 and ending on January 21, 2004. As required by the California Environmental Quality Act (CEQA), this document responds to comments received on the Draft EIR.

As required by Section 15132 of the State CEQA Guidelines, the Final EIR must respond to comments regarding significant environmental points raised in the review and consultation process. This document provides responses to comments on significant environmental points describing the disposition of the issue, explaining the EIR analysis, supporting EIR conclusions, or providing new information or corrections, as appropriate. This document, however, need not, and should not, attempt to respond to comments about the merits of the project.

This document is organized as follows:

- Section 1 This section provides a discussion of the relationship of this document with the Draft EIR. It also discusses the structure of this document.
- Section 2 This section lists the agencies/individuals that commented on the contents of the Draft EIR.
- Section 3 This section includes the written comments and the responses to the comments that were received on the Draft EIR as well as the verbal comments received during the Planning Commission hearing on December 10, 2003.

This Response to Comments Document is part of the Final EIR, which includes the Draft EIR and the technical appendices. These documents, and other information contained in the environmental record, constitute the Final EIR for the City of Rancho Cucamonga Tentative Tract Map Number 16072.

#### SECTION 2: LIST OF COMMENTORS

A list of public agencies, organizations, and individuals that provided comments on the Draft EIR is presented below. Each comment letter has been assigned an alphabetical designation (A through I). Each comment within each letter has been assigned a numerical designation so that each comment could be crossed-referenced with an individual response. Responses follow each comment letter. One individual provided verbal comments during the December 10, 2003 Planning Commission hearing on the project. The comments have been reiterated and responses follow each verbal comment.

#### COMMENT LETTERS RECEIVED ON DRAFT EIR

- A. Terry Roberts, Director, State Clearinghouse, State of California Governor's Office of Planning and Research
- B. Rita A. Kurth, Water Resource Administrator, Cucamonga County Water District
- C. Garth Morgan, Ph.D, Water Resource Engineer, Inland Empire Utilities Agency
- D. Steve Smith, P.E., Principal Transportation Analyst, San Bernardino Associated Governments
- E. Jonathan J. Mott, Parker & Covert LLP
- F. Steve Dunivin, Technical Supervisor, The Gas Company
- G. James Quisimo, South Coast Air Quality Management District
- H. Kathleen Rollings-McDonald, Executive Director, Local Agency Formation Commission
- I. Laura J. Simonek, Manager, Environmental Planning Team, Metropolitan Water District of Southern California

#### ORAL COMMENTS RECEIVED DURING PLANNING COMMISSION HEARING

J. Craig Sherman, Spirit of the Sage

#### SECTION 3: RESPONSES TO COMMENTS

Following are the responses to the written and oral comments that were received during the public review period on the Draft EIR. Where a comment results in a change to the Draft EIR, the response provides specific page, paragraph, and sentence reference, along with the new EIR text.

### A. Terry Roberts, Director, State Clearinghouse, State of California Governor's Office of Planning and Research

A1. This comment is noted and acknowledges the closing of the public review period for the Draft EIR. No specific comments on the Draft EIR were provided, therefore, no further response is necessary.

### B. Rita A. Kurth, Water Resource Administrator, Cucamonga County Water District

- B1. This comment regarding the need for additional water storage capacity at the District's Reservoir 5C site is noted. Page 5.8-5 in the Draft EIR identifies a mitigation measures that requires the project applicant to submit a water services development fee.
- B2. The project applicant is proposing to construct the full width of Wilson Avenue (i.e., 165 feet wide) adjacent to the project site as identified in the first paragraph on page 3-10 in the Draft EIR. The construction of the full width will also result in the coordination of the development of all utilities planned within Wilson Avenue adjacent to the project site. At this time, the project does not expect to affect the existing 16-inch water line along Wilson Avenue.

#### C. Garth Morgan, Ph.D, Water Resource Engineer, Inland Empire Utilities Agency

- C1. At this time, the City of Rancho Cucamonga understands that a future recycle water distribution system is anticipated to occur in the vicinity of the City's Industrial Area Specific Plan area which is located in the southern portion of the City. This specific plan area is anticipated to provide recycled water to the existing Empire Lakes Golf Course. Tentative Tract Map Number 16072 is located in the northern portion of the City, north of State Route 210. "The applicant shall comply with all standard requirements of the Cucamonga Valley Water District at the time of construction."
- C2. As identified on page 3-10 in the Draft EIR, the project includes the full-width improvement of Wilson Avenue which includes improvements to the 85-foot wide Metropolitan Water District (MWD) easement. The project applicant and the City will be coordinating with MWD regarding the plan for improvement within the easement. This specific coordination would occur during design review.

### D. Steve Smith, P.E., Principal Transportation Analyst, San Bernardino Associated Governments

- D1. This comment regarding the need to include the revised pages to the traffic study is noted. The traffic report in Appendix D in Volume II of the Draft EIR is hereby revised with the inclusion of pages 6-1, 6-2, and 6-3. Except for a typographical error for East Avenue at Wilson Avenue on Table 5.3-10 on page 5.3-18 in the Draft EIR, the project's fair share contribution to offsite intersection improvements is correctly identified in the Draft EIR. Table 5.3-10 on page 5.3-18 in the Draft EIR is revised as follows:
  - Delete: "\$120,000" under the Total Cost column for East Avenue at Wilson Avenue.
  - Add: "\$220,000" under the Total Cost column for East Avenue at Wilson Avenue.
  - Delete: "\$15,172" under the Project's Fair Share Cost column for East Avenue at Wilson Avenue.
  - Add: "\$27,816" under the Project's Fair Share Cost column for East Avenue at Wilson Avenue.

The revisions to pages 6-1, 6-2, and 6-3 in Appendix D result in a revision to Mitigation Measure TT-8 on pages 5.3-17 and 5.3-18 of the Draft EIR.

- Delete: "TT-8 Prior to the issuance of building permits, the applicant shall provide funds in accordance with the City's Transportation Development Fee. Collection of these fees shall represent the project's "fair share" toward the following transportation improvements required for Buildout Year 2020.
  - Construction of one additional northbound lane to provide a shared left and through lane, and a shared right and through northbound lane, and one additional southbound lane to provide a shared left and through and a shared right and through southbound lane on East Avenue at Banyon Street.
  - Construction of a westbound through lane on Highland Avenue at Etiwanda Avenue.
  - Installation of a traffic signal at the intersection of Etiwanda Avenue (North) at Wilson Avenue.
  - Installation of a traffic signal at the intersection of Etiwanda Avenue (South) at Wilson Avenue.
  - Installation of a traffic signal at the intersection of East Avenue at Wilson Avenue.
- Add: "TT-8 Prior to the issuance of building permits, the applicant shall provide funds in accordance with the City's Transportation Development Fee. Collection of these fees shall represent the project's "fair share"

toward the following transportation improvements required for Buildout Year 2020.

- Construction of one additional northbound lane to provide a shared left and through lane, and a shared right and through northbound lane on East Avenue at Banyan Street.
- Construction of one additional southbound lane to provide a shared left and through and a shared right and through southbound lane on East Avenue at Banyan Street.
- Construction of a westbound through lane on Highland Avenue at Etiwanda Avenue.
- Installation of a traffic signal at the intersection of Etiwanda Avenue (North) at Wilson Avenue.
- Installation of a traffic signal at the intersection of Etiwanda Avenue (South) at Wilson Avenue.
- Add an eastbound and westbound left turn lane and install a traffic signal at the intersection of East Avenue at Wilson Avenue.

In addition to Mitigation Measure TT-8, Table 5.3-9 is revised as follows:

Delete:

Intersection/Segment	Improvement	Total Cost
Etiwanda AveNorth (NS) at:		
Wilson Ave. (EW)	Install Traffic Signal	\$ 120,000
Etiwanda AveSouth- (NS) at:		
Wilson Ave. (EW)	Install Traffic Signal	\$ 120,000
Summit Ave. (EW)	Install Traffic Signal	\$ 120,000
Highland Ave. (EW)	Construct SB right turn lane	\$ 50,000
	Construct WB through lane	\$ 259,000
	Construct one additional SB lane to provide shared left and through, and shared right and through lane.	\$ 259,000
	Construct EB left turn lane	\$ 50,000
	Construct WB left turn lane	\$ 50,000
Total		\$ 1,527,000
Source: RK Engineering Group, Inc. 200 Notes: SB = Southbound WB = Westbound NB = Northbound EB = Eastbound	)2.	

#### Table 5.3-1: Required Offsite Project Area Intersection Improvements

#### Add:

#### Table 5.3-2: Required Offsite Project Area Intersection Improvements

7-10

Intersection/Segment	Improvement	Total Cost
Etiwanda AveNorth (NS) at:		
Wilson Ave. (EW)	Install Traffic Signal	\$ 120,000
Etiwanda AveSouth- (NS) at:		
Wilson Ave. (EW)	Install Traffic Signal	\$ 120,000
Summit Ave. (EW)	Install Traffic Signal	\$ 120,000
Highland Ave. (EW)	Construct SB right turn lane	\$ 50,000
	Construct an additional WB through lane	\$ 259,000
East Avenue (NS) at		
Wilson Avenue (EW)	Install Traffic Signal	\$ 120,000
	Add EB and WB Left Turn Lane	\$ 100,000
Summit Avenue (EW)	Install Traffic Signal	\$ 120,000
	Construct one additional NB Lane to Provide a Shared Left and Through Lane and Shared Right and Through Lane	\$ 259,000
	Construct one Additional SB Lane to Provide a Shared Left and Through Lane and Shared Right and Through Lane	\$ 259.000
	Construct EB left turn lane	\$ 50,000
	Construct WB left turn lane	\$ 50,000
Total		\$ 1,627,000
Source:RK Engineering Group, Inc. 200Notes:SB = SouthboundWB = WestboundNB = NorthboundEB = Eastbound	)2.	

The above revisions do not substantially alter the conclusions presented in Section 5.3.5 because Mitigation Measure TT-8 still identifies that the applicant will provide funds in accordance with the City's Transportation Development Fee and the intersections that require improvements are those shown on Table 5.3-10 in the Draft EIR.

#### E. Jonathan J. Mott, Parker & Covert LLP

E1. This comment regarding funding for new schools is noted. As stated in Mitigation Measure S-1 on page 5.8-8 of the Draft EIR, the project applicant will be required to pay developer impact fees in accordance with the Etiwanda School District approved impact fees. The State Legislature has determined through state bills that payment of school impact fees is adequate mitigation for new residential project such as Tentative Tract Map Number 16072.

#### F. Steve Dunivin, Technical Supervisor, The Gas Company

F1. This comment regarding the Southern California Gas Company's ability to provide gas service to the project without any significant impact on the environment is noted. No further response is required.

#### G. James Quisimo, South Coast Air Quality Management District

G1. This comment regarding the use of new air quality models is noted. Please note that the air quality analysis was prepared in the year 2002 prior to the approval of the new air models. This analysis was completed after the Notice of Preparation was sent out for public review on September 11, 2002. To understand the modifications that could occur with the new air models, the air quality emissions were inputted into the new models (EMFAC2002 and URBEMIS2002).

The model runs are provided in Attachment A. These runs show that no new significant carbon monoxide (CO) hotspots impacts or criteria pollutant impacts would occur with the implementation of the project compared to the evaluation of air quality impacts with the previous versions of the air models presented in Section 5.4 in the Draft EIR. Therefore, the air quality findings present in the Draft EIR adequately identifies the air emissions impacts that would occur with the development of the proposed project.

- G2. This comment regarding the use of a protocol Caltrans analysis is noted. Although not required to use such a protocol for non-Caltrans project, the air quality analysis was re-evaluated using the Caltrans protocol to understand if the level of impacts identified in the Draft EIR would increase. As shown in Attachment A, the reevaluation did not identify any new significant impacts that were not already addressed in the Draft EIR. Therefore, the findings presented in the Draft EIR adequately identifies the impacts that would occur with the implementation of the proposed project.
- G3. The emissions rate used from the health risk assessment for the back-up diesel fueled generator at the Rancho Cucamonga County Water District Plant is 0.4 grams per brake horsepower hour as found in the SCAQMD rules for Best Available Control Technology (BACT). However, the standby generator is test run for 15-minutes one day a week. The emissions factor in grams per second used in the Screen3 model reflects the fact that the 600-horsepower generator is running for only 900 seconds per day on the day that it is tested.
- G4. State CEQA Guidelines Section 15064 (i)(3) addresses evaluation of cumulative effects. For an impact involving a resource that is addressed by an approved air quality management plan or mitigation program, the CEQA Guidelines provide that a lead agency may determine that a project's incremental contribution is not cumulatively considerable if the project complies with the adopted plan or program. As noted in the Draft EIR, the cumulative analysis analyzed the conformity of the proposed project with the adopted Air Quality Management Plan (AQMP) for the South Coast Air Basin and concluded that the proposed project did not comply with the AQMP and was, therefore, cumulatively significant to air quality resources. An analysis using the list approach that included the Tracy Development as requested by SCAQMD would come to the same conclusion and is not necessary.
- G5. Please see response to comment G1 regarding the use of the new updated URBEMIS2002 model.

### H. Kathleen Rollings-McDonald, Executive Director, Local Agency Formation Commission

- H1. The project applicant anticipates that the temporary onsite detention basins will be maintained by a special landscape district or a homeowners association.
- H2. This comment regarding the current City boundary west and northwest of the project site is noted. An additional area northwest of the project site and north of the Edison easement is currently within the City of Rancho Cucamonga. This modification to Exhibit 3-1 is hereby incorporated into the Draft EIR. This revision does not affect the findings provided in the Draft EIR.
- H3. In accordance with Mitigation Measure B-1 on page 5.2-29 in the Draft EIR, the project applicant will be required to obtain land within or near the North Etiwanda Open Space and Habitat Preservation Program (NEOSHPP) that support RAFFS habitat. If the applicant can not obtain the land, the applicant will pay an offsite mitigation cost to a City-approved agency to purchase and manage mitigation lands. The project site is not included within lands designated for the NEOSHPP, therefore, the implementation of the proposed project will not adversely impact the program.
- H4. This comment regarding the City's existing police protection contract is noted. The project site is currently within the unincorporated area and served by the Sheriff. There is not an existing contract between the City and the Sheriff to serve the project site. This information does not alter any findings in the Draft EIR.
- H5. The specific financial arrangement between the City and the State Department of Forestry for future wildland fires is not known at this time. This financial arrangement does not result in any new environmental impacts associated with the project.

#### I. Laura J. Simonek, Manager, Environmental Planning Team, Metropolitan Water District of Southern California

- I1. Please see response to comment C2 regarding the Metropolitan Water District (MWD) easement and existing pipeline. The width of the easement is 85 feet. The third sentence on page 3-10 is revised as follows:
  - Delete: "...includes improvements to the adjacent 65-foot wide Metropolitan Water District (MWD) easement."
  - Add: "...includes improvements to the adjacent 85-foot wide Metropolitan Water District (MWD) easement

#### J. Craig Sherman, Spirit of the Sage (Public Comment)

J1. Comment: Mr. Sherman was concerned that the public hearing to receive comments on the Draft EIR was too close to the time that the document was distributed for public review.

Response: This comment regarding the timing of the City of Rancho Cucamonga Planning Commission hearing on the Draft EIR is noted. The provision of a public hearing to receive comments on a Draft EIR is not a requirement of CEQA; however, the City has provided an additional opportunity to provide comments, and has provided an extended comment period due to anticipated office closures for Christmas and New Year's Day holidays.

J2. Comment: Mr. Sherman felt that the mitigation ratio for the Riversidean Alluvial Fan Sage Scrub (RAFSS) should be higher than the recommended ratio of 1:1.

Response: The mitigation ratio of 1:1 was recommended for the affected RAFSS habitat because this ratio is consistent with the mitigation ratio agreed by the California Department of Fish and Game on other projects in the project vicinity.

J3. Comment: Mr. Sherman asked why the Holland Classification was not used in identifying plant communities onsite.

Response: Two plant community identification systems were used for the proposed project. However, the Holland Classification system was used to determine impacts and mitigation measures. The plant communities classified with the Holland system is shown in Exhibit 5.2-2 in the Draft EIR.

J4. Comment: Mr. Sherman requested that the loss of California Black Walnuts and Plumber's Mariposa Lily should be mitigated.

Response: Mitigation Measure B-6 identifies the need to replace "heritage trees." The California Black walnut is considered a "heritage tree"; therefore these trees will be mitigated at a 1:1 ratio.

Mitigation Measure B-7 in the Draft EIR includes a re-evaluation of Plumber's Mariposa Lily. If found, the number and location will be identified and the resource agencies will be notified for consultation and possible collection and relocation.

J5. Comment: Mr. Sherman was concerned that public safety impacts such as landslides and flooding were not addressed.

Response: Landslides and flooding issues were addressed in Section 5.1 (Geology and Soils) and Section 1.3 (Hydrology and Water Quality), respectively.

J6. Comment: Mr. Sherman was concerned that the Alternatives that were evaluated were considered not feasible. He questioned what level of economic return was considered feasible.

Response: Economic feasibility was not reviewed as part of the alternative analysis. The term feasibility related to whether the alternatives could feasibly attain most of the basic objectives of the project while avoiding or substantially lessen the

significant effects of the project. The alternatives that were selected were those that attempt tried to substantially lessen a significant impact. These alternatives resulted in not meeting the basic objectives of the proposed project.

J7. Comment: Mr. Sherman was concerned that a portion of the project was not consistent with the density set forth in the Etiwanda North Specific Plan (ENSP).

Response: The project site has a land use designation of Low Residential (2-4 dwelling units per acre) on the southern portion of the site, and Very Low Residential (0.1 to 2 dwelling units per acre) on the northern portion of the site; the City Planner determined that the overall project density of 2.4 dwelling units per acre (as averaged over the entire project) was consistent with the land use goals of the Etiwanda North Specific Plan.

J8. Comment: Mr. Sherman requested that the Development Agreement be made available to the public.

Response: The Development Agreement is currently being prepared by the City of Rancho Cucamonga. For the City to approve the Development Agreement, the environmental impacts associated with the implementation of the Development Agreement is required to be consistent with the environmental impacts addressed in the EIR.



### Finance, Audit, Insurance, & Real Property Committee

City of Rancho Cucamonga Road Easement

Item 7-10 January 9, 2024 Overview of the Easement Conveyance

# Subject

To grant a permanent easement to the city of Rancho Cucamonga for public road purposes on Metropolitan fee-owned property in the city of Rancho Cucamonga

## Purpose

• The road improvements are being constructed to accommodate a residential development located just north of the Rialto Pipeline.

# **Distribution** System Map



### General Location Map



# Site Map



Key Provisions

- Compatible use with prior rights provisions for Metropolitan.
- City of Rancho Cucamonga is responsible for the construction, operation, and maintenance of the public road and related facilities and for indemnifying Metropolitan.
- All plans shall be reviewed and approved by Metropolitan before the commencement of work.
- Metropolitan will receive the fair market value for the proposed easement of \$1,361,000 and a one-time processing fee of \$8,500.

Board Options

# Option No. 1

- Review and consider the Final Environmental Impact Report certified by the city of Rancho Cucamonga and authorize the General Manager to grant a permanent easement to the city of Rancho Cucamonga for public road and trail purposes Option No. 2
- Do not approve the permanent easement.

## Board Options

# Staff Recommendation

Option No. 1






# Finance, Audit, Insurance, and Real Property Committee Business Continuity Program Update

Item 7a January 9, 2024 Item 6a Update on Business Continuity Program Subject Business Continuity Program Update

Purpose

- 1. Provide the Board with an update on Metropolitan's Business Continuity Program
- 2. Share accomplishments and work in progress

Next Steps

Continue to provide regular updates to the Board on Business Continuity Program activities.

# Agenda

- Disaster phases and relationships
- Emergency Management organization
- Business Continuity Management program
  - Objectives
  - Program governance
  - Lifecycle
  - Key Accomplishments
  - Business process examples
  - Roadmap

### **Disaster Phases and Relationships**



### **Emergency Management Organization**



Finance, Audit, Insurance, and Real Property Committee



# Objectives

- Build a culture of resiliency
  - Ensure mission continuity
  - Create awareness
  - Build and foster relationships
  - Increase collaboration

## Program Governance

- Reports to the Finance Group Manager
- Business continuity steering committee
  - Serves as an advisory and decision-making group
  - Ensure audit and policy compliance
  - Set planning priorities to guide the program
  - Meets on a quarterly basis







# Key Accomplishments

- 31 Business continuity plans developed
  - 110 critical business processes identified
- Fusion Risk Management system used to maintain plans and data
- SharePoint site developed for plan access
- Special focus on cybersecurity impacts for plan maintenance and testing

### **Business Process Examples**

Recovery Time Objective	Process
≤ 4 hours	Water system operations
	Fleet vehicles and equipment management
≤ 8 hours	Security services
	Internal and external communications
≤ 1 day	Liquidity management
	IT systems and network security administration
≤ 2 days	Payroll processing
	Fabrication, manufacturing & repair of pipe and mechanical equipment
≤ 3 days	Customer support (help desk)
≤ 4 days	Mailing services
	Purchasing
≤ 7 days	Manage warehouse inventories
	Support staffing needs
≤ 14 days	Construction management
	Water quality reporting
≤ 21 days	Construction contracts administration
≤ 30 days	Financial reporting ltem 6a Slide 10 1306

# Roadmap

- Increase training for planning coordinators
- Conduct employee workshops on business continuity and alternate ways to access key systems
- Build out the SharePoint site to ensure availability and accessibility of plans
- Conduct tabletop exercises



#### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

**Annual Comprehensive Financial Report** For the Fiscal Year Ended June 30, 2023 and 2022



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### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

### **Annual Comprehensive Financial Report**

### For the Fiscal Years Ended June 30, 2023 and 2022

Prepared by:

Office of the Assistant General Manager, Finance and Administration

#### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

#### Annual Comprehensive Financial Report For the Fiscal Years Ended June 30, 2023 and 2022

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Introductory Section

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THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

November 17, 2023

To the Board of Directors of The Metropolitan Water District of Southern California:

We are pleased to present the Annual Comprehensive Financial Report for The Metropolitan Water District of Southern California (Metropolitan) for the fiscal years ended June 30, 2023 and 2022.

Management assumes full responsibility for the completeness and reliability of the information contained in this report, based upon a comprehensive framework of internal control that it has established for this purpose. Because the cost of internal control should not exceed anticipated benefits, the objective is to provide reasonable, rather than absolute, assurance that the basic financial statements are free of any material misstatements.

Macias Gini & O'Connell LLP, an independent public accounting firm, has issued an unmodified opinion on Metropolitan's basic financial statements for the fiscal year ended June 30, 2023. An unmodified opinion was also issued for the fiscal year ended June 30, 2022, by KPMG LLP, an independent public accounting firm. The independent auditors' report is located at the front of the financial section of this report.

Management's discussion and analysis (MD&A) immediately follows the independent auditors' report and provides a narrative introduction, overview, and analysis of the basic financial statements. The MD&A complements this letter of transmittal and should be read in conjunction with it.

#### Profile of Metropolitan

Metropolitan is a public agency and a quasi-municipal corporation, which was created by an act of the state Legislature in 1928. Metropolitan's primary purpose is to provide a supplemental supply of water for domestic and municipal uses and purposes at wholesale rates to its member public agencies. Most member agencies have other sources of water. Metropolitan is comprised of 26 member agencies consisting of 14 cities, 11 municipal water districts, and one county water authority, which collectively provide services in more than 300 cities and unincorporated communities. Its service area spans some 5,200 square miles, and includes all or portions of the six counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura. Metropolitan has historically provided between 40 and 60 percent of the water used by nearly 19 million Southern Californians who reside within its service area. Metropolitan imports water from two principal sources, Northern California, via the Edmund G. Brown California Aqueduct of the State Water Project owned by the State of California and the Colorado River, via the Colorado River Aqueduct (CRA) owned by Metropolitan.

Metropolitan is governed by a 38-member Board of Directors (Board), with each member agency having at least one representative on the Board. Representation and voting rights are based upon the assessed valuation of real property within the jurisdictional boundary of each member agency. The Board elects the Chair and Secretary, and the Vice Chairs are appointed by the Chair.

Metropolitan's biennial budget for fiscal year 2023-24 included 1,929 regular full time positions with approximately 1,776 positions filled at fiscal year ended June 30, 2023, and the remaining positions under recruitment or vacant. Employees are represented by the American Federation of State, County and Municipal Employees, Locals 1001 and 1902, the Association of Confidential Employees, and the Supervisors Association of Metropolitan. Metropolitan is an equal opportunity employer and encourages diversity in contracting and in the workforces of Metropolitan contractors.

#### **Financial Policies and Highlights**

Metropolitan has a comprehensive set of financial policies. These policies set forth guidelines to maintain control and accountability over revenue and expenses, maintain a reasonable balance between debt and assets in providing funding for capital assets, and ensure proper appropriation of reserves and restricted funds.

#### Rate Stabilization

Metropolitan's reserve policy provides for a minimum reserve requirement and target amount of unrestricted reserves at June 30 of each year. The minimum reserve requirement at June 30 of each year is equal to the portion of fixed costs estimated to be recovered by water revenues for the 18 months beginning with the immediately succeeding July. Funds representing the minimum reserve requirement are held in the Revenue Remainder Fund. Any funds in excess of the minimum reserve requirement are held in the Water Rate Stabilization Fund. The target amount of unrestricted reserves is equal to the portion of the fixed costs estimated to be recovered by water revenues during the two years immediately following the 18-month period used to calculate the minimum reserve requirement. Funds in excess of the target amount are to be utilized for capital expenditures in lieu of the issuance of additional debt, or for the redemption, defeasance or purchase of outstanding bonds or commercial paper as determined by the Board. Provided that the fixed charge coverage ratio is at or above 1.2, amounts in the Water Rate Stabilization Fund may be expended for any lawful purpose of Metropolitan, as determined by the Board.

#### Investment

Annually, the Board adopts an investment policy that is in compliance with the California Government Code, Sections 53600 et seq. The investment of idle funds is delegated by the Board to Metropolitan's Treasurer who assumes full responsibility for the transactions of the investment program, which includes the investment of bond proceeds and debt service reserves. Metropolitan's investments are in compliance with the adopted investment policy. Refer to Note 3 in the Notes to the Basic Financial Statements for detailed investment information.

#### Ad Valorem Tax

In addition to water revenues, Metropolitan is expressly empowered under the Metropolitan Water District Act to levy and collect taxes on all taxable property within its boundaries for the purpose of carrying on its operations and paying its obligations. As a result of legislation enacted in 1984, tax levies beginning in fiscal year 1990-91, other than annexation taxes, are limited to the amount needed to pay debt service on Metropolitan's general obligation bonds and Metropolitan's proportionate share of state general obligation bond debt service under the State Water Contract. However, under the terms of the 1984 legislation, the Board may, following a public hearing, suspend this particular restriction upon a finding that doing so is essential to Metropolitan's fiscal integrity. The Board made such a finding for fiscal years ended June 30, 2014 through 2022 and in March 2022 extended its applicability to fiscal years at the rate levied during fiscal year ended June 30, 2013 to pay a portion of State Water Contract costs other than general obligation debt service.

#### **Budget and Rates**

Metropolitan's budget system incorporates features of program budgeting, management by objectives, and performance reporting, which provides for funding, analysis, review, and control. Operating budgets are prepared by each group and department biennially. Each program and its required resources are reviewed by management and, upon acceptance, are incorporated into the overall budget for approval by the Board. Costs are maintained by project and activity, and expenditures are controlled by Board-approved appropriations.

The adopted biennial budget for fiscal years 2022-23 and 2023-24 meets the fixed charge coverage target, makes progress towards meeting the revenue bond coverage target, provides increased funding from revenues for the Capital Investment Plan, and promotes the long-term fiscal sustainability goals of Metropolitan. The total budgets for fiscal years 2022-23 and 2023-24 were \$2.14 billion and \$2.25 billion, respectively. The adopted biennial budget includes an overall water rates and charges increase of 5.0% effective January 1, 2023 and an additional 5.0% on January 1, 2024.

Each month, variances between budget estimates and actual receipts and expenditures are identified and evaluated. This review is performed as one of several control measures to assure progress in meeting Metropolitan's goals and program objectives.

Metropolitan's budget is prepared and monitored on a cash basis. Cash basis accounting recognizes revenues when received and expenses when paid. Under accrual accounting, revenues are recorded when earned and expenses are recorded at the time liabilities are incurred, regardless of the timing of related cash flows.

#### Metropolitan's Economic Condition

#### Local Economy

Metropolitan's service area has an economic base that is diversified and wellpositioned to participate in U.S. and world economic growth over the next ten years. In 2021, the economy of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties (the "Six County Area") was larger than all but eleven nations of the world, ranking between the Russian Federation and Brazil with an estimated gross domestic product ("GDP") of \$1.664 trillion. In 2022, the major sectors of the economy providing employment in the Six County Area were education and health services, professional and business services, which include architecture, design, computer, research and development, advertising, legal, accounting, and internet-related and management services; government, leisure and hospitality, retail trade and manufacturing. Transportation, warehouse and utilities, educational and health services, professional and business services, information, and construction have shown the largest job growth since 2019. International trade has been a leading growth sector in the Six County Area with Los Angeles and Long Beach ports being the nation's leading port complex in terms of trade volumes reaching record levels in 2021. This growth supports jobs and economic activity in the transportation, wholesale trade and warehousing industries as the Six County Area is a gateway for U.S. trade with Pacific Rim countries.

The Six County Area had an employed labor force of approximately 9.9 million through April 2023, the most recent date that employment data is available. The Six County Area had 21.7 million residents in 2022, approximately 56 percent of the State's population. The population grew by approximately 1.7 million residents between 2000 and 2010 and another 0.9 million between 2010 and 2021. In 2021 and 2022 population growth was negative for the Six County Area as immigration fell, deaths increased from the COVID pandemic, and outmigration increased.

#### Long-term Financial Planning

Metropolitan currently has several major construction projects underway. These projects primarily involve infrastructure and system reliability, either as upgrades to existing capital assets or replacements and refurbishments of existing facilities, to ensure reliability as well as enhance operational efficiency and flexibility, and comply with water quality regulations. As set forth in the adopted biennial budget for fiscal years 2022-23 and 2023-24, Metropolitan's capital investment plan for the fiscal years ending June 30, 2024 through 2028 totals approximately \$2.4 billion.

Metropolitan's capital investment plan is regularly reviewed and updated. Implementation and construction of specific elements of the program are subject to Board approval, and the amount and timing of borrowings will depend upon, among other factors, status of construction activity and water demands within Metropolitan's service area. Major projects in the capital investment plan are highlighted below.

Funding of the capital investment plan is accomplished with external and internal resources. The Board has adopted an internal funding objective to fund 45 percent of capital program expenditures. The amount of internal funding is determined by the Board as part of the biennial budget process. The remainder of capital program expenditures is funded primarily through the issuance of water revenue bonds payable from net operating revenues. Additional information on Metropolitan's capital investment plan can be found in Note 11(f) of the Notes to the Basic Financial Statements.

#### Highlights of the Capital Investment Plan

*Colorado* River Aqueduct Facilities. Deliveries through the CRA began in 1941. Through annual inspections and maintenance activities, the performance and reliability of the various components of the CRA are regularly evaluated. Projects under the CRA facilities program are designed to replace or refurbish facilities and components on the CRA system in order to reliably convey water from the Colorado River to Southern California.

Distribution System - Prestressed Concrete Cylinder Pipe. Metropolitan's distribution system is comprised of approximately 830 miles of pipelines ranging in diameter from 30 inches to over 200 inches. There are 163 miles of the distribution system that is made up of prestressed concrete cylinder pipe (PCCP). In response to PCCP failures experienced by several water agencies, Metropolitan initiated the PCCP Assessment Program in December 1996 to evaluate the condition of Metropolitan's PCCP lines and investigate inspection and refurbishment methods. As part of this program, Metropolitan made improvements to several sections of PCCP. Rather than continue to make spot repairs to pipe segments, Metropolitan has initiated a long-term capital program to rehabilitate approximately 100 miles of PCCP in five pipelines by relining with a welded steel liner. Significant projects over the next several years include relining of portions of Second Lower and Sepulveda Feeders.

*Distribution System* - Refurbishments and Improvements. In addition to the long-term program to rehabilitate Metropolitan's PCCP lines, several other components of the distribution system, including dams and reservoirs, are being refurbished and/or improved. Significant projects over the next several years include retrofitting of the distribution system to improve resiliency against earthquake; rehabilitation of reservoirs; relining of pipelines; and refurbishment of pump stations, pressure control structures, hydroelectric plants, and service connections.

Drought Response and System Flexibility. In response to the ongoing historic statewide drought, several drought response projects that address decreasing water supplies both in specific parts of Metropolitan's service area and across the entire District have been added to the CIP. This is in addition to the ongoing projects to increase the system flexibility of Metropolitan's water supply and delivery infrastructure to meet service demands. Metropolitan continues investigating capital improvements that mitigate drought impacts and more projects are expected to be developed in the coming years. Some of the projects commenced in fiscal year 2021-22. Significant projects in this category include Inland Feeder-Rialto Pipeline Intertie, Wadsworth Pump Discharge to Eastside Pipeline Bypass, Badlands Tunnel Surge Tank Facility,

Sepulveda Feeder Pump Stations, Sepulveda Feeder West Area Water Supply Reliability Pipeline Improvements, Sepulveda Canyon PCS to Venice PCS Valve Replacements and Perris Valley Pipeline Tunnels.

*System Reliability.* System Reliability projects are implemented at facilities throughout Metropolitan's system to utilize new processes or technologies, to improve safety, or to increase overall reliability. Significant projects in this category include seismic strengthening of Metropolitan's headquarters building, construction or improvement of operations support facilities, security system enhancements, control system upgrades, and information technology infrastructure projects.

Water Treatment Plant Improvements. The F.E. Weymouth Treatment Plant, which was placed into service in 1941, is Metropolitan's oldest water treatment facility. Four more water treatment plants were constructed throughout Metropolitan's service area with Henry J. Mills Water Treatment Plant being the newest water treatment facility, which was place into service in 1978. These plants have been subsequently expanded since their original construction. Metropolitan has completed numerous upgrades and refurbishments/replacement projects to maintain the plants' reliability and improve efficiency. Significant projects over the next several years include refurbishment of settling basins and strengthening of inlet channels at the Weymouth plant, rehabilitation of filtration system at the Robert B. Diemer Water Treatment Plant, second stage of electrical upgrades at the Mills plant, ozonation system upgrade at the Joseph Jensen Water Treatment Plant, and chemical system rehabilitation at the Robert A. Skinner Plant.

#### **Major Initiatives**

Metropolitan faces a number of challenges in providing adequate, reliable, and highquality supplemental water supplies for Southern California. These challenges include population growth in Metropolitan's service area, increased competition for low-cost water supplies, variable weather conditions, including extended drought periods, increased environmental regulations, and climate change. Metropolitan's resources and strategies for meeting these long-term challenges are identified in its Integrated Water Resources Plan (IRP).

The Board-adopted IRP was developed by Metropolitan, its member agencies, subagencies, and groundwater basin managers with the purpose of developing a portfolio of preferred resources to meet the water supply reliability and water quality needs for the service area in a cost-effective and environmentally sound manner. On January 12, 2016, the IRP was updated (2015 IRP Update) enabling Metropolitan and its member agencies to manage future challenges and changes in California's water conditions and to balance investments with water reliability benefits. The 2015 IRP Update seeks to provide regional reliability by stabilizing Metropolitan's traditional imported water supplies and continuing to develop additional conservation programs and local resources. It also advances long-term planning for potential future contingency resources, such as storm water capture and seawater desalination. In February 2020 Metropolitan began the new process for the development of the 2020 IRP. The 2020 IRP is being undertaken in two phases the first phase is Regional Needs Assessment, which was adopted by the Board in April 2022. This phase presents key technical finding and examines the effectiveness of generalized portfolio categories. The second phase is Climate Adaptation Master Plan for Water (CAMP4W), which will translate the high-level portfolio analysis from Phase 1 into specific policies, programs, and projects to address the findings and mitigate potential shortages. Considering the acceleration of climate impacts and cascading effects of simultaneous and serial climate events, Metropolitan initiated the CAMP4W to more explicitly assess and incorporate climate vulnerabilities and risks into its resource plans.

Since 2010, Metropolitan has been evaluating the potential and feasibility of implementing a regional recycled water program, now referred to as Pure Water Southern California (PWSC), (previously identified as the Regional Recycled Water Program or RRWP). Chronic drought conditions have resulted in significant reductions in local surface supplies and groundwater production and have increased the need for recharge supplies to groundwater and surface water reservoirs to improve their sustainable yields and operating integrity. In 2015, Metropolitan executed an agreement with the Sanitation Districts of Los Angeles County (LACSD) to implement a demonstration project and to establish a framework of terms and conditions of the PWSC. The objectives of the PWSC are to enable the potential reuse of up to 150 million gallons per day (mgd) of cleaned wastewater effluent from LACSD's Joint Water Pollution Control Plant. Purified water from a new advanced treatment facility could be delivered through pipelines to the region's groundwater basins, industrial facilities, and two of Metropolitan's treatment plants. Construction of a 0.5-mgd advanced water treatment demonstration plant was approved in 2017 and was completed in September 2019. Testing and operation of the plant began in October 2019 to confirm treatment costs and provide the basis for regulatory approval of the proposed treatment process. The first testing phase was completed in 2021 and has been followed by secondary MBR testing which will be completed in 2023. The testing will form the basis for the design, operation, and optimization of the advanced treatment plant, and will inform Metropolitan's Board decision whether to move forward with, a full-scale program. If implemented, the PWSC will have the flexibility to produce purified water suitable for Direct Potable Reuse ("DPR") through raw water augmentation at two of Metropolitan's treatment plants. The SWRCB Division of Drinking Water ("DDW") is in the process of developing regulations for DPR in California, with the statutorily-mandated deadline of December 31, 2023. On November 10, 2020, Metropolitan's Board voted to begin environmental planning work on the PWSC. The Notice of Preparation was published on September 2022 with scoping meetings held in October 2022. The draft EIR is scheduled for completion in the first quarter of 2023 with approval anticipated in the fall/winter of 2024. Metropolitan has been active in pursuing partnerships with other agencies. In November 2020, Metropolitan and LACSD executed an amendment to the existing collaboration agreement to contribute up to approximately \$4.4 million for the environmental planning phase costs. In December 2020, Metropolitan and Southern Nevada Water Authority (SNWA) executed a funding agreement under which SNWA will contribute up to \$6.0 million for the environmental planning costs for the PWSC. In the event either SNWA or Metropolitan decides not to proceed or participate in the PWSC in the future, SNWA's financial contribution to the PWSC's environmental planning would be returned by Metropolitan. In fiscal year 2022, Metropolitan signed an agreement with the Central Arizona Project and Arizona Department of Water for a \$6.0 million financial contribution similar to the SNWA agreement. Overall, Metroplitan has ten letters of interest representing 15 different agencies. In addition, Metropolitan was awarded

\$80 million in grant funding for the PWSC from the State of California. Environmental planning phase work commenced in fiscal year 2021 and is expected to continue through fiscal year 2025.

The Sites Reservoir is a proposed reservoir project of approximately 1.3 million to 1.5 million acre-feet, being analyzed by the Sites Reservoir Authority, to be located in Colusa County. The water stored in the proposed project would be diverted from the Sacramento River. As currently proposed, the Sites Reservoir project would have dedicated water storage and yield that would be used for fishery enhancement, water quality, and other environmental purposes. The proposed project could also provide additional water supply that could be used for dry-year benefits. Metropolitan is a member of the Sites Reservoir Committee, a group of 30 agencies that are participating in certain planning activities in connection with the proposed development of the project, including the development of environmental planning documents, a federal feasibility report and project permitting. In October 2020 and April 2022, Metropolitan's Board approved \$5.0 million and \$20.0 million, respectively, in funding for Metropolitan's continued participation in such planning activities through the end of 2024. Metropolitan's agreement to participate in funding of this phase of project development activities does not commit Metropolitan to participate in any actual reservoir project that may be undertaken in the future.

On April 29, 2019, Governor Newsom issued an executive order directing identified State agencies to develop a comprehensive statewide strategy to build a climate-resilient water system, directing the State agencies to inventory and assess the current planning for modernizing conveyance through the Bay-Delta with a new single tunnel project. Consistent with the Governor's direction, in January 2020, the Department of Water Resources (DWR) commenced a formal environmental review process under CEQA for a proposed single tunnel Delta Conveyance Project. The new conveyance facilities being reviewed would include intake structures on the Sacramento River, with a total capacity of 6,000 cfs, and a single tunnel to convey water to the existing pumping plants in the south Delta. On July 27, 2022, DWR released the Delta Conveyance Draft EIR for public and agency comment under CEQA. The proposed project would convey water to a new pumping facility in the south Delta that would lift water into the existing Bethany Reservoir, part of the California Aqueduct. The public comment period closed on December 16, 2022, and DWR is now preparing responses to comments. Planning, environmental review and conceptual design work by DWR are expected to be completed in the 2023-2024 timeframe. On December 8, 2020, the Board voted unanimously to fund its share of the environmental planning and pre-construction costs of the Delta Conveyance Project which is estimated at 47.2 percent or \$160.8 million for calendar year 2021 through 2024.

Metropolitan will continue to add storage and conservation resources to its diverse water supply portfolio as well as focus on water quality improvements. In addition, Metropolitan will work to stabilize its traditional imported water supplies. Commitment of the resources to achieve these goals will enable Metropolitan to meet its member agencies' and the region's water reliability and quality needs in a fiscally responsible manner.

#### Awards and Acknowledgments

The Government Finance Officers Association (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to Metropolitan for its annual comprehensive financial report (ACFR) for the fiscal year ended June 30, 2022. This was the twenty-seventh consecutive year that Metropolitan has received this prestigious award. In order to be awarded a Certificate of Achievement, Metropolitan published an easily readable and efficiently organized ACFR. This report satisfies both Generally Accepted Accounting Principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current ACFR continues to meet the Certificate of Achievement Program's requirements and we are submitting it to the GFOA to determine its eligibility for another Certificate of Achievement.

The preparation of this report would not have been possible without the efficient and dedicated services of the entire staff of the Office of the Assistant General Manager, Finance and Administration. I would like to express my appreciation to all staff that assisted and contributed to the preparation of this report. Credit must also be given to the General Manager and the Board for their unfailing support for maintaining the highest standards of professionalism in the management of Metropolitan's finances. Any questions regarding the content of this report may be directed to the Controller, Bernadette Robertson, at (213) 217-7547.

Respectfully,

Kastono Kerain'

Katano Kasaine Assistant General Manager/Chief Financial Officer



Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

### The Metropolitan Water District of Southern California

For its Annual Comprehensive Financial Report For the Fiscal Year Ended

June 30, 2022

Christophen P. Morrill

Executive Director/CEO





#### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Officers of the Board of Directors (As of June 30, 2023)

Chair

ADAN ORTEGA

Vice Chair NANCY SUTLEY Vice Chair

Vice Chair MICHAEL CAMACHO S. GAIL GOLDBERG

Vice Chair JUDY ABDO

Secretary LOIS FONG-SAKAI

#### **REPRESENTATIVES OF MEMBER PUBLIC AGENCIES**

Anaheim STEPHEN J. FAESSEL

**Beverly Hills** BARRY D. PRESSMAN

Burbank MARSHA RAMOS

**Calleguas Municipal Water** District JACQUE MCMILLAN

Central Basin Municipal Water District JUAN GARZA ARTURO CHACON

> Compton TANA MCCOY

Eastern Municipal Water District JEFFREY D. ARMSTRONG

Foothill Municipal Water District RICHARD ATWATER

> Fullerton FRED JUNG

Glendale ARDY KASSAKHIAN Inland Empire Utilities Agency MICHAEL CAMACHO

Las Virgenes Minicipal Water District GLEN D. PETERSON

> Long Beach GLORIA CORDERO

Los Angeles HEATHER REPENNING MATT S. PETERSEN MIGUEL ANGEL LUNA NANCY SUTLEY TRACY QUINN

Municipal Water District of **Orange County** DENNIS ERDMAN LARRY D. DICK LINDA ACKERMAN KARL W. SECKEL

> Pasadena CYNTHIA KURTZ

San Diego County Water Authority S. GAIL GOLDBERG LOIS FONG-SAKAI C. MARTIN MILLER TIM T. SMITH

San Fernando ADAN ORTEGA

San Marino JOHN T. MORRIS

Santa Ana THAI VIET PHAN

> Santa Monica JUDY ABDO

Three Valleys Municipal Water District DAVID D. DE JESUS

Torrance RUSSELL LEFEVRE

Upper San Gabriel Valley **Municipal Water District** ANTHONY R. FELLOW

West Basin Municipal Water District DESI ALVAREZ GLORIA GRAY

Western Municipal Water **District of Riverside County** BRENDA DENNSTEDT

**Financial Section** 

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#### **Independent Auditor's Report**

To the Board of Directors The Metropolitan Water District of Southern California

#### **Report on the Audit of the Financial Statements**

#### **Opinions**

We have audited the financial statements of the business-type activities and fiduciary activities of the Metropolitan Water District of Southern California (Metropolitan), as of and for the year ended June 30, 2023, and the related notes to the financial statements, which collectively comprise Metropolitan's basic financial statements as listed in the table of contents.

In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the respective financial position of the business-type activities and the fiduciary activities of Metropolitan, as of June 30, 2023, and the respective changes in financial position and, where applicable, cash flows thereof for the year then ended in accordance with accounting principles generally accepted in the United States of America.

#### **Basis for Opinions**

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States (*Government Auditing Standards*). Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of Metropolitan and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

#### Other Matter - Prior Period Financial Statements

The basic financial statements of Metropolitan as of and for the year ended June 30, 2022, were audited by another auditor, who expressed unmodified opinions on those financial statements on October 31, 2022.

#### **Responsibilities of Management for the Financial Statements**

Metropolitan's management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about Metropolitan's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

#### Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinions. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS and Government Auditing Standards, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of Metropolitan's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about Metropolitan's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

#### **Required Supplementary Information**

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis and the pension and other postemployment benefits related schedules, collectively identified as required supplementary information in the table of contents, be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with GAAS, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

#### Supplementary Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise Metropolitan's basic financial statements. The supplementary information as listed in the table of contents is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with GAAS. In our opinion, the information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

#### **Other Information**

Management is responsible for the other information included in the annual comprehensive financial report. The other information comprises the introductory and statistical sections, but does not include the basic financial statements and our auditor's report thereon. Our opinions on the basic financial statements do not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audit of the basic financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the basic financial statements, or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

#### Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated November 17, 2023, on our consideration of Metropolitan's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and the results of that testing, and not to provide an opinion on the effectiveness of Metropolitan's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering Metropolitan's internal control over financial reporting and compliance.

Macias Gini É O'Connell LP

Los Angeles, California November 17, 2023
June 30, 2023 and 2022

The following discussion and analysis of The Metropolitan Water District of Southern California's (Metropolitan) financial performance provides an overview of the financial activities for the fiscal years ended June 30, 2023 and 2022. This discussion and analysis should be read in conjunction with the basic financial statements and accompanying notes, which follow this section.

## DESCRIPTION OF BASIC FINANCIAL STATEMENTS

Metropolitan operates as a utility enterprise and maintains its accounting records in accordance with United States generally accepted accounting principles (U.S. GAAP) for proprietary funds as prescribed by the Governmental Accounting Standards Board (GASB). The basic financial statements include statements of net position, statements of revenues, expenses and changes in net position, statements of cash flows, statements of fiduciary net position and statements of changes in fiduciary net position. The statements of net position include all of Metropolitan's assets, deferred outflows of resources, liabilities, and deferred inflows of resources, with the difference reported as net position, some of which is restricted in accordance with bond covenants or other commitments. The statements of revenues, expenses and changes in net position report all of Metropolitan's revenues and expenses during the periods indicated. The statements of cash flows show the amount of cash received and paid out for operating activities, as well as cash received from taxes, investment income, grants, and other funding sources and cash used for construction projects, State Water Project (SWP) costs and principal and interest payments on borrowed money. The statements of fiduciary net position include the assets and liabilities of fiduciary funds with the difference reported as fiduciary net position and the statements of changes in fiduciary net position include additions and deductions of fiduciary funds. The fiduciary fund activity is excluded from Metropolitan's balances reported in the statements of net position, statements of revenues, expenses and changes in net position and statements of cash flows.

During the fiscal year ended June 30, 2023, Metropolitan implemented GASB Statement No. 96 (GASB 96), *Subscription-Based Information Technology Arrangements*, which requires Metropolitan to recognize a subscription asset and liability for contracts which provide Metropolitan a right-to-use vendor-provided information technology. Fiscal year 2022 balances were adjusted as discussed in Note 1(u) of the basic financial statements. Fiscal year 2021 balances within this Management's Discussion and Analysis (MD&A) were not adjusted for the implementation of this GASB statement.

During the fiscal year ended June 30, 2022, Metropolitan implemented GASB Statement No. 87 (GASB 87), *Leases*, which requires Metropolitan to recognize leases receivable and deferred inflows of resources related to lease arrangements where Metropolitan is a lessor. Further, Metropolitan is required to recognize a lease liability and a lease asset for lease arrangements where Metropolitan is a lessee.

MANAGEMENT'S DISCUSSION AND ANALYSIS—UNAUDITED

(CONTINUED)

June 30, 2023 and 2022

# CONDENSED FINANCIAL INFORMATION

Condensed Schedule of Net Position

	June 30,					
		2023		2022		2021
(Dollars in millions)				As Adjusted Note 1u		
Assets and deferred outflows of resources						
Capital assets, net	\$	10,537.2	\$	10,512.4	\$	10,546.0
Other assets		2,520.9		2,409.6		2,336.1
Total assets		13,058.1		12,922.0		12,882.1
Deferred outflows of resources		309.4		149.6		167.3
Total assets and deferred outflows of resources		13,367.5		13,071.6		13,049.4
Liabilities and deferred inflows of resources						
Long-term liabilities, net of current portion		4,585.3		4,512.1		5,291.5
Other liabilities		1,172.0		724.6		494.0
Total liabilities		5,757.3		5,236.7		5,785.5
Deferred inflows of resources		159.7		377.7		69.1
Total liabilities and deferred inflows of resources		5,917.0		5,614.4		5,854.6
Net position						
Net investment in capital assets, including State Water Project costs		6,359.2		6,220.3		6,141.4
Restricted		616.8		573.5		532.7
Unrestricted		474.5		663.4		520.7
Total net position	\$	7,450.5	\$	7,457.2	\$	7,194.8

## **Capital Assets, Net**

Net capital assets include plant and equipment, participation rights, lease assets, subscription assets and construction work in progress, net of accumulated depreciation and amortization.

*Fiscal Year 2023 Compared to 2022.* At June 30, 2023, net capital assets totaled \$10.5 billion, or 78.8 percent of total assets and deferred outflows of resources, and were \$24.8 million higher than the prior year. The increase included \$288.9 million of construction spending, \$136.2 million net increase in participation rights in SWP, and a \$4.5 million increase in subscription and lease assets, offset by \$365.7 million of depreciation and amortization and \$39.1 million retirements of capital assets. See the capital assets section on pages 15-16 for additional information.

*Fiscal Year 2022 Compared to 2021.* At June 30, 2022, net capital assets totaled \$10.5 billion, or 80.4 percent of total assets and deferred outflows of resources, and were \$33.6 million lower than the prior year. The decrease included depreciation and amortization of \$374.1 million and \$15.1 million retirements of capital assets and write-off of construction in progress upon determination that no operating assets would result from the cost incurred, offset by Metropolitan's continued expenditures on the capital investment plan of \$209.0 million, a net increase of \$141.4 million in participation rights in SWP, and an increase of \$5.2 million in subscription and lease assets. See the capital assets section on pages 15-16 for additional information.

## **Other Assets**

Other assets include cash and investments, accounts receivable, inventories, and prepaid costs.

*Fiscal Year 2023 Compared to 2022.* At June 30, 2023, other assets totaled \$2.5 billion and were \$111.3 million higher than the prior year. The increase included \$74.5 million higher deposits, prepaid costs, and other due to \$46.0 million funding for the Delta Conveyance Project planning and pre-construction costs and \$18.8 million increased collateral requirement from California Independent System Operator to support Metropolitan's power trading agreement with Arizona Electric Power Cooperative, \$52.3 million higher cash and investments primarily due to \$80.0 million funds received from the State Water Resources Control Board (SWRCB) to support activities for the Pure Water Southern California program, and water inventory increased \$49.5 million due to higher per unit cost of water and 100.6 thousand acre feet (TAF) more water in storage. These increases were offset by \$69.6 million lower water receivables primarily due to 94.8 TAF lower water sold in May and June 2023 as compared to the same period in prior year.

*Fiscal Year 2022 Compared to 2021.* At June 30, 2022, other assets totaled \$2.4 billion and were \$73.5 million higher than the prior year. Cash and investments were \$61.5 million higher primarily due to higher water revenues. Inventories also increased \$28.3 million primarily due to higher per unit cost of water. These increases were offset by \$15.1 million lower deposits, prepaid costs, and other due to \$21.5 million lower prepaid water costs resulting from 180.3 TAF less water in storage and \$10.8 million of lower prepaid expenses, partially offset by \$25.0 million funding for the Delta Conveyance Project planning and pre-construction costs.

## **Deferred Outflows of Resources**

Deferred outflows of resources include deferred outflows related to loss on bond refundings, swap terminations, net pension liability, and net OPEB liability.

*Fiscal Year 2023 Compared to 2022.* At June 30, 2023, deferred outflows totaled \$309.4 million and were \$159.8 million higher than the prior year primarily due to \$149.1 million higher deferred outflows related to pension, which included \$100.6 million higher deferred outflows related to the net difference between projected and actual earnings on pension plan investments and \$48.2 million higher deferred outflows due to changes in assumptions. Also contributing to the increase was \$19.8 million higher deferred outflows related to OPEB due to \$30.2 million higher deferred outflows related to the net difference between projected and actual earnings on OPEB plan offset by \$9.2 million lower deferred outflows related to OPEB contributions subsequent to the measurement date. These increases were offset by \$7.1 million lower deferred loss on bond refundings due to higher interest rates, which resulted in gains on bond refundings.

*Fiscal Year 2022 Compared to 2021.* At June 30, 2022, deferred outflows totaled \$149.6 million and were \$17.7 million lower than the prior year. The decrease included \$12.1 million lower deferred outflows related to pension, which included \$13.1 million lower deferred outflows related to the net difference between projected and actual earnings on pension plan investments and \$6.2 million lower difference between expected and actual experience, offset by \$7.2 million higher deferred outflows related to pension contributions subsequent to the measurement date. Also contributing to the decrease was \$6.2 million lower deferred loss on bond refundings and \$1.9 million lower deferred loss on swap terminations, both of which were due to amortization. These decreases were offset by \$2.5 million higher deferred outflows related to OPEB due to \$4.8 million higher difference between

expected and actual experience and \$3.6 million higher deferred outflows related to OPEB contributions subsequent to the measurement date, offset by \$5.9 million lower deferred outflows related to the net difference between projected and actual earnings on OPEB plan investments.

## Long-term Liabilities, Net of Current Portion

Long-term liabilities, net of current portion includes long-term debt, long-term revolving notes, customer deposits and trust funds, leases, subscriptions, net pension liability, net OPEB liability, accrued compensated absences, workers' compensation and third party claims, fair value of interest rate swaps, and other long-term obligations.

*Fiscal Year 2023 Compared to 2022.* At June 30, 2023, long-term liabilities, net of current portion totaled \$4.6 billion and were \$73.2 million higher than the prior year. The increase included \$350.0 million higher net pension liability due to \$184.3 million higher interest on total pension liability, \$167.7 million less pension plan investment earnings, \$66.0 million change of assumptions, and \$44.1 million of service costs offset by \$99.4 million employer and employee contributions to the pension plan, plus \$14.1 million of differences between expected and actual experiences. Net OPEB liability was also \$62.4 million higher due to \$53.8 million lower investment income, \$28.8 million interest on the total OPEB liability, and \$10.1 million of service costs, offset by and \$30.6 million of employer contributions. These increases were offset by a \$335.4 million decrease in long-term debt, net of current portion. The decrease included \$363.0 million higher current portion of long-term debt as compared to prior year, \$139.9 million principal payments, \$51.1 million of bond refundings, as the new debt issued was less than the amount of debt refunded, \$35.6 million of principal paid by the Wells Fargo Revolving Credit Facility note issued in June 2022, and \$4.2 million decrease in premiums and discounts, offset by \$258.4 million of new debt issued to fund Metropolitan's capital programs. See other liabilities section on page 7 and long-term debt section on page 17 for additional information. In addition, fair value of interest rate swaps decreased by \$13.2 million due to higher interest rates as compared to prior year.

*Fiscal Year 2022 Compared to 2021.* At June 30, 2022, long-term liabilities, net of current portion totaled \$4.5 billion and were \$779.4 million lower than the prior year primarily due to a \$351.1 million decrease in long-term debt, net of current portion. The decrease included \$159.6 million higher current portion of long-term debt as compared to prior year, \$123.1 million principal payments, \$39.0 million decrease in premiums and discounts, and \$35.6 million of principal paid by the Royal Bank of Canada Short-Term Credit Facility (RBC) note issued in June 2021, offset by \$6.2 million of bond refundings, as the new debt issued was more than the amount of debt refunded. See other liabilities section on page 7 and long-term debt section on page 17 for additional information. In addition, net pension liability was \$284.0 million lower due to \$417.4 million of pension plan investment earnings and \$91.9 million employer and employee contributions to the pension plan, offset by \$181.2 million lower due to \$85.2 million of net investment income, \$48.4 million change of assumptions, and \$27.0 million lower due to \$85.2 million difference between expected and actual experience. Also contributing to the decrease in long-term debt, net of current portion was a \$29.8 million decrease in fair value of interest rate swaps due to higher interest rates as compared to prior year.

# **Other Liabilities**

Other liabilities represent current liabilities that are due within one year. Current liabilities include accounts payable, accrued liabilities, short-term revolving notes, current portion of leases and subscriptions, and the current portion of long-term liabilities.

*Fiscal Year 2023 Compared to 2022.* At June 30, 2023, other liabilities totaled \$1.2 billion and were \$447.4 million higher than the prior year. Current portion of long-term debt increased by \$363.0 million primarily due to the addition of \$271.8 million Special Variable Rate Water Revenue Refunding Bonds, 2020 Series B with a mandatory tender date of April 2, 2024. Also contributing to the increase in other liabilities was \$43.8 million higher accounts payable and accrued expenses, which included \$77.2 million increase in SWP costs variable charges resulting from higher water allocation and \$9.3 million higher water conservation expenses offset by \$46.0 million lower withdrawal from DWR's Flexible Storage Program compared to prior year. In addition, revolving notes increased \$20.8 million due to the issuance of \$38.4 million and \$18.0 million tax-exempt and taxable notes, respectively, to fund certain capital costs of the Antelope Valley East Kern High Desert Water Banking and conservation programs.

*Fiscal Year 2022 Compared to 2021.* At June 30, 2022, other liabilities totaled \$724.6 million and were \$230.6 million higher than the prior year. Current portion of long-term debt increased by \$159.6 million primarily due to the addition of \$78.9 million and \$80.0 million of Water Revenue Bonds, 2000 Series B-3 and 2017 Series A, respectively, which have a Standby Bond Purchase Agreement (SBPA) expiration of March 2023. Also contributing to the increase in other liabilities was \$62.4 million higher accounts payable and accrued expenses primarily due to \$45.1 million higher SWP costs which included \$20.9 million or 71.1 TAF withdrawal from DWR's Flexible Storage Program, \$15.7 million more variable charges due to higher per unit cost of water plus 42.6 TAF more water purchased in May and June of 2022 compared to the same months in the prior year. Also contributing to the increase in accounts payable and accrued expenses were \$8.5 million more SWP Operation and Maintenance, Power and Replacement (OMP&R) charges and \$7.2 million purchase of water for the YUBA Accord Transfer program.

## **Deferred Inflows of Resources**

Deferred inflows of resources represent deferred inflows related to the net pension liability, net OPEB liability, leases, bond refundings, and effective interest rate swaps.

*Fiscal Year 2023 Compared to 2022.* At June 30, 2023, deferred inflows of resources totaled \$159.7 million and were \$218.0 million lower than the prior year. The decrease included \$197.6 million of lower deferred inflows related to pension primarily due to \$207.9 million lower net difference between projected and actual earnings on pension plan investments, offset by \$10.3 million increase in differences between expected and actual experience. In addition, deferred inflows related to OPEB decreased \$65.9 million, which included \$45.6 million lower net difference between projected and actual earnings on OPEB plan investments, \$10.5 million lower changes of assumptions, and \$9.8 million lower differences between expected and actual experiences in deferred inflows of resources were offset by \$30.4 million higher deferred inflows related to gains on bond refundings and \$13.2 million higher effective swaps due to higher interest rates.

*Fiscal Year 2022 Compared to 2021.* At June 30, 2022, deferred inflows of resources totaled \$377.7 million and were \$308.6 million higher than the prior year primarily due to \$206.3 million million higher deferred inflows related to pension, which included \$207.9 million higher net difference between projected and actual earnings on pension plan

investments, offset by \$1.0 million lower changes of assumptions. Additionally, deferred inflows related to OPEB increased \$73.7 million, which included \$45.6 million higher net difference between projected and actual earnings on OPEB plan investments and \$37.9 million higher changes of assumptions, offset by \$9.8 million lower differences between expected and actual experience. Deferred inflows on effective swaps were also higher by \$29.8 million due to higher interest rates. These increases in deferred inflows of resources were offset by \$1.2 million lower deferred inflows related to leases due to amortization.

# Net Investment in Capital Assets, including State Water Project Costs

Net investment in capital assets, including State Water Project costs, include amounts expended for capital improvements, SWP and other intangible assets including participation rights in other facilities, lease assets, and subscription assets offset by accumulated depreciation and amortization, outstanding debt issued for these purposes as well as lease and subscription payables.

*Fiscal Year 2023 Compared to 2022.* At June 30, 2023, net investment in capital assets, including State Water Project costs totaled \$6.4 billion and was \$138.9 million higher than the prior year. This increase included \$114.1 million decrease in outstanding debt and related deferred inflows of resources and \$24.8 million net increase in capital assets. See discussions of these items in the capital assets and long-term debt sections on pages 15-16 and 17, respectively.

*Fiscal Year 2022 Compared to 2021.* At June 30, 2022, net investment in capital assets, including State Water Project costs totaled \$6.2 billion and was \$78.9 million higher than the prior year. This increase included \$112.5 million decrease in outstanding debt and related deferred outflows of resources, offset by \$33.6 million net decrease in capital assets. See discussions of these items in the capital assets and long-term debt sections on pages 15-16 and 17, respectively.

# **Restricted Net Position**

Restricted net position includes amounts restricted for debt service payments and operating expenses, both of which are required by bond covenants.

*Fiscal Year 2023 Compared to 2022.* At June 30, 2023, restricted net position totaled \$616.8 million which was \$43.3 million higher than fiscal year 2022 due to \$79.4 million restricted funds for the Pure Water Southern California program received in fiscal 2023 and \$10.6 million increase in restricted for operating expenses due to higher anticipated power costs in fiscal year 2024, offset by \$43.6 million of lower restricted for debt service due to lower principal and interest payment requirements in fiscal year 2024.

*Fiscal Year 2022 Compared to 2021.* At June 30, 2022, restricted net position totaled \$573.5 million which was \$40.8 million higher than fiscal year 2021 due to \$22.7 million increase in restricted for operating expenses due to higher anticipated power and water costs in fiscal year 2023 and \$14.3 million of higher restricted for debt service due to higher principal and interest payment requirements in fiscal year 2023.

# **Unrestricted Net Position**

Unrestricted net position consists of net position items that do not meet the definition of "restricted" or "net investment in capital assets, including State Water Project costs". Certain unrestricted net position items have been designated for purposes authorized by Metropolitan's Board of Directors (Board).

*Fiscal Year 2023 Compared to 2022.* Unrestricted net position of \$474.5 million decreased \$188.9 million from the prior year, which included \$138.9 million higher net investment in capital assets, including State Water Project costs, \$43.3 million higher restricted for debt service and operating expenses, and fiscal year 2023 negative changes in net position of \$6.7 million.

*Fiscal Year 2022 Compared to 2021.* Unrestricted net position of \$663.4 million increased \$142.7 million from the prior year, which included fiscal year 2022 positive changes in net position of \$262.4 million offset by \$78.9 million higher net investment in capital assets, including State Water Project costs and \$40.8 million higher restricted for debt service and operating expenses.

MANAGEMENT'S DISCUSSION AND ANALYSIS—UNAUDITED

(CONTINUED)

June 30, 2023 and 2022

# **CHANGES IN NET POSITION**

Condensed Schedule of Revenues, Expenses, and Changes in Net Position

	Fiscal Year Ended June 30,					
		2023	2022	2021		
			As Adjusted			
(Dollars in millions)		1.00(1.*	Note 1u	4 404 7		
Water revenues	\$	1,236.4 \$	1,515.1 \$	1,404.7		
Readiness-to-serve charges		147.0	135.0	133.0		
Capacity charge		37.2	37.0	31.7		
Power sales		5.7	7.7	19.0		
Operating revenues		1,426.3	1,694.8	1,588.4		
Taxes, net		189.5	168.1	160.6		
State funding for Pure Water Southern California program		80.0		—		
Investment income, net		35.0		4.1		
Gain on sale of plant assets		6.2	9.2	_		
Other		17.0	8.7	10.9		
Nonoperating revenues		327.7	186.0	175.6		
Total revenues		1,754.0	1,880.8	1,764.0		
Power and water costs		(688.3)	(605.7)	(480.9)		
Operations and maintenance		(579.8)	(473.9)	(508.2)		
Litigation payments			(50.9)	(44.4)		
Depreciation and amortization		(386.5)	(377.4)	(364.5)		
Operating expenses		(1,654.6)	(1,507.9)	(1,398.0)		
Bond interest, net of amount capitalized		(97.4)	(93.5)	(91.6)		
Investment loss, net		_	(10.9)	_		
Loss on disposal of plant assets		_		(13.2)		
Other		(8.8)	(6.4)	(6.2)		
Nonoperating expenses		(106.2)	(110.8)	(111.0)		
Total expenses		(1,760.8)	(1,618.7)	(1,509.0)		
Changes in net position before contributions		(6.8)	262.1	255.0		
Capital contributions		0.1	0.3	0.3		
Changes in net position		(6.7)	262.4	255.3		
Net position, beginning of year		7,457.2	7,194.8	6,939.5		
Net position, end of year	\$	7,450.5 \$	7,457.2 \$	7,194.8		

# **Operating Revenues**

Metropolitan's principal source of revenue is derived from the sale and availability of water, including water rates and other exchange and wheeling transactions, which typically account for approximately 85 percent of operating revenues. Metropolitan's primary sources of water supply are the Colorado River and the SWP.



Analytical Review of Operating Revenues

*Fiscal Year 2023 Compared to 2022.* Fiscal year 2023 operating revenues were \$1.4 billion or \$268.5 million less than the prior year. The decrease was primarily due to \$278.7 million of lower water revenues, which included \$323.8 million or 351.7 TAF of lower volumes sold offset by \$45.1 million of higher price. The decrease in water revenues was partially offset by \$12.0 million higher Readiness-to-Serve charges adopted by the Board.

*Fiscal Year 2022 Compared to 2021.* Fiscal year 2022 operating revenues were \$1.7 billion or \$106.4 million more than the prior year. The increase was primarily due to \$110.4 million of higher water revenues, which included \$64.1 million or 71.8 TAF of higher volumes sold and \$46.3 million of higher price. The increase in water revenues was partially offset by \$11.3 million lower power sales primarily due to lower Colorado River Aqueduct deliveries as compared to prior year.

#### MANAGEMENT'S DISCUSSION AND ANALYSIS—UNAUDITED

(CONTINUED)

June 30, 2023 and 2022

## **Nonoperating Revenues**

The primary source of nonoperating revenues is property taxes.



# NONOPERATING REVENUES

(Dollars in millions)

## **Analytical Review of Nonoperating Revenues**

*Fiscal Year 2023 Compared to 2022.* Nonoperating revenues for fiscal year 2023 totaled \$327.7 million and were \$141.7 million higher than the prior year. The increase included funding received from the SWRCB of \$80.0 million to support the Pure Water Southern California program, \$35.0 million more of investment income primarily due to \$26.9 million increase in interest income resulting from higher interest rates, and \$21.4 million higher property tax revenues due to higher assessed property values.

*Fiscal Year 2022 Compared to 2021.* Nonoperating revenues for fiscal year 2022 totaled \$186.0 million and were \$10.4 million higher than the prior year. The increase was primarily due to \$9.2 million gain on sale of plant assets related to the sale of surplus land and \$7.5 million higher property tax revenues due to higher assessed property values, offset by \$4.1 million less of investment income, which included \$11.5 million unfavorable change in fair value of investments and \$3.5 million lower rate of return resulting in \$10.9 million investment loss reported in non-operating expenses. In addition, other revenues were \$2.2 million lower due to lower property rentals as various land leases expired.

MANAGEMENT'S DISCUSSION AND ANALYSIS—UNAUDITED

(CONTINUED)

June 30, 2023 and 2022

# **Operating Expenses**

Operating expenses fall into four primary cost areas: power and water, operations and maintenance (O&M), depreciation and amortization, and litigation payments.



# OPERATING EXPENSES

## **Analytical Review of Operating Expenses**

*Fiscal Year 2023 Compared to 2022.* Fiscal year 2023 operating expenses of \$1.7 billion were \$146.7 million higher than the prior year. The increase included \$105.9 million higher O&M costs, which included \$77.5 million higher pension expense and \$7.5 million higher OPEB expense, both of which related to higher difference between projected and actual earnings on pension and OPEB plan investments, plus \$9.3 million more conservation credits. In addition, power and water expenses increased by \$82.6 million primarily due to \$65.4 million higher SWP OMP&R costs. These increases were offset by \$50.9 million lower litigation payments, which did not occur in fiscal year 2023.

*Fiscal Year 2022 Compared to 2021.* Fiscal year 2022 operating expenses of \$1.5 billion were \$109.9 million higher than the prior year. The increase included \$124.8 million higher power and water expenses primarily due to 71.8 TAF higher water transactions, \$12.9 million increase in depreciation and amortization expense due to the increase in capital assets, and \$6.5 million higher litigation payment to the San Diego County Water Authority, see Note 11(g) for additional information. These increases were offset by \$34.3 million lower O&M costs, which included \$67.1 million lower pension expense and \$18.3 million lower OPEB expense, due to the recognition of investment gains, partially offset by higher labor, professional services, utilities, and insurance expenses.

MANAGEMENT'S DISCUSSION AND ANALYSIS—UNAUDITED

(CONTINUED)

June 30, 2023 and 2022

## **Nonoperating Expenses**

The primary sources of nonoperating expenses are interest expense on bonds, loss on disposal of plant assets and other, net.



## Analytical Review of Nonoperating Expenses

*Fiscal Year 2023 Compared to 2022.* Fiscal year 2023 nonoperating expenses of \$106.2 million were \$4.6 million lower than the prior year primarily due to \$10.9 million lower investment loss resulting from favorable market conditions. This decrease was offset by \$3.9 million higher bond interest expense due to higher variable interest rates.

*Fiscal Year 2022 Compared to 2021.* Fiscal year 2022 nonoperating expenses of \$110.8 million were \$0.2 million lower than the prior year primarily due to \$13.2 million lower loss on disposal of assets as the recalculation of previously capitalized interest on construction did not occur in fiscal year 2022. This decrease was offset by \$10.9 million more of investment loss primarily due to an unfavorable change in fair value of investments and \$1.9 million more bond interest due to the implementation of GASB 89 in fiscal year 2022.

# **CAPITAL ASSETS**

Capital assets include Metropolitan's water infrastructure, land and buildings, participation rights in SWP and various other water programs, as well as lease and subscription assets. More detailed information on capital assets and commitments for construction contracts are presented in Notes 2 and 11(f) to the basic financial statements, respectively.

Metropolitan's fiscal year 2024 capital investment plan includes \$300.0 million principally for the Colorado River Aqueduct (CRA) reliability programs, systems and information technology improvements, distribution system reliability projects, treatment plant reliability program, system flexibility and supply reliability projects, and the prestressed concrete cylinder pipe reliability (PCCP) rehabilitation program.



Schedule of Capital Assets	June 30,					
(Dollars in millions)		2023	2022		2021	
Land, easements and rights of way	\$	989.8 \$	988.5	\$	986.7	
Construction in progress		743.1	803.5		811.9	
Parker power plant and dam		13.0	13.0		13.0	
Power recovery plants		225.5	223.6		220.7	
Other dams and reservoirs		1,868.9	1,847.5		1,837.9	
Water transportation facilities		4,208.3	4,100.1		4,003.1	
Pumping plants and facilities		384.6	378.1		360.2	
Treatment plants and facilities		3,227.5	3,190.6		3,139.5	
Buildings		237.0	180.7		179.1	
Miscellaneous		617.8	586.3		579.6	
Pre-operating expenses of original aqueduct		44.6	44.6		44.6	
Participation rights in SWP		5,865.4	5,729.1		5,587.7	
Participation rights in other facilities		459.0	459.0		459.0	
Lease assets		11.2	10.6		10.4	
Subscription assets		8.5	4.8			
Gross capital assets		18,904.2	18,560.0		18,233.4	
Less accumulated depreciation and amortization		(8,367.0)	(8,047.6)		(7,687.4)	
Total capital assets, net	\$	10,537.2 \$	10,512.4	\$	10,546.0	
Net increase (decrease) from prior year	\$	24.8 \$	(33.6)	\$	37.6	
Percent change		0.2%	(0.3%)		0.4%	

*Fiscal Year 2023 Compared to 2022.* Net capital assets totaled approximately \$10.5 billion and increased \$24.8 million over the prior year. The increase included \$288.9 million of construction spending, \$136.2 million net increase in participation rights in SWP, and a \$4.5 million increase in subscription and lease assets, offset by \$365.7 million of depreciation and amortization and \$39.1 million retirements of capital assets.

The major capital asset additions for fiscal year 2023 included:

- \$68.5 million for the distribution system reliability program; this program will replace or refurbish existing facilities within Metropolitan's distribution system including pressure control structures, hydroelectric power plants, and pipelines in order to reliably meet water demands.
- \$42.7 million for the treatment plant reliability program; this program will replace or refurbish facilities and components at Metropolitan's five water treatment plants in order to continue to reliably meet water demands.
- \$35.0 million for the system reliability program, which is designed to improve or modify facilities throughout Metropolitan's service area in order to utilize new processes and/or technologies, and to improve facility safety and overall reliability.
- \$33.3 million for the CRA reliability program; projects under this program will replace or refurbish components on the CRA system to reliably convey water from the Colorado River to Southern California.
- \$29.4 million for the PCCP program; projects under this program will refurbish or upgrade Metropolitan's PCCP feeders to maintain reliable water deliveries without unplanned shutdowns.
- \$20.6 million for the system flexibility/supply reliability program; projects under this program will enhance the flexibility and/or increase the capacity of Metropolitan's water supply and delivery infrastructure to meet current and projected service demands. Further, these projects address climate change affecting water supply, regional drought, and alternative water sources for areas dependent on the State Water Project.

*Fiscal Year 2022 Compared to 2021.* Net capital assets totaled approximately \$10.5 billion and decreased \$33.6 million over the prior year. The decrease included \$374.1 million of depreciation and amortization and \$15.1 million retirements of capital assets and write-off of construction in progress upon determination that no operating assets would result from the cost incurred, offset by \$209.0 million of construction spending, a \$141.4 million net increase in participation rights in SWP, and \$5.2 million increase in subscription and lease assets.

The major capital asset additions for fiscal year 2022, excluding capitalized interest, included:

- \$40.6 million for the CRA reliability program.
- \$39.4 million for the distribution system reliability program.
- \$35.3 million for the system reliability program.
- \$33.0 million for the treatment plant reliability program.
- \$22.8 million for the PCCP program.

MANAGEMENT'S DISCUSSION AND ANALYSIS—UNAUDITED

(CONTINUED) June 30, 2023 and 2022

# **DEBT ADMINISTRATION – LONG-TERM DEBT**

Schedule of Long-term Debt, Including Current Portion

	June 30,								
(Dollars in millions)		2023		2022		2021			
General obligation bonds <sup>(1)</sup>	\$	19.2	\$	20.2	\$	26.8			
Revenue bonds <sup>(1)</sup>		3,881.2		3,848.4		3,994.3			
Other, net <sup>(2)</sup>		421.0		425.2		464.2			
	\$	4,321.4	\$	4,293.8	\$	4,485.3			
Increase (decrease) from prior year	\$	27.6	\$	(191.5)	\$	66.1			
Percent change		0.6%		(4.3%)		1.5%			

<sup>(1)</sup>Includes refunding bonds.

<sup>(2)</sup>Consists of unamortized bond discounts and premiums.

*Fiscal Year 2023 Compared to 2022.* At June 30, 2023, outstanding bonds and other long-term obligations totaled \$4.3 billion, a net increase of \$27.6 million or 0.6 percent from the prior year. The increase was due to the issuance of \$258.4 million Water Revenue and Refunding Bonds, 2023 Series A. This increase was offset by \$139.9 million of scheduled principal payments, \$51.1 million of bond refundings, as the new debt issued was less than the amount of debt refunded, \$35.6 million of principal paid by the Wells Fargo Revolving Credit Facility note issued in June 2022, and \$4.2 million lower premiums and discounts due to \$48.7 million related to scheduled amortization, offset by \$44.5 million related to bond refundings, as the premiums on new debt issued was more than the premiums outstanding on the debt refunded.

*Fiscal Year 2022 Compared to 2021.* At June 30, 2022, outstanding bonds and other long-term obligations totaled \$4.3 billion, a net decrease of \$191.5 million or 4.3 percent from the prior year. The decrease included \$123.1 million of scheduled principal payments, \$39.0 million lower premiums and discounts due to \$52.3 million related to scheduled amortization, offset by \$13.3 million related to bond refundings, as the premiums on new debt issued was more than the premiums outstanding on the debt refunded. Also contributing to the decrease was \$35.6 million of principal payments funded by the short-term RBC note issued in June 2021. These decreases were offset by \$6.2 million of bond refundings, as the new debt issued was more than the amount of debt refunded.

Additional information on Metropolitan's long-term debt can be found in Notes 5 and 6 to the basic financial statements.

# **CREDIT RATINGS**

Metropolitan's credit ratings at June 30, 2023 are shown below.

	Moody's Investors Service	Standard & Poor's Global	Fitch Ratings
General obligation bonds	Aaa	AAA	AA+
Water revenue bonds-fixed rate	Aa1	AAA	AA+
Water revenue bonds-variable rate	VMIG 1	A-1+	F1+
Subordinate water revenue bonds-fixed rate	N/A	AA+	AA+
Subordinate water revenue bonds-variable rate	N/A	A-1+	F1+

# STATEMENTS OF NET POSITION

		June	e 30,	
		2023		2022
(Dollars in thousands)				As Adjusted
ASSETS AND DEFEDDED OUTELOWS OF DESOURCES				Note Iu
Current Assets				
Cash and investments at fair value (Nates 1d and 2):				
Unrestricted (cost: \$346,159 and \$604,318 for 2023 and 2022, respectively)	\$	342.625	\$	597,798
Restricted (cost: \$763.547 and \$610.288 for 2023 and 2022, respectively)	·	755,754		603.702
Total cash and investments		1,098,379		1,201,500
Receivables:				
Water revenues		197,272		266,894
Interest on investments		9,249		3,157
Leases (Notes 1j and 7)		858		958
Other, net (Note 1f)		35,122		38,736
Total receivables		242,501		309,745
Inventories (Note 1g)		197,416		147,951
Deposits, prepaid costs, and other (Note 13)		71,804		63,279
Total current assets		1,610,100		1,722,475
Noncurrent Assets:				
Cash and investments, at fair value (Notes 1d and 3):				
Unrestricted (cost: \$385,990 and \$293,338 for 2023 and 2022, respectively)		382,050		290,173
Restricted (cost: \$110,741 and \$46,467 for 2023 and 2022, respectively)		109,611		46,046
Total cash and investments		491,661		336,219
Capital assets (Note 2):				
Plant and equipment - non depreciable (Notes 1h and 11f)		1,732,912		1,792,066
Plant and equipment - depreciable (Notes 1h and 11f)		10,827,309		10,564,412
Participation rights in State Water Project (Notes 1i and 12)		5,865,357		5,729,122
Participation rights in other facilities (Notes 1i and 4)		459,049		459,049
Lease assets (Notes 1j and 7)		11,155		10,552
Subscription assets (Notes 1k and 8)		8,472		4,785
Total capital assets		18,904,254		18,559,986
Less accumulated depreciation and amortization		(8,367,044)		(8,047,598)
Total capital assets, net		10,537,210		10,512,388
Leases receivable, net of current portion (Notes 1j and 7)		27,363		25,140
Deposits, prepaid costs, and other, net of current portion (Note 13)		391,716		325,773
Total noncurrent assets		11,447,950		11,199,520
Total assets		13,058,050		12,921,995
<b>Deferred Outflows of Resources</b> (Note 1p):				
Loss on bond refundings (Note 5d)		—		7,146
Loss on swap terminations (Note 5d)		14,046		15,975
Pension related (Notes 1n and 9d)		240,137		91,078
OPEB related (Notes 10 and 10k)		55,223		35,430
Total deferred outflows of resources		309,406		149,629
Total Assets and Deferred Outflows of Resources	\$	13,367,456	\$	13,071,624

See accompanying notes to basic financial statements.

# STATEMENTS OF NET POSITION

		Jun	1e 30,	
		2023		2022
				As Adjusted
(Dollars in thousands)				Note 1u
LIABILITIES, DEFERRED INFLOWS OF RESOURCES, AND NE	T PO	SITION		
Current Liabilities:	•		•	400.007
Accounts payable and accrued expenses (Note 11)	\$	242,658	\$	198,887
Short-term revolving notes (Note 5a)		56,400		35,645
Current portion of long-term debt (Notes 5 and 6)		745,243		382,276
Current portion of accrued compensated absences (Notes 1m and 6)		27,900		26,900
Current portion of customer deposits (Note 6)		8,106		2,954
Current portion of leases (Notes 1j, 6 and 7)		1,543		1,328
Current portion of subscriptions (Notes 1k, 6 and 8)		3,327		1,559
Current portion of workers' compensation		0 550		6.04.2
and third party claims (Notes 6 and 16)		8,759		6,013
Current portion of other long-term liabilities (Note 6)		25,219		10,770
Accrued bond interest		51,099		57,056
Matured bonds and coupons not presented for payment		1,701		1,207
Total current liabilities		1,171,955		724,595
Noncurrent Liabilities (Note 6):				0.011.101
Long-term debt, net of current portion (Note 5)		3,576,056		3,911,484
Accrued compensated absences, net of current portion (Note Im)		32,400		31,653
Customer deposits, net of current portion		50,885		39,858
Leases, net of current portion (Notes 1) and /)		5,397		6,352
Subscription, net of current portion (Notes 1k and 8)		1,174		1,853
Net pension liability (Notes 1n and 9c)		790,626		440,600
Net OPEB liability (Notes 10 and 10f)		114,653		52,282
Workers' compensation and third party claims,		5.047		6 6 9 0
Existence of interest rate server (Note 5-)		5,947		10,009
Pair value of interest rate swaps (Note 5e)		0,055		19,223
Tetal approximate liabilities		4 595 219		4 512 146
Total liabilities		4,585,518		4,312,140
Deferred Inflows of Besources (Note 10):		5,151,215		5,250,741
Effective swees		50 847		37 677
Leases (Notes 1 and 7)		27 354		25 352
Cain on bond refundings (Note 5d)		27,334		25,552
Dension related (Notes 1n and 0d)		10,309		207.015
ODER related (Notes 1a and 10k)		10,300		106 726
Total deformed inflows of resources		150 656		377.670
Total Liabilities and Deferred Inflows of Resources		5 016 020		5 614 411
Net Position (Note 15):		5,710,727		5,014,411
Net investment in capital assets including State Water Project costs		6 359 192		6 220 270
Restricted for		0,557,172		0,220,270
Debt service		102 285		235 033
Other		474 565		235,755
Unrestricted		474 195		662 122
Total net position		7 450 527		7 457 213
Total Liabilities. Deferred Inflows of Resources and Net Position	\$	13.367.456	\$	13 071 624
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# STATEMENTS OF REVENUES, EXPENSES AND CHANGES IN NET POSITION

	 Fiscal Year E	nded	June 30,
	2023		2022
(Dollars in thousands)			As Adjusted Note 1u
Operating Revenues (Notes 1c and 1r):			
Water revenues	\$ 1,236,403	\$	1,515,070
Readiness-to-serve charges	147,000		134,958
Capacity charge	37,215		37,090
Power sales	5,697		7,675
Total operating revenues	 1,426,315		1,694,793
Operating Expenses:			
Power and water costs	688,297		605,685
Operations and maintenance	579,796		473,891
Litigation payments (Note 11g)	 —		50,932
Total operating expenses	 1,268,093		1,130,508
Operating income before depreciation and amortization	158,222		564,285
Less depreciation and amortization (Note 2)	(386,496)		(377,378)
Operating income (loss)	 (228,274)		186,907
Nonoperating Revenues (Expenses) (Note 1r):			
Taxes, net (Note 1e)	189,506		168,143
Bond interest, net	(97,419)		(93,488)
State funding for Pure Water Southern California program	80,000		_
Investment income (loss), net	35,027		(10,942)
Gain on sale or disposal of plant assets	6,173		9,215
Other, net	8,232		2,296
Total nonoperating revenues, net	 221,519		75,224
Changes in Net Position Before Contributions	(6,755)		262,131
Capital contributions (Note 1q)	 69		260
Changes in net position	 (6,686)		262,391
Net position, beginning of year	 7,457,213		7,194,822
Net position, End of Year	\$ 7,450,527	\$	7,457,213

See accompanying notes to basic financial statements.

	Fiscal Year Ended June 30,				
(Dollars in thousands)	2023	2022			
Cash Flows from Operating Activities:					
Cash received from water sales	\$ 1,173,884	\$ 1,358,072			
Cash received from other exchange transactions	148,833	164,521			
Cash received from readiness-to-serve charges	144,368	134,589			
Cash received from capacity charge	37,840	36,067			
Cash received from power sales	5,870	8,812			
Cash paid for operations and maintenance expenses	(324,791)	(260,129)			
Cash paid to employees for services	(268,766)	(272,256)			
Cash paid for power and water costs	(727,368)	(555,804)			
Cash paid for litigation	—	(50,520)			
Other cash flows for operating activities	6,895	2,847			
Net cash provided by operating activities	196,765	566,199			
Cash Flows from Noncapital Financing Activities:					
Cash received from State in support of Pure Water Southern California program	80,000				
Proceeds from short term notes for conservation credits	18,000				
Proceeds from other collections	9,542	9,130			
Net cash provided by noncapital financing activities	107,542	9,130			
Cash Flows from Capital and Related Financing Activities:					
Acquisition and construction of capital assets	(277,335)	(227,585)			
Payments for State Water Project costs	(136,235)	(141,446)			
Advance payments for Delta Conveyance Project costs	(34,500)	(25,000)			
Proceeds from short and long-term debt	295,400				
Payments for bond issuance costs	(1,881)	(2,389)			
Principal paid on debt	(175,565)	(123,065)			
Interest paid on debt	(155,191)	(160,213)			
Proceeds from tax levy	197,828	160,003			
Transfer (to) from escrow trust accounts	(961)	3,591			
Proceeds from sale of capital assets	8,425	14,612			
Net cash used in capital and related financing activities	(280,015)	(501,492)			
Cash Flows from Investing Activities:					
Purchase of investment securities	(4,006,062)	(3,308,262)			
Proceeds from sales and maturities of investment securities	3,958,988	3,218,529			
Investment income	22,458	11,269			
Net cash used in investing activities	(24,616)	(78,464)			
Net change in cash	(324)	(4,627)			
Cash at July 1, 2022 and 2021	382	5,009			
Cash at June 30, 2023 and 2022 (Notes 1b and 3)	\$ 58	\$ 382			

# STATEMENTS OF CASH FLOWS

See accompanying notes to basic financial statements.

# STATEMENTS OF CASH FLOWS

		June 30,		
(Dollars in thousands)		2023		2022
				As Adjusted
<b>RECONCILIATION OF OPERATING (LOSS) INCOME TO NET</b> CASH PROVIDED BY OPERATING ACTIVITIES	I			
Operating (Loss) Income	\$	(228,274)	\$	186,907
Adjustments to Reconcile Operating (Loss) Income to Net Cash Provided by Operating Activities:				
Depreciation and amortization expense		386,496		377,378
Decrease in accounts receivable		67,013		7,915
Increase in inventories		(100,318)		(7,311)
(Increase) decrease in deposits, prepaid costs, and other		(25,639)		27,302
Increase in accounts payable, and accrued expenses		97,515		48,205
Increase in deferred deliveries of exchange water		14,447		10,745
Increase (decrease) in pension liabilities		350,026		(249,909)
Increase (decrease) in OPEB liabilities		62,371		(98,955)
(Increase) decrease in deferred outflows related to pension		(149,059)		10,685
(Decrease) increase in deferred inflows related to pension		(197,615)		181,566
Increase in deferred outflows related to OPEB		(19,793)		(2,230)
(Decrease) increase in deferred inflows related to OPEB		(65,940)		64,856
Increase in other items		5,535		9,045
Total Adjustments		425,039		379,292
Net cash provided by operating activities	\$	196,765	\$	566,199
Significant Noncash Investing, Capital and Financing Activities				
Refunding bonds proceeds received in escrow trust fund	\$	886,551	\$	130,482
Debt defeased through escrow trust fund with refunding debt	\$	(866,280)	\$	(92,195)
Capital contributions	\$	69	\$	260
RECONCILIATION OF CASH AND INVESTMENTS TO CASH				
Unrestricted cash and investments (at June 30, 2023 and 2022 includes \$58 and \$382 of cash, respectively)	\$	724,675	\$	887,971
Restricted cash and investments		865,365		649,748
Total cash and investments, at fair value (Note 3)		1,590,040		1,537,719
Less: carrying value of investments		(1,589,982)		(1,537,337)
Total Cash (Notes 1h and 3)	\$	58	\$	382

# STATEMENTS OF FIDUCIARY NET POSITION

	Private Pu Fu	rpos nds	e Trust		Custodial Funds			
			Jun	e 30,				
(Dollars in thousands)	2023		2022		2023		2022	
Assets								
Restricted pooled cash and investments, at fair value (Notes 1d and 3):	\$ 2,250	\$	2,672	\$	2,448	\$	2,440	
Interest receivable	1				8		2	
Total assets	\$ 2,251	\$	2,672	\$	2,456	\$	2,442	
<b>Liabilities</b> Accounts payable and accrued expenses	\$ _	\$	17	\$	248	\$	41	
Due to other governments			4		28			
Net Position	_		21		276		70	
Restricted for organizations and other governments	2,251		2,651		2,180		2,372	
Total Liabilities and Net Position	\$ 2,251	\$	2,672	\$	2,456	\$	2,442	

See accompanying notes to basic financial statements.

# STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION

	Private Purpose Trust Funds					Custodial Funds			
			F	iscal Year E	nded Ju	ine 30,			
(Dollars in thousands)		2023		2022		2023	2022		
Additions									
Contributions from participating agencies	\$	2,796	\$	2,445	\$	247 \$	193		
Return of unspent funds		_		4		—			
Interest		10		3		67	14		
Total additions		2,806		2,452		314	207		
Deductions									
Support payments to the Colorado River Board		2,500		2,400		_			
Expensed equipment		6		10					
Computer systems and software		12		9					
Administrative expenses		54		9					
Support payments for Colorado River system augmentation and conservation		384		268					
Payments to other governments for conservation		_		—		102	92		
Professional services		250		210		404	197		
Total deductions		3,206		2,906		506	289		
Net Decrease in Fiduciary Net Position		(400)		(454)		(192)	(82)		
Net position, Beginning of Year		2,651		3,105		2,372	2,454		
Net position, End of Year	\$	2,251	\$	2,651	\$	2,180 \$	2,372		

See accompanying notes to basic financial statements.

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# **I. REPORTING ENTITY AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**

# (a) Reporting Entity

The Metropolitan Water District of Southern California (Metropolitan), a special district of the State of California, was organized in 1928 by vote of the electorates of several Southern California cities following adoption of the Metropolitan Water District Act (Act) by the California Legislature. Metropolitan's primary purposes under the Act are to develop, store, and distribute water, at wholesale, to its member public agencies for domestic and municipal purposes. Surplus water is sold for other beneficial uses, including agricultural use. Metropolitan's service area comprises approximately 5,200 square miles and includes portions of the six counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura. There are 26 independent member agencies of Metropolitan, consisting of 14 cities, 11 municipal water districts, and one county water authority. Metropolitan has no financial accountability for its member agencies. Metropolitan is governed by a 38-member Board of Directors (Board) comprised of representatives of the member agencies. Representation and voting rights are based on assessed valuations of property pursuant to Sections 52 and 55 of the Act. Each member agency is entitled to have at least one representative on the Board plus an additional representative for each full five percent of the assessed valuation of real property within the jurisdictional boundary of each member agency. Changes in relative assessed valuation do not terminate any director's term. Accordingly, the Board may, from time to time, have more or fewer than 38 directors. However, effective January 1, 2020, no member agency shall have fewer than the number of representatives the agency had as of January 1, 2019. No single member agency has a voting majority.

The Metropolitan Water District Asset Financing Corporation (MWDAFC) was incorporated on June 19, 1996. The MWDAFC is a California nonprofit public benefit corporation formed to assist Metropolitan by acquiring, constructing, operating and maintaining facilities, equipment, or other property needed by Metropolitan and leasing or selling such property to Metropolitan. The MWDAFC is governed by a board of five directors, each of whom must be a member of Metropolitan's Board. MWDAFC had no financial operations during fiscal years 2023 or 2022. MWDAFC is a component unit of Metropolitan and its activities will be blended with those of Metropolitan for financial reporting purposes should it commence operations.

Fiduciary funds are displayed by fund type in the Statements of Fiduciary Net Position and Statements of Changes in Fiduciary Net Position, but are not included in Metropolitan's proprietary financial statements because the assets of these funds are not available to Metropolitan. Metropolitan reports the following fiduciary funds:

- ٠ Private-purpose trust funds: These funds are used to account for trust arrangements where the benefits are held for other governments.
- Custodial funds: These funds account for resources held by Metropolitan in a custodial capacity on behalf of other governmental organizations.

# (b) Principles of Presentation

Metropolitan operates as an enterprise fund and applies all applicable GASB pronouncements in its accounting and reporting. The accompanying basic financial statements reflect the flow of economic resources measurement focus and the full accrual basis of accounting. Under full accrual accounting, revenues are recorded when earned and expenses are recorded at the time liabilities are incurred regardless of the timing of related cash flows.

For purposes of the statements of cash flows, Metropolitan defines cash as demand account balances and cash on hand.

June 30, 2023 and 2022

Fiduciary funds are used to account for assets held in a trustee or custodial capacity and cannot be used to support Metropolitan's own purpose. Fiduciary funds are accounted for using the economic resources measurement focus and accrual basis of accounting.

# (c) Revenue Policies

Water revenues, which include funds received from charges for the sale and availability of water, including water rates and other exchange and wheeling transactions, is the principal source of Metropolitan's revenues. Other sources of operating revenue include readiness-to-serve charges, capacity charge, and hydroelectric power sales. Other revenues include ad valorem property taxes and investment income.

Water rates are established by the Board on a biennial basis. Water rates are supported by cost of service studies. Water rates are not subject to regulation by the California Public Utilities Commission or by any other local, state, or federal agency. Water is delivered to the member agencies on demand and revenue is recognized at the time of sale.

Metropolitan's rate structure consists of unbundled rate elements (supply, system access, system power, and treatment) designed to provide transparency regarding the cost of specific functions to member agencies. It is designed to improve regional water resources management and accommodate a water transfer market. The rate structure also includes tiered pricing for supply, a capacity charge, and a readiness-to-serve charge.

# (d) Fair Value Measurements

Metropolitan categorizes the fair value measurements for assets and liabilities within the fair value hierarchy established by U.S. GAAP. The hierarchy is based on the valuation inputs of assets and liabilities as follows: Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that a government can access at the measurement date; Level 2 inputs are inputs-other than quoted prices-that are observable for identical assets or liabilities, either directly or indirectly; and Level 3 inputs are unobservable inputs, such as management's assumption of the default rate among underlying mortgages of a mortgage-backed security. Metropolitan reports its investments and liabilities using valuation techniques consistent with market and cost approaches to determine the fair value.

# (e) Taxing Authority

Metropolitan is expressly empowered under the Act to levy and collect taxes on all taxable property within its boundaries for the purpose of carrying on its operations and paying its obligations, subject to certain limitations in the Act, the California Revenue and Taxation Code, and the California Constitution. Property taxes are levied annually by the Board effective as of July 1, using a lien date of January 1, and are payable by property owners in two equal installments that are due on November 1 and February 1, and become delinquent after December 10 and April 10, respectively. Property taxes levied by Metropolitan are billed and collected by the counties in its service area and are remitted to Metropolitan periodically throughout the year.

Property tax revenue is used to pay Metropolitan's general obligation bond debt service and a portion of its obligations under its contract with the state for a water supply and participation in the SWP (the State Water Contract). In setting the annual levy, Metropolitan takes into account potential delinquencies, tax allocations to the successor agencies of former redevelopment agencies, and supplemental tax collections. Metropolitan recognizes

property taxes receivable on July 1 of each fiscal year and recognizes revenue over the following 12-month period beginning July 1 through June 30 (the period for which the tax is levied).

As a result of legislation enacted in 1984, commencing with the fiscal year ended June 30, 1991, tax levies, other than annexation taxes, are limited to the amount needed to pay debt service on Metropolitan's general obligation bonds and Metropolitan's proportionate share of general obligation bond debt service of the state under the State Water Contract. However, under the terms of the 1984 legislation, the Board may conclude that this particular restriction is not applicable upon a finding that doing so is essential to Metropolitan's fiscal integrity. The Board made such a finding for fiscal years ended June 30, 2014 through 2022 and in March 2022 extended its applicability to fiscal years ended/ending June 30, 2023 through 2026, and maintained the tax rate for these fiscal years at the rate levied during fiscal year ended June 30, 2013 to pay a portion of State Water Contract costs other than general obligation debt service.

# (f) Other Receivables

Other receivables include amounts for taxes, hydroelectric power sales, readiness-to-serve charges, and other billings.

# (g) Inventories

Metropolitan's inventories are valued based on a moving-average cost. Expenses are recorded when inventories are used. Components of inventories at June 30, 2023 and 2022 were as follows:

	 June 30,		
(Dollars in thousands)	 2023		
Water in storage	\$ 172,821	\$	128,415
Operating supplies	24,595		19,536
Total inventories	\$ 197,416	\$	147,951

# (h) Capital Assets

Metropolitan's capital assets include plant and equipment, which are recorded at cost. Construction costs are capitalized if they exceed \$50,000 and the asset has a useful life of at least five years. The cost of constructed assets may include labor, materials, certain general and administrative expenses, and interest incurred during construction periods prior to July 1, 2021. Beginning July 1, 2021 and thereafter, interest incurred during construction is no longer capitalized in accordance with GASB 89. Depreciation is calculated using the straight-line method based on the estimated average useful lives of the assets, which are 10 to 80 years for buildings, storage, distribution facilities, and miscellaneous assets and 10 to 50 years for treatment plants and hydroelectric power recovery facilities. Improvements or refurbishments with aggregated costs that meet capitalization thresholds and that extend the useful life of an existing asset by at least five years are capitalized.

Major computer systems software, whether purchased or internally developed, is capitalized if the cost exceeds \$250,000 and the useful life is at least three years. Vehicles and operating equipment are capitalized if the cost equals or exceeds \$5,000 and the useful life is at least four years. Depreciation is calculated using the straight-line method based on the estimated useful lives and ranges from 3 to 10 years for major computer systems software and 4 to 10 years for vehicles and operating equipment.

# (i) Participation Rights

Metropolitan participates in various storage and water management programs entitling it to certain water rights. Projects include the SWP and various storage and water management programs. Metropolitan's participation in these projects is through cash payments. The value of participation rights is equal to the amounts spent for the construction of capital assets, such as pipelines, pumping facilities, and storage facilities, and amortized over the life of the agreements. These assets are not owned by Metropolitan. Certain projects also require payments for ongoing maintenance; those payments are charged to expense as incurred, see Notes 2, 4, and 12.

# (j) Leases

Metropolitan is a lessor for various noncancellable leases of land to an outside party and lessee for various noncancellable leases of buildings, equipment, and land from an outside party, see Note 7.

Short-term leases: For leases that have a maximum possible term of 12 months or less at commencement, Metropolitan recognizes a revenue or an expense, respectively, when Metropolitan is a lessor or lessee. The revenue or expense is based on the provisions of the lease contract.

Long-term leases: For leases that have a maximum possible term of more than 12 months at commencement and an individual value of \$250,000 or more, Metropolitan recognizes a lease receivable and deferred inflow of resources when Metropolitan is the lessor or a lease liability and lease assets when Metropolitan is the lessee. For leases that have a maximum possible term of more than 12 months at commencement and an individual value of less than \$250,000, Metropolitan recognizes a revenue or an expense when Metropolitan is a lessor or lessee, respectively.

## Measurement of lease amounts - lessor

At lease commencement, Metropolitan initially measures the lease receivable at the present value of payments expected to be received during the lease term. Subsequently, the lease receivable is reduced by the principal portion of lease payments received. The deferred inflow of resources is initially measured as the initial amount of the lease receivable, plus prepayments received, less lease incentives paid at or before the lease commencement date. Subsequently, Metropolitan recognizes lease revenue as a straight-line amortization of the deferred inflow over the shorter of the lease term or the useful life of the underlying asset.

## Measurement of lease amounts - lessee

At lease commencement, Metropolitan initially measures the lease liability at the present value of payments expected to be made during the lease term. Subsequently, the lease liability is reduced by the principal portion of lease payments made. The lease asset is initially measured as the initial amount of the lease liability, less lease payments made at or before the lease commencement date, plus any initial direct costs ancillary to placing the underlying asset into service, less any lease incentives received at or before the lease commencement date. Subsequently, the intangible lease asset is amortized into depreciation and amortization expenses on a straight-line basis over the shorter of the lease term or the useful life of the underlying asset.

Key estimates and judgment related to leases include how Metropolitan determines 1) the discount rate, 2) the lease term and 3) the lease receipts or payments.

- *Discount rate:* Metropolitan uses its estimated incremental borrowing rate as the discount rate for leases, whether Metropolitan is the lessee or the lessor, unless the rate is stated in the lease agreement. The incremental borrowing rate for leases is based on the rate of interest Metropolitan would have to pay if it issued general obligation bonds to borrow an amount equal to the lease under similar terms at the commencement or remeasurement date. For Metropolitan, this is assumed to be equal to the treasury yield.
- *Lease term:* The lease term includes the noncancellable period of the lease plus any additional periods covered by an option to extend that is reasonably certain to be exercised. Periods in which both the lessor or lessee have an option to terminate, are excluded from the lease term.
- Lease receipts or payments: Metropolitan evaluates lease receipts and payments to determine if they should be included in the measurement of the lease, including those receipts or payments that require a determination of whether they are reasonably certain of being received or made. Lease receipts included in the measurement of the lease receivable are composed of fixed payments from the lessee. Lease payments included in the measurement of the lease liability are composed of fixed payments to the lessor and purchase options reasonably certain to be exercised, if applicable.

# (k) Subscription-Based Information Technology Arrangements

Metropolitan has several noncancellable subscription assets for the right-to-use information technology, see Note 8.

Short-term subscription assets: For arrangements that have a maximum possible term of 12 months or less at commencement, Metropolitan recognizes an expense, based on the provisions of the subscription assets contract.

Long-term subscription assets: For arrangements that have a maximum possible term of more than 12 months at commencement and an individual value of \$250,000 or more, Metropolitan recognizes a subscription liability and subscription assets. For subscription assets that have a maximum possible term of more than 12 months at commencement and an individual value of less than \$250,000, Metropolitan recognizes an expense.

# Measurement of subscription assets

At subscription commencement, Metropolitan initially measures the subscription assets at the present value of payments expected to be made during the subscription term. Subsequently, the subscription liability is reduced by the principal portion of subscription payments made. The subscription asset is initially measured as the initial amount of the subscription liability, less subscription payments made at or before the subscription commencement date, less any vendor incentives received at or before the subscription commencement date, plus the capitalizable implementation costs. The subscription-based IT arrangement asset is amortized on a straight-line basis over the shorter of the subscription term or the useful life of the underlying software.

Similar to leases, Metropolitan has key estimates and judgments related to 1.) discount rate, 2.) the subscription assets term and 3.) subscription asset payments

- *Discount rate:* Metropolitan uses its estimated incremental borrowing rate as the discount rate for subscription assets, unless the rate is stated in the subscription agreement. The incremental borrowing rate for subscription asset is based on the rate of interest Metropolitan would have to pay if it issued general obligation bonds to borrow an amount equal to the subscription asset under similar terms at the commencement or remeasurement date. For Metropolitan, this is assumed to be equal to the treasury yield.
- *Subscription asset term:* This includes the noncancellable period of the subscription asset plus any additional periods covered by an option to extend that is reasonably certain to be exercised. Periods in which both Metropolitan and the vendor have a unilateral option to terminate, are excluded from the subscription term.
- *Subscription asset payments:* Metropolitan evaluates payments to determine if they should be included in the measurement of the subscription liabilities, including those payments that require a determination of whether they are reasonably certain of being made. Metropolitan monitors subscription assets for possible changes that may require remeasurement if they could materially affect the amount of the liability and the related asset that should be recognized.

# (I) Disaggregation of Payable Balances

Accounts payable and accrued expenses at June 30, 2023 and 2022 were as follows:

	June 30,			
(Dollars in thousands)	2023		2022 <sup>(1)</sup>	
Department of Water Resources (SWP):				
Capital, operating, maintenance, power, replacement, and variable power	\$	142,451	\$	109,370
Vendors		69,663		63,752
Accrued power costs		1,646		1,838
Accrued salaries		15,958		13,958
Readiness-to-serve overcollection		—		1,628
Conservation credits		12,940		8,341
Total accounts payable and accrued expenses	\$	242,658	\$	198,887

<sup>(1)</sup> Adjustments were made to fiscal year 2022 accounts payable and accrued expenses due to the implementation of GASB 96. See Note 1(u).

# (m) Compensated Absences

Metropolitan's employees earn vacation, sick, and compensatory leave in varying amounts depending primarily on length of service. Upon termination from Metropolitan service, employees are entitled to full payment for accrued vacation and compensatory leave at their final pay rates, and are entitled to payment for approximately one-half of their accrued sick leave at such rates. Metropolitan records its obligations for vacation, sick, and compensatory leave earned by eligible employees based on current pay rates. The allocations to the current and long-term portions of these vested obligations were based on experience and projections of turnover.

# (n) Pension Accounting

For purposes of measuring the net pension liability, deferred outflows of resources and deferred inflows of resources related to pensions, and pension expense, information about the fiduciary net position of the Plan and additions to/deductions from the Plan's fiduciary net position have been determined on the same basis as they are reported by the California Public Employees' Retirement System (CalPERS) Financial Office. For this purpose, benefit payments (including refunds of employee contributions) are recognized when currently due and payable in accordance with the benefit terms. Investments are reported at fair value.

GASB requires that the reported results must pertain to liability and asset information within certain defined timeframes. For this report, the following timeframes are used:

Valuation Date (VD): June 30, 2021 Measurement Date (MD): June 30, 2022 Measurement Period: July 1, 2021 to June 30, 2022

# (o) **OPEB** Accounting

For purposes of measuring the net OPEB liability, deferred outflows of resources and deferred inflows of resources related to OPEB, and OPEB expense, information about the fiduciary net position of Metropolitan's plan (OPEB Plan), the assets of which are held by the California Employer's Retiree Benefit Trust (CERBT), and additions to/ deductions from the OPEB Plan's fiduciary net position have been determined on the same basis. For this purpose, benefit payments are recognized when currently due and payable in accordance with the benefit terms. Investments are reported at fair value.

GASB requires that the reported results must pertain to liability and asset information within certain defined timeframes. For this report, the following timeframes are used:

Valuation Date (VD): June 30, 2021 Measurement Date (MD): June 30, 2022 Measurement Period: July 1, 2021 to June 30, 2022

# (p) Deferred Outflows/Inflows of Resources

The net investment in capital assets, including State Water Project costs of \$6.4 billion and \$6.2 billion at June 30, 2023 and 2022, respectively, includes the effect of deferring the recognition of gains or losses from bond refundings. The deferred inflow from gains on bond refundings at June 30, 2023 were \$30.4 million. The deferred outflow from losses on bond refundings at June 30,2022 were \$7.1 million. These are amortized and recognized as a component of interest expense in a systematic and rational manner over the remaining life of the old or the new debt, whichever is shorter.

The unrestricted net position amount of \$474.5 million and \$663.4 million at June 30, 2023 and 2022, respectively, includes the effect of deferring the recognition of losses from swap terminations resulting in defeasance of debt, the increase or decrease in fair value of Metropolitan's effective interest rate swaps, and deferred amounts related to pension, OPEB and leases.

The deferred outflows from losses on swap terminations resulting in debt defeasance at June 30, 2023 and 2022, respectively, were \$14.0 million and \$16.0 million. These deferred outflows of resources are amortized and recognized as a component of interest expense in a systematic and rational manner over the remaining life of the old debt or the life of the new debt, whichever is shorter.

The deferred outflows related to pension at June 30, 2023 and 2022 were \$240.1 million and \$91.1 million, respectively. The deferred inflows related to pension at June 30, 2023 and 2022 were \$10.3 million and \$207.9 million, respectively. See Notes 9(c) and (d) for additional information.

The deferred outflows related to OPEB at June 30, 2023 and 2022 were \$55.2 million and \$35.4 million, respectively. The deferred inflows related to OPEB at June 30, 2023 and 2022 were \$40.8 million and \$106.7 million, respectively. See Notes 10(j) and (k) for additional information.

The deferred inflows from the increase in fair value of interest rate swaps of \$50.8 million and \$37.7 million at June 30 2023 and 2022, respectively, would be recognized as an investment gain upon the early termination of the swaps. Metropolitan will only terminate its interest rate swap agreements in advance of the contractual termination dates if market conditions permit. The deferred inflow also would be recognized as an investment gain if the swaps were determined no longer to be effective hedges.

The deferred inflows related to leases at June 30, 2023 and 2022 were \$27.4 million and \$25.4 million, respectively. These deferred inflows are amortized and recognized as lease revenue, a component of non-operating revenues, on a straight-line basis over the shorter of the lease term or the useful life of the underlying asset.

# (q) Capital Contributions

Capital contributions are comprised of federal, state, and private grants. These grants are typically of a reimbursable nature: Metropolitan first pays for the project and then the granting agency reimburses Metropolitan for its eligible expenses. The portion of the grants restricted for capital purposes are reflected as capital contributions in the statements of revenues, expenses and changes in net position when they are earned, irrespective of the timing of the receipts. Examples of capital projects where grants are received include water treatment plant improvements, such as fluoridation and water storage programs.

# (r) Operating and Nonoperating Revenues and Expenses

Metropolitan's primary purpose is to provide a supplemental supply of water for domestic and municipal uses. Accordingly, Metropolitan defines operating revenues as revenues derived from the sale and availability of water, including water rates and other exchange and wheeling transactions. It also includes readiness-to-serve charges, capacity charge, and hydroelectric power sales. Operating expenses include the cost of sales and services, administrative expenses, and depreciation and amortization of capital assets.

Revenues from property taxes, investment income, and grant funding, as well as interest expense on outstanding debt, are related to capital and financing activities and are defined as nonoperating revenues and expenses.

In fiscal year 2023, Metropolitan received \$80.0 million from the State Water Resources Control Board (State Board) to fund the Pure Water Southern California program. This contribution was recorded as restricted net position and must be spent by fiscal year 2026. The balance as of June 30, 2023 was \$79.4 million.

# (s) Restricted and Unrestricted Resources

When both restricted and unrestricted resources are available for use, it is Metropolitan's practice to use restricted resources first, then unrestricted resources as they are needed.

# (t) Use of Estimates

The preparation of basic financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the basic financial statements and reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

# (u) New Accounting Pronouncements

Metropolitan implemented the following GASB Statements in fiscal year 2023:

GASB Statement No. 96, *Subscription-Based Information Technology Arrangements* (GASB 96). This Statement provides guidance on the accounting and financial reporting for subscription-based information technology arrangements for governments. A subscription asset is a contract conveying the right-to-use a vendor's information technology software, sometimes in combination with a tangible underlying capital asset, in an exchange or exchange-like transaction. A subscription liability and an intangible asset is recognized in the financial statements. The impact of the implementation of this standard can be found in the Statements of Net Position, Statements of Changes in Revenues, Expenditures and Net Position and Notes 2 and 8.

NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

	2022			GASB 96		2022
(Dollars in thousands)	previously reported		adjustment		as adjusted	
Noncurrent Assets:						
Subscriptions		—		4,785		4,785
Accumulated depreciation and amortization		(8,047,006)		(592)		(8,047,598)
Total change in assets			\$	4,193		
Current Liabilities:						
Accounts payable and accrued expenses	\$	198,870	\$	17	\$	198,887
Current portion of subscriptions				1,559		1,559
Noncurrent Liabilities:						
Subscriptions, net of current portion				1,853		1,853
Total change in liabilities				3,429		
Net Position:						
Net investment in capital assets, including SWP		6,219,489		781		6,220,270
Unrestricted		663,450		(17)		663,433
Total change in net position				764		
Total change in liabilities and net position			\$	4,193		

Metropolitan adjusted its Statement of Net Position for fiscal year 2022 as follows:

The statements of revenues, expenses and changes in net position for fiscal year 2022 was adjusted as follows:

	2022			GASB 96	2022
(Dollars in thousands)	previously reported		adjustment		as adjusted
Operating expenses:					
Operations and maintenance	\$	475,275	\$	(1,384)	\$ 473,891
Less Depreciation and amortization		(376,786)		(592)	(377,378)
Total change in operating income				792	
Nonoperating revenues (expenses)					
Other, net		2,324		(28)	2,296
Total change in net position			\$	764	

GASB Statement No. 94, *Public-Private and Public-Public Partnerships and Availability Payment Arrangements* effective for fiscal years beginning after June 15, 2022. This statement aims to improve financial reporting by addressing issues related to public-private and public-public partnership arrangements (PPPs). A PPP is an arrangement in which a government (the transferor) contracts with an operator (a governmental or nongovernmental entity) to provide public services by conveying control of the right to operate or use a nonfinancial asset, such as infrastructure or other capital asset (the underlying PPP asset), for a period of time in an exchange or exchange-like transaction. Metropolitan did not have any contracts that meet the requirements of GASB 94.

Metropolitan is currently evaluating its accounting practices to determine the potential impact on the financial statements for the following GASB Statements that will be implemented in a future fiscal year:

- GASB Statement No. 99, *Omnibus 2022* (some components effective in fiscal year 2023 and 2022 did not have a significant impact to Metropolitan, others effective for fiscal year 2024).
- GASB Statement No. 100, *Accounting Changes and Error Corrections*-an amendment of GASB Statement No. 62 (effective for fiscal year 2024).
- GASB Statement No. 101, Compensated Absences (effective for fiscal year 2025).

NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

# 2. CAPITAL ASSETS

Capital asset activity for the fiscal years ended June 30, 2023 and 2022 was as follows:

Capital assets not being depreciated:         \$ 986,674         \$ 7,709           Construction in progress         811,908         196,851           Total capital assets not being depreciated         1,798,582         204,560           Other capital assets:         13,009         —           Parker power plant and dam         13,009         —           Power recovery plants         220,692         4,077           Other capital assets:         4,003,061         106,795           Pumping plants and facilities         3,139,536         57,161           Power flows and communication facilities         3,139,536         57,161           Power flows and communication facilities         40,061         125           Computer systems software         125,640         4,017           Buildings         179,084         1,636           Major capitoment         111,286         4,414           Pro-operating expenses of original apueduer         112,286         9,444           Participation rights in Stare Water Project (Note 12)         5,587,676         19,587           Total other capital assets (Note 7) <sup>(1)</sup> 10,360         386           Other capital assets in biorical cost         (14,548,833         408,222           Accomulated deprecintion and amortizati	(Dollars in thousands)	June 30,	2021	Additions
Land, casements and rights of way       \$ $986,074$ \$ $7,090$ Construction in progress $1,098$ $196,081$ $1,098,582$ $204,560$ Other capital assets: $1,009$ $$ $20,692$ $4007$ Power recovery plants $220,692$ $4007$ $9,400$ Water transportation facilities $3,139,536$ $57,161$ Power lines and facilities $3,139,536$ $57,161$ Power lines and communication facilities $4,003,061$ $1265$ Computer systems software $123,2400$ $4,017$ Buildings $304,6464$ $2,8855$ Miscellancous $304,6464$ $2,8855$ Miscellancous $304,6464$ $2,8855$ Miscellancous $304,6464$ $2,8855$ Miscellancous $ 4,8795$ $-$ Participation rights in state Water Project (Note 12) $5,587,676$ $193,874$ Participation rights in other facilities (Note 4) $44,999$ $ -$ Lease assets thistorical cost $16,434,833$ $408,222$ $Accore 10^{-0}$ $10,360$ $386$	Capital assets not being depreciated:			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Land, easements and rights of way	\$ 980	5,674	\$ 7,709
Total capital assets not being depreciated         1,798,582         204,560           Other capital assets:         13,009         —           Power recovery plants and dam         220,692         4,007           Other dams and reservoirs         13,879,916         9,940           Water transportation facilities         4,003,061         106,792           Pumping plants and facilities         3,139,536         57,161           Power lines and communication facilities         40,061         125           Computer systems software         122,640         4,017           Buildings         179,084         1,636           Miscellancous         304,646         2,885           Major equipment         111,286         4,414           Participation rights in other facilities (Note 4)         44595         —           Participation rights in other facilities (Note 4)         103,600         386           Subscription assets (Note 8) $^{27}$ —         4,785           Total other capital assets at historical cost         16,434,833         408,222           Accumulated depreciation and amortization:         —         4,785           Parker power plants and facilities         (12,789)         (80)           Other dams and reservoirs         (508,089)	Construction in progress	811	1,908	196,851
Other capital assets:         13,009         —           Parker power plants and dam         13,009         —           Power recovery plants         220,092         4,077           Other dams and reservoirs         4,003,061         106,795           Pumping plants and facilities         4,003,061         106,795           Pumping plants and facilities         3,139,536         57,161           Power lines and communication facilities         44,001         125           Computer systems software         123,640         4,017           Baildings         179,084         1,636           Misor capiting expenses of original aqueduet         44,595         —           Participation rights in other facilities (Note 4)         459,049         —           Participation rights in other facilities (Note 4)         459,049         —           Participation rights in other facilities (Note 4)         459,049         —           Participation rights in other facilities (Note 4)         44,595         —           Total other capital assets at historical cost         16,434,833         408,222           Accumulated depreciation and amorization:         —         4,785           Total other capital assets at historical cost         16,434,833         408,222	Total capital assets not being depreciated	1,798	3,582	204,560
Parker power plant and dam       13,009       —         Power recovery plants       220,692       4,077         Other dams and reservoirs       1,387,916       9,940         Water transportation facilities       4,003,061       106,792         Pumping plants and facilities       3,139,536       57,161         Power lines and communication facilities       3,139,536       57,161         Computer systems software       123,640       4,017         Buildings       179,084       1,635         Major equipment       111,286       4,414         Pre-operating expenses of original aqueduct       44,595       —         Participation rights in state Water Project (Note 12)       5,587,676       193,874         Participation rights in state Water Project (Note 12)       5,587,676       193,874         Participation rights in state Water Project (Note 12)       5,587,676       193,874         Participation sets (Note 7) <sup>(1)</sup> 10,360       366         Causer recovery plants       101,363       408,822         Accumulated depreciation and amorization:       —       4,785         Participation facilities       (12,789)       (80)         Power recovery plants       (110,114)       (5,980)         Other dams and res	Other capital assets:			
Power recovery plants         220,692         4,077           Other dams and reservoirs         1,837,916         9,940           Water transportation facilities         360,222         18,157           Pumping plants and facilities         360,222         18,157           Treatment plants and facilities         3139,536         57,161           Power lines and communication facilities         40,061         125           Computer systems software         123,640         4,017           Buildings         179,084         1,635           Major equipment         111,286         4,441           Pre-operating expenses of original aqueduer         445,055            Participation rights in State Water Project (Note 12)         5,587,676         193,874           Participation rights in State Water Project (Note 12)         5,587,676         193,874           Participation rights in other facilities (Note 4)         45,049            Lease assets (Note 7) <sup>10</sup> 10,360         386           Subscription assets Notes 8) <sup>10</sup> -         -           Other dams and reservoirs         (10,114)         (5,080,09)           Power plant and dam         (12,789)         (80)           Pawter power plant and dam         (12,289) <td>Parker power plant and dam</td> <td>13</td> <td>3,009</td> <td>_</td>	Parker power plant and dam	13	3,009	_
Other dams and reservoirs         1.837,916         9,940           Water transportation facilities         4,003,061         106,795           Pumping plants and facilities         3,139,536         57,161           Power lines and communication facilities         40,00,01         125           Computer systems software         123,640         4,017           Buildings         179,084         1,636           Miscellaneous         304,646         2,855           Major equipment         111,286         4,414           Pre-operating expenses of original aqueduct         44,505         —           Participation rights in other facilities (Note 4)         459,049         —           Lease assets (Note 7) <sup>(0)</sup> 10,300         386           Subscription assets (Note 8) <sup>(0)</sup> —         4,785           Total other capital assets at historical cost         16,434,833         408,222           Accumulated depreciation and amortization:         —         4,785           Participation facilities         (12,789)         (80)           Power plant and dam         (12,2789)         (61,200)           Purpersoptiment and facilities         (14,54,898)         (61,200)           Pumping plants and facilities         (12,289)         (76,3	Power recovery plants	220	0,692	4,077
Water transportation facilities $4,003,061$ $106,795$ Purping plants and facilities $361,222$ $18,157$ Treatment plants and facilities $3,139,536$ $57,161$ Power lines and communication facilities $40,061$ $125$ Computer systems software $123,640$ $4,017$ Buildings $179,084$ $1,636$ Maior equipment $111,286$ $4,414$ Pre-operating expenses of original aqueduct $44,595$ $$ Participation rights in other facilities (Note 4) $459,049$ $$ Lasse assets (Note 7) $^{(0)}$ $10,360$ $386$ Subscription assets (Note 8) $^{(2)}$ $ 4,785$ Total other capital assets at historical cost $16,434,833$ $408,222$ Accumulated depreciation and amorization: $(110,114)$ $(5,080)$ Parker power plant and facilities $(12,789)$ $(80)$ Other dams and reservoirs $(508,089)$ $(26,803)$ Water transportation facilities $(12,289)$ $(468)$ Computer systems of tware $(110,966)$ $(5,997)$	Other dams and reservoirs	1,837	7,916	9,940
Pumping plants and facilities $360,222$ 18,157         Treatment plants and facilities $3,139,536$ 57,161         Power lines and communication facilities $40,061$ 125         Computer systems software       123,640 $4,017$ Buildings $179,084$ $1,636$ Miscellaneous $304,646$ 2,855         Major equipment       111,286 $4,414$ Pre-operating expenses of original aqueduct $44,595$ —         Participation rights in State Water Project (Note 12) $5,587,767$ $193,874$ Participation rights in state Water Project (Note 4) $459,049$ —         Lease assets (Note 7) ( <sup>10</sup> $10,360$ $386$ Subscription assets (Note 8) ( <sup>20</sup> )       — $4,785$ Total other capital assets at historical cost $16,434,833$ $408,222$ Accumulated depreciation and amortization:       Parker power plants and facilities $(12,789)$ $(80)$ Power tenson facilities $(12,789)$ $(80)$ $(10,210)$ $(76,365)$ Power tens and communication facilities $(12,229)$ $(76,365)$ $(76,365)$ $(24,803)$ $(11,214)$ $(3,960)$	Water transportation facilities	4,003	3,061	106,795
Treatment plants and facilities $3,139,536$ $57,161$ Power lines and communication facilities $40,061$ $125$ Computer systems software $123,640$ $40,017$ Buildings $179,084$ $1636$ Miscellaneous $304,646$ $2,855$ Major equipment $111,286$ $44,414$ Pre-operating expenses of original aqueduct $44,595$ —         Participation rights in other facilities (Note 4) $459,049$ —         Lease assets (Note 7) <sup>(0)</sup> $10,360$ $386$ Subscription assets (Note 8) <sup>(2)</sup> — $47,855$ Total other capital assets at historical cost $16,434,833$ $408,222$ Accumulated depreciation and amortization:       — $47,855$ Parker power plant and dam       ( $12,789$ )       ( $800$ Other dams and reservoirs       ( $508,089$ )       ( $26,803$ )         Water transportation facilities       ( $12,229$ )       ( $76,365$ )         Power ines and communication facilities       ( $12,229$ )       ( $76,365$ )         Pre-operating expenses of original aqueduct       ( $44,2121$ )       ( $39,60$ Major equipment       ( $93,627$ )       ( $5920$ )	Pumping plants and facilities	360	),222	18,157
Power lines and communication facilities       40,061       125         Computer systems software       123,640       4,017         Buildings       179,084       1.636         Miscellaneous       304,646       2,855         Major equipment       111,286       4,414         Pre-operating expenses of original aqueduct       44,595       —         Participation rights in State Water Project (Note 12)       5,587,676       193,874         Participation rights in other facilities (Note 4)       459,049       —         Lease assets (Note 7) $^{O}$ 10,360       386         Subscription assets (Note 8) $^{C}$ —       4,785         Total other capital assets at historical cost       16,434,833       408,222         Accumulated depreciation and amortization:       —       4,785         Parker power plant and dam       (12,789)       (80)         Other dams and rescrivers       (508,089)       (26,803)         Water transportation facilities       (11,14)       (5,080)         Other dams and facilities       (12,224)       (10,124)         Trast other capital asset at historied       (12,249)       (66,303)         Water transportation facilities       (12,249)       (66,303)         Other dams and fac	Treatment plants and facilities	3,139	536	57,161
Computer systems software         123,640         4,017           Buildings         179,084         1,536           Miscellaneous         304,646         2,285           Major equipment         111,286         4,414           Pre-operating expenses of original aqueduct         44,595         —           Participation rights in State Water Project (Note 12)         5,587,676         193,874           Participation rights in other facilities (Note 4)         459,049         —           Lease assets (Note 7)         10,560         386           Subscription assets (Note 8)         70         10,560         386           Subscription assets (Note 8)         70         —         4,785           Total other capital assets at historical cost         16,434,833         408,223           Accumulated depreciation and amortization:         (110,114)         (5,080)           Other dams and reservoirs         (508,089)         (26,803)           Other dams and reservoirs         (508,089)         (26,803)           Water transportation facilities         (12,2,224)         (10,124)           Other dams and reservoirs         (508,089)         (26,803)           Other dams and reservoirs         (508,089)         (26,803)           Other davins of f	Power lines and communication facilities	40	0,061	125
Buildings       179,084       1,636         Miscellancous $304,646$ 2,855         Major equipment       111,286       4,414         Pre-operating expenses of original aqueduct $44,595$ —         Participation rights in other facilities (Note 12) $5,587,676$ $193,874$ Participation rights in other facilities (Note 4) $459,049$ —         Lease assets (Note 7) <sup>(1)</sup> $10,360$ $386$ Subscription assets (Note 8) <sup>(2)</sup> $ 4,785$ Total other capital assets at historical cost $16,434,833$ $408,222$ Accumulated depreciation and amortization:       — $ 4,785$ Parker power plant and dam $(12,789)$ $(80)$ Power recovery plants $(110,114)$ $(5080)$ Other dams and reservoirs $(26,803)$ $(26,803)$ Water transportation facilities $(123,224)$ $(10,114)$ Purpting plants and facilities $(123,224)$ $(10,124)$ Power lines and communication facilities $(123,224)$ $(10,200)$ Purticipation rights in other facilities $(25,997)$ $(36,27)$ $(5,997)$ Buildings	Computer systems software	123	3,640	4,017
Miscellaneous $304,646$ $2,855$ Major equipment         111,286 $4,414$ Pre-operating expenses of original aqueduct $44,595$ $-$ Participation rights in State Water Project (Note 12) $5,587,676$ $193,874$ Participation rights in other facilities (Note 4) $459,049$ $-$ Lease assets (Note 7) $10,360$ $386$ Subscription assets (Note 8) $  4,785$ Total other capital assets at historical cost $16,434,833$ $408,222$ Accumulated depreciation and amortization: $  4,785$ Parker power plant and dam         (12,789)         (80)           Other dams and reservoirs $(508,089)$ $(26,083)$ Water transportation facilities         (110,114) $(5,080)$ Other dams and reservoirs $(123,224)$ $(10,124)$ Treatment plants and facilities $(122,289)$ $(446)$ Computer systems oftware $(110,966)$ $(5,977)$ Buildings $(41,211)$ $(33,627)$ $(52,28)$ Pre-operating expenses of original aqueduct	Buildings	179	2.084	1.636
Major equipment111,2864,414Pre-operating expenses of original aqueduct44,595Participation rights in State Water Project (Note 12) $5,587,676$ $193,874$ Participation rights in other facilities (Note 4) $459,049$ Lease assets (Note 7) $10,360$ $386$ Subscription assets (Note 8) $ 4,785$ Total other capital assets at historical cost $16,434,833$ $408,222$ Accumulated depreciation and amortization:111,140 $(5,080)$ Parker power plant and dam $(12,789)$ $(80)$ Other dams and reservoirs $(508,089)$ $(26,803)$ Water transportation facilities $(110,114)$ $(5,080)$ Other dams and reservoirs $(110,114)$ $(5,080)$ Other dams and reservoirs $(123,224)$ $(10,124)$ Treatment plants and facilities $(122,289)$ $(468)$ Computer systems software $(110,966)$ $(5,997)$ Buildings $(12,1980)$ $(11,531)$ Major equipment $(93,627)$ $(5,928)$ Pre-operating expenses of original aqueduct $(44,595)$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 8) $(2,649)$ $(-5,687,390)$ $(-5,687,390)$ Other capital assets, net $ (592,997)$ Data and facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) $(-)$ $(-)$ $(-)$ Data assets, Note 8) $(2,612)$ $ (-)$ <td< td=""><td>Miscellaneous</td><td>304</td><td>1.646</td><td>2.855</td></td<>	Miscellaneous	304	1.646	2.855
Dre-operating expenses of original aqueduct $44,595$ $-$ Participation rights in State Water Project (Note 12) $5,587,676$ $193,874$ Participation rights in State Water Project (Note 4) $459,049$ $-$ Lease assets (Note 7) $^{(0)}$ $10,560$ $386$ Subscription assets (Note 8) $^{(2)}$ $ 4,785$ Total other capital assets at historical cost $16,434,833$ $408,222$ Accumulated depreciation and amortization: $12,789$ (80)Parker power plant and dam $(12,789)$ (80)Other dams and reservoirs $(508,089)$ $(26,803)$ Water transportation facilities $(11,514,898)$ (61,200)Pumping plants and facilities $(12,229)$ (76,365)Power systems software $(110,966)$ $(5,997)$ Buildings $(121,2980)$ $(11,531)$ Major equipment $(93,627)$ $(5,228)$ Pre-operating expenses of original aqueduct $(44,595)$ $-$ Participation rights in State Water Project (Note 12) $(1,670)$ $(1,670)$ Major equipment $(245,433)$ $(13,780)$ Lease assets (Note 7) $^{(0)}$ $(1,670)$ $(1,670)$ Lease assets (Note 8) $^{(2)}$ $ -$ Subscription assets (Note 8) $^{(2)}$ $ (522)$ Drad accumulated depreciation and amortization $(7,687,300)$ $(374,087)$ Other capital assets, net $8,747,443$ $34,135$ Total assets, net $8,105,40,6025$ $8,228,605$ Deparation and assets, net $8,105,40,6025$ <	Maior equipment	111	1.286	4.414
Participation rights in State Water Project (Note 12) $5,587,676$ $193,874$ Participation rights in other facilities (Note 4) $459,049$ $-$ Lease assets (Note 7) $10,360$ $386$ Subscription assets (Note 8) $6^{\circ}$ $-$ Total other capital assets at historical cost $16,434,833$ $408,222$ Accumulated depreciation and amortization: $110,114$ $(5,080)$ Parker power plant and dam $(12,789)$ $(80)$ Other dams and reservoirs $(508,089)$ $(26,803)$ Water transportation facilities $(110,114)$ $(5,080)$ Pumping plants and facilities $(12,249)$ $(10,124)$ Prestment plants and facilities $(12,289)$ $(468)$ Computer systems software $(110,966)$ $(5,997)$ Buildings $(111,248)$ $(110,216)$ Major equipment $(93,627)$ $(5,928)$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) $(10,70)$ $(1,674)$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) $(10,70)$ $(1,674)$ $(16,70)$ Other capital assets, net $8,747,443$ $34,135$ Total capital assets, net $8,747,443$ $34,135$ Total capital assets, net $8,747,443$ $34,135$ Total capital assets, net $8,747,443$ $34,135$ Total capital assets, net $8,747,443$ $34,135$ Total capital assets, net $8,747,443$ $34,135$	Pre-operating expenses of original aqueduct	44	4.595	.,
Participation rights in other facilities (Note 4) $459,049$ $-$ Lease assets (Note 7) (1) $10,360$ $386$ Subscription assets (Note 8) (12) $ 4,785$ Total other capital assets at historical cost $16,434,833$ $408,222$ Accumulated depreciation and amortization: $12,789$ (80)Parker power plant and dam $(12,789)$ (80)Other dams and reservoirs $(508,089)$ (26,803)Water transportation facilities $(11,11,4)$ (5,080)Other dams and reservoirs $(508,089)$ (26,803)Water transportation facilities $(12,224)$ $(10,124)$ Treatment plants and facilities $(12,289)$ (468)Computer systems software $(110,966)$ (5,997)Buildings $(11,11)$ $(3,969)$ Miscellaneous $(12,1980)$ $(11,531)$ Major equipment $(93,627)$ $(5,928)$ Pre-operating expenses of original aqueduct $(44,595)$ $-$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) (1) $(1,670)$ $(1,670)$ $(1,670)$ Other capital assets, net $7,057,390$ $(374,087)$ Total accumulated depreciation and amortization $7,687,390$ $(374,087)$ Other capital assets, net $$10,546,025$ $$238,055$ Depresention and amortization $$7,67,535$ $$238,055$ Depresention and amortization and amortization $$7,67,5390$ $$374,087$ Other capital assets, net $$10,546,025$ $$$	Participation rights in State Water Project (Note 12)	5.58	7.676	193.874
Lase assets (Note 7)10,300386Lease assets (Note 8) $^{(2)}$ $-$ 4,785Total other capital assets at historical cost16,434,833408,222Accumulated depreciation and amortization:112,789(80)Parker power plant and dam(12,789)(80)Other dams and reservoirs(508,089)(26,803)Water transportation facilities(110,114)(5,080)Pumping plants and facilities(12,3224)(10,124)Treatment plants and facilities(12,3224)(10,124)Treatment plants and facilities(12,289)(468)Computer systems software(110,966)(5,997)Buildings(11,2980)(11,531)Major equipment(93,627)(5,928)Participation rights in state Water Project (Note 12)(4,151,585)(15,486)Participation rights in other facilities (Note 4)(245,433)(13,780)Lease assets (Note 7)(1,670)(1,670)(1,684)Subscription assets (Note 8)(2(374,087)(592,00)Other capital assets, net(7,687,390)(374,087)(374,087)Total activitial assets, net\$10,546,025\$238,005Daracetion and amortization and amortization(7,687,390)(374,087)Daracetion and assets, net\$10,546,025\$238,005	Participation rights in other facilities (Note 4)	450	9.049	
Subscription assets (Note 8) $(2)$ $ 4,785$ Total other capital assets at historical cost16,434,833408,222Accumulated depreciation and amortization: $(12,789)$ (80)Parker power plant and dam $(12,789)$ (80)Power recovery plants $(110,114)$ $(5,080)$ Other dams and reservoirs $(586,089)$ (26,803)Water transportation facilities $(123,224)$ $(10,124)$ Treatment plants and facilities $(123,224)$ $(10,124)$ Treatment plants and facilities $(122,289)$ (468)Computer systems software $(110,966)$ $(5997)$ Buildings $(41,211)$ $(3,969)$ Miscellaneous $(121,980)$ $(11,531)$ Major equipment $(93,627)$ $(5,928)$ Pre-operating expenses of original aqueduct $(44,595)$ $-$ Participation rights in State Water Project (Note 12) $(4,151,585)$ $(150,486)$ Participation rights in state Water Project (Note 4) $(245,433)$ $(13,780)$ Lase assets (Note 7) $(0)$ $(1,670)$ $(1,670)$ $(1,670)$ Subscription assets (Note 8) $(2)$ $ (592,730)$ $(592,893)$ Other capital assets, net $(7,687,390)$ $(374,087)$ $(374,087)$ Total acumulated depreciation and amortization $(7,687,390)$ $(374,087)$ Other capital assets, net $$10,546,025$ $$$238,695$ $-$ Total acumulated metrication and amortization $$$10,546,025$ $$$238,695$ Depreseriation and amortizati	Lease assets (Note 7) <sup>(1)</sup>	10	) 360	386
Total other capital assets a historical cost(16,434,833408,222Total other capital assets a historical cost(16,434,833408,222Accumulated depreciation and amortization:Parker power plant and dam(12,789)(80)Power recovery plants(110,114)(508,089)(26,803)Water transportation facilities(110,124)Pumping plants and facilities(110,966)(59,920)Power lines and communication facilities(110,966)(59,920)Power lines and communication facilities(110,966)(59,920)Power lines and communication facilities(110,966)(59,920)Power lines and communication facilities(110,966)(59,920)Power lines and communication facilities(110,966)(59,920)Power lines and communication facilities(110,966)(59,920)Power lines and communication facilities(110,966)(59,928)Power lines and communication facilities(110,966)(59,928)Power lines and communication facilities(110,966)(59,928)Major equipment(93,627)(59,28)Pre-coperating expenses of original aqueduct(44,595)(44,595)Participation r	Subscription assets (Note 8) $^{(2)}$			4 785
Accumulated depreciation and amortization: $(3/10 + 900)$ $(3/10 + 900)$ Parker power plant and dam $(12,789)$ $(80)$ Power recovery plants $(110,114)$ $(5,080)$ Other dams and reservoirs $(508,089)$ $(26,803)$ Water transportation facilities $(1154,898)$ $(61,200)$ Pumping plants and facilities $(12,229)$ $(10,124)$ Treatment plants and facilities $(954,920)$ $(76,365)$ Power lines and communication facilities $(12,289)$ $(468)$ Computer systems software $(110,966)$ $(5,997)$ Buildings $(12,1980)$ $(11,531)$ Major equipment $(93,627)$ $(5,928)$ Pre-operating expenses of original aqueduct $(44,595)$ $$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) <sup>(1)</sup> $(1,670)$ $(1,670)$ $(1,670)$ Subscription assets, net $(7,687,390)$ $(374,087)$ Total accumulated depreciation and amortization $(7,687,390)$ $(374,087)$ Other capital assets, net $$10,546,025$ \$ 238,695Depresentione and amortization and spectration $$10,546,025$ \$ 238,695	Total other capital assets at historical cost	16 434	4 833	408 222
Parker power plant and dam(12,789)(80)Power recovery plants(110,114)(5,080)Other dams and reservoirs(508,089)(26,803)Water transportation facilities(1,154,898)(61,200)Pumping plants and facilities(123,224)(10,124)Treatment plants and facilities(12,289)(76,365)Power lines and communication facilities(12,289)(468)Computer systems software(110,966)(5,997)Buildings(41,211)(3,969)Miscellaneous(121,980)(11,531)Major equipment(93,627)(5,928)Pre-operating expenses of original aqueduct(44,595)Participation rights in other facilities (Note 4)(245,433)(13,780)Lease assets (Note 7)(1)(1,670)(1,684)Subscription assets (Note 8)(2)-(5922)Total accumulated depreciation and amortization(7,687,390)(374,087)Other capital assets, net\$10,546,025\$Total capital assets, net\$10,546,025\$Depreciation aged as cfollower\$10,546,025\$Depreciation and amortization\$10,546,025\$Depreciation assets, net\$10,546,025\$Depreciation assets, net\$10,546,025\$Depreciation assets, net\$10,546,025\$Depreciation assets, net\$10,546,025\$Depreciation assets, net\$10,546,025\$<	Accumulated depreciation and amortization:	10,10	1,000	100,222
Power recovery plants $(15,0)$ $(05)$ Other dams and reservoirs $(110,114)$ $(508)$ Water transportation facilities $(123,224)$ $(10,124)$ Pumping plants and facilities $(123,224)$ $(10,124)$ Treatment plants and facilities $(954,920)$ $(76,365)$ Power lines and communication facilities $(12,289)$ $(468)$ Computer systems software $(110,0)66$ $(5,997)$ Buildings $(41,211)$ $(3,969)$ Miscellaneous $(121,980)$ $(11,531)$ Major equipment $(93,627)$ $(5,928)$ Pre-operating expenses of original aqueduct $(44,595)$ -Participation rights in state Water Project (Note 12) $(41,511,585)$ $(150,486)$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) <sup>(1)</sup> $(1,670)$ $(1,670)$ $(1,684)$ Subscription assets (Note 8) <sup>(2)</sup> - $(592)$ -Total accumulated depreciation and amortization $(7,687,390)$ $(374,087)$ Other capital assets, net $$10,546,025$ \$ 238,695Depreciption agost gated as follower: $$10,546,025$ \$ 238,695	Parker power plant and dam	(12	2 789)	(80)
Other dams and reservoirs $(10,11)$ $(10,11)$ $(26,803)$ Water transportation facilities $(508,08)$ $(26,803)$ Water transportation facilities $(1,154,898)$ $(61,200)$ Pumping plants and facilities $(123,224)$ $(10,124)$ Treatment plants and facilities $(954,920)$ $(76,365)$ Power lines and communication facilities $(12,289)$ $(468)$ Computer systems software $(110,966)$ $(5,997)$ Buildings $(41,211)$ $(3,969)$ Miscellaneous $(121,980)$ $(11,531)$ Major equipment $(93,627)$ $(5,928)$ Participation rights in State Water Project (Note 12) $(44,595)$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) <sup>(1)</sup> $(1,670)$ $(1,670)$ $(1,684)$ Subscription assets, net $(7,687,390)$ $(374,087)$ Other capital assets, net $8,747,443$ $34,135$ Total capital assets, net $$10,546,025$ $$238,695$	Power recovery plants	(11)	) 114)	(5.080)
Water transportation facilities $(0,0,0)$ $(0,0,0)$ Pumping plants and facilities $(1,154,898)$ $(61,200)$ Pumping plants and facilities $(123,224)$ $(10,124)$ Treatment plants and facilities $(954,920)$ $(76,365)$ Power lines and communication facilities $(12,289)$ $(468)$ Computer systems software $(110,966)$ $(5,997)$ Buildings $(41,211)$ $(3,969)$ Miscellaneous $(121,980)$ $(11,531)$ Major equipment $(93,627)$ $(5,928)$ Pre-operating expenses of original aqueduct $(44,595)$ Participation rights in State Water Project (Note 12) $(4,151,585)$ $(150,486)$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) <sup>(1)</sup> $(1,670)$ $(1,670)$ $(1,684)$ Subscription assets (Note 8) <sup>(2)</sup> $ (592)$ Total accumulated depreciation and amortization $(7,687,390)$ $(374,087)$ Other capital assets, net $$10,546,025$ $$ 238,695$ Total capital assets, net $$ 10,546,025$ $$ 238,695$ Depreceiving and mortization was charged as follows: $$ 10,546,025$ $$ 238,695$	Other dams and reservoirs	(508	8 () 8 9)	(26,803)
Numer intervention $(1,2,3,24)$ $(10,124)$ Pumping plants and facilities $(123,224)$ $(10,124)$ Treatment plants and facilities $(123,224)$ $(468)$ Computer systems software $(110,966)$ $(5,997)$ Buildings $(41,211)$ $(3,969)$ Miscellaneous $(121,980)$ $(11,531)$ Major equipment $(93,627)$ $(5,928)$ Pre-operating expenses of original aqueduct $(44,595)$ Participation rights in State Water Project (Note 12) $(4,151,585)$ $(150,486)$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) <sup>(1)</sup> $(1,670)$ $(1,670)$ $(1,684)$ Subscription assets (Note 8) <sup>(2)</sup> - $(592)$ -Total accumulated depreciation and amortization $(7,687,390)$ $(374,087)$ Other capital assets, net $8,747,443$ $34,135$ Total capital assets, net $$10,546,025$ $$238,695$ Depreciption end amortization was charged as follows: $$10,546,025$ $$238,695$	Water transportation facilities	(1 154	4 898)	(61,200)
Treatment plants and facilities $(155,221)$ $(155,221)$ Power lines and facilities $(954,920)$ $(76,365)$ Power lines and communication facilities $(12,289)$ $(468)$ Computer systems software $(110,966)$ $(5,997)$ Buildings $(41,211)$ $(3,969)$ Miscellaneous $(121,980)$ $(11,531)$ Major equipment $(93,627)$ $(5,928)$ Pre-operating expenses of original aqueduct $(44,595)$ Participation rights in State Water Project (Note 12) $(4,151,585)$ $(150,486)$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) <sup>(1)</sup> $(1,670)$ $(1,670)$ $(1,684)$ Subscription assets (Note 8) <sup>(2)</sup> $ (592)$ Total accumulated depreciation and amortization $(7,687,390)$ $(374,087)$ Other capital assets, net $8,747,443$ $34,135$ Total capital assets, net $$10,546,025$ $$238,695$ Depreciption asset follower: $$10,546,025$ $$238,695$	Pumping plants and facilities	(1,13)	3 224)	(10,124)
Included $(154,329)$ $(16,503)$ Power lines and nomination facilities $(12,289)$ $(468)$ Computer systems software $(110,966)$ $(5,997)$ Buildings $(41,211)$ $(3,969)$ Miscellaneous $(12,289)$ $(11,531)$ Major equipment $(93,627)$ $(5,928)$ Pre-operating expenses of original aqueduct $(44,595)$ $$ Participation rights in State Water Project (Note 12) $(4,151,585)$ $(150,486)$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) <sup>(1)</sup> $(1,670)$ $(1,670)$ $(1,684)$ Subscription assets (Note 8) <sup>(2)</sup> $ (592)$ Total accumulated depreciation and amortization $(7,687,390)$ $(374,087)$ Other capital assets, net $8,747,443$ $34,135$ Total capital assets, net $$10,546,025$ $$238,695$ Depreciption asset follower: $$10,546,025$ $$238,695$	Treatment plants and facilities	(954	4.920)	(10,121) (76.365)
Fower nices and communication facilities $(12,20)$ $(10,966)$ $(5,997)$ Buildings $(110,966)$ $(5,997)$ Buildings $(41,211)$ $(3,969)$ Miscellaneous $(121,980)$ $(11,531)$ Major equipment $(93,627)$ $(5,928)$ Pre-operating expenses of original aqueduct $(44,595)$ $-$ Participation rights in State Water Project (Note 12) $(4,151,585)$ $(150,486)$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) <sup>(1)</sup> $(1,670)$ $(1,684)$ Subscription assets (Note 8) <sup>(2)</sup> $ (592)$ Total accumulated depreciation and amortization $(7,687,390)$ $(374,087)$ Other capital assets, net $\$,747,443$ $34,135$ Total capital assets, net $\$,747,443$ $323,695$ Descretion and amortization $\$,747,443$ $$238,695$	Power lines and communication facilities	()3-	2 289)	(468)
Computer systems software $(110,700)$ $(3,977)$ Buildings $(41,211)$ $(3,969)$ Miscellaneous $(121,980)$ $(11,531)$ Major equipment $(93,627)$ $(5,928)$ Pre-operating expenses of original aqueduct $(44,595)$ $-$ Participation rights in State Water Project (Note 12) $(4,151,585)$ $(150,486)$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) <sup>(1)</sup> $(1,670)$ $(1,684)$ Subscription assets (Note 8) <sup>(2)</sup> $ (592)$ Total accumulated depreciation and amortization $(7,687,390)$ $(374,087)$ Other capital assets, net $8,747,443$ $34,135$ Total capital assets, net $$10,546,025$ $$238,695$ Descretion and amortization $$10,546,025$ $$238,695$	Computer systems software	(12	1,205)	(5.997)
Durdings $(41,211)$ $(5,503)$ Miscellaneous $(121,980)$ $(11,531)$ Major equipment $(93,627)$ $(5,928)$ Pre-operating expenses of original aqueduct $(44,595)$ -Participation rights in State Water Project (Note 12) $(4,151,585)$ $(150,486)$ Participation rights in other facilities (Note 4) $(245,433)$ $(13,780)$ Lease assets (Note 7) <sup>(1)</sup> $(1,670)$ $(1,684)$ Subscription assets (Note 8) <sup>(2)</sup> - $(592)$ Total accumulated depreciation and amortization $(7,687,390)$ $(374,087)$ Other capital assets, net $8,747,443$ $34,135$ Total capital assets, net $$10,546,025$ $$238,695$ Descretion and amortization was charged as follows: $$238,695$	Buildinge	(110	1 211)	(3,997)
Macchallouts(121,500)(121,500)Major equipment(93,627)(5,928)Pre-operating expenses of original aqueduct(44,595)Participation rights in State Water Project (Note 12)(4,151,585)(150,486)Participation rights in other facilities (Note 4)(245,433)(13,780)Lease assets (Note 7) <sup>(1)</sup> (1,670)(1,684)Subscription assets (Note 8) <sup>(2)</sup> (592)Total accumulated depreciation and amortization(7,687,390)(374,087)Other capital assets, net8,747,44334,135Total capital assets, net\$10,546,025\$Depreciation and amortization was charged as follows:238,695	Miscelleneous	(12)	1 980)	(11,531)
Major equipment(53,027)(5,928)Pre-operating expenses of original aqueduct(44,595)—Participation rights in State Water Project (Note 12)(4,151,585)(150,486)Participation rights in other facilities (Note 4)(245,433)(13,780)Lease assets (Note 7) <sup>(1)</sup> (1,670)(1,684)Subscription assets (Note 8) <sup>(2)</sup> —(592)Total accumulated depreciation and amortization(7,687,390)(374,087)Other capital assets, net8,747,44334,135Total capital assets, net\$ 10,546,025238,695Depreciation and amortization was charged as follows:\$ 10,546,025\$ 238,695	Major equipment	(12)	3 6 27)	(11,551)
Participation rights in State Water Project (Note 12) Participation rights in other facilities (Note 12) Lease assets (Note 7) <sup>(1)</sup> Subscription assets (Note 8) <sup>(2)</sup> Total accumulated depreciation and amortization Other capital assets, net Total capital assets, net Depreciation and amortization was charged as follows: (44,59,5) (150,486) (245,433) (13,780) (16,64) (1,670) (1,670) (7,687,390) (374,087) (374,087) Subscription and amortization Other capital assets, net Total capital assets, net Total capital assets, net Subscription and amortization (7,687,390) (374,087) Subscription and amortization (7,687,390) (374,087) Subscription and amortization (7,687,390) (374,087) (37	Pro operating expenses of original equeduct	().	1,027)	(3,720)
Participation rights in state watch Project (Note 12)(1,51,565)(155,460)Participation rights in other facilities (Note 4)(245,433)(13,780)Lease assets (Note 7)(1,670)(1,684)Subscription assets (Note 8)(2)-(592)Total accumulated depreciation and amortization(7,687,390)(374,087)Other capital assets, net8,747,44334,135Total capital assets, net\$ 10,546,025238,695Depreciation and amortization was charged as follows:10,546,025\$ 238,695	Pre-operating expenses of original aqueduct	(4-	1 595)	(150.486)
Participation lights in other factures (Note 4)(15,760)Lease assets (Note 7) <sup>(1)</sup> (1,670)Subscription assets (Note 8) <sup>(2)</sup> —Total accumulated depreciation and amortization(7,687,390)Other capital assets, net8,747,443Total capital assets, net10,546,025Depreciation and amortization was charged as follows:	Participation rights in other fealities (Note 4)	(4,13)	= 422)	(130,480)
Lease assets (rote /) **(1,070)(1,064)Subscription assets (Note 8) (2)—(592)Total accumulated depreciation and amortization(7,687,390)(374,087)Other capital assets, net8,747,44334,135Total capital assets, net\$ 10,546,025238,695Depreciation and amortization was charged as follows:\$ 10,546,025\$ 238,695	Leave assets $(1)$ (1)	(24)	1,433) 1,670)	(15,760)
Subscription assets (Note 6)—(352)Total accumulated depreciation and amortization(7,687,390)(374,087)Other capital assets, net8,747,44334,135Total capital assets, net\$ 10,546,025\$ 238,695Depreciation and amortization was charged as follows:\$ 10,546,025\$ 238,695	Subscription assots (Note 7) $(2)$	(1	1,070)	(1,084)
Other capital assets, net(7,067,390)(374,087)Total capital assets, net8,747,44334,135Total capital assets, net\$ 10,546,025\$ 238,695Depreciation and amortization was charged as follows:\$ 10,546,025\$ 238,695	Total accomputed depresention and emertionation	17 10	7 300)	(392)
Total capital assets, net     0,/4/,445     54,155       Total capital assets, net     \$ 10,546,025     \$ 238,695	Other conital assots not	(/,08)	7 4 4 2	(3/4,08/)
Total capital assets, net     No. 238,095       Depreciation and amortization was charged as follows:     238,095	Tatal applial assets, net	\$,/4	(	\$ 228.05
THE ATTENDED AND AND AND AND AND AND AND AND AND AN	Popular capital assets, flet	ş 10,540	9,029	₽ <u>∠</u> 38,695

Depreciation of water related assets

Amortization of State Water Project participation rights (Note 12)

Amortization of other participation rights (Note 4)

Amortization of lease assets and subscription assets (Notes 7 and 8)

Depreciation and amortization expense related to capital assets

Plus: Net retirements adjusted to expense

Total depreciation and amortization expense

<sup>(1)</sup> For the implementation of GASB 87 in fiscal year 2022, Metropolitan restated fiscal 2021 balances.

<sup>(2)</sup> For the implementation of GASB 96 in fiscal year 2023, Metropolitan restated fiscal 2022 balances, as required but fiscal 2021 balances were not restated as it was not practical to do so.
#### NOTES TO BASIC FINANCIAL STATEMENTS

	Reductions		June 30, 2022		Additions		Reductions		June 30, 2023
\$	(5.836)	\$	988 547	\$	1.775	\$	(507)	\$	989.815
Ŷ	(205 240)	Ŷ	803 519	Ŷ	279 018	Ŷ	(339 440)	Ŷ	743 097
	(211,076)		1,792,066		280,793		(339,947)		1,732,912
			, ,		,				, ,
	_		13,009		—		—		13,009
	(1,149)		223,620		1,939		(108)		225,451
	(415)		1,847,441		24,336		(2,901)		1,868,876
	(9,739)		4,100,117		125,562		(17,381)		4,208,298
	(243)		378,136		8,792		(2,348)		384,580
	(6,157)		3,190,540		43,510		(6,585)		3,227,465
	_		40,186		10		_		40,196
	_		127,657		25,347		(828)		152,176
	(14)		180,706		105,006		(48,734)		236,978
	(209)		307,292		1,573		(755)		308,110
	(4,587)		111,113		8,022		(1,560)		117,575
	_		44,595		·		_		44,595
	(52,428)		5,729,122		192,616		(56,381)		5,865,357
			459,049		·		( <i>, _ ,</i>		459,049
	(194)		10,552		843		(240)		11,155
			4,785		3,687		<u> </u>		8,472
	(75,135)		16,767,920		541,243		(137,821)		17,171,342
	—		(12,869)		(72)				(12,941)
			(115,194)		(5,530)		108		(120,616)
	402		(534,490)		(25,802)		2,901		(557,391)
	7,232		(1,208,866)		(62,688)		7,074		(1,264,480)
	243		(133,105)		(8,488)		273		(141,320)
	1,241		(1,030,044)		(77,260)		6,548		(1,100,756)
	—		(12,757)		(459)				(13,216)
			(116,963)		(5,966)		828		(122,101)
	14		(45,166)		(5,183)		26,225		(24,124)
	_		(133,511)		(10,003)		486		(143,028)
	4,553		(95,002)		(6,146)		1,539		(99,609)
	—		(44,595)		_		—		(44,595)
	—		(4,302,071)		(140,144)		—		(4,442,215)
	—		(259,213)		(13,779)		—		(272,992)
	194		(3,160)		(1,663)		240		(4,583)
	—		(592)		(2,485)		—		(3,077)
	13,879		(8,047,598)		(365,668)		46,222		(8,367,044)
	(61,256)		8,720,322		175,575		(91,599)		8,804,298
\$	(272,332)	\$	10,512,388	\$	456,368	\$	(431,546)	\$	10,537,210
		\$	207 545					\$	207 597
		Ŷ	150 486					Ŷ	140 144
			13 780						13 770
			2 276						4 1/9
			374.087						365 668
			3 201						20,000
		\$	3,271					\$	386 406

# 3. CASH AND INVESTMENTS

As a public agency, Metropolitan's investment practices are prescribed by various provisions of the California Government Code and the Act, as well as by administrative policies. Metropolitan's statement of investment policy is approved annually by the Board and describes the Treasurer's investment authority, practices, and limitations. The basic investment policy objectives, in order of importance, are safety of principal, liquidity, and return on investment.

Cash and investments may or may not be restricted as to use, depending on the specific purposes for which such assets are held. See Notes 3(d) and 15.

Metropolitan's total deposits and investments are reported at fair value in the following funds:

	 June 30,						
(Dollars in thousands)	 2023		2022				
Proprietary Funds	\$ 1,590,040	\$	1,537,719				
Fiduciary Funds	4,698		5,112				
Total deposits and investments	\$ 1,594,738	\$	1,542,831				
Deposits	\$ 58	\$	382				
Investments	1,594,680		1,542,449				
Total deposits and investments	\$ 1,594,738	\$	1,542,831				

A summary of Metropolitan's deposit and investment policies, information on interest and credit risks, and restricted cash and investments is provided below.

# (a) Deposits

The California Government Code requires California banks and savings and loan associations to secure a local government agency's deposits by pledging government securities as collateral.

As of June 30, 2023 Metropolitan's cash balance included \$53,000 and \$5,000 of deposits with financial institutions and cash on hand, respectively. Cash balance as of June 30, 2022 included \$377,000 and \$5,000 of deposits with financial institutions and cash on hand, respectively.

## (b) Investments

Metropolitan is permitted by State law and Board policy to invest in a variety of instruments including U.S. Treasury securities, federal agencies, Supranationals, asset-backed, repurchase agreements, negotiable certificates of deposit, bankers' acceptances, prime commercial paper, Government-sponsored enterprise (GSE), California local agency securities, including securities issued by Metropolitan, medium-term corporate notes, time deposits, investment contracts, money market funds, California Asset Management Program (CAMP), and Local Agency Investment Fund (LAIF).

	June 30,						
(Dollars in thousands)		2023		2022			
Asset-backed securities	\$	54,547	\$	93,055			
CAMP		559,817		324,888			
Federal agency securities		142,858		50,226			
GSE		12,995		14,750			
LAIF		25,000		75,000			
Medium-term corporate notes		211,609		208,477			
Money market funds		1,022		1,732			
Municipal bonds		2,083		3,139			
Negotiable certificates of deposit		122,040		226,178			
Prime commercial paper		150,024		212,293			
Supranationals		6,728		73,738			
U.S. Treasury securities		305,957		258,973			
Total investments	\$	1,594,680	\$	1,542,449			

As of June 30, 2023 and 2022, Metropolitan had the following investments at fair value:

Metropolitan categorizes its fair value measurements within the fair value hierarchy established by U.S. GAAP. The hierarchy is based on the valuation inputs used to measure fair value of the assets. Level 1 are quoted prices in an active market for identical assets; Level 2 inputs are significant other observable inputs; and Level 3 inputs are significant unobservable inputs.

June 30, 2023 and 2022

The following is the summary of the fair value hierarchy of the fair value of investments of Metropolitan as of June 30, 2023 and 2022:

	Fair Value Measurement Using											
(Dollars in thousands)	6/	30/2023	( P N I (	Quoted Prices in Active Markets for dentical Assets Level 1)	Si Ol	gnificant Other bservable Inputs Level 2)	6/	/30/2022	1 1 1 (	Quoted Prices in Active Markets for dentical Assets Level 1)	Si O (	gnificant Other bservable Inputs Level 2)
Investments by fair value level:												
Asset-backed securities	\$	54,547	\$	54,547	\$	_	\$	93,055	\$	93,055	\$	_
Federal agency securities		142,858		142,858		_		50,226		50,226		_
GSE		12,995		12,995		_		14,750		14,750		_
Medium-term corporate notes		211,609		206,718		4,891		208,477		208,477		_
Municipal bonds		2,083		2,083				3,139		3,139		
Negotiable certificates of deposit		122,040		_		122,040		226,178				226,178
Prime commercial paper		150,024		_		150,024		212,293		59,845		152,448
Supranationals		6,728		6,728		_		73,738		73,738		_
U.S. Treasury securities		305,957		305,957		—		258,973		258,973		
Total investments by fair value level	\$1	,008,841	\$	731,886	\$	276,955	\$ 1	,140,829	\$	762,203	\$	378,626
Investments not subject to fair value level:												
CAMP		559,817						324,888				
LAIF		25,000						75,000				
Money market funds <sup>(1)</sup>		1,022						1,732				
Total investments not subject to fair value level		585,839						401,620				
Total investments	\$1,	,594,680					\$1	,542,449				

<sup>(1)</sup> As of June 30, 2023, the balance was invested in Dreyfus Government Cash Management (DGCXX). In the same period of 2022, the balance was invested in Dreyfus Government Cash Management and Dreyfus AMT-Free Tax-Exempt Cash Management (DGCXX and DEIXX).

Investments classified in Level 1 of the fair value hierarchy, valued at \$731.9 million and \$762.2 million as of June 30, 2023 and 2022, respectively, were valued using quoted prices in active markets.

Medium-term corporate notes totaling \$4.9 million as of June 30, 2023, negotiable certificates of deposit totaling \$122.0 million and \$226.2 million as of June 30, 2023 and 2022, respectively, and prime commercial paper totaling \$150.0 million and \$152.4 million as of June 30, 2023 and 2022, respectively, are classified in Level 2 of the fair value hierarchy using cost, matrix, GSP, and Bloomberg pricing.

Metropolitan owns investments utilizing a stable one dollar per share value. These investment assets are exempt from reporting under the fair value measurement levels. There are no redemption restrictions for the investments reported at a value of one dollar per share. The total investments reported at a value of one dollar per share. The total investments reported at a value of one dollar per share were \$585.8 million and \$401.6 million at June 30, 2023 and 2022, respectively.

CAMP and LAIF are carried at fair value, or the value of each participating dollar as provided by CAMP and LAIF, respectively. The fair value of Metropolitan's position in CAMP and LAIF is the same as the value of the pool shares. The pooled funds are not subject to level 1, 2 or 3 of the fair value hierarchy.

*Interest rate risk.* In accordance with Metropolitan's investment policy, interest rate risk was managed by limiting the duration of the various portfolio segments. Each segment has limitations on the amount of duration exposure (see the following for specific durations).

### Liquidity Segment

This segment of the portfolio was managed against the Intercontinental Exchange Bank of America Merrill Lynch (ICE BoAML) 3-Month Treasury Bill Index, approved by the Finance and Insurance Committee. The benchmark duration as of June 30, 2023 and 2022 were 0.23 and 0.24, respectively, and the portfolio duration was permitted to vary from the benchmark by plus or minus 0.50. As of June 30, 2023 and 2022, Metropolitan's investments and portfolio durations for this segment were as follows:

	June 30,							
	2023				2022			
(Dollars in thousands)		Fair value		Duration		Fair value	Duratio	n
Asset-backed securities	\$	36,325		0.37	\$	86,037	0.4	9
CAMP		559,817				324,888	—	_
Federal agency securities		85,976		0.31		48,909	0.6	7
LAIF		25,000		_		75,000	_	_
Medium-term corporate notes		72,786		0.54		163,888	0.5	5
Money market funds		1		—		1	_	_
Municipal bonds				—		_	_	_
Negotiable certificates of deposit		113,444		0.45		226,178	0.3	2
Prime commercial paper		101,026		0.08		212,293	0.1	2
Supranationals		_		_		63,110	0.5	3
U.S. Treasury securities		45,211		0.29		149,522	0.6	0
Total portfolio segment	\$	1,039,586			\$	1,349,826		
Portfolio duration				0.15			0.2	9

## Core Segment

This segment of the portfolio was managed against the ICE BoAML, U.S. Corporate and Government, one to five years, A-Rated and above index approved by the Finance and Insurance Committee. For fiscal years 2023 and 2022, the benchmark durations were 2.57 and 2.61, respectively, and the portfolio duration was permitted to vary from the benchmark by plus or minus 1.50. As of June 30, 2023 and 2022, Metropolitan's investments and portfolio durations for this segment were as follows:

#### NOTES TO BASIC FINANCIAL STATEMENTS

#### (CONTINUED)

June 30, 2023 and 2022

		June	e 30,	30,			
	2023	3	2022				
(Dollars in thousands)	Fair value	Duration		Fair value	Duration		
Asset-backed securities	\$ 18,222	1.74	\$	7,018	1.55		
Federal agency securities	55,894	1.60					
GSE	12,995	2.06		14,750	1.29		
Medium-term corporate notes	138,823	2.61		44,589	2.64		
Money market funds	928			1,052			
Municipal bonds	2,083	2.62		2,131	3.58		
Negotiable certificates of deposit	8,596	0.85					
Prime commercial paper	48,998	0.48					
Supranationals	6,728	1.48		10,628	1.80		
U.S. Treasury securities	258,311	2.09		107,231	2.12		
Total portfolio segment	\$ 551,578		\$	187,399			
Portfolio duration		1.99			2.14		

#### Bond Reserves and Lake Mathews Segment

Investments in the bond reserves were managed based on the requirements of each of the bond issues. The Lake Mathews trust funds were managed in a manner that preserved the principal and provided the necessary liquidity to pay its operating expenses. Per Board authorization, the Treasurer was authorized to invest these monies in excess of five years.

As of June 30, 2023 and 2022, Metropolitan's investments and portfolio durations for this segment were as follows:

		2023	3	2022			
(Dollars in thousands)	F	<sup>7</sup> air value	Duration	Fair value	Duration		
Federal agency securities	\$	988	0.25	\$ 1,317	0.93		
Money market funds		93	—	679			
Municipal bonds		—	—	1,008	2.06		
U.S. Treasury securities		2,435	3.62	2,220	3.08		
Total portfolio segment	\$	3,516		\$ 5,224			
Weighted average duration			2.57		1.94		

*Credit risk.* Credit risk was managed by purchasing investments with the nationally recognized credit ratings specified in Metropolitan's investment policy. Additionally, the policy required monitoring the credit ratings of securities held in the portfolio, and if the securities' credit ratings were downgraded, evaluating for potential sale. For certain securities, additional requirements included consideration of net worth, length of time in business, and specified fair values.

June 30, 2023 and 2022

Presented in the following table is the minimum rating required, if applicable, by investment type pursuant to Metropolitan's investment policy and State law:

Investment Type	Minimum Rating
U.S. Treasury	Not applicable.
Federal Agency Obligations	
GSE	
Bankers' acceptances	'A-1' or its equivalent or better by a Nationally Recognized Statistical Rating Organization (NRSRO).
Prime commercial paper	Highest ranking or highest letter and number rating as provided by a NRSRO.
Negotiable certificates of deposit	'A' (long-term) or 'A-1' (short-term) or their equivalent or better by a NRSRO.
Bank deposits	All deposits must be collateralized as required by California Government Code Sections 53630 et seq. The Treasurer may waive collateral for the portion of any deposits that is insured pursuant to federal law.
Asset-backed securities	Rating category of at least 'AA' or equivalent or better by a NRSRO.
Supranationals	Rating category of at least 'AA' or equivalent or better by a NRSRO.
CAMP	Rating category of 'AAAm' or its equivalent or better by a NRSRO.
Repurchase agreements	Limited to primary dealers or financial institutions in a rating category of 'A' or its equivalent or better by a NRSRO.
Medium-term corporate notes	Rating category of 'A' or its equivalent or better by a NRSRO.
LAIF	Not applicable.
Money market funds	Highest ranking by not less than two NRSROs or must retain an investment advisor that meets specified requirements.
Municipal bonds	'A' (long-term) or 'A-1' (short-term) or their equivalent or better by a NRSRO.

			2023		2022
(Dollars in thousands)	Rating <sup>(1)</sup>		Fair value		Fair value
Asset-backed securities	$AAA^{(2)}$	\$	54,547	\$	93,055
CAMP	$AAAm^{(3)}$		559,817		324,888
Federal agency securities	$N/A^{(4)}$		142,858		50,226
GSE	$N/A^{(4)}$		12,995		14,750
LAIF	$N/A^{(5)}$		25,000		75,000
Medium-term corporate notes	A- <sup>(3)</sup>		211,609		208,477
Money market funds	$AAAm^{(3)}$		1,022		1,732
Municipal bonds	$AA+^{(3)}$		2,083		3,139
Negotiable certificates of deposit	A-1 <sup>(3)</sup>		122,040		226,178
Prime commercial paper	A-1 <sup>(3)</sup>		150,024		212,293
Supranationals	AAA		6,728		73,738
U.S. Treasury securities	$N/A^{(4)}$		305,957		258,973
Total portfolio		\$	1,594,680	\$	1,542,449

At June 30, 2023 and 2022, Metropolitan's portfolio was invested in the following securities by rating:

<sup>(1)</sup>Minimum actual rating by sector as of June 30, 2023.

<sup>(2)</sup>Standard & Poor's Global Ratings and Moody's Investor Services.

<sup>(3)</sup>Standard & Poor's Global Ratings.

<sup>(4)</sup>Credit ratings are not applicable to obligations of the U.S. Government or obligations explicitly guaranteed by the U.S. Government. <sup>(5)</sup>LAIF is not rated.

*Concentration of credit risk.* In accordance with Metropolitan's investment policy, the minimum requirements for limiting concentration of credit risk defined the maximum percent allowable for investment in each security type as well as the percent allowable for investment by issuer per type. Generally, the maximum allowable for investment by security type varied from 20 percent for asset-backed securities and money market funds, to 100 percent for federal agency securities, GSE, and U.S. Treasury securities. The percentages of investments that can be purchased by a single issuer is limited to 5 percent for asset-backed securities, banker's acceptances, medium-term corporate notes, municipal bonds, negotiable certificates of deposit, and prime commercial paper.

The following table identifies Metropolitan's limits and the percent invested by security type based on fair value, as of June 30, 2023 and 2022.

#### NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

	Investment Policy	Percent of Port	folio
	Limits	2023	2022
Asset-backed securities	20%	4 %	6 %
CAMP	40%	35 %	21 %
Federal agency securities	100%	9 %	3 %
GSE	100%	1 %	1 %
LAIF	N/A	2 %	5 %
Medium-term corporate notes	30%	13 %	13 %
Money market funds	20%	<1 %	<1%
Municipal bonds	30%	<1 %	<1%
Negotiable certificates of deposit	30%	8 %	15 %
Prime commercial paper	40%	9 %	14 %
Supranationals	30%	<1%	5 %
U.S. Treasury securities	100%	19 %	17 %
Total portfolio		100 %	100 %

At June 30, 2023 and 2022, Metropolitan had the following investments (obligations of the U.S. government or obligations explicitly guaranteed by the U.S. government not listed) representing five percent or more of its investments:

(Dollars in thousands)	 2023	
CAMP	\$ 559,817	35.11 %
(Dollars in thousands)	 2022	
САМР	\$ 324,888	21.06 %

*Custodial credit risk.* At June 30, 2023 and 2022, Metropolitan's investments were insured, registered or held, in Metropolitan's name, in safekeeping at Metropolitan's bank, which was not a counterparty to the investment transactions. The exceptions were \$559.8 million and \$324.9 million in the CAMP as of June 30, 2023 and 2022, respectively, and \$25.0 million and \$75.0 million in deposits in LAIF as of June 30, 2023 and 2022.

CAMP is a program created through a joint powers agency as a pooled short-term portfolio and cash management vehicle for California public agencies under California Government Code Section 53601(p). CAMP is governed by a seven member Board of Trustees comprised of finance directors and treasurers of California public agencies. The total amount invested by all public agencies in CAMP was \$16.0 billion and \$7.3 billion as of June 30, 2023 and 2022, respectively. Of the amount invested in CAMP, 31.8 percent and 36.9 percent were invested in medium-term and short-term notes and asset-backed securities at June 30, 2023 and 2022, respectively. The average maturity of CAMP investments was 26 days and 28 days as of such dates.

The LAIF, created by California statute, is part of a pooled money investment account (PMIA). The LAIF has oversight by the Local Investment Advisory Board, which consists of five members designated by statute. The Chairwoman is the State Treasurer, or her designated representative.

The total amount invested by all public agencies in LAIF as of June 30, 2023 and 2022 was \$25.7 billion and \$35.8 billion, respectively. At June 30, 2023 and 2022, the PMIA had a balance of \$178.4 billion and \$234.5 billion, respectively, of which, 2.78 percent and 1.88 percent were invested in medium-term and short-term notes and asset-backed securities, respectively. The average maturity of the LAIF investments as of June 30, 2023 and 2022, was 260 days and 311 days, respectively.

## (c) Reverse Repurchase Agreements

Metropolitan is permitted, subject to conditions imposed by State law, to sell securities owned under written agreements and to buy back the securities on or before a specified date for a specified amount. No such reverse repurchase agreements were entered into during the fiscal years ended June 30, 2023 and 2022.

# (d) Restricted Cash and Investments

Metropolitan has established a number of separate accounts, also referred to as funds, to provide for specific activities in accordance with special regulations, bond covenants, and trust arrangements. The accounts are classified as "restricted." Most restricted accounts have the minimum cash and investment balance requirements and all are nondiscretionary in terms of the use of assets. Among other things, the restricted amounts provide for payments of debt service on Metropolitan's bonds; reserves for principal and interest on outstanding bonds; payments for arbitrage tax rebate; construction of capital assets; expenses for Pure Water Southern California program; payment of Metropolitan's operations and maintenance expenses; and payment of the costs related to the closure and postclosure maintenance of Metropolitan's solid waste landfill facility.

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June 30, 2023 and 2022

# **4. PARTICIPATION RIGHTS**

Participation rights activity, excluding participation rights in State Water Project, for the fiscal years ended June 30, 2023 and 2022 was as follows:

(Dollars in thousands)	June 30, 2021	1	Additions
Participation rights:			
Imperial Irrigation District	\$ 112,313	\$	_
Palo Verde Irrigation District	82,804		
Kern Delta Water District	39,007		
South County Pipeline	72,371		
Semitropic Water Storage District	34,259		
Arvin-Edison Water Storage District	47,187		—
Chino Basin	27,500		—
Orange County	23,000		—
Conjunctive Use Programs	20,608		—
Total	 459,049		—
Accumulated amortization:			
Imperial Irrigation District	(65,773)		(2,271)
Palo Verde Irrigation District	(38,101)		(2,343)
Kern Delta Water District	(23,803)		(2,172)
South County Pipeline	(25,845)		(912)
Semitropic Water Storage District	(20,754)		(942)
Arvin-Edison Water Storage District	(26,157)		(1,467)
Chino Basin	(17,808)		(1,453)
Orange County	(14,636)		(1,195)
Conjunctive Use Programs	(12,556)		(1,025)
Total	 (245,433)		(13,780)
Participations rights, net	\$ 213,616	\$	(13,780)

#### NOTES TO BASIC FINANCIAL STATEMENTS

 Reductions	June 30, 2022	Additions	Reductions	June 30, 2023
\$ —	\$ 112,313	\$ —	\$ —	\$ 112,313
	82,804	—	—	82,804
	39,007	—	—	39,007
	72,371	—	—	72,371
—	34,259	—	—	34,259
—	47,187	—	—	47,187
_	27,500	—	—	27,500
	23,000	—	_	23,000
	20,608	—	_	20,608
	459,049	_		459,049
	(68,044)	(2,270)	_	(70,314)
_	(40,444)	(2,342)	_	(42,786)
_	(25,975)	(2,172)		(28,147)
_	(26,757)	(912)	_	(27,669)
_	(21,696)	(942)		(22,638)
_	(27,624)	(1,467)		(29,091)
_	(19,261)	(1,455)	_	(20,716)
_	(15,831)	(1,195)	_	(17,026)
_	(13,581)	(1,025)	_	(14,606)
	(259,213)	(13,780)		(272,993)
\$ 	\$ 199,836	\$ (13,780)	\$ _	\$ 186,056

# (a) Imperial Irrigation District

In December 1988, Metropolitan and the Imperial Irrigation District (IID) entered into a water conservation agreement that became effective in December 1989. Under the terms of the conservation agreement, Metropolitan paid for capital costs and continues to pay annual costs for specific conservation projects within IID. From 1998 to 2003, Metropolitan diverted from the Colorado River a quantity of water equal to the amount of water conserved by the conservation projects, which totaled between 104.9 TAF and 109.5 TAF annually. Under the October 2003 amendment to an agreement and at the request of the Coachella Valley Water District (CVWD), up to 20.0 TAF of the total conserved volume was made available to CVWD. Under the May 2007 amendment to the agreement and a December 2014 letter agreement, at least 85.0 TAF and 105.0 TAF will be/was available in calendar years 2023 and 2022, respectively, see Note 11(c). The water must be used in the calendar year the water is conserved, unless stored in a Colorado River reservoir pursuant to a separate agreement.

As capital projects were completed, the costs contributed by Metropolitan were capitalized as participation rights in Metropolitan's accounting records. The construction phase of this program was completed as of September 30, 1998, and the operation and maintenance phase commenced on October 1, 1998. The October 2003 amendment to the agreement extended the term through December 31, 2041 or 270 days beyond the termination of the Quantification Settlement Agreement plus any extension applicable over the agreement, see Note 11(e).

Participation rights for this project totaled \$112.3 million as of June 30, 2023 and 2022, and are amortized using the straight-line method over the remaining life of the agreement. Amortization expense totaled \$2.3 million in fiscal years 2023 and 2022.

## (b) Palo Verde Irrigation District

In August 2004, Metropolitan entered into an agreement with Palo Verde Irrigation District (PVID) to implement a 35-year land management and crop rotation program. This fallowing program commenced in January 2005 and will extend through July 2040 and will make available up to 130.0 TAF of water in certain years for transfer to Metropolitan from PVID.

Under the terms of the agreement, Metropolitan paid for all program start-up costs that have been capitalized as participation rights. These costs included sign-up payments to individual landowners, funding for a community improvement program and program setup costs.

Participation rights for this program totaled \$82.8 million as of June 30, 2023 and 2022, and are being amortized using the straight-line method over 35 years. Amortization expense totaled \$2.3 million in fiscal years 2023 and 2022.

## (c) Kern Delta Water District

Metropolitan entered into an agreement with the Kern Delta Water District for the development of a water management program. The agreement includes a Regulation Program and a Transportation Program. Under the terms of the Regulation Program, Kern Delta will regulate the storage and delivery for Metropolitan of up to 250.0 TAF of water and has 114.7 TAF in the program as of June 30, 2023. The program is intended to provide a minimum recharge and return capability of 50.0 TAF annually. Construction of infrastructure is required in order to meet the program's dry year minimum return. The transportation program provides Metropolitan with priority

rights to convey water acquired by Metropolitan from third parties through the Kern-Delta facilities to the California Aqueduct for ultimate delivery to Metropolitan. This program terminates on December 31, 2029. The facilities became operational in June 2010.

Participation rights for the Kern Delta totaled \$39.0 million as of June 30, 2023 and 2022, and are being amortized using the straight-line method over the remaining life of the agreement. Amortization expense totaled \$2.2 million in fiscal years 2023 and 2022.

# (d) South County Pipeline

In 1989, Metropolitan entered into an agreement with two member agencies and one of their subagencies to participate in the construction of an upsized version of a 26-mile long pipeline serving the south Orange County portion of its service area. Participation in this project provides Metropolitan capacity to transport its water in the central part of its service area.

Participation rights for this project totaled \$72.4 million as of June 30, 2023 and 2022. These participation rights are amortized using the straight-line method over 80 years, which is the life of the agreement. Amortization expense totaled \$0.9 million in fiscal years 2023 and 2022.

## (e) Semitropic Water Storage District

In December 1994, Metropolitan entered into a water banking and exchange program with Semitropic Water Storage District and its improvement districts that entitles it to storage, withdrawal, and exchange rights for its SWP supplies. The agreement terminates in November 2035.

In 1999, Metropolitan became fully vested for 35 percent of the one million acre-foot banking project. Metropolitan has a storage allocation of 350.0 TAF and currently has 146.8 TAF in the program as of June 30, 2023. Metropolitan is entitled to a minimum of 31.5 TAF per year of pump back capacity. In addition, assuming a 100 percent SWP allocation, Metropolitan is entitled to a minimum of 46.6 TAF per year of entitlement exchange rights. Finally, Metropolitan has the ability to use other banking partners' rights when they are not being used. As a result, the potential maximum return capability for Metropolitan is estimated at 248.8 TAF per year assuming a 100 percent SWP allocation and usage of the other banking partners' rights. In fiscal year 2015, Metropolitan spent \$5.8 million to increase the return capacity by 13.2 TAF per year. Since then, the additional return capacity has been reduced to 6.7 TAF per year after Metropolitan received reimbursement of \$2.9 million.

Participation rights for this program totaled \$34.3 million as of June 30, 2023 and 2022. These participation rights are amortized using the straight-line method over the remaining life of the agreement. Amortization expense totaled \$0.9 million in fiscal years 2023 and 2022.

## (f) Arvin-Edison Water Storage District

In December 1997, Metropolitan entered into an agreement for a water management program with Arvin-Edison Water Storage District (Arvin-Edison). The agreement includes a regulation program, a transportation program, and a water quality exchange program. Under the terms of the regulation program, Arvin-Edison will regulate the storage and delivery for Metropolitan of up to 350.0 TAF of water and currently has 100.2 TAF in the program as

of June 30, 2023. The minimum estimated return capability for the Arvin-Edison program varies from 40.0 TAF per year to 75.0 TAF per year depending on hydrologic/groundwater conditions. Return water will be delivered to Metropolitan upon request through a new intertie pipeline to the California Aqueduct and by exchange of existing Arvin-Edison supplies in the California Aqueduct. In 2008, Metropolitan amended the agreement to construct the south canal improvement project that will improve the operational flexibility of the program as well as increase the ability to return high quality water to the California Aqueduct. The project was completed in early 2009. The agreement terminates on November 4, 2035 with provisions for automatic extension if all stored water has not been returned.

The agreement also provides a transportation program whereby Metropolitan is provided priority rights to convey water acquired by Metropolitan from third parties through the Arvin-Edison facilities to the California Aqueduct for ultimate delivery to Metropolitan.

Participation rights for the Arvin-Edison program totaled \$47.2 million as of June 30, 2023 and 2022. These participation rights are amortized using the straight-line method over the remaining life of the agreement. Amortization expense totaled \$1.5 million in fiscal years 2023 and 2022.

### (g) Chino Basin

In June 2003, Metropolitan entered into a groundwater storage agreement with Inland Empire Utilities Agency, Three Valleys Municipal Water District, and the Chino Basin Watermaster. Under the terms of the agreement, Metropolitan may store up to 25.0 TAF per year to a maximum of 100.0 TAF and may withdraw up to 33.0 TAF per year for overlying demand during dry, drought, or emergency conditions. The facilities became operational during fiscal year 2009. As of June 30, 2023, Metropolitan had 7.5 TAF in storage. The agreement terminates on March 1, 2028, unless the parties agree to extend for an additional maximum period of 25 years.

Participation rights in the Chino basin groundwater storage program totaled \$27.5 million as of June 30, 2023 and 2022. These participation rights are amortized using the straight-line method over the remaining life of the agreement. Amortization expense totaled \$1.5 million in fiscal years 2023 and 2022.

## (h) Orange County

In 2003, Metropolitan entered into a groundwater storage agreement with the Orange County Water District and the Municipal Water District of Orange County to allow Metropolitan to store 66.0 TAF in the Orange County Basin. Metropolitan may store up to 16.5 TAF per year and withdraw up to 22.0 TAF for overlying demand during dry, drought, or emergency conditions. The facilities became operational during fiscal year 2009. As of June 30, 2023, Metropolitan had no water in storage. The program included the construction of wells and barrier improvements for protection of groundwater supplies from seawater intrusion. The agreement terminates in June 2028, unless the parties agree to extend for an additional maximum period of 25 years.

Participation rights in the Orange County groundwater storage program totaled \$23.0 million as of June 30, 2023 and 2022. These participation rights are amortized using the straight-line method over the remaining life of the agreement. Amortization expense totaled \$1.2 million in fiscal years 2023 and 2022.

# (i) Conjunctive Use Programs

Conjunctive use is the operation of a groundwater basin in coordination with a surface water system to increase total water supply availability, thus improving the overall reliability of supplies. Metropolitan has entered into seven agreements with its member agencies for conjunctive use programs whereby Metropolitan provides funding for construction of water storage and related facilities in exchange for water storage and withdrawal rights. The conjunctive use programs were funded with State Proposition 13 grant dollars. The seven projects are with Long Beach, Long Beach-Lakewood, Compton, Three Valleys, Three Valleys MWD-La Verne, Foothill MWD, and Western MWD-Elsinore Valley MWD. Collectively, these seven projects allow Metropolitan to store up to 45.9 TAF with storage of 11.5 TAF per year and withdrawal of 15.3 TAF per year for overlying demand during dry, drought, or emergency conditions. As of June 30, 2023, Metropolitan had a total of 11.8 TAF in storage in these seven accounts. The term of each agreement is 25 years, unless the parties agree to extend for an additional maximum period of 25 years. Termination dates range from July 2027 to December 2031. The facilities became operational during fiscal year 2009.

Participation rights in these projects totaled \$20.6 million at June 30, 2023 and 2022. These participation rights are amortized using the straight-line method over the remaining lives of the agreements. Amortization expense totaled \$1.0 million in fiscal years 2023 and 2022.

### 5. SHORT-TERM AND LONG-TERM DEBT

Metropolitan's enabling Act specifies that its indebtedness shall be limited to 15 percent of the assessed value of all taxable property within Metropolitan's service area. Existing outstanding debt of \$4.378 billion and \$4.329 billion at June 30, 2023 and 2022, respectively, represents less than one percent of the June 30, 2023 and 2022 total taxable net assessed valuation of \$3,625 billion and \$3,377 billion, respectively.

Metropolitan's long-term debt consists of general obligation and revenue bond issues as well as other obligations. The general obligation bonds are secured by Metropolitan's authority to levy ad valorem property taxes. The revenue bond obligations are special limited obligations of Metropolitan and are secured by a pledge of Metropolitan's net operating revenues. Such obligations contain certain restrictive covenants, with which Metropolitan has complied. Substantially all of the bond issues contain call provisions. Substantially all of the debt proceeds have been, and are expected to continue to be, utilized to fund new facilities, improvements and betterments, and to refund outstanding bonds.

## (a) Commercial Paper and Revolving Notes

Metropolitan may issue up to \$200.0 million in commercial paper to fund a portion of its capital investment plan, as approved by Metropolitan's Board. There was no commercial paper issued in fiscal years 2023 and 2022 and no commercial paper was outstanding at June 30, 2023 and 2022. Metropolitan may also issue other forms of short-term debt such as variable rate water revenue bonds and revolving notes.

Short-term notes issued during the fiscal year ended June 30, 2023 were as follows:

• On June 13, 2023, Metropolitan issued certain notes evidencing a draw of \$35.6 million from Wells Fargo Bank, N.A., under the Wells Fargo Revolving Credit Facility for the purpose of refunding a portion of Metropolitan's then outstanding subordinate lien bonds. The notes have a maturity date of May 31, 2024. The

notes were repaid on June 21, 2023 from the proceeds of the Water Revenue and Refunding Bonds, 2023 Series A.

On June 30, 2023, Metropolitan issued certain notes evidencing draws of \$38.4 million (Tax-Exempt), and \$18.0 million (Taxable) from Wells Fargo Bank, N.A., under the Wells Fargo Revolving Credit Facility. The taxexempt draw will finance a portion of the costs of construction and other capital costs relating to the Antelope Valley East Kern High Desert Water Banking Program. The taxable draw will fund a portion of Metropolitan's conservation expenses. The taxable and tax-exempt notes have a maturity date of May 31, 2024.

Short-term note issued during the fiscal year ended June 30, 2022 was as follows:

On June 29, 2022, Metropolitan issued certain notes evidencing a draw of \$35.6 million from Wells Fargo Bank, N.A., under the Wells Fargo Revolving Credit Facility for the purpose of refunding a portion of Metropolitan's then outstanding subordinate lien bonds. The notes have maturity date of June 28, 2023.

A total of \$56.4 million and \$35.6 million short-term revolving notes were outstanding at June 30, 2023 and 2022.

## (b) General Obligation Bonds

In 1966, voters authorized Metropolitan to incur up to \$850.0 million of general obligation bond indebtedness to finance a portion of Metropolitan's capital investment plan. The original amounts, issued as Series A through H under the 1966 authorization, totaled \$850.0 million. Metropolitan has refunded a portion of these general obligation bond issues through the issuance of refunding bonds. A total of \$19.2 million and \$20.2 million in general obligation refunding bonds were outstanding at June 30, 2023 and 2022, respectively.

The general obligation refunding bond issues include both serial and term bonds that mature in varying amounts through March 2037 at an interest rate of 5.0 percent. The term bonds are subject to mandatory redemption prior to maturity. All general obligation bonds maturing on or after the earliest applicable call date are subject to optional redemption prior to maturity, callable on interest payment dates, and subject to early redemption.

There were no general obligation bonds issued during the fiscal year ended June 30, 2023 and 2022.

## (c) Revenue Bonds

Pursuant to a 1974 voter authorization, additional funds, primarily for funding the capital investment plan, are obtained through the sale of water revenue bonds. Revenue bonds may be issued subject to certain conditions, including a requirement that the total of revenue bonds outstanding does not exceed the equity (net position) of Metropolitan as of the fiscal year end prior to such issuance. Metropolitan has refunded some of these revenue bonds through the issuance of refunding bonds. A total of \$3.881 billion and \$3.848 billion of revenue bonds and revenue refunding bonds were outstanding at June 30, 2023 and 2022, respectively.

Each fixed rate revenue and revenue refunding bond issue consists of either serial or term bonds or both that mature in varying amounts through April 2053 at interest rates ranging from 0.46 percent to 5.75 percent. The term bonds are subject to mandatory redemption prior to maturity. Substantially all revenue bonds maturing on or after

the earliest applicable call date are subject to optional redemption prior to maturity, callable on any interest payment dates, and subject to early redemption.

Revenue bond issued during the fiscal year ended June 30, 2023 was as follows:

• On June 21, 2023, Metropolitan issued \$258.4 million of Water Revenue and Refunding Bonds, Series 2023 A, at a true interest cost of 3.87 percent, to fund a portion of Metropolitan's Capital Investment Plan and costs of issuance. The maturities extend to April 1, 2053 and are subject to mandatory and optional redemption provisions.

There were no revenue bonds issued during the fiscal year ended June 30, 2022.

## (d) Bond Refundings and Defeasances

Metropolitan has issued Waterworks General Obligation Refunding Bonds, Water Revenue Refunding Bonds, Special Variable Rate Water Revenue Refunding Bonds, and short-term notes to refund various issues of Waterworks General Obligation Bonds, Waterworks General Obligation Refunding Bonds, Water Revenue Bonds, Water Revenue Refunding Bonds, Special Variable Rate Water Revenue Refunding Bonds, and revolving notes previously issued. The net proceeds from these sales were used to redeem the refunded bonds and fund certain swap termination payments or to purchase U.S. Treasury securities that were deposited in irrevocable escrow trust accounts with a bank acting as an independent fiscal agent to provide for all future debt service on the bonds being refunded. As a result, those bonds are considered defeased and the related liabilities have been excluded from Metropolitan's basic financial statements.

Refunding and defeasance transactions during fiscal year 2023 were as follows:

- On July 7, 2022, Metropolitan issued \$279.6 million of Water Revenue Refunding Bonds (WRRB), 2022 Series A, which refunded \$181.2 million of WRRB, 2012 Series A; \$26.5 million of WRRB, 2012 Series F; and \$73.2 million of WRRB, 2012 Series G. In addition, a \$35.6 million draw on the Wells Fargo Revolving Credit Facility was prepaid from the proceeds. This refunding resulted in projected present value savings of \$40.1 million. The true interest cost was 2.91%. The final maturity is October 1, 2036. The bonds are subject to optional redemption provisions.
- On July 27, 2022, Metropolitan issued \$253.4 million of WRRB, 2022 Series B, which refunded \$78.9 million of Water Revenue Bonds, 2000 Series B-3; \$41.5 million of Special Variable Rate Water Revenue Refunding Bonds (SVRWRRB), 2016 Series B-1; \$16.1 million of SVRWRRB, 2016 Series B-2; \$55.7 million of Water Revenue Bonds, 2017 Series A; \$45.0 million of SVRWRRB, 2018 Series A-1; and \$45.0 million of SVRWRRB, 2018 Series A-2. The true interest cost was 2.88%. The final maturity is July 1, 2040. The bonds are subject to optional redemption provisions.
- On July 27, 2022, Metropolitan issued \$147.7 million of SVRWRRB, 2022 Series C-1 (Taxable) and \$134.6 million of SVRWRRB, 2022 Series C-2 (Taxable), which refunded, \$140.4 million of WRRB, 2015 Series A, and \$127.0 million of WRRB, 2016 Series A. The 2022 Series C-1 and C-2 bonds are variable rate bonds. The

final maturity of the 2022 Series C-1 bonds is July 1, 2037 and the final maturity for the 2022 Series C-2 bonds is July 1, 2046. Both series of bonds are subject to optional and mandatory redemption provisions.

The 2022 Series B, 2022 Series C-1, and 2022 Series C-2 refunding bonds were issued as a common plan of finance. The combined refunding's resulted in projected present value debt savings of \$24.6 million.

Refunding and defeasance transactions during fiscal year 2022 was as follows:

On July 8, 2021, Metropolitan issued \$98.4 million of WRRB, Series 2021 B, which refunded \$89.4 million, WRRB, 2011 Series C and \$2.8 million, WRRB, 2014 Series C-3. In addition, a \$35.6 million draw on the RBC Short-Term Credit Facility was prepaid from the proceeds. This refunding resulted in projected present value savings of \$22.0 million. The true interest cost was 0.85 percent. The final maturity is October 1, 2036. The bonds are subject to optional redemption provisions.

The refundings and defeasances were accomplished to take advantage of lower interest rates, to realize economic savings or to eliminate or mitigate certain risks associated with managing its variable rate debt. The transactions resulted in cash flow savings of \$79.9 million and \$23.4 million and economic gains (difference between the present values of the debt service payments on the old debt and new debt) of \$64.7 million and \$22.0 million for fiscal years 2023 and 2022, respectively. The net carrying amount of the old debt was equal to the reacquisition price in fiscal year 2023 and 2022. Deferred inflows of gain on bond refundings at June 30, 2023 was \$30.4 million. Deferred outflows of loss on bond refundings at June 30, 2022 was \$7.1 million. The deferred outflows on swap terminations for the same periods were \$14.0 million and \$16.0 million, respectively.

## (e) Interest Rate Swaps

Metropolitan has eight outstanding interest rate swap agreements as of June 30, 2023. These agreements require that Metropolitan pay fixed interest rates and receive interest at variable interest rates which are Metropolitan's hedging derivative instruments.

Metropolitan's interest rate swap portfolio as of June 30, 2023, 2022, and 2021 is summarized in the following table.

# NOTES TO BASIC FINANCIAL STATEMENTS

*(CONTINUED)* June 30, 2023 and 2022

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#### NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

(Dollars in thousands)						
Associated Bond Issue <sup>(1)</sup>		Notional Amount	Effective Date	Fixed Rate Paid	Variable Rate Received	Counterparty Credit Rating <sup>(2)</sup>
2002 A Payor	\$	34,554	09/12/02	3.300 %	57.74% of 1MoLIBOR <sup>(4)</sup>	A1/A-/A+
2002 B Payor		12,926	09/12/02	3.300 %	57.74% of 1MoLIBOR	Aa2/A+/AA
2003 Payor C-1 C-3		131,913	12/18/03	3.257 %	61.20% of 1MoLIBOR	Aa2/A+/AA-
2003 Payor C-1 C-3		131,912	12/18/03	3.257 %	61.20% of 1MoLIBOR	Aa2/A+/AA
2004 C Payor		4,672	11/16/04	2.980 %	61.55% of 1MoLIBOR	A1/A-/A+
2004 C Payor		3,823	11/16/04	2.980 %	61.55% of 1MoLIBOR	A3/BBB+/A
2005 Payor		26,445	07/06/05	3.360 %	70.00% of 3MoLIBOR	Aa2/A+/AA
2005 Payor	_	26,445	07/06/05	3.360 %	70.00% of 3MoLIBOR	A3/BBB+/A
Total swaps	\$	372,690				

<sup>(1)</sup>These swaps lock in a fixed rate for an equivalent amount of variable rate debt.

<sup>(2)</sup>Credit Ratings - Moody's Investors Service, Standard & Poor's Global, Fitch Ratings, respectively.

<sup>(3)</sup>Excludes accrued interest.

<sup>(4)</sup>London Interbank Offered Rate.

NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

		Fair Val	ue as of $6/30^{(3)}$		Change in Fair Value in FY						
Swap Termina	ation	2023	2022	2021	2023	2022					
07/01/25	\$	(147) \$	(1,042) \$	(3,431) \$	895	\$ 2,389					
07/01/25		(55)	(389)	(1,284)	334	895					
07/01/30		(2,273)	(6,959)	(17,238)	4,686	10,279					
07/01/30		(2,269)	(6,959)	(17,238)	4,690	10,279					
10/01/29		(159)	(354)	(821)	195	467					
10/01/29		(130)	(290)	(672)	160	382					
07/01/30		(510)	(1,615)	(4,151)	1,105	2,536					
07/01/30		(510)	(1,615)	(4,151)	1,105	2,536					
	\$	(6,053) \$	(19,223) \$	(48,986) \$	13,170	\$ 29,763					

As with its investments, Metropolitan categorizes its liabilities using fair value measurements within the fair value hierarchy established by U.S. GAAP and are discussed in Note 3.

June 30, 2023 and 2022

Metropolitan has the following recurring fair value measurements as of June 30, 2023 and 2022:

(Dollars in thousands)

	Fair Value Measurements Using											
Associated Bond Issue	Significant Other Observable Inputs 6/30/2023 (Level 2) 6/30/2022											
2002 A Payor	\$	(147)	\$	(147)	\$	(1,042)	\$	(1,042)				
2002 B Payor		(55)		(55)		(389)		(389)				
2003 Payor C-1 C-3		(2,273)		(2,273)		(6,959)		(6,959)				
2003 Payor C-1 C-3		(2,269)		(2,269)		(6,959)		(6,959)				
2004 C Payor		(159)		(159)		(354)		(354)				
2004 C Payor		(130)		(130)		(290)		(290)				
2005 Payor		(510)		(510)		(1,615)		(1,615)				
2005 Payor		(510)		(510)		(1,615)		(1,615)				
Total swaps	\$	(6,053)	\$	(6,053)	\$	(19,223)	\$	(19,223)				

Derivative instruments classified in Level 2 of the fair value hierarchy are valued using an income approach that considers benchmark interest rates, yield curves, and credit spreads.

## Pay-Fixed, Receive-Variable

*Objective of the Swaps:* In order to take advantage of low interest rates in the marketplace, Metropolitan entered into separate pay-fixed, receive-variable interest rate swaps at costs that were less than what Metropolitan otherwise would have paid to issue fixed rate debt in the tax-exempt municipal bond market. Currently, there are eight pay-fixed, receive-variable interest rate swaps outstanding.

*Terms:* The notional amounts of the swaps match the principal amounts of the associated debt in total. Metropolitan's swap agreements contain scheduled reductions to outstanding notional amounts that are expected to approximately follow scheduled or anticipated reductions in the associated long-term debt.

*Fair Values:* At June 30, 2023, all pay-fixed, receive-variable swaps had a negative fair value. Because the coupons on Metropolitan's variable rate bonds adjust to changing interest rates, the bonds do not have corresponding fair value changes. The fair values of the swaps were estimated using the zero-coupon method and exclude accrued interest. This method calculates the future net settlement payments required by the swap, assuming that the current forward rates implied by the yield curve correctly anticipate future spot interest rates. These payments are then

discounted using spot rates implied by the current yield curve for hypothetical zero-coupon bonds due on the date of each future net settlement on the swaps.

*Credit Risks:* As of June 30, 2023, Metropolitan was not exposed to credit risk on the outstanding pay-fixed, receive-variable swaps that had negative fair values. However, should interest rates change and the fair values of the swaps become positive, Metropolitan would be exposed to credit risk to each swap counterparty in the amount of the derivatives' fair value. Should the counterparties to the transactions fail to perform according to the terms of the swap contract, Metropolitan would face a maximum possible loss equal to the fair value of these swaps.

All swap agreements contain specific collateral requirements that are in effect for Metropolitan and the counterparties. The swaps require different collateral levels based on credit ratings and the fair value of the swap. Generally, the fair value threshold levels are also reduced as the credit ratings are reduced. Collateral on all swaps is to be in the form of U.S. government securities that may be held by the party posting the collateral. Metropolitan had no posted collateral as of June 30, 2023.

Each swap contains cross-default provisions that allow the nondefaulting party to accelerate and terminate all outstanding transactions and to net the transactions' fair values into a single sum to be owed by, or owed to, the nondefaulting party.

As of June 30, 2023, Metropolitan has pay-fixed, receive-variable swap transactions with one counterparty in the amount of \$171.3 million or 46.0 percent of the notional amount of Metropolitan's outstanding pay-fixed, receive-variable swap transactions. This counterparty is rated Aa2/A+/AA by Moody's, Standard & Poor's Global, and Fitch Ratings, respectively.

**Basis Risk:** The interest rates on Metropolitan's variable rate bonds are expected to be equivalent, but not necessarily equal to the variable rate payments received from counterparties on pay-fixed, receive-variable interest rate swaps. To the extent these variable payments differ, Metropolitan is exposed to basis risk. When the rates received from the counterparties are less than the rates on variable rate bonds associated with the respective swap transactions there is a basis loss. When the rates received from the counterparties are greater than the rates on variable rate bonds associated with the respective swap transactions there is a basis gain. As of June 30, 2023, the interest rates of the variable rate debt associated with these swap transactions range from 2.65 percent to 5.10 percent. Metropolitan's variable rate payments received from the counterparties of these swaps ranged from 3.00 percent to 3.88 percent.

*Termination Risk:* Metropolitan may terminate any of the swaps if the other party fails to perform under the terms of the swap agreements. If any of the swaps are terminated, the associated variable rate bonds would no longer carry a synthetic fixed interest rate. Also, if at the time of termination the swap has a negative fair value, Metropolitan would be liable to the counterparty for a payment equal to the swap's fair value.

Tax Risk: As with other forms of variable rate exposure and the relationship between the taxable and tax-exempt markets, Metropolitan is exposed to tax risk should tax-exempt interest rates on variable rate debt issued in

June 30, 2023 and 2022

conjunction with the swaps rise faster than taxable interest rates received by the swap counterparties, due particularly to reduced federal or state income tax rates, over the term of the swap agreement.

## (f) Swap Payments and Associated Debt

Using rates as of June 30, 2023, debt service requirements on Metropolitan's swap-related variable rate debt and net swap payments are as follows. As rates vary, variable rate bond interest payments and net swap payments will vary.

	 Variable F	Rate Bon	ds	Interest Rate	
(Dollars in thousands)	Principal		Interest	Swaps, Net	Total
Year ending June 30:					
2024	\$ 34,630	\$	16,106	\$ 25	\$ 50,761
2025	65,190		13,213	(55)	78,348
2026	75,770		9,762	(107)	85,425
2027	61,170		6,542	(131)	67,581
2028	63,540		3,604	(131)	67,013
2029-2031	72,390		4,333	(135)	76,588
Total	\$ 372,690	\$	53,560	\$ (534)	\$ 425,716

# (g) Variable Rate Bonds

The variable rate bonds bear interest at daily and weekly rates ranging from 2.65 percent to 5.10 percent as of June 30, 2023 and 0.50 percent to 1.66 as of June 30, 2022. Metropolitan can elect to change the interest rate period of the bonds with certain limitations.

Metropolitan has entered into SBPAs with commercial banks to provide liquidity for five separate variable rate bond issues listed in the table below. Bondholders have the right to tender such variable rate bonds to the paying agent on any business day with same day notice. In the event that tendered bonds are not remarketed, the paying agent will draw on the SBPA to pay such bondholders. The draw on the SBPA creates a new debt obligation between Metropolitan and the Bank, called a Bank Bond.

The Bank Bonds that would be issued under the SBPA would initially bear interest at a per annum interest rate equal to, depending on the applicable SBPA, a Base Rate of either: (a) the highest of the (i) Prime Rate plus one percent, (ii) Federal Funds Rate plus two percent, and (iii) seven percent; or (b) the highest of the (i) Prime Rate, (ii) Federal Funds Rate plus one half of one percent, and (iii) seven and one half percent (with the Base Rate increasing in the case of each of (i), (ii) and (iii) of this clause (b) after 90 days, by one percent). To the extent such bank bonds have not been remarketed or otherwise retired as of the earlier of the 90th day following the draw on the SBPA or the stated expiration date of the related SBPA, Metropolitan's obligation to repay the principal of the Bank Bonds would be payable in semi-annual installments over a period of approximately three or five years, depending on the applicable SBPA. Metropolitan has secured its obligation to repay principal and interest under the SBPAs as a senior lien obligation.

In addition, such bonds are subject to mandatory tender for purchase under certain circumstances, including upon the expiration of the SBPA. Metropolitan intends to either renew the facility or exercise its right to remarket the debt

June 30, 2023 and 2022

as a long-term financing. The portion that would be due in the next fiscal year in the event that the outstanding variable rate bonds were tendered and purchased by the commercial banks under the standby agreements was \$77.5 million and \$51.0 million at June 30, 2023 and 2022, respectively.

Metropolitan has the following variable rate bonds that are supported by a SBPA as of June 30, 2023 and 2022:

(Dollars in thousands)									
		Amo	unt		Expiration	Interest	Current	Am	ount
Bond Issue	6,	/30/2023	6/3	30/2022	Date	Rate	2023		2022
Water Revenue Bonds									
2000 Series B-3	\$		\$	78,900	3/20/23	Reset Daily	\$ 	\$	78,900
2017 Series A $^{(1)}$		24,275		80,000	1/26/26	Reset Daily			80,000
Water Revenue Refund	ing	Bonds							
2018 Series A-1, A-2		—		90,070	6/04/24	Reset Daily			
2016 Series B-1, B-2 <sup>(2)</sup>		25,325		82,905	1/26/26	Reset Daily			_
2022 Series C-1, C-2		282,275			1/26/26	Reset Daily			_
Subordinate Water Rev	enu	e Refundi	ng I	Bonds					
2021 Series A		222,160		222,160	6/13/25	Reset Daily			—
Total	\$	554,035	\$	554,035			\$ 	\$	158,900

<sup>(1)</sup> At 6/30/22, the SBPA associated with the 2017 Series A Water Revenue Bond was set to expire on 3/20/23.

 $^{(2)}$  At 6/30/22, the SBPA associated with the 2016 Series B-1 and B-2 Water Revenue Refunding Bonds was set to expire on 6/4/24. The 2016 Series B-1 bonds were refunded and had no outstanding balance as of 6/30/23.

Metropolitan has the following variable rate bonds that are not supported by a SBPA as of June 30, 2023 and 2022:

(Dollars in thousands)			
Bond Issue	6/30/23	6/20/22	Interest Rate
Subordinate Water Revenue Bonds			
2017 Series C Subordinate Water Revenue Refunding Bonds	\$ 80,000	\$ 80,000	SIFMA Index plus % spread
2017 Series D	95,630	<b>95,63</b> 0	SIFMA Index plus % spread
2017 Series E	95,625	95,625	SIFMA Index plus % spread
Total	\$ 271,255	\$ 271,255	

The current terms of the Subordinate Water Revenue Refunding Bonds, 2017 Series D and Series E (SIFMA Index Mode), and the Subordinate Water Revenue Bonds, 2017 Series C (SIFMA Index Mode), require bondholders to tender their bonds for purchase on the scheduled mandatory tender date of May 21, 2024. A failure by Metropolitan to pay the purchase price from the proceeds of remarketing or other funds, for a period of five business days following written notice by any owner of such bonds, will constitute an event of default under Metropolitan's Subordinate Debt Resolutions. Upon the occurrence and continuance of such events of default, the owners of

June 30, 2023 and 2022

25 percent in aggregate principal amount of the Subordinate Revenue Bonds then outstanding may elect a bondholders' committee to exercise rights and powers of such owners under the Subordinate Debt Resolutions, including the right to declare the entire unpaid principal of the Subordinate Revenue Bonds then outstanding to be immediately due and payable.

### (h) Long-term Debt Obligation Summary, Net of Long-term Revolving Notes

Interest rates at June 30, 2023 on all outstanding fixed-rate obligations range from 0.46 percent to 5.75 percent. Interest on the variable rate debt is reset either daily or weekly based upon market conditions. Future principal and interest payments in accordance with the debt agreements as of June 30, 2023 are as follows:

(Dollars in thousands)	Principal	Interest	Total
Year ending June 30:			
2024	\$ 155,680	\$ 144,502	\$ 300,182
2025	186,910	147,302	334,212
2026	159,565	166,892	326,457
2027	168,860	158,866	327,726
2028	179,035	150,912	329,947
2029-2033	904,520	611,012	1,515,532
2034-2038	1,042,995	381,619	1,424,614
2039-2043	640,320	175,853	816,173
2044-2048	318,670	77,758	396,428
2049-2053	143,820	16,484	160,304
	\$ 3,900,375	\$ 2,031,200	\$ 5,931,575
Unamortized bond discount and premium, net	420,924		
Total debt	 4,321,299		
Less current portion	(745,243)		
Long-term portion of debt	\$ 3,576,056		

## 6. LONG-TERM LIABILITIES

Long-term liability activity for the fiscal years ended June 30, 2023 and 2022 is shown on the following table. Payments on the bonds are made from the restricted debt service funds; other long-term debt and the compensated absences liability will be liquidated primarily with water revenues.

# NOTES TO BASIC FINANCIAL STATEMENTS

*(CONTINUED)* June 30, 2023 and 2022

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#### NOTES TO BASIC FINANCIAL STATEMENTS

(Dollars in thousands)	Maturity Dates	Range of Interest Rates	Jur	ne 30, 2021	Additions
Waterworks general obligation refund	ding bonds (Note 5b):				
2019 Series A	3/1/22-3/1/28	5.00 %	\$	13,165	\$ _
2020 Series A	3/1/29-3/1/37	5.00 %		13,665	_
Total general obligation and general	al obligation refunding bonds			26,830	—
Water revenue bonds (Note 5c):					
2000 Series B-3	7/1/29-7/1/35	Variable		78,900	—
2015 Series A	7/1/21-7/1/45	5.00 %		201,535	_
2017 Series A	7/1/41-7/1/47	Variable		80,000	_
2017 Subordinate Series C	5/21/24	Variable		80,000	_
2018 Subordinate Series B	9/1/23-9/1/28	5.00 %		64,345	_
2020 Series A	10/1/30-10/1/49	5.00 %		207,355	_
2021 Series A	10/1/28-10/1/51	5.00 %		188,890	_
2023 Series A	4/1/24-4/1/53	5.00 %		—	_
Water revenue refunding bonds (Not	e 5d):				
1993 Series A	7/1/21	5.75 %		2,040	_
2011 Series C	10/1/21-10/1/36	3.00%-5.00%		118,700	_
2012 Series A	10/1/23-10/1/36	3.25%-5.00%		181,180	_
2012 Series C	7/1/21	5.00 %		5,635	_
2012 Series F	7/1/21-7/1/28	5.00 %		37,735	—
2012 Series G	7/1/21-7/1/31	4.00%-5.00%		89,820	—
2014 Series A	7/1/21	5.00 %		4,870	—
2014 Series C-2-C-3	10/1/21	3.00 %		2,810	—
2014 Series E	7/1/21-7/1/24	3.50%-5.00%		86,060	—
2016 Series A	7/1/28-7/1/37	2.00%-5.00%		239,455	—
2016 Series B-1, B-2	7/1/25-7/1/37	Variable		82,905	—
2017 Subordinate Series A	7/1/21-7/1/27	2.00%-2.50%		232,715	—
2017 Subordinate Series B	8/1/21-8/1/24	4.00%-5.00%		142,575	—
2017 Subordinate Series D	5/21/24	Variable		95,630	—
2017 Subordinate Series E	5/21/24	Variable		95,625	—
2018 Series A1, A-2	7/1/21-7/1/37	Variable		90,070	—
2018 Subordinate Series A	7/1/21-7/1/23	5.00 %		90,115	_
2018 Series B	1/1/22-1/1/39	5.00 %		129,125	_
2019 Series A	7/1/30-7/1/39	5.00 %		218,090	_
2019 Subordinate Series A	7/1/21-7/1/29	5.00 %		233,660	_
2020 Subordinate Series A	7/1/23-7/1/29	3.00%-5.00%		152,455	_
2020 Series B	4/2/24	.46%-1.04 %		271,815	_
2020 Series C	7/1/21-7/1/40	5.00 %		267,995	_
2021 Subordinate Series A	7/1/37-7/1/42	Variable		222,160	_
2021 Series B	10/1/22-10/1/36	4.00%-5.00%		—	98,410
2022 Series A	10/1/23-10/1/36	4.00%-5.00%		—	_
2022 Series B	7/1/26-7/1/40	3.00%-5.00%		—	_
2022 Series C-1, C-2	7/1/30-7/1/46	Variable			
Total water revenue and water revenue r	refunding bonds			3,994,265	98,410
Other long-term debt (Notes 5a and	5h):				
Unamortized bond discount and premiu	ms, net			464,184	13,312
Total long-term debt				4,485,279	111,722
Other long-term liabilities (see table n	ext page)			1,064,004	433,350
Total long-term liabilities			\$	5,549,283	\$ 545,072

#### NOTES TO BASIC FINANCIAL STATEMENTS

 Reductions	June 30, 2022 As Adjusted Note 1u	Additions	Reductions	June 30, 2023	Amounts Due Within One Year
\$ (6,655)	\$ 6,510	\$ _	\$ (960)	\$ 5,550	\$ 1,005
 —	13,665	_	_	13,665	
(6,655)	20,175	—	(960)	19,215	1,005
—	78,900	—	(78,900)	—	—
(2,535)	199,000	_	(144,120)	54,880	4,020
—	80,000	—	(55,725)	24,275	—
—	80,000	—	—	80,000	80,000
—	64,345	—	—	64,345	6,605
_	207,355	—	—	207,355	—
_	188,890	_	—	188,890	_
—	—	258,410	—	258,410	5,815
(2,040)	_	_	_	_	_
(89,385)	29,315	_	_	29,315	_
_	181,180	_	(181,180)	_	_
(5,635)	_	_	_	_	_
(11,195)	26,540	_	(26,540)	_	_
(1,590)	88,230	_	(88,230)	_	_
(4,870)	_	_	_	_	_
(2,810)	_	_	_	_	_
(23,225)	62,835	_	(28,925)	33,910	30,350
_	239,455	_	(127,040)	112,415	_
_	82,905	_	(57,580)	25,325	_
(13,500)	219,215	_	(14,455)	204,760	22,015
(35,645)	106,930	_	(71,290)	35,640	· _
_	95,630	_		95,630	95,630
_	95,625	_	_	95,625	95,625
_	90,070	_	(90,070)	,	, <u> </u>
(40,125)	49,990	_	(39,125)	10,865	10,865
(4.600)	124,525	_	(4,835)	119,690	5,075
(-,)	218.090	_		218,090	
(4.780)	228.880	_	(19.820)	209.060	24.780
(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	152,455	_	(,)	152,455	13.265
_	271 815	_	_	271.815	271.815
(2.315)	265.680	_	(2.450)	263.230	7.330
(2,010)	222,160	_	(_,)	222,160	-,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	98 410	_	(10,600)	87.810	13,345
		279.570	(10,000)	279.570	11,210
_	_	253 365	_	253 365	
_	_	282,275	_	282,275	_
 (244 250)	3 848 425	1 073 620	(1 040 885)	3 881 160	697 745
 (211,230)	5,610,425	1,075,020	(1,010,000)	5,001,100	071,145
 (52,336)	425,160	44,528	(48,764)	420,924	46,493
(303,241)	4,293,760	1,118,148	(1,090,609)	4,321,299	745,243
 (847,168)	650,186	864,280	(430,350)	1,084,116	74,854
\$ (1,150,409)	\$ 4,943,946	\$ 1,982,428	\$ (1,520,959)	\$ 5,405,415	\$ 820,097

#### NOTES TO BASIC FINANCIAL STATEMENTS

(Dollars in thousands)	June 30, 2021	А	dditions	R	eductions	June 30, 2022 As Adjusted Note 1u	e 30, 2022 s Adjusted Note 1u Ad			Additions Reductions			June 30, 2023	Amounts Due Within One Year	
Accrued compensated absences (Note 1m)	\$ 57,917	\$	27,856	\$	(27,220)	\$ \$ 58,553	\$	29,640	\$	(27,893)	\$ 60,300	\$	27,900		
Customer deposits and trust funds	46,484		3,445		(7,117)	42,812		18,852		(2,673)	58,991		8,106		
Leases payable (Note 7)	8,824		311		(1,455)	7,680		813		(1,553)	6,940		1,543		
Subscriptions payable (Note 8)	_		3,412		_	3,412		2,794		(1,705)	4,501		3,327		
Net pension liability (Note 9c)	724,587		301,650		(585,637)	440,600		651,224		(301,198)	790,626		—		
Net OPEB liability (Note 10f)	164,731		81,462		(193,911)	52,282		140,297		(77,926)	114,653		—		
Workers' Compensation and third party claims (Note 16)	10,289		4,469		(2,056)	12,702		3,366		(1,362)	14,706		8,759		
Fair value of interest rate swaps (Note 5e)	48,986		_		(29,763)	19,223		_		(13,170)	6,053		_		
Other long-term liabilities	2,186		10,745		(9)	12,922		17,294		(2,870)	27,346		25,219		
Total other long-term liabilities	\$ 1,064,004	\$	433,350	\$	(847,168)	\$ \$ 650,186	\$	864,280	\$	(430,350)	\$ 1,084,116	\$	74,854		

# 7. LEASES

## (a) Lessor

Metropolitan holds a diverse portfolio of land lease agreements with another party primarily for the purposes of communication facilities, access for utility operations, parking lots or storage. These leases expire at various dates through 2099 and provide renewal options that are reasonably certain to be exercised for some and others having no renewal options. The leases also exhibit a wide range of terms and financial arrangements such as initial monthly payments ranging from \$2,100 to \$138,000 with rate hike provisions at different time periods. Metropolitan recognizes lease receivables and deferred inflows of resources based on the present value of expected receipts over the term of the respective leases. The expected received are discounted using explicit rate or Metropolitan's incremental borrowing rate. Variable payments are excluded from the valuations unless they are fixed in substance. Metropolitan recognized revenues related to lease agreements totaling \$1.2 million and \$1.3 million for the fiscal years ended June 30, 2023 and 2022, respectively, reported in nonoperating revenues in the Statements of Revenues, Expenses and Changes in Net Position.

A summary of lease receivable activity during the fiscal years ended June 30, 2023 and 2022 are as follows:

(Dollars in thousands)	June 30, 2021	,	Additions	]	Reductions	June 30, 2022	Additions	 June 30, 2023		
Leases of land	\$	26,910	\$		\$	(812)	\$ 26,098	\$ 3,645	\$ (1,522)	\$ 28,221
Total leases receivable	\$	26,910	\$	_	\$	(812)	\$ 26,098	\$ 3,645	\$ (1,522)	\$ 28,221

A summary of the deferred inflow of resources activity during the year ended June 30, 2023 and 2022 are as follows:

(Dollars in thousands)	June 30, 2021	Additions	1	Reductions	June 30, 2022	Additions	Re	ductions	June 30, 2023
Deferred inflows of resources related to leases	\$ 26,590	\$ _	\$	(1,238)	\$ 25,352	\$ 3,645	\$	(1,643)	\$ 27,354
Total deferred inflows of resources related to leases	\$ 26,590	\$ _	\$	(1,238)	\$ 25,352	\$ 3,645	\$	(1,643)	\$ 27,354

For fiscal year 2023, \$2.5 million was added to the deferred inflow of resources and lease receivable related to modification or renewals and none for 2022. There were no reductions of the deferred inflow of resources or the lease receivable due to terminations for both fiscal years.

#### NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

(Dollars in thousands)	Lease revenue					
Fiscal year ending June 30,						
2024	\$	858				
2025		875				
2026		776				
2027		802				
2028		954				
2029-2033		3,471				
2034-2038		2,309				
2039-2043		2,332				
2044-2048		1,860				
2049-2053		1,542				
2054-2058		1,647				
2069-2063		743				
2064-2068		259				
2069-2073		316				
2074-2078		970				
2079-2083		1,114				
2084-2088		1,465				
2089-2093		1,885				
2094-2098		2,385				
2099-2103		861				
2104-2108						
2109-2113						
2114-2118						
2119-2123		800				
Total	\$	28,224				

Remaining amounts to be received over the term of the leases are as follows:

## (b) Lessee

Metropolitan leases building space, equipment and land for various terms under long-term noncancellable lease agreements. These leases expire at various dates through 2042 and provide renewal options that are reasonably certain to be exercised for some and others having no renewal options. The leases also exhibit a wide range of terms and financial arrangements such as initial monthly payments ranging from \$1,300 to \$26,000 with rate hike provisions or fixed payment at different time periods. Metropolitan records lease assets and lease liabilities based on the present value of expected payments over the lease term of the respective leases. The expected payments are discounted using the explicit rate or Metropolitan's incremental borrowing rate. Variable payments are excluded from the valuations unless they are fixed in substance.

June 30, 2023 and 2022

(Dollars in thousands)	June 30 2021	Additions	Additions		Deductions			Additions	Deductions	June 30, 2023		
Lease assets:												
Buildings	\$ 3,087	\$	36	\$	(194)	\$	2,929	\$	_	\$ :	\$	2,929
Equipment	676		—		_		676		495	(240)		931
Land	 6,597		350				6,947		348	_		7,295
Total lease assets	 10,360		386		(194)		10,552		843	(240)		11,155
Accumulated amortization on lease assets:												
Buildings	(520)		(534)		194		(860)		(424)	_		(1,284)
Equipment	(273)		(273)		_		(546)		(246)	240		(552)
Land	(877)		(877)		_		(1,754)		(993)	—		(2,747)
Total accumulated amortization lease assets	 (1,670)		(1,684)		194		(3,160)		(1,663)	240		(4,583)
Lease assets, net	\$ 8,690	\$	(1,298)	\$		\$	7,392	\$	(820)	\$ 	\$	6,572

A summary of the lease asset activity during the fiscal years ended June 30, 2023 and 2022 are as follows:

Future annual lease payments are as follows:

(Dollars in thousands)	Principal	Interest
Fiscal year ending June 30,		
2024	\$ 1,543 \$	66
2025	1,380	46
2026	1,082	34
2027	828	27
2028	494	22
2029-2033	886	75
2034-2038	552	29
2039-2043	175	6
Total	\$ 6,940 \$	305

#### 8. SUBSCRIPTION-BASED INFORMATION TECHNOLOGY ARRANGEMENTS

Metropolitan has several software-based information technology agreements encompassing a range of services. These include enterprise software licensing and subscription agreements, cloud data warehousing, e-procurement system services as well as various technology security and maintenance support services. These agreements expire at various dates through 2027 and provide renewal options that are reasonably certain to be exercised for some and others having no renewal options. The expected payments are discounted using the implicit rate or Metropolitan's incremental borrowing rate. Variable payments are excluded from the valuations unless they are fixed in substance. Metropolitan has no future subscription commitments at this time.

June 30, 2023 and 2022

The total amount of subscription assets and the related accumulated amortization for the fiscal years ended June 30, 2023 and 2022 are as follows:

(Dollars in thousands)	June 30, 2021	Additions	June 30, 2022 As Adjusted (Note 1u)	Additions	June 30, 2023
Subscription assets:					
Security & Enterprise Solutions	\$ 	\$ 4,365	\$ 4,365	\$ 2,893	\$ 7,258
Workflow & Productivity Solution	 _	420	420	794	1,214
Total subscription assets		4,785	4,785	3,687	 8,472
Accumulated amortization on subscription assets:					
Security & Enterprise Solutions	—	485	485	2,279	2,764
Workflow & Productivity Solution	 —	107	107	206	313
Total accumulated amortization on subscription assets	 	592	592	2,485	3,077
Subscription assets, net	\$ 	\$ 4,193	\$ 4,193	\$ 1,202	\$ 5,395

Future principal and interest payment are as follows:

	 Security & Ent	erpri	se Solutions	Workflow & Productivity Solutions							
(Dollars in thousands)	Principal	Interest			Principal		Interest				
Fiscal year ending June 30,											
2024	\$ 2,981	\$	52	\$	346	\$	23				
2025	799		7		217		10				
2026	—		_		77		4				
2027	_				81		1				
Total	\$ 3,780	\$	59	\$	721	\$	38				
## 9. PENSION PLAN

### (a) General Information about the Pension Plan

#### **Plan Description**

All full-time Metropolitan employees are required to participate in Metropolitan's Miscellaneous Plan with CalPERS, an agent multiple-employer public employee defined benefit pension plan. CalPERS acts as a common investment and administrative agent for participating public entities within the State of California. A menu of benefit provisions as well as other requirements is established by State statutes within the Public Employee's Retirement Law. Metropolitan selects optional benefit provisions from the benefit menu by contract with CalPERS and adopts those benefits through Board approval. CalPERS issues a separate annual comprehensive financial report. Copies of CalPERS' annual financial report may be obtained from its Executive Office, 400 Q Street, Sacramento, CA 95811.

#### **Benefits Provided**

CalPERS provides retirement and disability benefits, annual cost-of-living adjustments, and death benefits to plan members and beneficiaries. Benefits are based on years of credited service, equal to one year of full-time employment. Employees hired prior to January 1, 2013 (Classic members) with five years of total service are eligible to retire at age 50 with statutorily reduced benefits; employees hired after January 1, 2013 (PEPRA members) with at least five years of credited service are eligible to retire at age 52 with statutorily reduced benefits. All members are eligible for improved non-industrial disability benefits after five years of service. The death benefit is one of the following: the Basic Death Benefit, the 1959 Survivor Benefit, or the Optional Settlement 2W Death Benefit.

### **Contribution Description**

Section 20814(c) of the California Public Employees' Retirement Law requires that the employer contribution rates for all public employers be determined on an annual basis by the actuary and shall be effective on the July 1 following notice of a change in the rate. The total plan contributions are determined through CalPERS' annual actuarial valuation process. The actuarially determined rate is the estimated amount necessary to finance the costs of benefits earned by employees during the year, with an additional amount to finance any unfunded accrued liability. Metropolitan is required to contribute the difference between the actuarially determined rate and the contribution rate of employees. Metropolitan's total employer contributions were \$88.2 million and \$81.5 million for the fiscal years ended June 30, 2023 and 2022, respectively. The employee contribution rate was 7.25 percent of annual pay for PEPRA members for the fiscal years ended June 30, 2023 and 2022 and 7.0 percent of annual pay for Classic members in both years. Metropolitan contributes the full 7.0 percent for Classic members while PEPRA members contribute the full 7.25 percent. At June 30, 2023 and 2022, Metropolitan's pickup of the employee's 7.0 percent share were \$10.6 million and \$11.0 million, respectively. Payments made by Metropolitan to satisfy contribution requirements that are identified by the pension plan terms as plan member contribution requirements are classified as plan member contributions.

June 30, 2023 and 2022

The Plans' provisions and benefits in effect at June 30, 2023 and 2022 are summarized as follows:

	Miscellan	Miscellaneous				
Hire date	Prior to January 1, 2013	On or after January 1, 2013				
Benefit formula	2.0% @ 55	2.0% @ 62				
Benefit vesting schedule	5 years	5 years				
Benefit payments	Monthly for life	Monthly for life				
Final average compensation period	12 months	36 months				
Sick leave credit	Yes	Yes				
Retirement age	50-67	52-67				
Monthly benefits as a % of eligible compensation	1.426% to 2.418%	1.0% to 2.5%				
Cost of living adjustment	2.0 %	2.0 %				
Required employee contribution rates						
2023	7.0 %	7.25 %				
2022	7.0 %	7.25 %				
Required employer contribution rates						
2023	35.74 %	35.74 %				
2022	34.39 %	34.39 %				

At June 30, 2021 and 2020, the valuation dates for fiscal years 2023 and 2022, respectively, the following current and former employees were covered by the benefit terms:

	2023	2022
Valuation date	6/30/2021	6/30/2020
Inactive employees (or their beneficiaries) currently receiving benefits	2,363	2,338
Inactive employees entitled to but not yet receiving benefits	887	898
Active members	1,854	1,850
Total	5,104	5,086

## (b) Actuarial Methods and Assumptions Used to Determine Total Pension Liability

Metropolitan's net pension liability is measured as the total pension liability, less the pension plan's fiduciary net position. The net pension liability at June 30, 2023 and 2022 was measured as of June 30, 2022 and 2021, respectively, using an annual actuarial valuation as of June 30, 2021 and 2020, respectively. The actuarial valuations as of June 30, 2021 and 2020 were rolled forward to June 30, 2022 and 2021, respectively, using standard update procedures.

The total pension liabilities for the measurement dates of June 30, 2022 and 2021 were based on the following actuarial methods and assumptions:

Actuarial cost method	Entry Age Normal in accordance with the requirements of GASB 68
Actuarial assumptions	
Discount rate	6.90% in 2022 and 7.15% in 2021
Inflation	2.30% in 2022 and 2.50% in 2021
Salary increases	Varies by entry age and service
Mortality rate table <sup>(1)</sup>	Derived using CalPERS' Membership Data for all Funds
Post-retirement benefit increase	The lesser of contract COLA or 2.30% and 2.50% in 2022 and 2021, respectively, until Purchasing Power Protection Allowance Floor on Purchasing Power applies, 2.30% and 2.50% thereafter in 2022 and 2021, respectively.

<sup>(1)</sup> The mortality table used was developed based on CalPERS' specific data. The probabilities of mortality are based on the 2021 CalPERS Experience Study for the period from 2001 to 2019 for the June 30, 2022 measurement date and the 2017 CalPERS Experience Study for the period from 1997 to 2015 for the June 30, 2021 measurement date. The Experience Study report can be obtained at CalPERS' website under Forms and Publications. Pre-retirement and Post-retirement mortality rates include generational mortality improvement using 80% of Scale MP-2020 for the June 30, 2022 measurement date and 15 years of projected mortality improvement using 90% of Scale MP-2016 for the June 30, 2021 measurement date. Both reports were published by the Society of Actuaries.

### Long-term Expected Rate of Return

The long-term expected rate of return on pension plan investments of 6.90 percent and 7.15 percent for measurement dates of June 30, 2022 and 2021, respectively, were determined using a building-block method in which expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class.

In determining the long-term expected rate of return for the measurement date of June 30, 2022, CalPERS took into account both short-term and long-term market return expectations. Using historical returns of all the funds' asset classes, expected compound (geometric) returns were calculated over the next 20 years using a building-block approach. The expected rate of return was then adjusted to account for assumed administrative expenses of 10 Basis points.

June 30, 2023 and 2022

The table below reflects long-term expected real rates of return by asset class for the measurement date of June 30, 2022.

Asset Class	Current Target Allocation	Real Return Years <sup>(1),(2)</sup>
Global Equity - Cap-weighted	30.00 %	4.54 %
Global Equity - Non -Cap-weighted	12.00	3.84
Private Equity	13.00	7.28
Treasury	5.00	0.27
Mortgage-backed Securities	5.00	0.50
Investment Grade Corporates	10.00	1.56
High Yield	5.00	2.27
Emerging Market Debt	5.00	2.48
Private Debt	5.00	3.57
Real Assets	15.00	3.21
Leverage	(5.00)	(0.59)
Total	100.00 %	

<sup>(1)</sup>An expected inflation of 2.30 percent used for this period.

<sup>(2)</sup>Figures are based on the 2021 Asset Liability Management study.

In determining the long-term expected rate of return for measurement date of June 30, 2021, CalPERS took into account both short-term and long-term market return expectations as well as the expected pension fund cash flows. Using historical returns of all the funds' asset classes, expected compound (geometric) returns were calculated over the short-term (first 10 years) and the long-term (11+ years) using a building-block approach. Using the expected nominal returns for both short-term and long-term, the present value of benefits was calculated for each fund. The expected rate of return was set by calculating the rounded single equivalent expected return that arrived at the same present value of benefits for cash flows as the one calculated using both short-term and long-term returns. The expected rate of return was then set equal to the single equivalent rate calculated above and adjusted to account for assumed administrative expenses.

June 30, 2023 and 2022

The table below reflects long-term expected real rates of return by asset class for the measurement date of June 30, 2021.

Asset Class <sup>(1)</sup>	Assumed Asset Allocation	Real Return Years 1-10 <sup>(2)</sup>	Real Return Years 11+ <sup>(3)</sup>
Public Equity	50.00 %	4.80 %	5.98 %
Fixed Income	28.00	1.00	2.62
Inflation Assets	—	0.77	1.81
Private Equity	8.00	6.30	7.23
Real Assets	13.00	3.75	4.93
Liquidity	1.00	—	(0.92)
Total	100.00 %		

<sup>(1)</sup>In the CalPERS Annual Comprehensive Financial Report, Fixed Income is included in Global Debt Securities; Liquidity is included in Short term Investments; Inflation Assets are included in both Global Equity Securities and Global Debt Securities.

<sup>(2)</sup>An expected inflation of 2.00 percent used for this period.

<sup>(3)</sup>An expected inflation of 2.92 percent used for this period.

#### **Discount Rate**

The discount rate used to measure the total pension liability at June 30, 2022 and 2021 measurement dates were 6.90 percent and 7.15 percent, respectively. The projection of cash flows used to determine the discount rate assumed that contributions from plan members will be made at the current member contribution rates and that contributions from employers will be made at a statutorily required rates, actuarially determined. Based on those assumptions, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on plan investments of 6.90 percent and 7.15 percent were applied to each respective periods of projected benefit payments to determine the total pension liability.

NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

## (c) Changes in the Net Pension Liability

The following tables show the changes in net pension liability recognized over the measurement periods of June 30, 2022 and 2021:

	Increase (Decrease)						
(Dollars in thousands)	То	Total Pension Liability (a)		Plan Fiduciary Net Position (b)		et Pension Liability = (a) - (b)	
Balance at June 30, 2021 (MD)	\$ 2,669,675		\$ 2,229,075		\$	440,600	
Changes recognized for the measurement period:							
Service cost		44,093		_		44,093	
Interest on total pension liability		184,342		_		184,342	
Differences between expected and actual experience		(14,115)		_		(14,115)	
Changes of assumptions		66,014		_		66,014	
Contribution - Employer		_		81,525		(81,525)	
Contribution - Employee		_		17,876		(17,876)	
Net investment income		_		(167,705)		167,705	
Benefit payments, including refunds of employee contributions		(142,551)		(142,551)			
Administrative expenses				(1,388)		1,388	
Net Changes	\$	137,783	\$	(212,243)	\$	350,026	
Balance at June 30, 2022 (MD)	\$	2,807,458	\$	2,016,832	\$	790,626	

	Increase (Decrease)						
(Dollars in thousands)	Total Pension Liability (a)			Plan Fiduciary Net Position (b)		et Pension Liability = (a) - (b)	
Balance at June 30, 2020 (MD)	\$	2,578,818	\$	1,854,231	\$	724,587	
Changes recognized for the measurement period:							
Service cost		38,574		—		38,574	
Interest on total pension liability		181,233				181,233	
Differences between expected and actual experience		3,634				3,634	
Contribution - Employer				74,339		(74,339)	
Contribution - Employee				17,521		(17,521)	
Net investment income				417,420		(417,420)	
Benefit payments, including refunds of employee contributions		(132,584)		(132,584)			
Administrative expenses		—		(1,852)		1,852	
Net Changes	\$	90,857	\$	374,844	\$	(283,987)	
Balance at June 30, 2021 (MD)	\$	2,669,675	\$	2,229,075	\$	440,600	

NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

### Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the net pension liability of the Plan as of the June 30, 2022 and 2021 measurement dates, calculated using the discount rate of 6.90 percent and 7.15 percent, respectively. The table also shows what the net pension liability would be if it were calculated using a discount rate that is one percentage point lower or one percentage point higher than the current rate:

(Dollars in thousands)	2023	2022
Discount Rate -1%	5.9 %	6.15 %
Net Pension Liability	\$ 1,138,330	\$ 763,933
Current Discount Rate	6.9 %	7.15 %
Net Pension Liability	\$ 790,626	\$ 440,600
Discount Rate +1%	7.9 %	8.15 %
Net Pension Liability	\$ 500,375	\$ 170,085

### **Pension Plan Fiduciary Net Position**

Detailed information about the pension plan's fiduciary net position is available in the separately issued CalPERS GASB 68 Accounting Report for Metropolitan.

### Amortization of Deferred Outflows and Deferred Inflows of Resources

Under GASB 68, gains and losses related to changes in total pension liability and fiduciary net position are recognized in pension expense systematically over time.

The first amortized amounts are recognized in pension expense for the year the gain or loss occurs. The remaining amounts are categorized as deferred outflows and deferred inflows of resources related to pensions and are to be recognized in future pension expense.

Net difference between projected and actual earnings on pension plan investments	5 year straight-line amortization
All other amounts	Straight-line amortization over the expected average remaining service lifetime (EARSL) of all members that are provided with benefits (active, inactive, and retired) as of the beginning of the measurement period

The amortization period differs depending on the source of the gain or loss:

The EARSL for the Plan for the period ending June 30, 2022 measurement date is 3.7 years, which was obtained by dividing the total service years of 19,007 (the sum of remaining service lifetimes of the active employees) by 5,104 (the total number of participants: active, inactive, and retired). The EARSL for the Plan for the June 30, 2021 measurement date is 3.5 years, which was calculated by dividing the total service years of 17,798 by the total number of participants of 5,086. Inactive employees and retirees have remaining service lifetimes equal to zero and total

June 30, 2023 and 2022

future service is based on the members' probability of decrementing due to an event other than receiving a cash refund.

#### (d) Pension Expense, Deferred Outflows and Deferred Inflows of Resources Related to Pensions

For the years ended June 30, 2023 and 2022, Metropolitan recognized pension expense of \$91.6 million and \$16.0 million, respectively. At June 30, 2023 and 2022, Metropolitan has deferred outflows and inflows of resources related to pensions as follows:

		Deferred Outflows of Resources Outflows				Deferred Inflows of Resources Inflows			
(Dollars in thousands)		2023		2022		2023		2022	
Pension contributions subsequent to measurement date	\$	88,219	\$	81,525	\$	_	\$		
Differences between expected and actual experience		3,125		9,553		(10,300)			
Changes of assumptions		48,172							
Net difference between projected and actual earnings on pension plan investments		100,621		_		_		(207,915)	
Total	\$	240,137	\$	91,078	\$	(10,300)	\$	(207,915)	

The amounts above are net of outflows and inflows recognized in the pension expense for the fiscal years ended June 30, 2023 and 2022. At June 30, 2023 and 2022, the deferred outflows of resources related to contributions subsequent to the measurement date of \$88.2 million and \$81.5 million, respectively, will be/was recognized as a reduction of the net pension liability in the fiscal years ending/ended June 30, 2024 and 2023, respectively.

The net difference between projected and actual earnings on pension plan investments, differences between expected and actual experience, and changes of assumptions will be recognized in future pension expense as follows:

(Dollars in thousands)	Deferre Outflows /(Inflows of Resource			
Fiscal year ending June 30,				
2024	\$	32,482		
2025		28,695		
2026		16,476		
2027		63,965		
Total	\$	141,618		

NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

## **10. POSTEMPLOYMENT BENEFITS OTHER THAN PENSIONS (OPEB)**

### (a) Plan Description and Benefits Provided

Through CalPERS, Metropolitan offers medical insurance to active and retired employees, as well as their qualified dependents under the Public Employees' Medical and Hospital Care Act (PEMHCA). Under PEMHCA, health coverage for the employee continues into retirement. Current plans offered are two PPO plans: PERS Gold and PERS Platinum; and eleven HMO plans through Anthem Blue Cross, Blue Shield, Health Net, Kaiser, Sharp, United Healthcare and Western Health. Metropolitan participates in the CERBT Fund, which is an agent multiple-employer plan available to employers to pre-fund OPEB benefits. Benefit provisions are established through negotiations between Metropolitan and its various bargaining units, which also apply to retirees. For employees hired on or after January 1, 2012, retirees must have a minimum of 10 years of PERS service and no less than five years of Metropolitan service in order to receive post-employment health benefits in accordance with PERS as per Government Code Section 22893. For employees hired prior to January 1, 2012, retirees are not required to meet the eligibility criteria. This benefit was available to 2,045 and 2,022 retired Metropolitan employees at June 30, 2023 and 2022, respectively. CalPERS issues a separate annual comprehensive financial report that includes financial statements for its CERBT Fund. Copies of CalPERS' annual financial report may be obtained from its Executive Office, 400 Q Street, Sacramento, CA 95811.

### (b) Funding Policy and Contributions

Contribution requirements are established by Memorandum of Understandings negotiated between Metropolitan and its various bargaining units. During fiscal years 2023 and 2022, Metropolitan contributed up to 100 percent of Anthem HMO Traditional Region 2 basic plan rate for all employees and retirees. During fiscal years 2023 and 2022, Metropolitan contributed the full actuarially determined contribution rates of 6.3 percent and 10.6 percent or \$14.9 million and \$23.9 million, respectively. Employees are not required to contribute to the plan.

### (c) Employees Covered

At June 30, 2022 and 2021, the measurement dates for fiscal years 2023 and 2022, respectively, the following current and former employees were covered by the benefit terms:

	2023	2022
Measurement Date	6/30/2022	6/30/2021
Inactives employees (or their beneficiaries) currently receiving benefits	1,872	1,812
Inactive employees entitled to but not yet receiving benefits	150	142
Active members	1,821	1,864
Total	3,843	3,818

NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

### (d) Actuarial Assumptions Used to Determine Total OPEB Liability

The total OPEB liability used to calculate the net OPEB liability as of June 30, 2023 and 2022 was measured as of June 30, 2022 and 2021, respectively using an actuarial valuation as of June 30, 2021. The actuarial valuation as of June 30, 2021 was rolled forward to the June 30, 2022 measurement date, using standard updated procedures. The June 30, 2021 actuarial valuation was based on the following actuarial methods and assumptions:

Actuarial cost method	Entry age normal cost
Actuarial assumptions	
Funding policy	Metropolitan pre-funds full ADC
Discount rate	6.75%
Long-term expected rate of return on assets	6.75%
General inflation	2.3% per annum
Salary increases	3.0% per annum
Mortality, disability, termination, retirement <sup>(1)</sup>	Derived using CalPERS Membership Data
Mortality improvement	Mortality projected fully generational with Society of Actuaries mortality improvement Scale MP-2021
Healthcare cost trend rate	2021 valuation:
	Pre-Medicare: 7.0% for 2022, decreasing to 3.83% for 2076 and later
	Medicare: 5.5% for 2022, decreasing to 3.83% for 2076 and later
Healthcare participation for future retirees	Currently covered: 100%; Currently waived: 90%

<sup>(1)</sup>Derived from the CalPERS Experience Study dated November 2021.

The long-term expected rate of return on OPEB plan investments was determined using a building block method in which expected future real rates of return (expected returns, net of OPEB plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.

The target allocation and best estimates of arithmetic real rates of return for each major asset class as of June 30, 2023 and 2022 are summarized in the following table:

Asset class	Target Allocation	Long-term expected real rate of return
Global equity	59.0 %	4.8 %
Fixed income	25.0	1.5
TIPS	5.0	1.3
Commodities	3.0	0.8
REITs	8.0	3.8
Total	100.0 %	

## (e) Discount Rate

The discount rate used to measure the total OPEB liability at June 30, 2022 and 2021 measurement dates was 6.75 percent. The projection of cash flows used to determine the discount rate assumed that Metropolitan contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the OPEB plan's fiduciary net position was projected to be available to make all projected OPEB payments for current active and inactive employees and beneficiaries. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all periods of projected benefit payments to determine the total OPEB liability.

## (f) Changes in the OPEB Liability

The following tables shows the changes in the net OPEB liability recognized over the measurement periods of June 30, 2022 and 2021:

	Increase (Decrease)								
(Dollars in thousands)	Total OPEB Liability			n Fiduciary et Position	Net OPEE Liability (c) = (a) - (b)				
Balance at June 30, 2021 (MD)	\$	429,603	\$	377,321	(C) \$	52,282			
Changes recognized for the measurement period:									
Service cost		10,124				10,124			
Interest		28,839				28,839			
Contribution - employer		_		30,603		(30,603)			
Net investment income		_		(53,817)		53,817			
Benefit payments		(25,377)		(25,377)					
Administrative expense				(194)		194			
Net changes	\$	13,586	\$	(48,785)	\$	62,371			
Balance at June 30, 2022 (MD)	\$	443,189	\$	328,536	\$	114,653			

#### NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

	Increase (Decrease)									
(Dollars in thousands)	Total OPEB Liability		Pla N	et Position	N (c)	let OPEB Liability = (a) - (b)				
Balance at June 30, 2020 (MD)	¢	( <i>a</i> ) ( <i>a</i> ) ( <i>a</i> )	¢	287 562	(U) ¢	$\frac{164731}{164731}$				
Changes recognized for the measurement period:	Ψ	432,273	Ψ	207,502	Ψ	104,751				
Service cost		11,473				11,473				
Interest		30,563				30,563				
Difference between expected and actual experience		6,034				6,034				
Changes of assumptions		(48,447)				(48,447)				
Contribution - employer		_		27,025		(27,025)				
Net investment income		_		85,221		(85,221)				
Benefit payments		(22,313)		(22,313)						
Administrative expense		_		(174)		174				
Net changes	\$	(22,690)	\$	89,759	\$	(112,449)				
Balance at June 30, 2021 (MD)	\$	429,603	\$	377,321	\$	52,282				

### (g) Sensitivity of the Net OPEB Liability to Changes in the Discount Rate

The following presents the net OPEB liability of the OPEB Plan as of the June 30, 2022 and 2021 measurement dates if it were calculated using a discount rate that is one percentage point lower or one percentage point higher than the current rate.

(Dollars in thousands)	2023	2022
Discount Rate -1%	5.75 %	5.75 %
Net OPEB Liability	\$ 167,076	\$ 103,236
Current Discount Rate	6.75 %	6.75 %
Net OPEB Liability	\$ 114,653	\$ 52,282
Discount Rate +1%	7.75 %	7.75 %
Net OPEB Liability	\$ 70,814	\$ 9,669

NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

## (h) Sensitivity of the Net OPEB Liability to Changes in the Health Care Cost Trend Rates

The following presents the net OPEB liability of the OPEB Plan if it were calculated using a healthcare trend rate that is one percentage point lower or one percentage point higher than the current rate, for measurement periods ended June 30, 2022 and 2021:

(Dollars in thousands)		2023	2022
		6 00/2 / 1 5 0/2	6 0% / 4 5 %
		0.07074.570	0.070/4.370
Healthcare Trend Rate -1%	decre	easing to 3.0 %	decreasing to 3.0 %
Net OPEB Liability	\$	60,313	\$ 3,096
		7.0%/5.5 %	7.0%/5.5 %
Current Healthcare Trend Rate	decr	easing to 4.0 %	decreasing to 4.0 %
Net OPEB Liability	\$	114,653	\$ 52,282
		8.0%/6.5 %	8.0%/6.5 %
Healthcare Trend Rate +1%	decr	easing to 5.0 %	decreasing to 5.0 %
Net OPEB Liability	\$	180,293	\$ 112,091

### (i) OPEB Plan Fiduciary Net Position

Detailed information about the OPEB plan's fiduciary net position is available in the separately issued CERBT Fund financial reports.

### (j) Recognition of Deferred Outflows and Deferred Inflows of Resources

Gains and losses related to changes in total OPEB liability and fiduciary net position are recognized in OPEB expense systematically over time.

Amounts are first recognized in OPEB expense for the year the gain or loss occurs. The remaining amounts are categorized as deferred outflows and deferred inflows of resources related to OPEB and are to be recognized in future OPEB expense.

The recognition period differs depending on the source of the gain or loss:

Net difference between projected and actual earnings on OPEB plan investments	5 year straight-line amortization
All other amounts	Straight-line amortization over the expected average remaining service lives of all members that are provided with benefits (active, inactive, and retired) as of the beginning of the measurement period

NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

### (k) OPEB Expense and Deferred Outflows/Inflows of Resources Related to OPEB

For the years ended June 30, 2023 and 2022, Metropolitan recognized OPEB expense of \$2.0 million and \$10.7 million, respectively. At June 30, 2023 and 2022, Metropolitan has deferred outflows and inflows of resources related to OPEB as follows:

(Dollars in thousands)		Deferred Outflows of Resources				Deferred Inflows of Resources			
		2023	2022		2023		2022		
OPEB contributions subsequent to measurement date	\$	21,419	\$	30,603	\$	:	\$		
Differences between expected and actual experience		3,620		4,827		(10,808)	(20,635)		
Changes of assumptions						(29,978)	(40,494)		
Net difference between projected and actual earnings on OPEB plan investments		30,184		_		_	(45,597)		
Total	\$	55,223	\$	35,430	\$	(40,786)	\$ (106,726)		

The \$21.4 million and \$30.6 million reported as deferred outflows of resources related to contributions subsequent to the June 30, 2022 and 2021 measurement dates, respectively, will be/was recognized as a reduction of the net OPEB liability during the fiscal years ending/ended June 30, 2024 and 2023, respectively.

The net difference between projected and actual earnings on OPEB plan investments, differences between expected and actual experience, and changes of assumptions will be recognized in future expense as follows:

	Deferred Inflows
(Dollars in thousands)	of Resources
Fiscal year ending June 30,	
2024	\$ (13,598)
2025	(4,351)
2026	(5,194)
2027	16,161
Total	\$ (6,982)

## **II. COMMITMENTS AND CONTINGENCIES**

### (a) State Water Contract (see Note 12)

Estimates of Metropolitan's share of the projected fixed costs of the SWP are provided annually by the State. The estimates are subject to future increases or decreases resulting from changes in planned facilities, refinements in cost estimates, and inflation. During the next five years, payments under the State Water Contract, exclusive of variable power costs, are currently estimated by the State to be as follows:

#### NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

(Dollars in thousands)	State Wat Contract Paymen	er ats
Year ending June 30:		
2024	\$ 543,01	9
2025	511,89	9
2026	510,07	'9
2027	501,13	57
2028	499,51	7

According to the State's latest estimates, Metropolitan's long-term commitments under the contract, for capital and minimum operations and maintenance costs, including interest to the year 2035, are as follows:

	State Water
	Long Term
(Dollars in thousands)	Commitments
Transportation facilities	\$ 548,028
Conservation facilities	918,277
Off-aqueduct power facilities <sup>(1)</sup>	4,083
East Branch enlargement	232,350
Revenue bond surcharge	 631,536
Total long-term SWP contract commitments	\$ 2,334,274

<sup>(1)</sup>These commitments represent operations and maintenance costs. Metropolitan was relieved of its obligation for capital costs in 2018.

Metropolitan intends to exercise its option to extend its agreement with the State through 2085, which will result in annual minimum operations and maintenance costs through 2085. In addition, the amounts shown above do not contain any escalation for inflation, are subject to significant variation over time because the amounts are based on a number of assumptions, and are contingent on future events. None of the estimated long-term commitments are recorded as liabilities in the accompanying basic financial statements.

### (b) Bay/Delta Regulatory and Planning Activities

The State Board is the agency responsible for setting water quality standards and administering water rights throughout California. Decisions of the State Board can affect the availability of water to Metropolitan and other water users throughout California. The State Board exercises its regulatory authority over Bay/Delta watershed supplies by means of public proceedings leading to regulations and decisions.

The Delta Stewardship Council (Council) is the California State agency tasked with creating and implementing a comprehensive management plan for the Delta. The Council, created by the 2009 Sacramento-San Joaquin Delta Reform Act, serves as an independent voice for science and policy in the Delta to achieve the state mandated coequal goals for the Delta of ecosystem restoration and water supply reliability. To accomplish its mission, the Council adopted and implements the Delta Plan, which is the state's long-term management plan for the Delta to further the coequal goals, including facilitating, coordinating, and integrating the activities of hundreds of local, state, and federal agencies that have responsibilities directly related to water, ecosystems, land use, recreation, flood control and other functions in the legally defined Delta. The Council is conducting updates to its Delta Plan, including a strategic levee

investment policy, and a Five-Year Review to consider progress in implementing the Delta Plan over the preceding five years, identify areas where progress has been made or is lacking, and inform the Council about opportunities to address deficiencies. In addition, the Council is developing a draft climate change adaption plan for the Delta and Suisun Marsh as part of their Delta Adapts: Creating a Climate Resilient Future initiative. The Delta Adapts plan is intended to help inform and assess specific climate risks and vulnerabilities in the Delta and, in coordination with other agencies and stakeholders, develop adaptation strategies to address those vulnerabilities.

To obtain "take" authorization under the California Endangered Species Act (CESA) for the long-term operation of the State Water Project, the Department of Water Resources (DWR) consults with the California Department of Fish and Wildlife (CDFW) and requests an incidental take permit (ITP) of state listed species. To obtain "take" authorization under the Federal Endangered Species Act, DWR consults with the National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (FWS) and requests biological opinions (BiOps) authorizing incidental take of federally listed species. The updated BiOps for the long-term operation of the SWP and the Central Valley Project (CVP) were finalized in October 2019 and Reclamation adopted its long-term operations plan for the CVP in February 2020. CDFW issued its ITP and DWR approved its long-term operations plan in March 2020. The BiOps and the State ITP have been challenged in court by multiple parties including water agencies and non-governmental organization groups. Metropolitan is involved in the BiOp litigation as part of the State Water Contractors, and in the State ITP litigation as Metropolitan, in order to protect its interest that the permits are based on the best available science and are granted pursuant to correct legal standards. The litigation on the State ITP includes eight cases and has been ordered to be coordinated in Sacramento County Superior Court. The administrative records were certified in March 2022. Metropolitan and the other parties of the State Water Contractors are challenging the completeness of the administrative record. No date has been set for the hearing merits. Reclamation reinitiated consultation under the federal ESA in September 2021; and in consideration of the reinitiated federal consultation, the BiOp litigation has been stayed.

The Bay Delta Conservation Plan (BDCP) planning process, which began in 2007, was a voluntary collaboration of state, federal, and local water agencies, state and federal fish agencies, environmental organizations, and other interested parties to provide a comprehensive habitat conservation and restoration program for the Delta, including new Delta conveyance infrastructure as one of the conservation measures consisting of multiple new intakes on the Sacramento River connected to existing SWP and CVP water facilities in the south Delta by two main tunnels. In addition, the BDCP would have provided the basis for long-term permits under federal and state endangered species laws for activities covered by the plan based on the best available science, identified sources of funding, and an adaptive management and monitoring program, and it would have been incorporated into the Delta Plan if it met the requirements of the federal and state ESAs for a Habitat Conservation Plan/Natural Communities Conservation Plan (HCP/NCCP).

On April 30, 2015, the State announced its intent to study three new conveyance-only alternatives that would not be part of an HCP/NCCP, separating the conveyance facilities and habitat restoration measures into two separate efforts namely: CWF and California EcoRestore. Under the CWF, the new water conveyance facilities with proposed design changes would be constructed and operated, with federal ESA compliance achieved through section 7 consultation. State and Federal ESA permits were issued in June and July 2017, and the DWR approved CWF on July 21, 2017. Metropolitan and other State Water Contractors approved their respective participation in CWF in

2017 and 2018. On February 12, 2019, Governor Newsom announced that he did not support a two-tunnel Delta Conveyance project, but supports a single tunnel project. On April 29, 2019, Governor Newsom issued Executive Order N-10-19, directing several agencies to, among other things, "inventory and assess current planning to modernize conveyance through the Bay Delta with a new single tunnel project." On May 2, 2019, the DWR rescinded its approval of CWF and decertified the Environmental Impact Report (EIR).

Eighteen SWP contractors have taken action in November and December 2020 and approved their participation in the planning and pre-construction costs for the Delta Conveyance Project and authorized the execution of a funding agreement with the DWR for such purpose. At its December 8, 2020, Board meeting, Metropolitan's Board authorized the General Manager to execute a funding agreement and committed funding for a Metropolitan participation level of 47.2 percent of the costs of preliminary design, environmental planning and other preconstruction activities to assist in the environmental process for the proposed Delta Conveyance Project. At a 47.2 percent participation level for Metropolitan, its forecasted funding agreement costs will be \$160.8 million for calendar years 2021 through 2024. On July 27, 2022 the DWR released a public Draft Environmental Impact Report (Draft EIR) under the California Environmental Quality Act for the Delta Conveyance Project. A range of reasonable alternatives are identified and their potential impacts on environmental resources are analyzed in the Draft EIR. The Draft EIR also discusses Community Benefits Program framework as part of the Delta Conveyance Project to help protect and enhance the cultural, recreational, natural resource and agricultural values of the Delta. DWR's ongoing tribal consultation process as part of its environmental planning, consistent with State statutes and policies is also documented in the Draft EIR. The public comment period for the Draft EIR closed on December 16, 2022. DWR is in the process of reviewing and responding to substantive comments received on the Draft EIR and plans to issue a Final EIR in late 2023. At that time, DWR will determine whether to approve the proposed project, an alternative or no project.

### (c) Imperial Irrigation District

As of June 30, 2023, Metropolitan had advanced a total of \$379.0 million to the IID for construction costs, operations and maintenance costs, and indirect costs of the conservation projects. Metropolitan remains obligated to pay IID for actual operation and maintenance costs for the remainder of this agreement through at least 2041. In return, Metropolitan will receive between 85.0 TAF to 105.0 TAF in 2023 and annually thereafter depending upon the amount used by the Coachella Valley Water District (CVWD). A total of at least 85.0 TAF to 105.0 TAF will be/was available in calendar years 2023 and 2022, respectively, for diversion by Metropolitan, see Note 4(a).

#### (d) Sale of Water by the Imperial Irrigation District to San Diego County Water Authority

In April 1998, the San Diego County Water Authority (SDCWA) and IID executed an agreement (Transfer Agreement) for SDCWA's purchase from IID of Colorado River water that is conserved within IID. SDCWA is a Metropolitan member agency and one of the largest water purchasers from Metropolitan. In October 2003 the Transfer Agreement was revised as part of the Quantification Settlement Agreement, see Note 11(e). The amended Transfer Agreement sets the maximum transfer amount at 205.0 TAF in 2021, with the transfer gradually ramping up to that amount over an approximately twenty-year period, stabilizing at 200.0 TAF per year beginning in 2023.

No facilities exist to provide for delivery of water from IID to SDCWA. In 1998, Metropolitan and SDCWA entered into an agreement for the exchange of the IID water to be acquired by SDCWA under the Transfer

Agreement, with water to be delivered by Metropolitan. In 2003, the boards of directors of Metropolitan and SDCWA agreed to an increase in the price that SDCWA would pay to Metropolitan for this exchange of water, in return for Metropolitan's assignment to SDCWA of Metropolitan's rights to water conserved as a result of the lining of the All-American and Coachella Canals and \$235.0 million, as set forth in an amended exchange agreement (Exchange Agreement) and an Allocation Agreement. Under the Exchange Agreement, SDCWA makes available to Metropolitan at its intake at Lake Havasu on the Colorado River the conserved Colorado River water acquired by SDCWA from IID and the conserved canal lining water allocated to SDCWA. In exchange, Metropolitan delivers an equal volume of water from its own sources of supply through its delivery system to SDCWA. The deliveries to both Metropolitan and SDCWA are deemed to be made in equal monthly increments. SDCWA pays Metropolitan a volumetric price for each delivery by Metropolitan. The price payable by SDCWA is calculated using the charges set by Metropolitan's Board from time to time to be paid by its member agencies for the conveyance of water through Metropolitan's facilities, see Note 1(c). SDCWA has challenged the validity of Metropolitan's charges for conveyance of water that became effective January 1, 2011 and January 1, 2012, in San Diego County Water Authority v. Metropolitan Water District of Southern California; et al. On June 8, 2012, SDCWA filed a separate lawsuit challenging the rates adopted by Metropolitan's Board on April 10, 2012 and effective on January 1, 2013 and January 1, 2014. On May 30, 2014, SDCWA filed a separate lawsuit challenging the rates adopted by Metropolitan's Board on April 8, 2014 and effective on January 1, 2015 and January 1, 2016. On April 13, 2016, SDCWA filed a separate lawsuit challenging the rates and charges adopted by Metropolitan's Board on April 12, 2016 and effective on January 1, 2017 and January 1, 2018. On June 8, 2018, SDCWA filed a separate lawsuit challenging the rates and charges adopted by Metropolitan's Board on April 10, 2018 and effective on January 1, 2019 and January 1, 2020. The Exchange Agreement requires Metropolitan to pay the disputed portion of the amount paid by SDCWA under the Exchange Agreement and interest thereon to SDCWA, if SDCWA prevails in a dispute over the price payable by SDCWA under the Exchange Agreement. See Claims and Litigation, Note 11(g).

### (e) Quantification Settlement Agreement

The Quantification Settlement Agreement (QSA) is part of the California Plan, which is a plan to reduce California's use of Colorado River water to its basic apportionment of 4.4 million acre-feet per year when necessary through water conservation, transfers from higher priority agricultural users to Metropolitan's service area, and storage programs. The QSA was executed in October 2003 and establishes Colorado River water use limits for IID and the CVWD. It also provides for specific acquisitions of conserved water and water supply arrangements and restores the opportunity for Metropolitan to receive any special surplus water.

### (f) Construction Programs and Contracts

The estimated cost, excluding contingencies, of Metropolitan's capital program for fiscal years 2024 through 2028 totals approximately \$2.4 billion. Capital spending for fiscal year 2024 and 2025 is planned at \$300.0 million and \$372.0 million, respectively. Planned capital spending for fiscal years 2026 through 2028 includes spending for the Pure Water Southern California program and is \$381.0 million, \$475.0 million, and \$838.0 million, for each fiscal year, respectively.

Over the next three years, the Capital Investment Plan budget totals approximately \$1.053 billion with \$206.5 million on refurbishment and replacement (R&R) work at pressure control facilities and pipelines throughout the distribution system; \$193.5 million to continue relining of the Prestressed Concrete Cylinder Pipe portions of

June 30, 2023 and 2022

the Second Lower and Sepulveda feeders; \$123.5 million targeted for R&R projects for the Colorado River Aqueduct; over \$69.7 million for R&R work at Metropolitan's water treatment plants; \$94.0 million on projects to mitigate drought impacts; and \$58.2 million on a variety of information technology projects such as the Supervisory Control and Data Acquisition system.

Metropolitan had commitments under construction contracts in force as follows:

	 June	e 30,	
(Dollars in thousands)	 2023		2022
Second Lower Feeder PCCP rehabilitation, reach 3B	\$ 65,314	\$	
Weymouth water treatment plant basins nos. 5-8 & filter building no. 2 rehabilitation	62,428		90,025
Perris Valley Pipeline Interstate 215 tunnel crossing	54,820		
CRA pumping plants domestic water treatment system replacement	23,560		30,937
Wadsworth pumping plant bypass pipeline	13,981		_
CRA pumping plants - sump rehabilitation	13,274		15,792
La Verne shops building completion - stage 5	9,551		18,530
Colorado River Aqueduct conduit structural protection	8,527		_
Jensen and Skinner water treatment plants battery energy storage systems	7,365		9,093
CRA pumping plants - overhead cranes replacement	7,147		12,460
Henry J. Mills water treatment plan electrical upgrades, stage 2	6,613		7,941
Furnishing large-diameter conical plug valves	6,187		6,592
Foothill hydroelectric power plant seismic upgrade	6,024		_
CRA conveyance system solar level sensor installation	5,266		_
Orange County Feeder relining - reach 3	4,840		16,798
Weymouth plant battery energy storage system	3,529		6,177
Furnishing butterfly valves for the Inland Feeder/SBVMWD Foothill pump station intertie, schedule 1	2,601		
Furnishing butterfly valves for the Weymouth water treatment plant - schedule 1	2,314		2,465
OC-88 pump station chiller replacement	2,104		2,584
Metropolitan headquarters building exterior physical security improvements	1,614		
Metropolitan headquarters building fire alarm & smoke control improvements	1,553		6,546
Sepulveda, West Valley, and East Valley feeders interconnection upgrades	1,435		3,144
Jensen water treatment plant ozone power supply units replacement	1,225		2,258
Lake Mathews PCCP rehabilitation valve storage building	818		4,154
Refurbishing valve actuators for the Diemer water treatment plant	343		1,173
Lake Mathews reservoir wastewater system replacement	300		2,412
Second Lower Feeder PCCP rehabilitation - reach 3A	237		11,645
Replacement of Casa Loma siphon barrel no. 1	132		6,444
Upper Feeder Santa Ana river crossing expansion joint replacement	—		1,200
Furnishing steel pipe for Etiwanda pipeline north relining, stage 3	—		1,021
Other	 4,401		5,048
Total	\$ 317,503	\$	264,439

These commitments are being financed with operating revenues and debt financing.

## (g) Claims and Litigation

Through several lawsuits filed by SDCWA since 2010, SDCWA has challenged the rates adopted by Metropolitan's Board in 2010, 2012, 2014, 2016 and 2018. Each of these lawsuits and the status thereof are briefly described below.

The 2010 and 2012 Cases. SDCWA filed San Diego County Water Authority v. Metropolitan Water District of Southern California, et al. on June 11, 2010 challenging the rates adopted by the Board on April 13, 2010, which became effective January 1, 2011 and January 1, 2012 (the "2010 Case"). The complaint requested a court order invalidating the rates adopted April 13, 2010, and that Metropolitan be mandated to allocate certain costs associated with the State Water Contract and the Water Stewardship Rate to water supply rates and not to transportation rates.

The contract price payable by SDCWA under the Exchange Agreement between Metropolitan and SDCWA is Metropolitan's transportation rates. Therefore, SDCWA also alleged that Metropolitan breached the Exchange Agreement by allocating certain costs related to the State Water Contract and the Water Stewardship Rate to its transportation rates because it resulted in an overcharge to SDCWA for water delivered pursuant to the Exchange Agreement.

On June 8, 2012, SDCWA filed a new lawsuit challenging the rates adopted by Metropolitan on April 10, 2012 and effective on January 1, 2013 and January 1, 2014 (the "2012 Case") based on similar claims, and further alleging that Metropolitan's rates adopted in 2012 violated Proposition 26.

Following a trial of both lawsuits in two phases and subsequent trial court ruling, the parties appealed. On June 21, 2017, the California Court of Appeal ruled that Metropolitan may lawfully include its State Water Project transportation costs in the System Access Rate and System Power Rate that are part of the Exchange Agreement's price term, and that Metropolitan may also lawfully include the System Access Rate in its wheeling rate, reversing the trial court decision on this issue. The court held Metropolitan's allocation of the State Water Project transportation costs as its own transportation costs is proper and does not violate the wheeling statutes (Water Code, § 1810, et seq.), Proposition 26 (Cal. Const., Article XIIIC, §1, subd.(e)), whether or not that Proposition applies to Metropolitan's rates, California Government Code section 54999.7, the common law, or the terms of the parties' Exchange Agreement.

The Court of Appeal also ruled that the record did not support Metropolitan's inclusion of its Water Stewardship Rate as a transportation cost in the Exchange Agreement price or the wheeling rate, under the common law and the wheeling statutes. The court noted that its holding does not preclude Metropolitan from including the Water Stewardship Rate in Metropolitan's full-service rate.

The Court of Appeal held that because the Water Stewardship Rate was included in the Exchange Agreement price, there was a breach by Metropolitan of the Exchange Agreement in 2011 through 2014 and remanded the case to the trial court for a redetermination of damages in light of its ruling concerning the Water Stewardship Rate. The Court of Appeal also found that the Exchange Agreement may entitle the prevailing party to attorneys' fees for both phases of the case, and directed the trial court on remand to make a new determination of the prevailing party, if any.

On September 27, 2017, the California Supreme Court denied SDCWA's petition for review, declining to consider the Court of Appeal's decision. The Court of Appeal's decision is therefore final.

After tendering payment in 2019 which SDCWA rejected, in February 2021 Metropolitan paid to SDCWA the same amount previously tendered of \$44.4 million for contract damages for SDCWA's Water Stewardship Rate payments from 2011 to 2014 and pre-judgment and post-judgment interest. In September 2021, following a 2021 Court of Appeal opinion clarifying that its Water Stewardship Rate ruling applies to later years, Metropolitan paid to SDCWA the amount of \$35.9 million for SDCWA's Water Stewardship Rate payments from 2015 to 2017 and pre-judgment interest. These payments include all amounts sought related to breach of the Exchange Agreement resulting from the inclusion of the Water Stewardship Rate in the contract price for Exchange Agreement transactions occurring from 2010 until the Water Stewardship Rate was no longer charged in the contract price for Exchange Agreement Set-Aside Fund and \$22.1 million withdrawn from reserves (the remainder of the statutory interest).

The Superior Court also issued an order finding SDCWA is the prevailing party on the contract in the 2010 and 2012 cases and is therefore entitled to its attorneys' fees and costs under the contract, and to statutory costs. On February 25, 2021, Metropolitan appealed both prevailing party determinations. The parties stipulated to \$13,397,575.66 as the amount of SDCWA's attorneys' fees that may be awarded under the Exchange Agreement, in the event Metropolitan's appeal is unsuccessful. On March 17, 2022, the Court of Appeal held that SDCWA is the prevailing party in the 2010 and 2012 cases and is therefore entitled to attorney's fees under the parties' Exchange Agreement and litigation costs. On March 21, 2022, Metropolitan paid to SDCWA \$14,296,864.99 (\$13,397,575.66 fees award, plus statutory interest) and \$352,247.79 for costs (\$326,918.34 costs award, plus statutory interest).

On July 27, 2022, Metropolitan paid SDCWA \$411,888.36 for attorneys' fees on appeals of post-remand orders.

The 2014, 2016 and 2018 Cases. SDCWA has also filed lawsuits challenging the rates adopted in 2014, 2016 and 2018 and asserting breach of the Exchange Agreement. Metropolitan filed cross-complaints in the three cases, asserting claims relating to rates and the Exchange Agreement, including reformation.

The operative Petitions for Writ of Mandate and Complaints allege the same Water Stewardship Rate claim and breach of the Exchange Agreement as in the 2010 and 2012 cases, but because Metropolitan paid the amounts sought to SDCWA, and the writ in the 2010 and 2012 cases encompasses these claims, these claims and cross-claims are moot. They also claim Metropolitan's wheeling rate fails to provide wheelers a reasonable credit for "offsetting benefits" pursuant to Water Code Section 1810, et seq., and that Metropolitan has breached the Exchange Agreement by failing to reduce the price for an "offsetting benefits" credit. The cases also alleged that in 2019 and 2020, Metropolitan misallocated its California WaterFix (CWF) costs as transportation costs and breached the Exchange Agreement by including those costs in the transportation rates charged. In April 2022, the parties requested the court's dismissal with prejudice of the claims and cross-claims relating to CWF. The cases also request a judicial declaration that Proposition 26 applies to Metropolitan's rates and charges, and a judicial declaration that SDCWA is not required to pay any portion of a judgment in the litigation. Metropolitan filed cross-complaints in each of these cases, asserting claims relating to rates and the Exchange Agreement.

The cases were stayed pending resolution of the 2010 and 2012 cases, but the stays have been lifted and the cases have been consolidated in the San Francisco Superior Court. Metropolitan and SDCWA each filed motions for summary adjudication of certain issues in the 2014, 2016 and 2018 cases with the court. Summary adjudication is a procedure by which a court may determine the merits of a particular claim or affirmative defense, a claim for damages, and/or an issue of duty before trial.

On May 4, 2022, the San Francisco Superior Court issued an order granting Metropolitan's motion for summary adjudication on its cross-claim for declaratory relief that the conveyance facility owner, Metropolitan, determines fair compensation, including any offsetting benefits; and denying its motion on certain other cross-claims and an affirmative defense.

On May 11, 2022, the San Francisco Superior Court issued an order granting SDCWA's motion for summary adjudication on: Metropolitan's cross-claim in the 2018 case for a declaration with respect to the lawfulness of the Water Stewardship Rate's inclusion in the wheeling rate and transportation rates in 2019 and 2020; certain Metropolitan cross-claims and affirmative defenses on the ground that Metropolitan has a duty to charge no more than fair compensation, which includes reasonable credit for any offsetting benefits pursuant to Water Code section 1811(c), with the court also stating that whether that duty arose and whether Metropolitan breached that duty are issues to be resolved at trial; Metropolitan's affirmative defenses that SDCWA's claims are untimely and SDCWA has not satisfied claims presentation requirements; Metropolitan's affirmative defense in the 2018 case that SDCWA has not satisfied dispute resolution requirements under the Exchange Agreement; SDCWA's claim, Metropolitan's cross-claims, and Metropolitan's rates and charges, with the court also stating that whether Metropolitan violated Proposition 26 is a separate issue; and Metropolitan's cross-claims and affirmative defenses regarding the applicability of Government Code section 54999.7, finding that section 54999.7 applies to Metropolitan's rates. The court denied SDCWA's motion on certain other Metropolitan cross-claims and affirmative defenses.

Damages sought by SDCWA in connection with its claims for offsetting benefits credit under the Exchange Agreement exceed \$334.0 million for the six years (2015 through 2020) at issue in these cases. In the event that SDCWA were to prevail in a final adjudication of this issue, a determination of offsetting benefits credit due to SDCWA, if any, could impact the Exchange Agreement price in future years.

Trial of the 2014, 2016 and 2018 cases occurred May 16 to July 1, 2022. Subsequent to the July 1, 2022 trial closing date of the 2014, 2016 and 2018 cases, the parties filed post-trial briefs on August 19, 2022. On September 14, 2022, the court granted in part and denied in part SDCWA's motion for partial judgment; the rulings did not resolve any claims or cross-claims. Trial closing arguments were held on September 27, 2022.

As directed by the court, the parties filed proposed statements of decision on December 16, 2022.

On December 27, 2022, the court entered the parties' stipulation memorializing the earlier resolution of the Water Stewardship Rate claims in SDCWA's favor, except a cross-claim that Metropolitan withdrew via the stipulation.

On March 14, 2023, the court issued an amended order on SDCWA's motion for partial judgment to address Metropolitan's request for a declaration on Metropolitan's cost causation obligations when setting rates. The court

ruled that Metropolitan cannot demonstrate that a declaration regarding cost causation is the proper subject for declaratory relief.

After issuing a tentative statement of decision on March 14, 2023, and receiving SDCWA's objections on March 29, 2023, on April 25, 2023, the court issued its final statement of decision concerning the trial in the 2014, 2016, and 2018 cases. For each claim litigated at trial, the court ruled in favor of Metropolitan or found the claim to be moot based on the rulings in Metropolitan's favor. The court concluded: (1) the duty to include a reasonable credit for any offsetting benefits pursuant to the Wheeling Statutes did not arise and Metropolitan did not breach the Exchange Agreement by failing to calculate a reasonable credit for any offsetting benefits; (2) because Metropolitan did not breach the Exchange Agreement, the court need not address damages; (3) Metropolitan's conditional claims to reform the Exchange Agreement, if SDCWA prevailed, are moot; (4) Metropolitan's conditional claim for a declaration of its rights and duties under the Wheeling Statutes, if SDCWA prevailed on its claim that the Wheeling Statutes apply to the Exchange Agreement, is moot (the court stated that while it finds offsetting benefits under the Wheeling Statutes do not apply to the Exchange Agreement's price term, the court "has made no express finding whether the Wheeling Statutes apply"); (5) SDCWA's rate challenges are rejected; and (6) SDCWA's request for a declaration that it could not be required to contribute to a damages, fees, or costs award in the cases is moot.

The court will issue a final judgment in the 2014, 2016, and 2018 cases, which will be subject to appeal.

Metropolitan is unable to assess at this time the likelihood of success of the pending cases, any possible appeals, settlements or any future claims.

### (h) Reid Gardner Generating Station

Reid Gardner Generating Station (Plant) is a 557 megawatt coal-fired plant located near Moapa, Nevada. The Plant is owned and operated by Nevada Energy (NE). In 1983, DWR entered into a Participation Agreement to import power from the Plant to serve the SWP energy needs. DWR's interest in the Plant terminated on July 25, 2013. DWR and NE negotiated the terms of the divestiture including DWR's obligations to mitigate any environmental impacts associated with the electricity generated for DWR over the past thirty years. Metropolitan paid approximately 75.0 percent of DWR's costs associated with the generation of electricity at the Plant and will pay this proportion of DWR's assigned mitigation costs.

## (i) Landfill Obligation

Federal and State laws and regulations require that Metropolitan perform certain maintenance and monitoring functions at its sole landfill site for 30 years after closure. They further require that a separate funding mechanism be established to ensure that sufficient funds are available for closure and postclosure costs. In October 1995, the landfill was closed and management's estimate of closure and postclosure costs for this site totaled approximately \$2.0 million. The required thirty-year postclosure maintenance and monitoring of the landfill officially started in January 1998; after the installation of the landfill's final cover was completed. Approximately \$25,000 and \$9,000 were expended for post closure maintenance and monitoring activities in fiscal years 2023 and 2022, respectively.

The actual cost of postclosure care may be higher due to inflation, changes in technology, or changes in landfill laws or regulations. Funding of these costs has been derived from a separate trust account that has been established for closure and postclosure costs. The balance of the trust account is sufficient to cover the landfill liability. At June 30, 2023 and 2022, approximately \$700,000, net of interest receipts and disbursements, was available in this account.

## 12. PARTICIPATION RIGHTS IN STATE WATER PROJECT

Metropolitan is one of 29 water suppliers contracting with the State of California for a system to provide water throughout much of California. Under the terms of the State Water Contract, as amended, Metropolitan is obligated to pay allocable portions of the cost of construction of the system and ongoing operations and maintenance costs through at least the year 2035, regardless of the quantities of water available from the project, see Note 11(a). Metropolitan and the other contractors may also be responsible to the State for certain obligations of any contractor who defaults on its payments to the State.

Approximately 32 percent and 31 percent of Metropolitan's total expenditures during fiscal years ended June 30, 2023 and 2022, respectively, pertained to its net payment obligations for the SWP. These payments were primarily based on the contractual water delivery request, the annually requested and actual deliveries received, and the cost of power required for such deliveries, offset by credits received from the project.

The State Water Contract provides Metropolitan rights to water through 2052 but Management's present intention is to exercise Metropolitan's option to extend the contractual period to at least 2085, under similar terms, based on the Agreement in Principle reached in 2014. This corresponds to an estimated 125-year service life for the original facilities. The State is obligated to provide specified quantities of water throughout the life of the contract, subject to certain conditions.

The State has power generation facilities associated with its reservoirs and aqueducts. The power generated is utilized by the system for water transportation purposes. Power generated in excess of system needs is marketed to various utilities and California's power market. The revenues resulting from sales of excess power reduce the costs of pumping. Metropolitan and the other water contractors are responsible for repaying the operating costs of the power facilities regardless of the amount of power generated.

Metropolitan capitalizes its share of system construction costs as participation rights when such costs are billed by the State, see Notes 1(i), 2, and 13(a). Metropolitan's share of system operations and maintenance costs is charged to expense.

Metropolitan amortizes a portion of capitalized participation rights each month using a formula that considers the total estimated cost of the project, the estimated useful life, and estimated production capacity of the assets based upon maximum annual contracted deliveries provided by the State of California. Amortization expense totaled \$140.1 million and \$150.5 million in fiscal years 2023 and 2022, respectively.

NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

### 13. DEPOSITS, PREPAID COSTS, AND OTHER

Balances at June 30, 2023 and 2022 were as follows:

	June 30,			
(Dollars in thousands)		2023		2022
Prepaid water costs	\$	226,974	\$	228,309
Prepaid costs-Delta Habitat conservation and conveyance		58,627		58,627
Prepaid costs-Delta Conveyance Project		96,000		50,000
Prepaid costs-California WaterFix		7,494		7,494
Prepaid expenses		15,054		16,989
Preliminary design/reimbursable projects		47,669		20,407
Other		11,702		7,226
Total deposits, prepaid costs, and other		463,520		389,052
Less current portion		(71,804)		(63,279)
Noncurrent portion	\$	391,716	\$	325,773

#### (a) Prepaid Water Costs

Metropolitan has entered into several water exchange and storage agreements with other agencies. These agreements provide Metropolitan with additional reliable water supplies to supplement deliveries of Colorado River and SWP water. Metropolitan is also actively pursuing other agreements, both within and outside its service area, to provide additional water supplies. The exchange and storage agreements generally provide for advance delivery of water during periods when water is available. At a later time when water is needed, these programs can then return water to improve Metropolitan's reliability. Expenditures associated with these agreements have been recorded as prepaid costs and are charged to cost of water as the water is withdrawn. At June 30, 2023 and 2022, prepaid water costs totaled approximately \$227.0 million and \$228.3 million, respectively, based on volumes of 711.3 TAF and 864.5 TAF, as of such dates.

#### (b) Prepaid Costs—Delta Habitat Conservation and Conveyance

In March 2009, Metropolitan, other SWP contractors, federal CVP contractors, and the U.S. Department of Interior's Bureau of Reclamation entered into funding agreements with DWR. The agreements are known collectively as the Delta Habitat Conservation and Conveyance Program (DHCCP) Funding Agreement and the Bay Delta Conservation Plan and Delta Habitat Conservation and Conveyance Plan (BDCP - DHCCP) Supplemental Funding Agreement. Metropolitan's three-year DHCCP agreement provides funding of approximately \$35.0 million for Metropolitan's share (24 percent). Metropolitan's two-year BDCP-DHCCP agreement provides funding of approximately \$25.0 million (25 percent). The funding provided by both agreements supports development of the BDCP which was later on adapted as CWF, see Note 11(b), through environmental analysis, planning and design of Delta conservation measures including Delta water conveyance options. The two-tunnel CWF project shifted to a single tunnel project referred to as the Delta Conveyance Project with the announcement of Governor Newsom on February 12, 2019. Total prepaid costs at June 30, 2023 and 2022 were \$58.6 million.

NOTES TO BASIC FINANCIAL STATEMENTS

(CONTINUED)

June 30, 2023 and 2022

## (c) Prepaid Costs—Delta Conveyance Project

The Board approved a 47.2 percent funding commitment for planning and pre-construction costs for the Delta Conveyance Project on December 18, 2020. Total prepaid costs for the Delta Conveyance Project as of June 30, 2023 and 2022 was \$96.0 million and \$50.0 million, respectively.

## (d) Prepaid Costs—California WaterFix

In fiscal year 2019, Metropolitan disbursed a total of \$41.5 million to DWR for preconstruction planning costs of the CWF in accordance with the advance funding agreement entered into in August 2018. The \$41.5 million was Metropolitan's share (31 percent) of the funding and DWR intends to refund Metropolitan for funds advanced through this agreement through bond financing actions. However, as a result of the shift to a single tunnel project and DWR's withdrawal of approval of the CWF Project as well as the rescission of other permitting applications, see Note 11(b), Metropolitan requested, on June 27, 2019, that DWR return its contributions that have not been spent as of May 2, 2019. DWR returned \$34.0 million of unspent funds and \$0.5 million of interest to Metropolitan in fiscal year 2020. Total advanced funds at June 30, 2023 and 2022 were \$7.5 million.

## (e) Preliminary Design/Reimbursable Projects

Metropolitan engages in preliminary design activities prior to obtaining Board approval of capital projects. The costs of these designs are recorded as prepaid costs. Once Board approval is obtained, these costs are added to the cost of the relevant construction project.

Reimbursable projects include work Metropolitan is contracted to perform for outside, non-related parties, and is subsequently billed for reimbursement.

## 14. DEFERRED COMPENSATION AND SAVINGS PLANS

For the benefit of its employees, Metropolitan has adopted a deferred compensation plan in accordance with Section 457 of the Internal Revenue Code. Generally, eligible employees may defer receipt of a portion of their salary until termination, retirement, death, or unforeseeable emergency. Until the funds are paid or otherwise made available to the employee, the employee is not obligated to report the deferred salary for income tax purposes. Metropolitan does not match the employee's contribution to the deferred compensation plan.

Metropolitan has established another compensation deferral arrangement in accordance with Section 401(k) of the Internal Revenue Code, a defined contribution plan. The 401(k) Savings Plan (savings plan) is available to substantially all employees. Metropolitan matches a maximum of 4.5 percent of the employee's total cash compensation in the savings plan. Amounts deferred by participants, Metropolitan matching contributions, and accumulated earnings thereon are fully vested. At June 30, 2023 and 2022, 1,618 and 1,631 employees, respectively, participated in the savings plan.

June 30, 2023 and 2022

	June 30,						
(Dollars in thousands)		2023		2022			
Employees	\$	23,835	\$	23,718			
Metropolitan		10,818		10,562			
Total Contributions	\$	34,653	\$	34,280			
Eligible payroll	\$	274,833	\$	264,366			
Employee contributions as percent of eligible payroll		8.7 %		9.0 %			

Metropolitan's contributions to the savings plan were as follows:

Deferred amounts and matching contributions, if any, for both plans are transferred by Metropolitan each pay period to a third-party administrator who coordinates the investment of such proceeds in a variety of investment vehicles in accordance with the instructions of each participant. Accordingly, neither the assets nor the related liability of each plans were included in the accompanying basic financial statements. Metropolitan is not liable to its employees for any losses that may be incurred in connection with their participation in the plans.

### **15. NET POSITION**

Net position is classified as either restricted, unrestricted, or net investment in capital assets, including SWP costs.

Net investment in capital assets, including SWP costs consist of capital assets, net of accumulated depreciation and amortization, and reduced by the outstanding balances of any bonds, notes, or other borrowings attributable to the acquisition or construction of those assets and deferred outflows and inflows of resources related to debt. Metropolitan's capital assets, including SWP costs include plant and equipment, see Notes 1(h) and 2, participation rights in SWP, see Notes 1(i), 2, and 12, participation rights in other facilities, see Notes 1(i), 2 and 4, lease assets, see Notes 1(j), 2, and 7, and subscription assets, see Notes 1(k), 2, and 8. Net investment in capital assets, including SWP costs were approximately \$6.4 billion and \$6.2 billion at June 30, 2023 and 2022, respectively.

The restricted component of net position are those items that have external constraints placed on them by creditors, grantors, contributors, or laws or regulations of other governments, or imposed by law through constitutional provisions of enabling legislation. Restricted net position totaled \$616.8 million and \$573.5 million at June 30, 2023 and 2022, respectively, of which \$192.3 million and \$235.9 million, respectively, were set-aside for principal and interest payments on outstanding debt. The remaining \$424.5 million and \$337.6 million, respectively, relates to estimated operating and maintenance expense for July and August of the subsequent fiscal year. Each of these requirements is related to bond covenants.

The unrestricted component of net position are those items that do not meet the definition of "restricted" or "net investment in capital assets, including SWP costs." Unlike the restricted net position, the Board has discretion in determining the use and establishing minimum/maximum balance requirements for the unrestricted cash and investment portion of net position. The Board may at any time change or eliminate amounts established for these purposes. Unrestricted net position totaled \$474.5 million and \$663.4 million at June 30, 2023 and 2022, respectively.

## **16. RISK MANAGEMENT**

Metropolitan is exposed to various risks of loss related to the design, construction, treatment, and delivery of water resources. Metropolitan self-insures most of its property losses, the first \$25.0 million for general liability, fiduciary liability and directors' and officers' liability, and \$5.0 million for workers' compensation. Metropolitan supplements its self-insurance program with \$75.0 million excess general liability coverage, \$60.0 million excess fiduciary liability coverage, \$65.0 million excess for directors' and officers' liability coverage, and statutory limits excess workers' compensation coverage. Special insurance policies carried include aircraft hull and liability, a limited property damage policy, crime insurance, specialty crime coverage, and travel accident coverage. Coverage types and limits for fiscal year 2023 were unchanged from fiscal year 2022. Settlement amounts did not exceed the self-insurance or insurance coverage limits in any of the past three years.

Liabilities are reported when it is probable that a loss has occurred and the amount of the loss can be reasonably estimated. Liabilities include an estimated amount for claims that have been incurred but not reported (IBNR). Claims liabilities are calculated considering the effects of inflation, recent claim settlement trends including frequency and amount of payouts, and other economic and social factors. The present value of liabilities for unpaid claims is based on a 1.5 percent annual interest rate over the life of the claims. Changes in the balances of claims liabilities during the past three fiscal years were included in accounts payable as follows:

	June 30,							
(Dollars in thousands)		2023		2022		2021		
Unpaid claims, beginning of fiscal year	\$	12,702	\$	10,289	\$	13,602		
Incurred claims (including IBNR)		3,366		4,469		7,106		
Claim payments and adjustments		(1,362)		(2,056)		(10,419)		
Unpaid claims, end of fiscal year		14,706		12,702		10,289		
Less current portion		(8,759)		(6,013)		(4,792)		
Noncurrent portion	\$	5,947	\$	6,689	\$	5,497		

### **17. SUBSEQUENT EVENT**

In October 2023, the first stage of the High Desert Water Bank (Water Bank), a new groundwater storage partnership project between Metropolitan and Antelope Valley-East Kern (AVEK) water agency, was completed. The Water Bank project constructed on AVEK property has a capacity of 280 TAF and allows Metropolitan to annually store and withdraw up to 70 TAF of State Water Project supplies. The building of the second stage is underway and is projected to be fully operational in 2027. Metropolitan is funding the \$211.0 million construction of the project and has recorded \$68.5 million of costs as of June 30, 2023.

# NOTES TO BASIC FINANCIAL STATEMENTS

*(CONTINUED)* June 30, 2023 and 2022

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#### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA REQUIRED SUPPLEMENTARY INFORMATION—UNAUDITED

June 30, 2023 and 2022

(Dollars in thousands)	2023	2022
Measurement date: June 30,	2022	2021
TOTAL PENSION LIABILITY		
Service cost	\$ 44,093	\$ 38,574
Interest on total pension liability	184,342	181,233
Changes of assumptions	66,014	—
Difference between expected and actual experience	(14,115)	3,634
Benefit payments, including refunds of employee contributions	(142,551)	(132,584)
Net change in total pension liability	 137,783	90,857
Total pension liability - beginning	2,669,675	2,578,818
Total pension liability - ending (a)	\$ 2,807,458	\$ 2,669,675
PLAN FIDUCIARY NET POSITION		
Contribution - Employer	\$ 81,525	\$ 74,339
Contribution - Employee	17,876	17,521
Net investment income <sup>(1)</sup>	(167,705)	417,420
Benefit payments, including refunds of employee contributions	(142,551)	(132,584)
Net plan to plan resource management	_	_
Administrative expense	(1,388)	(1,852)
Other miscellaneous income/(expense) <sup>(2)</sup>	_	_
Net change in fiduciary net position	 (212,243)	374,844
Plan fiduciary net position - beginning <sup>(3)</sup>	2,229,075	1,854,231
Plan fiduciary net position - ending (b)	\$ 2,016,832	\$ 2,229,075
Plan net pension liability - ending (a) - (b)	\$ 790,626	\$ 440,600
Plan fiduciary net position as a percentage of the total pension liability	 71.84 %	83.50 %
Covered payroll	\$ 241,288	\$ 235,294
Plan net pension liability as a percentage of covered payroll	327.67 %	187.26 %

#### SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS

<sup>(1)</sup>2015 amount was net of administrative expenses of \$1,972.

<sup>(2)</sup>During Fiscal Year 2017-18, as a result of GASB 75, CalPERS reported its proportionate share of activity related to post-employment benefits for participation in the State of California's agent OPEB plan. Accordingly, CalPERS recorded a one-time expense as a result of the adoption of GASB 75. Additionally, CalPERS employees participate in various State of California agent pension plans and during Fiscal Year 2017-18, CalPERS recorded a correction to previously reported financial statements to properly reflect its proportionate share of activity related to pensions in accordance with GASB 68. <sup>(3)</sup>Includes any beginning of year adjustment.

<sup>(4)</sup>GASB 68 requires ten years of information be presented but only nine years are available at this time. Additional years' information will be displayed as it becomes available.

See accompanying independent auditors' report

# **REQUIRED SUPPLEMENTARY INFORMATION—UNAUDITED**

(CONTINUED) June 30, 2023 and 2022

2021	2020	2019	2018	2017	2016	2015 <sup>(4)</sup>
2020	2019	2018	2017	2016	2015	2014
\$ 37,178	\$ 35,739	\$ 33,583	\$ 33,685	\$ 29,142	\$ 28,890	\$ 28,505
174,996	168,122	161,023	156,661	152,500	146,852	139,190
_		(15,391)	125,734	_	(35,008)	_
13,319	16,205	(10,039)	(15,804)	(12,754)	14,665	_
 (125,982)	(117,537)	(107,646)	(100,092)	(92,401)	(86,154)	(81,391)
 99,511	102,529	61,530	200,184	76,487	69,245	86,304
 2,479,307	2,376,778	2,315,248	2,115,064	2,038,577	1,969,332	1,883,028
\$ 2,578,818	\$ 2,479,307	\$ 2,376,778	\$ 2,315,248	\$ 2,115,064	\$ 2,038,577	\$ 1,969,332
\$ 66,091	\$ 56,497	\$ 48,780	\$ 42,819	\$ 38,393	\$ 34,306	\$ 33,853
16,230	15,631	15,749	14,895	15,034	14,787	15,185
90,131	114,220	139,003	171,562	8,304	35,301	236,746
(125,982)	(117,537)	(107,646)	(100,092)	(92,401)	(86,154)	(81,391)
	_	(4)		—		
(2,551)	(1,244)	(2,577)	(2,255)	(950)	(1,756)	
 _	4	(4,895)		_		
43,919	67,571	88,410	126,929	(31,620)	(3,516)	204,393
 1,810,312	1,742,741	1,654,331	1,527,402	1,559,022	1,562,538	1,358,145
\$ 1,854,231	\$ 1,810,312	\$ 1,742,741	\$ 1,654,331	\$ 1,527,402	\$ 1,559,022	\$ 1,562,538
\$ 724,587	\$ 668,995	\$ 634,037	\$ 660,917	\$ 587,662	\$ 479,555	\$ 406,794
 71.90 %	73.02 %	73.32 %	71.45 %	72.22 %	76.48 %	79.34 %
\$ 225,707	\$ 212,558	\$ 204,635	\$ 199,186	\$ 195,878	\$ 190,423	\$ 186,850
321.03 %	314.74 %	309.84 %	331.81 %	300.01 %	251.84 %	217.71 %

### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA **REQUIRED SUPPLEMENTARY INFORMATION—UNAUDITED** (CONTINUED)

June 30, 2023 and 2022

#### NOTES TO SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS

Benefit Changes: The figures above generally include any liability impact that may have resulted from voluntary benefit changes that occurred on or before the June 30, 2022 measurement date. However, offers of Two Years Additional Service Credit that occurred after the June 30, 2021 valuation date are not included in the figure above, unless the liability impact is deemed to be material by the plan actuary.

Changes of Assumptions: Effective with the June 30, 2021 valuation date (2022 measurement date), the accounting discount rate was reduced from 7.15% to 6.90%. In determining the long-term expected rate of return, CalPERS took into account long-term market return expectations as well as the expected pension fund cash flows. Projected returns for all asset classes are estimated, combined with risk estimates, and are used to project compound (geometric) returns over the long term. The discount rate used to discount liabilities was informed by the long-term projected portfolio return. In addition, demographic assumptions and the inflation rate assumption were changed in accordance with the 2021 CalPERS Experience Study and Review of Actuarial Assumptions. The accounting discount rate was 7.15% for measurement dates 2017 through 2021, 7.65% for measurement dates 2015 through 2016, and 7.50% for measurement date 2014.

(Dollars in thousands)	2023	2022	2021	2020	2019	2018	2017	2016	2015 <sup>(1)</sup>
Actuarially determined contribution	\$ 88,219	\$ 81,525	\$ 74,339	\$ 66,091	\$ 56,497	\$ 48,780	\$ 42,819	\$ 38,393	\$ 34,306
Contributions in relation to the actuarially determined contribution	(88,219)	(81,525)	(74,339)	(66,091)	(56,497)	(48,780)	(42,819)	(38,393)	(34,306)
Contribution deficiency (excess)	<u>\$                                    </u>	\$	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —
Covered payroll	\$249,812	\$241,288	\$235,294	\$225 <b>,</b> 707	\$212,558	\$204,635	\$199,186	\$195,878	\$190,423
Contributions as a percentage of covered payroll	35.31 %	33.79 %	31.59 %	29.28 %	26.58 %	23.84 %	21.50 %	19.60 %	18.02 %

#### SCHEDULE OF PENSION CONTRIBUTIONS

<sup>(1)</sup>GASB 68 requires ten years of information be presented but only nine years are available at this time. Additional years' information will be displayed as it becomes available.

See accompanying independent auditors' report

#### NOTES TO SCHEDULE OF PENSION CONTRIBUTIONS

Methods and assumptions used to set the actuarially determined contribution rates for fiscal year 2023:

Valuation date: June 30, 2020

Actuarial Cost Method	Entry age normal in accordance with the requirements of GASB 68
Amortization Method/Period	Level percentage of payroll over 20 year period
Asset Valuation Method	Investment gains/losses amortized over a fixed 30-year period spread directly over 5 years.
Discount rate	7.00%
Inflation	2.50%
Mortality, disability, termination, retirement	CalPERS 1997-2015 Experience Study
Mortality improvement	15 years of mortality projection using 90% of Scale MP 2016 from the Society of Actuaries

**REQUIRED SUPPLEMENTARY INFORMATION—UNAUDITED** 

(CONTINUED)

June 30, 2023 and 2022

#### SCHEDULE OF CHANGES IN NET OPEB LIABILITY AND RELATED RATIOS

(Dollars in thousands)	2023	2022	2021	2020	2019	2018(1)
Measurement Date: June 30,	2022	2021	2020	2019	2018	2017
TOTAL OPEB LIABILITY						
Service cost	\$ 10,124	\$ 11,473	\$ 11,061	\$ 10,635	\$ 10,325	\$ 10,024
Interest	28,839	30,563	29,322	31,600	30,252	28,951
Changes of assumptions	_	(48,447)	_	(4,217)		_
Difference between expected and actual experience	_	6,034	_	(50,116)	_	_
Benefit payments	(25,377)	(22,313)	(22,849)	(21,328)	(20,487)	(19,525)
Net change in total OPEB liability	13,586	(22,690)	17,534	(33,426)	20,090	19,450
Total OPEB liability - beginning	429,603	452,293	434,759	468,185	448,095	428,645
Total OPEB liability - ending (a)	\$ 443,189	\$ 429,603	\$ 452,293	\$ 434,759	\$ 468,185	\$ 448,095
PLAN FIDUCIARY NET POSITION	<b>A</b> 30 (03	¢ 07.005	Ф <b>22</b> БОС	¢ 22.077	Ф 24 ( <del>7</del> 4	¢ 22 ( 4 (
Net increate entities and	\$ 30,603	₽ 27,025 ₽5 001				
Net investment income	(55,817)	65,221 (22,212)	10,270	(21, 229)	18,538	(10 525)
A device territies and a second	(25,577)	(22,313)	(22,849)	(21,328)	(20,487)	(19,525)
Not change in Educing not position	(194)	(1/4)	20.790	(57)	(400)	(107)
Plan Educiary net position basing	(48,785)	09,759	20,769	20,922	32,323 207 526	172 720
Plan fiduciary net position - beginning	\$ 229 52(	\$ 277 221	\$ 200,775	\$ 266 772	\$ 220,951	\$ 207 526
Plan inductary net position - ending (b)	\$ 328,530	\$ 577,521	\$ 207,302 \$ 164.721	\$ 200,775	\$ 239,631	\$ 207,520
Plan net OPEB liability - ending (a) - (b)	\$ 114,055	\$ 52,282	<b>\$</b> 104,731	\$ 107,980	\$ 228,334	\$ 240,569
Plan fiduciary net position as a percentage of the total OPEB liability	74.13 %	87.83 %	63.58 %	61.36 %	51.23 %	46.31 %
Covered payroll	\$ 241,288	235,294	225,707	212,558	\$ 204,635	\$ 199,186
Plan net OPEB liability as a percentage of covered payroll	47.52 %	22.22 %	72.98 %	79.03 %	111.58 %	120.78 %

<sup>(1)</sup>Historical information is required only for measurement periods for which GASB 75 is applicable. Future years' information will be displayed up to 10 years as information becomes available.

See accompanying independent auditors' report

#### NOTES TO SCHEDULE OF CHANGES IN NET OPEB LIABILITY AND RELATED RATIOS

Benefit Changes: There were no benefit changes for the June 30, 2017 through 2022 measurement dates.

Changes of Assumptions: For the June 30, 2021 and 2019 measurement dates, demographic assumptions were updated to CalPERS 2000-2019 experience study and 1997-2015 experience study, respectively, and mortality improvements were updated to Scale MP-2021 and Scale MP-2019, respectively. There were no changes of assumptions for the June 30, 2022, 2020, 2018 or 2017 measurement dates.

**REQUIRED SUPPLEMENTARY INFORMATION—UNAUDITED** 

(CONTINUED)

June 30, 2023 and 2022

### SCHEDULE OF OPEB CONTRIBUTIONS

(Dollars in thousands)	2023	2022	2021	2020	2019	2018 <sup>(1)</sup>
Actuarially determined contribution	\$ 14,903 \$	23,922	\$ 23,217 \$	28,148 \$	27,328 \$	30,086
Contributions in relation to the actuarially determined contribution	(21,419)	(30,603)	(27,025)	(33,506)	(32,067)	(34,674)
Contribution excess	\$ (6,516) \$	6,681)	\$ (3,808) \$	(5,358) \$	(4,739) \$	(4,588)
Covered payroll	\$ 249,812 \$	5 241,288	\$ 235,294 \$	225,707 \$	212,558 \$	204,635
Contributions as a percentage of covered payroll	8.57 %	12.68 %	11.49 %	14.84 %	15.09 %	16.94 %

<sup>(1)</sup>Historical information is required only for measurement periods for which GASB 75 is applicable. Future years' information will be displayed up to 10 years as information becomes available.

See accompanying independent auditors' report

### NOTES TO SCHEDULE OF OPEB CONTRIBUTIONS

Methods and assumptions used to set the actuarially determined contribution rates for fiscal year 2023 were from the June 30, 2021 actuarial valuation:

Actuarial Cost Method	Entry age, level percentage of payroll
Amortization Method/Period	Level percentage of payroll over 23 year closed period (15 years remaining on measurement date $6/30/20$ ).
Asset Valuation Method	Investment gains/losses spread over 5 year rolling period with corridor of 80% and 120% of fair value
Discount rate	6.75%
Inflation	3.00%
Mortality, disability, termination, retirement	CalPERS 2000-2019 Experience Study
Medical trend	Pre-Medicare - 6.8% for 2023, decreasing to 3.8% for 2076 and later
	Medicare - 5.4% for 2022, decreasing to 3.8% for 2076 and later
Mortality improvement	Mortality projected fully generational with Scale MP-2021.

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### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA SUPPLEMENTAL INFORMATION

June 30, 2023 and 2022

## FIDUCIARY FUND DESCRIPTIONS

#### PRIVATE PURPOSE TRUST FUNDS

#### **Colorado River Authority**

The Colorado River Authority is a separate governmental entity composed of Southern California public agencies formed in 2007 for the purpose of engaging in the study, research and information dissemination among the people of California and representatives of Congress and the State Legislature relative to California's rights to water and other resources from the Colorado River. By means of a Joint Powers Agreement, Metropolitan acts as the trustee for the funds furnished by the public agencies in support of the Colorado River Authority. The Joint Powers Agreement specifies that such moneys will be placed in a special account designated "Colorado River Joint Powers Authority Account" and disbursements from are to be made by Metropolitan in accordance with the agreement.

#### **Delta Conveyance Finance Authority**

The Delta Conveyance Finance Authority (Finance Authority) was created on July 3, 2018 through a Joint Powers Authority, whose members consist of water agencies (member agencies) that contract with the Department of Water Resources (DWR) for the purchase of water. The Finance Authority's original purpose was to assist DWR and member agency participants to finance all or a portion of the two-tunnel California WaterFix (CWF) project. At the direction of Governor Newsom, the CWF project was shifted towards a single tunnel Delta Conveyance Project (Project). The Finance Authority may still assist in the financing of the Project after the completion of the environmental review under the California Environmental Quality Act and National Environmental Policy Act and other permitting activities, which is expected in mid-2024. The Finance Authority's operation is supported by the collection of contributions from its member agencies. Their funds are deposited in Metropolitan's cash and investment pool and disbursed in accordance with the Treasury and Accounting agreement between the Finance Authority and Metropolitan.

#### **Six Agency Committee**

The Six Agency Committee's (Committee) is a member group composed of a member and an alternate member appointed by each of the governing bodies of the six major California public agencies with Colorado River rights and interests. The Committee was created by a Joint Powers Agreement, executed on January 5, 1950 and subsequently amended, to administer funds contributed by the Agencies for purposes that tend to secure their rights in and to the waters of the Colorado River system. In accordance with the purposes of the Joint Powers Agreement, the Committee provides monetary support to the Board in furtherance of its work in safeguarding the Agencies' rights and promoting their interests in and to the water of the Colorado River. Terms and conditions for support of the Colorado River Board are set forth in an annual agreement between the Committee and the Colorado River Board. Funds advanced by the Agencies in accordance with the annual agreement are deposited with Metropolitan, who holds the responsibility to serve as trustee over such funds. Upon completion of the Committee, any funds remaining with the Committee will be ratably refunded to the contributing Agencies.
#### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA SUPPLEMENTAL INFORMATION (CONTINUED) June 30, 2023 and 2022

#### FIDUCIARY FUND DESCRIPTIONS (CONTINUED)

#### **CUSTODIAL FUNDS**

#### **Diamond Valley Lake Multi Species Reserve Fund**

The Diamond Valley Lake Multi Species Reserve Fund was created under a Cooperative Management Agreement executed by Metropolitan, the California Department of Fish & Wildlife, the United States Fish & Wildlife service, the Riverside County Habitat Conservation Agency, the Riverside County Regional Park and Open Space District, the County of Riverside, and the Riverside County Park Facilities Corporation for impacts related to Metropolitan's construction of the Diamond Valley Lake reservoir. The Cooperative Management Agreement provides for the acquisition, management, operation and maintenance of certain lands located in the southwestern portion of Riverside County in conformance with and to fulfill the requirements of the Southwestern Riverside Multi-Species Habitat Conservation Plan. The Southwestern Riverside Multi-Species Reserve initially comprised land owned by Metropolitan and the Riverside County Park Facilities Corporation, and now includes Riverside County Habitat Agency and United States Bureau of Land Management property. In accordance with the Cooperative Management Agreements of funds are made by Metropolitan in accordance with the agreement. The balances reported in the Diamond Valley Lake Multi Species Reserve Fund in Metropolitan's fuduciary fund statements exclude Metropolitan's share based on the percentage of Metropolitan owned land in the Multi Species Reserve and do not reflect the balance of funds available for it's management

#### Water Utility Climate Alliance Membership

The Water Utility Climate Alliance (WUCA) is an association of water utility agencies formed with a mission to provide leadership and collaboration on climate change issues affecting water agencies across the United States. The organization comprises 12 of the nation's largest water providers, including Metropolitan, who agreed to contribute funds to finance WUCA approved expenditures through a Fiscal Agent Agreement. In accordance with the Fiscal Agent Agreement, Metropolitan was designated as the Fiscal Agent for the contributions made by member agencies and the funds are deposited in Metropolitan's interest-bearing cash and investment accounts. Disbursement of funds from the available WUCA resources are made by Metropolitan in accordance with the Fiscal Agent Agreement. The balances reported in the WUCA fund in Metropolitan's fiduciary fund statements exclude Metropolitan's share of contributions and do not reflect the balance of funds available for WUCA.

#### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

#### SUPPLEMENTAL INFORMATION

(CONTINUED)

#### June 30, 2023 and 2022

#### COMBINING STATEMENTS OF FIDUCIARY NET POSITION PRIVATE PURPOSE TRUST FUNDS

	June 30, 2023										
(Dollars in thousands)	Colorado River Association		Delta Conveyance Finance Authority		Six Agency Committee			Total Private Purpose Trust Funds			
Assets											
Restricted pooled cash and investments, at fair value (Notes 1d and 3):	\$	437	\$	336	\$	1,477	\$	2,250			
Interest receivable				1		_		1			
Total assets	\$	437	\$	337	\$	1,477	\$	2,251			
Liabilities Accounts payable and accrued expenses	\$	_	\$	_	\$	_	\$	_			
Due to other governments											
Total liabilities Net Position		_		_				_			
Restricted for organizations and other governments		437		337		1,477		2,251			
Total Liabilities and Net Position	\$	437	\$	337	\$	1,477	\$	2,251			

#### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

#### SUPPLEMENTAL INFORMATION

(CONTINUED)

#### June 30, 2023 and 2022

#### COMBINING STATEMENTS OF FIDUCIARY NET POSITION PRIVATE PURPOSE TRUST FUNDS (CONTINUED)

(Dollars in thousands)	C	Colorado River Association		Delta Conveyance Finance Authority		Agency mmittee	Total Private Purpose Trust Funds	
Assets								
Restricted pooled cash and investments, at fair value (Notes 1d and 3):	\$	491	\$	479	\$	1,702	\$ 2,672	
Interest receivable						_		
Total assets	\$	491	\$	479	\$	1,702	\$ 2,672	
<b>Liabilities</b> Accounts payable and accrued expenses	\$		\$	17	\$		\$ 17	
Due to other governments						4	4	
Total liabilities		—		17		4	21	
Net Position								
Restricted for organizations and other governments		491		462		1,698	2,651	
Total Liabilities and Net Position	\$	491	\$	479	\$	1,702	\$ 2,672	

#### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA SUPPLEMENTAL INFORMATION

#### (CONTINUED)

June 30, 2023 and 2022

#### COMBINING STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION PRIVATE PURPOSE TRUST FUNDS

			Fisc	al Year Ende	ed June	e 30, 2023	
(Dollars in thousands)	C	Colorado River ociation	Со	Delta nveyance Finance Authority	Six Cor	Agency mmittee	Total Private Purpose Trust Funds
Additions							
Contributions from participating agencies	\$		\$		\$	2,796	\$ 2,796
Return of unspent funds							_
Interest				10			10
Total additions				10		2,796	2,806
Deductions							
Support payments to the Colorado River Board				_		2,500	2,500
Expensed equipment						6	6
Computer systems and software						12	12
Administrative expenses		54					54
Support payments for Colorado River system augmentation and conservation		_		_		384	384
Professional services				135		115	250
Total deductions		54		135		3,017	3,206
Net Decrease in Fiduciary Net Position		(54)		(125)		(221)	(400)
Net position, Beginning of Year		491		462		1,698	2,651
Net position, End of Year	\$	437	\$	337	\$	1,477	\$ 2,251

#### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA SUPPLEMENTAL INFORMATION

#### (CONTINUED)

June 30, 2023 and 2022

#### COMBINING STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION PRIVATE PURPOSE TRUST FUNDS (CONTINUED)

			Fisc	al Year Ende	ed June	e 30, 2022	
(Dollars in thousands)	Ass	Colorado River ociation	Со	Delta nveyance Finance Authority	Six Coi	Agency mmittee	Total Private Purpose Trust Funds
Additions							
Contributions from participating agencies	\$	—	\$	—	\$	2,445	\$ 2,445
Return of unspent funds		—		—		4	4
Interest		—		3		—	3
Total additions				3		2,449	2,452
Deductions							
Support payments to the Colorado River Board		_				2,400	2,400
Expensed equipment		_		—		10	10
Computer systems and software		_		—		9	9
Administrative expenses		9		—			9
Support payments for Colorado River system augmentation and conservation						268	268
Professional services		—		93		117	210
Total deductions		9		93		2,804	2,906
Net Decrease in Fiduciary Net Position		(9)		(90)		(355)	(454)
Net position, Beginning of Year		500		552		2,053	 3,105
Net position, End of Year	\$	491	\$	462	\$	1,698	\$ 2,651

#### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA SUPPLEMENTAL INFORMATION (CONTINUED)

June 30, 2023 and 2022

#### COMBINING STATEMENTS OF FIDUCIARY NET POSITION CUSTODIAL FUNDS

	Fiscal Year Ended June 30, 2023									
(Dollars in thousands)	V Mu Res	Diamond Valley Lake Ilti Species serve Fund	Wa Me	ater Utility Climate Alliance embership		Total Custodial Funds				
Assets										
Restricted pooled cash and investments, at fair value (Notes 1d and 3):	\$	2,052	\$	396	\$	2,448				
Interest receivable		7		1		8				
Total assets	\$	2,059	\$	397	\$	2,456				
Liabilities										
Accounts payable and accrued expenses	\$	_	\$	248	\$	248				
Due to other governments		28				28				
Total liabilities		28		248		276				
Net Position										
Restricted for organizations and other governments		2,031		149		2,180				
Total Liabilities and Net Position	\$	2,059	\$	397	\$	2,456				

### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA SUPPLEMENTAL INFORMATION

(CONTINUED) June 30, 2023 and 2022

#### COMBINING STATEMENTS OF FIDUCIARY NET POSITION CUSTODIAL FUNDS (CONTINUED)

	Fiscal Year Ended June 30, 2022									
(Dollars in thousands)	V Mu Res	Diamond Valley Lake Ilti Species Serve Fund	W	ater Utility Climate Alliance embership		Total Custodial Funds				
Assets										
Restricted pooled cash and investments, at fair value (Notes 1d and 3):	\$	2,060	\$	380	\$	<b>2,4</b> 40				
Interest receivable		2		_		2				
Total assets	\$	2,062	\$	380	\$	2,442				
Liabilities										
Accounts payable and accrued expenses	\$		\$	41	\$	41				
Due to other governments		29		_		29				
Total liabilities		29		41		70				
Net Position										
Restricted for organizations and other governments		2,033		339		2,372				
Total Liabilities and Net Position	\$	2,062	\$	380	\$	2,442				

#### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA SUPPLEMENTAL INFORMATION

#### (CONTINUED)

June 30, 2023 and 2022

#### COMBINING STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION CUSTODIAL FUNDS

(Dollars in thousands)	V: Mul Res	Diamond alley Lake Iti Species erve Fund	Wa Me	Total Custodial Funds		
Additions						
Contributions from participating agencies	\$	44	\$	203	\$	247
Interest		56		11		67
Total additions		100		214		314
Deductions						
Payments to other governments for conservation		102		—		102
Professional services				404		404
Total deductions		102		404		506
Net Decrease in Fiduciary Net Position		(2)		(190)		(192)
Net position, Beginning of Year		2,033		339		2,372
Net position, End of Year	\$	2,031	\$	149	\$	2,180

#### THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA SUPPLEMENTAL INFORMATION

#### (CONTINUED)

June 30, 2023 and 2022

#### COMBINING STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION CUSTODIAL FUNDS (CONTINUED)

(Dollars in thousands)	V Mu Res	Diamond alley Lake lti Species erve Fund	Wa Me	Total Custodial Funds		
Additions						
Contributions from participating agencies	\$	44	\$	149	\$	193
Interest		12		2		14
Total additions		56		151		207
Deductions						
Payments to other governments for conservation		92				92
Professional services		_		197		197
Total deductions		92		197		289
Net Decrease in Fiduciary Net Position		(36)		(46)		(82)
Net position, Beginning of Year		2,069		385		2,454
Net position, End of Year	\$	2,033	\$	339	\$	2,372

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#### **STATISTICAL SECTION**

This part of Metropolitan's comprehensive annual financial report presents detailed information as a context for understanding what the information in the financial statements, note disclosures, and required supplementary information says about Metropolitan's overall financial health.

Contents	<u>Page</u>
Financial Trends	122
These schedules contain trend information to help the reader understand how Metropolitan's financial performance and well-being have changed over time.	
Revenue Capacity	124
These schedules contain information to help the reader assess Metropolitan's most significant own-source revenue, water sales. Schedules with information about Metropolitan's property taxes are presented as well.	
Debt Capacity	130
These schedules present information to help the reader assess the affordability of Metropolitan's current levels of outstanding debt and Metropolitan's ability to issue additional debt in the future.	
Demographic and Economic Information	134
These schedules offer demographic indicators to help the reader understand the environment within which Metropolitan's financial activities take place.	
Operating Information	136
These schedules contain service and infrastructure data to help the reader understand how the information in Metropolitan's financial report relates to the service Metropolitan provides.	

Sources: Unless otherwise noted, the information in these schedules was derived from the annual comprehensive financial report for the relevant year.

#### Ten-Year Summary of Net Position by Component (Unaudited)-Accrual Basis (Dollars in millions)

	Fiscal Year Ended June 30,										
	2023	2022 (1)	2021 (2)	2020 <sup>(3)</sup>	2019	2018 <sup>(4),(5)</sup>	2017 <sup>(5)</sup>	2016	2015 (6)	2014	
		As Adjusted	As Adjusted	As Adjusted		As Adjusted	As Adjusted		As Adjusted		
Net investment in capital assets, including State Water Project costs	\$ 6,359.2	\$ 6,220.3	\$ 6,141.4	\$ 6,121.6	\$ 6,131.6	\$ 5,968.8	\$ 6,067.0	\$ 5,772.4	\$ 5,572.5	\$ 5,593.0	
Restricted for:											
Debt service	192.3	235.9	221.6	232.4	180.7	201.4	224.6	199.5	263.2	171.6	
Other expenses	424.5	337.6	311.1	276.6	237.9	206.2	182.4	183.3	178.8	147.7	
Unrestricted	474.5	663.4	520.7	308.9	286.0	310.1	283.7	528.6	867.2	1,288.7	
Total Net Position	\$ 7,450.5	\$ 7,457.2	\$ 7,194.8	\$ 6,939.5	\$ 6,836.2	\$ 6,686.5	\$ 6,757.7	\$ 6,683.8	\$ 6,881.7	\$ 7,201.0	

<sup>(1)</sup> Adjustment relates to the implementation of GASB Statement No. 96, *Subscription-Based Information Technology Arrangements*, in fiscal year 2023 with a restatement of fiscal year 2022 balances. Fiscal years 2014 through 2021 were not adjusted.

<sup>(2)</sup> Adjustment relates to the implementation of GASB Statement No. 87, *Leases*, in fiscal year 2022 with a restatement of fiscal year 2021 balances. Fiscal years 2014 through 2020 were not adjusted.

<sup>(3)</sup> Adjustment relates to the adoption of GASB Statement No. 84, *Fiduciary Activities*, in fiscal year 2021 with a restatement of fiscal year 2020 balances. Fiscal years 2014 through 2019 were not adjusted.

(4) Adjustment relates to Metropolitan's implementation of GASB Statement No. 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pension. Fiscal years 2014 through 2017 were not adjusted.

<sup>(5)</sup> Net investment in capital assets, including State Water Project costs, restricted for other expenses and unrestricted net position in fiscal years 2018 and 2017 were adjusted to conform to fiscal year 2019 presentation. Fiscal years 2014 through 2016 were not adjusted.

<sup>(6)</sup> Adjustment relates to Metropolitan's implementation of GASB Statement No. 68, Accounting and Financial Reporting for Pensions - an amendment of GASB Statement No. 27, and GASB Statement No. 71, Pension Transition for Contributions Made Subsequent to the Measurement Date - an amendment of GASB Statement No. 68. Fiscal year 2014 was not adjusted.

See accompanying Independent Auditors' Report.

#### Ten-Year Summary of Changes in Net Position (Unaudited)-Accrual Basis (Dollars in millions)

				l	Fiscal Year E	Inded June 30	),			
	2023	2022 <sup>(1)</sup>	2021 <sup>(2)</sup>	2020	2019	2018 <sup>(3)</sup>	2017	2016	2015 <sup>(4)</sup>	2014
		As adjusted	As adjusted			As adjusted			As adjusted	
Water revenues <sup>(5)</sup>	\$ 1,236.4	\$ 1,515.1	\$ 1,404.7	\$ 1,188.0	\$ 1,148.7	\$ 1,285.2	\$ 1,150.5	\$ 1,166.0	\$ 1,382.9	\$ 1,484.7
Readiness-to-serve charges	147.0	135.0	133.0	134.5	136.5	137.5	144.0	155.5	162.0	154.0
Capacity charge	37.2	37.0	31.7	30.5	33.0	34.6	39.7	44.7	37.5	28.4
Power sales	5.7	7.7	19.0	15.9	18.3	23.7	20.9	7.5	8.4	14.6
Operating revenues	1,426.3	1,694.8	1,588.4	1,368.9	1,336.5	1,481.0	1,355.1	1,373.7	1,590.8	1,681.7
Taxes, net State funding for Pure Water Southern California program	189.5	168.1	160.6	146.9	142.7	127.3	115.4	107.9	102.3	94.5
Investment income, net	35.0	_	4.1	28.9	36.0	10.6	6.2	19.4	_	5.7
Gain on sale of plant assets	6.2	9.2		_	_	_	_	_	_	_
Other	17.0	8.7	10.9	24.5	10.4	12.9	7.3	10.2	5.4	_
Nonoperating revenues	327.7	186.0	175.6	200.3	189.1	150.8	128.9	137.5	107.7	100.2
Total revenues	1,754.0	1,880.8	1,764.0	1,569.2	1,525.6	1,631.8	1,484.0	1,511.2	1,698.5	1,781.9
Power and water costs	(688.3)	(605.7)	(480.9)	(438.7)	(375.8)	(446.5)	(455.4)	(552.3)	(473.6)	(510.1)
Operations and maintenance	(579.8)	(473.9)	(508.2)	(557.4)	(493.9)	(507.4)	(487.5)	(650.1)	(543.4)	(439.7)
Litigation payments	_	(50.9)	(44.4)	_	_	_	_	_	_	_
Depreciation and amortization	(386.5)	(377.4)	(364.5)	(353.0)	(361.1)	(330.3)	(301.7)	(376.5)	(374.8)	(261.5)
Operating expenses	(1,654.6)	(1,507.9)	(1,398.0)	(1,349.1)	(1,230.8)	(1,284.2)	(1,244.6)	(1,578.9)	(1,391.8)	(1,211.3)
Bond interest, net of amount capitalized <sup>(6)</sup>	(97.4)	(93.5)	(91.6)	(100.7)	(126.9)	(124.5)	(134.6)	(126.9)	(132.5)	(146.7)
Interest and adjustments on $\mathrm{OAPF}^{(7)}$	_	_	_	_	_	_	(0.6)	(0.8)	(1.2)	(1.6)
Investment loss, net	_	(10.9)	_	_	_	_	_	_	(3.6)	_
Loss on disposal of plant assets	_	_	(13.2)	(10.2)	(13.7)	(88.7)	(20.9)	_	_	_
Other	(8.8)	(6.4)	(6.2)	(5.9)	(5.3)	(68.2)	(9.4)	(4.6)		(23.7)
Nonoperating expenses	(106.2)	(110.8)	(111.0)	(116.8)	(145.9)	(281.4)	(165.5)	(132.3)	(137.3)	(172.0)
Total expenses	(1,760.8)	(1,618.7)	(1,509.0)	(1,465.9)	(1,376.7)	(1,565.6)	(1,410.1)	(1,711.2)	(1,529.1)	(1,383.3)
Capital contributions	0.1	0.3	0.3		0.8	1.5		2.1	2.3	2.2
Changes in net position	\$ (6.7)	\$ 262.4	\$ 255.3	\$ 103.3	\$ 149.7	\$ 67.7	\$ 73.9	\$ (197.9)	\$ 171.7	\$ 400.8

(1) Adjustment relates to the implementation of GASB Statement No. 96, Subscription-Based Information Technology Arrangements, in fiscal year 2023 with a restatement of fiscal year 2022 balances. Fiscal years 2014 through 2021 were not adjusted.

(2) Adjustment relates to the implementation of GASB Statement No. 87, Leases, in fiscal year 2022 with a restatement of fiscal year 2021 balances. Fiscal years 2014 through 2020 were not adjusted.

(3) Adjustment relates to Metropolitan's implementation of GASB Statement No. 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pension. Fiscal years 2014 through 2017 were not adjusted.

(4) Adjustment relates to Metropolitan's implementation of GASB Statement No. 68, Accounting and Financial Reporting for Pensions - an amendment of GASB Statement No. 27, and GASB Statement No. 71, Pension Transition for Contributions Made Subsequent to the Measurement Date - an amendment of GASB Statement No. 68. Fiscal year 2014 was not adjusted.

<sup>(5)</sup> Water revenues includes revenues from water sales, exchanges, and wheeling.

(6) Beginning fiscal year 2022, construction interest costs were no longer capitalized in accordance with GASB Statement 89, Accounting for Interest Incurred before the End of a Construction Period.

<sup>(7)</sup> Off-Aqueduct Power Facilities. The State relieved Metropolitan of its obligation during the year ended June 30, 2018.

See accompanying Independent Auditors' Report.

#### Ten-Year Summary of Water Revenues by Component (Unaudited)-Accrual Basis (Dollars in thousands)

Water Sales <sup>(1)</sup>									
Treated Untr		Untreated		Tier 2 <sup>(2)(3)</sup>		Exchange		Total	
\$	744,018.3	\$	318,161.5	\$	143.2	\$	174,080.3	\$	1,236,403.3
	925,817.5		423,797.5		—		165,454.8		1,515,069.8
	840,130.7		397,566.6				167,038.1		1,404,735.4
	754,496.5		293,438.7				140,062.6		1,187,997.8
	727,511.1		318,940.9				102,221.8		1,148,673.8
	805,392.6		383,632.6		_		96,139.0		1,285,164.2
	704,254.2		358,841.4		_		87,437.0		1,150,532.6
	681,045.9		401,837.7		(1,180.3)		84,337.0		1,166,040.3
	805,798.0		489,016.4		9,252.8		78,830.9		1,382,898.1
	884,280.0		501,778.9		17,210.8		81,346.5		1,484,616.2
	₩	Treated \$ 744,018.3 925,817.5 840,130.7 754,496.5 727,511.1 805,392.6 704,254.2 681,045.9 805,798.0 884,280.0	Treated           \$ 744,018.3 \$           925,817.5           840,130.7           754,496.5           727,511.1           805,392.6           704,254.2           681,045.9           805,798.0           884,280.0	Water Sales (1)TreatedUntreated\$ 744,018.3\$ 318,161.5925,817.5423,797.5840,130.7397,566.6754,496.5293,438.7727,511.1318,940.9805,392.6383,632.6704,254.2358,841.4681,045.9401,837.7805,798.0489,016.4884,280.0501,778.9	Water Sales (1)           Treated         Untreated           \$ 744,018.3         \$ 318,161.5         \$           925,817.5         423,797.5         \$           925,817.5         423,797.5         \$           925,817.5         423,797.5         \$           925,817.5         423,797.5         \$           925,817.5         423,797.5         \$           925,817.5         423,797.5         \$           925,817.5         293,438.7         \$           727,511.1         318,940.9         \$           805,392.6         383,632.6         \$           704,254.2         358,841.4         \$           681,045.9         401,837.7         \$           805,798.0         489,016.4         \$           884,280.0         501,778.9         \$	Water Sales (1)TreatedUntreatedTier $2^{(2)}(3)$ \$ 744,018.3\$ 318,161.5\$ 143.2925,817.5423,797.5840,130.7397,566.6754,496.5293,438.7727,511.1318,940.9805,392.6383,632.6704,254.2358,841.4681,045.9401,837.7(1,180.3)805,798.0489,016.49,252.8884,280.0501,778.917,210.8	Water Sales (1)TreatedUntreatedTier $2^{(2)}(3)$ \$ 744,018.3\$ 318,161.5\$ 143.2925,817.5423,797.5840,130.7397,566.6754,496.5293,438.7727,511.1318,940.9805,392.6383,632.6704,254.2358,841.4681,045.9401,837.7(1,180.3)805,798.0489,016.49,252.8884,280.0501,778.917,210.8	Water Sales (1)TreatedUntreatedTier $2^{(2)}(3)$ Exchange\$ 744,018.3\$ 318,161.5\$ 143.2\$ 174,080.3925,817.5423,797.5165,454.8840,130.7397,566.6167,038.1754,496.5293,438.7140,062.6727,511.1318,940.9102,221.8805,392.6383,632.696,139.0704,254.2358,841.487,437.0681,045.9401,837.7(1,180.3)84,337.0805,798.0489,016.49,252.878,830.9884,280.0501,778.917,210.881,346.5	Water Sales (1)TreatedUntreatedTier $2^{(2)}(3)$ Exchange\$ 744,018.3\$ 318,161.5\$ 143.2\$ 174,080.3\$925,817.5423,797.5165,454.8840,130.7397,566.6167,038.1754,496.5293,438.7140,062.6727,511.1318,940.9102,221.8805,392.6383,632.696,139.0704,254.2358,841.487,437.0681,045.9401,837.7(1,180.3)84,337.0805,798.0489,016.49,252.878,830.9884,280.0501,778.917,210.881,346.5

<sup>(1)</sup> Water sales rates vary based on the program. See Table 4 for rates.

(2) Tier 2 dollars reflect the premium paid by the member agency for water taken in excess of their maximum purchase commitment. Either treated/untreated or both could have caused the agency to exceed their maximum.

<sup>(3)</sup> The 2016 credit resulted from a correction of water sales between member agencies.

See accompanying Independent Auditors' Report.

#### Ten-Year Summary of Water Revenues Rate Structure (Unaudited) (Dollars per acre-foot unless otherwise specified)

					Calenda	ar Year <sup>(1)</sup>				
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Tier 1 Supply Rate	\$ 321	\$ 243	\$ \$ 243	\$ 208	\$ 209	\$ 209	\$ 201	\$ 156	\$ 158	\$ 148
Tier 2 Supply Rate	530	285	5 285	295	295	295	295	290	290	290
System Access Rate	368	389	373	346	326	299	289	259	257	243
Water Stewardship Rate <sup>(2)</sup>				65	69	55	52	41	41	41
System Power Rate	166	167	7 161	136	127	132	124	138	126	161
Full Service Untreated:										
Tier 1	855	799	<b>)</b> 777	755	731	695	666	594	582	593
Tier 2	1,064	841	819	842	817	781	760	728	714	735
Treatment Surcharge	354	344	327	323	319	320	313	348	341	297
Full Service Treated:										
Tier 1	1,209	1,143	<b>1,104</b>	1,078	1,050	1,015	979	942	923	890
Tier 2	1,418	1,185	5 1,146	1,165	1,136	1,101	1,073	1,076	1,055	1,032
Readiness-to-Serve Charge (\$ millions)	154	140	) 130	136	133	140	135	153	158	166
Capacity Charge (\$ per cubic foot per second)	10,600	12,200	10,700	8,800	8,600	8,700	8,000	10,900	11,100	8,600

<sup>(1)</sup> Rates are set on a calendar year basis.

<sup>(2)</sup> This rate was not incorporated into Metropolitan's rates and charges beginning calendar year 2021.

See accompanying Independent Auditors' Report.

#### Principal Water Revenue Customers (Unaudited) - Accrual Basis (Dollars in thousands)

	Fiscal Y June 3	ear Ended 30, 2023			Fiscal Ye June 3		
	Amount	%		Rank	 Amount	%	Rank
Treated Water Sales			•				
<u>Member Agency</u>							
West Basin MWD	\$ 111,282.0	15.0	%	1	\$ 104,897.6	11.9 %	2
City of Los Angeles	100,268.1	13.5		2	93,382.3	10.6	5
MWD of Orange County	99,241.8	13.3		3	146,024.7	16.4	1
Calleguas MWD	67,852.9	9.1		4	101,243.7	11.4	3
Eastern MWD	45,771.7	6.2		5	 60,091.8	6.8	6
Subtotal	\$ 424,416.5	57.1	%		\$ 505,640.1	57.1 %	
Total Treated Water Sales	\$ 744,018.3	100.0	%		\$ 884,280.0	100.0 %	
Untreated Water Sales					 		
<u>Member Agency</u>							
City of Los Angeles	\$ 107,256.5	33.7	%	1	\$ 198,468.0	39.5 %	1
MWD of Orange County	40,920.4	12.9		2	39,493.2	7.9	4
Eastern MWD	38,617.5	12.1		3	 19,081.5	3.8	5
Subtotal	\$ 186,794.4	58.7	%		\$ 257,042.7	51.2 %	
Total Untreated Water Sales	\$ 318,161.5	100.0	%		\$ 501,778.9	100.0 %	
Tier 2 Sales							
Member Agency							
City of San Fernando	\$ 143.2	100.00	%	1	\$ 	- %	
City of Los Angeles	 				 15,444.0	89.7	1
Subtotal	\$ 143.2	100.00	%		\$ 15,444.0	89.7 %	
Total Tier 2 Sales	\$ 143.2	100.00	%		\$ 17,210.8	100.0 %	
Exchange							
<u>Member Agency</u>							
San Diego County Water Authority	\$ 151,990.0	87.3	%	1	\$ 81,346.5	100.0 %	1
Subtotal	\$ 151,990.0	87.3	%		\$ 81,346.5	100.0 %	
Total Exchange	\$ 174,080.3	100.0	%		\$ 81,346.5	100.0 %	
Total Water Revenue	\$ 1,236,403.3				\$ 1,484,616.2		

See accompanying Independent Auditors' Report.

#### The Metropolitan Water District of Southern California Table 6 Ten-Year Summary of Property Tax Levies and Collections (Unaudited)-Cash Basis

(Dollars in thousands)

Fiscal Year			Ta	x Collection	15		Outst	anding	Percent of Current Taxes Collected to		Percent of Total Tax Collections	Percent of Delinquent Taxes to
Ended June 30,	Total Tax Levy	Current	1	Delinquent		Total <sup>(1)</sup>	Delin Taxo	quent es <sup>(2)</sup>	Total Tax Levy		Total Tax Levy	Total Tax Levy
2023	\$ 176,719	\$ 168,426	\$	<b>29,4</b> 02		\$ 197,828	\$	8,293	95.3	%	111.9 %	4.7 %
2022	164,714	156,528		3,350		159,878		8,186	95.0		97.1	5.0
2021	153,026	153,026		8,081		161,107			100.0		105.3	—
2020	143,646	143,646		3,456		147,102		_	100.0		102.4	—
2019	130,566	130,566	(3)	14,588	(3)	145,154			100.0	(3)	111.2	—
2018	121,647	121,647	(3)	8,019	(3)	129,666		_	100.0	(3)	106.6	—
2017	112,727	112,727	(3)	2,410	(3)	115,137			100.0	(3)	102.1	—
2016	104,829	104,829		5,825		110,654		—	100.0		105.6	—
2015	100,066	97,687		5,320		103,007		2,379	97.6		102.9	2.4
2014	94,963	94,963		3,744		98,707			100.0		103.9	—

<sup>(1)</sup> Total tax collections exclude cash payments on new annexations.

<sup>(2)</sup> Delinquent taxes shown are net of the "Allowance for Uncollectibles" determined by historical trends of collections and payments.

(3) In fiscal year 2020, current and delinquent tax collections were revised for fiscal years 2017 through 2019 but total tax collections was not affected by the changes.

See accompanying Independent Auditors' Report.

#### The Metropolitan Water District of Southern California Table 7 Ten-Year Summary of Assessed Valuations and Property Tax Rates (Unaudited)

(Dollars in billions)

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Fiscal Year Ended June 30,	Gross Assessed Valuation <sup>(1)</sup>	Homeowner's Exemption	Net Assessed Valuation	Secured Property Percentage Tax Rate
2023	\$ 3,639.4	\$ 14.6	\$ 3,624.8	0.0035 %
2022	3,392.1	14.8	3,377.3	0.0035
2021	3,263.3	15.1	3,248.2	0.0035
2020	3,092.4	15.3	3,077.1	0.0035
2019	2,916.6	15.4	2,901.2	0.0035
2018	2,740.6	15.6	2,725.0	0.0035
2017	2,583.4	15.8	2,567.6	0.0035
2016	2,451.0	15.9	2,435.1	0.0035
2015	2,315.0	16.2	2,298.8	0.0035
2014	2,183.4	16.4	2,167.0	0.0035

(1) Gross assessed valuations (before deduction of Homeowner's and Business Inventory Exemptions), as of August each year, of all secured and unsecured property within Metropolitan's service area, as certified by the County Auditor-Controllers for the respective counties.

See accompanying Independent Auditors' Report.

Ten-Year Summary of Assessed Valuation Within Metropolitan's Service Area - By Counties (Unaudited) (Dollars in billions)

Fiscal Year Ended	Los Ange	eles	Orange	2		San Dieş	go	Riversid	le	Sa	an Bernar	dino	Ventur	a	Total	
June 30,	$AV^{(1)}$	⁰∕₀ (2)	AV	%	_	AV	%	 AV	%		AV	%	 AV	%	 AV	%
2023	\$ 1,766.2	48.6	\$ 724.3	19.9	\$	635.5	17.5	\$ 241.8	6.6	\$	147.2	4.0	\$ 124.4	3.4	\$ 3,639.4	100.0
2022	1,652.7	48.7	681.0	20.1		586.2	17.3	221.0	6.5		135.0	4.0	116.2	3.4	3,392.1	100.0
2021	1,593.5	48.8	655.0	20.1		566.4	17.4	209.0	6.4		127.1	3.9	112.3	3.4	3,263.3	100.0
2020	1,504.9	48.7	625.2	20.2		537.7	17.4	196.2	6.3		120.2	3.9	108.2	3.5	3,092.4	100.0
2019	1,415.3	48.5	591.4	20.3		508.6	17.4	184.6	6.3		113.0	3.9	103.7	3.6	2,916.6	100.0
2018	1,327.5	48.5	557.1	20.3		479.7	17.5	172.9	6.3		104.2	3.8	99.2	3.6	2,740.6	100.0
2017	1,251.3	48.4	524.5	20.3		452.0	17.5	163.1	6.3		97.8	3.8	94.7	3.7	2,583.4	100.0
2016	1,185.4	48.4	498.3	20.3		427.9	17.5	154.7	6.3		93.9	3.8	90.8	3.7	2,451.0	100.0
2015	1,117.4	48.3	470.7	20.3		405.0	17.5	146.3	6.3		89.1	3.8	86.5	3.8	2,315.0	100.0
2014	1,060.8	48.6	441.9	20.2		381.7	17.5	133.7	6.1		83.5	3.8	81.8	3.8	2,183.4	100.0

<sup>(1)</sup> Gross Assessed Valuation.

<sup>(2)</sup> Percent of Total Assessed Valuation within Metropolitan.

See accompanying Independent Auditors' Report.

Ten-Year Summary of Ratios of General Obligation Debt to Net Assessed Valuations, Total Outstanding Debt to Total Household Income, and

Amounts of Total and Net Outstanding Debt per Capita (Unaudited)

(Amounts in thousands)

Fiscal Year Ended June 30,	Population (1)	Net Assessed Valuations (NAV)	General Obligation (G.O.) Debt	Revenue Bond Debt	Unamortized Bond Discounts and Premiums, net	Leases and Subscriptions Payables	Notes and Loans	Total Outstanding Debt	Accumulated Resources Restricted for Repayment of Principal	Net Total Outstanding Debt	Ratio of G.O. Debt to NAV	Net Outstanding Debt per Capita
2023	18,411	\$3,624,835,574	\$ 19,215	\$3,881,160	\$ 420,924	\$ 11,441	\$56,400	\$ 4,389,140	\$ (112,625)	\$ 4,276,515	0.00 %	\$ 232.3
2022	18,544	3,377,339,505	20,175	3,848,425	425,160	11,092	35,645	4,340,497	(4) (123,525)	4,216,972 <sup>(4</sup>	0.00	227.4
2021	18,669	3,248,320,002	26,830	3,994,265	464,184	8,824	35,645	4,529,748	(111,810)	4,417,938	0.00	236.6
2020	18,805	3,077,116,471	37,300	3,968,845	366,281	—	82,445	4,454,871	(123,940)	4,330,931	0.00	230.3
2019	18,829	2,901,199,673	48,050	3,933,245	307,310	—	46,800	4,335,405	(116,825)	4,218,580	0.00	224.0
2018	18,848	2,725,018,457	60,600	4,233,860	212,499	—	_	4,506,959	(96,725)	4,410,234 (3	) 0.00	234.0
2017	18,818	2,567,616,063	74,905	4,301,985	202,848	—	—	4,579,738	(114,730)	4,465,008	0.00	237.3
2016	18,751	2,435,059,261	92,865	4,188,950	232,467	—	9,153	4,523,435	(153,270)	4,370,165	0.00	233.1
2015	18,684	2,298,791,445	110,420	4,157,105	200,028	—	10,684	4,478,237	(98,595)	4,379,642	0.00	234.4
2014	18,592	2,167,044,473	132,275	4,271,540	200,896	_	11,675	4,616,386	(82,285)	4,534,101	0.01	243.9

Fiscal Year Ended June 30,	Population (1)	Total Household Income (THI) <sup>(2)</sup>	General Obligation (G.O.) Debt	Revenue Bond Debt	U	namortized Bond Discounts and Premiums, net	Su	Leases and bscriptions Payables	Notes and Loans	Total Outstanding Debt		Ratio of Total Outstanding Debt to THI	C	Total Dutstanding Debt per Capita
2023	18,411	n/a	\$ 19,215	\$3,881,160	\$	420,924	\$	11,441	\$56,400	\$ 4,389,140		n/a	% \$	238.4
2022	18,544	n/a	20,175	3,848,425		425,160		11,092	35,645	4,340,497	(4)	n/a		234.1
2021	18,669	1,523,519,485	26,830	3,994,265		464,184		8,824	35,645	4,529,748		0.30		242.6
2020	18,805	n/a	37,300	3,968,845		366,281		_	82,445	4,454,871		n/a		236.9
2019	18,829	1,341,790,418	48,050	3,933,245		307,310		_	46,800	4,335,405		0.32		230.3
2018	18,848	1,288,257,814	60,600	4,233,860		212,499		_	_	4,506,959		0.35		239.1
2017	18,818	1,224,898,669	74,905	4,301,985		202,848		_	_	4,579,738		0.37		243.4
2016	18,751	1,155,679,001	92,865	4,188,950		232,467		_	9,153	4,523,435		0.39		241.2
2015	18,684	1,107,415,207	110,420	4,157,105		200,028		_	10,684	4,478,237		0.40		239.7
2014	18,592	1,025,884,337	132,275	4,271,540		200,896		_	11,675	4,616,386		0.45		248.3

(1) Population data is reported for Metropolitan's service area. Amounts reflect revisions based on current data from the State of California Department of Finance and/or revisions to the service area boundaries.

(2) THI is based on population data and per capita income for Metropolitan's six county service area. Population data is from the State of California Department of Finance and per capita income data is from the U.S. Department of Commerce. Amounts reflect revisions based on current data available.

(3) Accumulated Resources Restricted for Repayment of Principal for fiscal year 2018 were corrected in fiscal year 2020 resulting in revisions to previously reported amounts for, Net Total Outstanding Debt.

(4) Lease liabilities for fiscal years 2021 and 2022 were added in fiscal year 2023 resulting in revisions to previously reported amounts for, Total Outstanding Debt and Net Total Outstanding Debt.

<sup>(5)</sup> Subscription liabilities for fiscal year 2022 were added in fiscal year 2023 resulting in revisions to previously reported amounts for, Total Outstanding Debt and Net Total Outstanding Debt.

n/a: not available

See accompanying Independent Auditors' Report.

Source: Office of the Assistant General Manager, Finance and Administration, State of California Department of Finance, and U.S.

Department of Commerce

#### The Metropolitan Water District of Southern California Table 10 Direct and Overlapping Bonded Debt (Unaudited) As of June 30, 2023

2022-23 Net Assessed Valuation	\$ 3,624,752,706,804			
OVERLAPPING TAX AND ASSESSMENT DEBT:		Percentage Applicable		Debt June 30, 2023
Community College Districts	-	Various	\$	14,061,386,414
Los Angeles Unified School District		99.34		10,634,073,815
San Diego Unified School District		99.961		5,013,378,081
Other Unified School Districts		Various		17,557,666,878
High School and School Districts		Various		8,572,447,928
City of Los Angeles		99.991		1,039,586,429
Other Cities		Various		148,765,828
Irvine Ranch Water District Improvement Districts		100		499,180,000
Santa Margarita Water District Improvement Districts		100		31,290,000
Other Water Districts		Various		18,083,210
Healthcare Districts		Various		620,267,167
Other Special Districts		Various		5,219,407
Community Facilities Districts		Various		8.050.548.131
1915 Act Bonds and Other Special Assessment District Bonds		Various		911.283.341
TOTAL GROSS OVERLAPPING TAX AND ASSESSMENT DEBT			S	67.163.176.629
Less: Obligations supported from other revenue sources				223.773.081
TOTAL NET OVERLAPPING TAX AND ASSESSMENT DEBT			\$	66,939,403,548
METROPOLITAN WATER DISTRICT TOTAL DIRECT DEBT			\$	19,215,000
TOTAL GROSS DIRECT AND OVERLAPPING TAX AND ASSESSMENT DEBT			\$	67,182,391,629
TOTAL NET DIRECT AND OVERLADDING TAY AND ASSESSMENT DERT			\$	66 958 618 548
TOTAL NET DIRECT AND OVERLAITING TAX AND ASSESSMENT DEDT			4	00,000,010,010
OVERLAPPING GENERAL FUND DEBT:		Percentage Applicable	ş	Debt June 30, 2023
OVERLAPPING GENERAL FUND DEBT: Los Angeles County Obligations	-	Percentage Applicable 93.099	<u>\$</u>	Debt June 30, 2023 2,425,186,840
OVERLAPPING GENERAL FUND DEBT: Los Angeles County Obligations Orange County Obligations	-	Percentage Applicable 93.099 99.925	<u> </u>	Debt June 30, 2023 2,425,186,840 461,678,481
OVERLAPPING GENERAL FUND DEBT: Los Angeles County Obligations Orange County Obligations Riverside County Obligations	-	Percentage Applicable 93.099 99.925 66.616	<u> </u>	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658
OVERLAPPING GENERAL FUND DEBT: Los Angeles County Obligations Orange County Obligations Riverside County Obligations San Bernardino County Obligations	-	Percentage Applicable 93.099 99.925 66.616 50.753		Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084
OVERLAPPING GENERAL FUND DEBT: Los Angeles County Obligations Orange County Obligations Riverside County Obligations San Bernardino County Obligations San Diego County Obligations	-	Percentage Applicable 93.099 99.925 66.616 50.753 96.726		Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832
OVERLAPPING GENERAL FUND DEBT: Los Angeles County Obligations Orange County Obligations Riverside County Obligations San Bernardino County Obligations San Diego County Obligations Ventura County Obligations	-	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244	\$	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563
OVERLAPPING GENERAL FUND DEBT: Los Angeles County Obligations Orange County Obligations Riverside County Obligations San Bernardino County Obligations San Diego County Obligations Ventura County Obligations City of Anaheim General Fund Obligations	-	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892	- - 	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101
OVERLAPPING GENERAL FUND DEBT: Los Angeles County Obligations Orange County Obligations Riverside County Obligations San Brenardino County Obligations San Diego County Obligations Ventura County Obligations City of Anaheim General Fund Obligations City of Long Beach General Fund Obligations and Pension Obligation Bonds	-	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100	\$	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000
OVERLAPPING GENERAL FUND DEBT: Los Angeles County Obligations Orange County Obligations Riverside County Obligations San Brenardino County Obligations San Diego County Obligations San Diego County Obligations City of Anaheim General Fund Obligations City of Long Beach General Fund Obligations and Pension Obligation Bonds City of Los Angeles General Fund Obligations	-	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100 99.991	\$	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000 1,291,405,177
OVERLAPPING GENERAL FUND DEBT:         Los Angeles County Obligations         Orange County Obligations         Riverside County Obligations         San Bernardino County Obligations         San Diego County Obligations         San Diego County Obligations         City of Anaheim General Fund Obligations         City of Los Angeles General Fund Obligations         City of Los Angeles General Fund And Pension Obligation Bonds         City of Pasadena General Fund And Pension Obligation Bonds	-	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100 99.991 100		Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000 1,291,405,177 508,563,265
OVERLAPPING GENERAL FUND DEBT:         Los Angeles County Obligations         Orange County Obligations         Riverside County Obligations         San Bernardino County Obligations         San Diego County Obligations         San Diego County Obligations         City of Anaheim General Fund Obligations         City of Los Angeles General Fund Obligations         City of Pasadena General Fund and Pension Obligation Bonds         City of San Diego General Fund Obligations	-	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100 99.991 100 99.95	- \$	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000 1,291,405,177 508,563,265 642,050,994
OVERLAPPING GENERAL FUND DEBT:         Los Angeles County Obligations         Orange County Obligations         Riverside County Obligations         San Bernardino County Obligations         San Diego County Obligations         City of Anaheim General Fund Obligations         City of Long Beach General Fund Obligations         City of Pasadena General Fund Obligations         City of Pasadena General Fund And Pension Obligation Bonds         City of San Diego General Fund Obligations         Other City General Fund Obligations	-	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100 99.991 100 99.95 Various	- - - -	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000 1,291,405,177 508,563,265 642,050,994 8,515,681,108
OVERLAPPING GENERAL FUND DEBT:         Los Angeles County Obligations         Orange County Obligations         Riverside County Obligations         San Bernardino County Obligations         San Diego County Obligations         San Diego County Obligations         City of Anaheim General Fund Obligations         City of Long Beach General Fund Obligations         City of Pasadena General Fund Obligations         City of San Diego General Fund Obligations         Other City General Fund Obligations         Water District General Fund Obligations         Water District General Fund Obligations	-	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100 99.991 100 99.95 Various Various	- - - -	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000 1,291,405,177 508,563,265 642,050,994 8,515,681,108 54,971,404
OVERLAPPING GENERAL FUND DEBT:         Los Angeles County Obligations         Orange County Obligations         Riverside County Obligations         San Diego County Obligations         San Diego County Obligations         San Diego County Obligations         City of Anaheim General Fund Obligations         City of Long Beach General Fund Obligations         City of Los Angeles General Fund Obligations         City of Pasadena General Fund and Pension Obligation Bonds         City of San Diego General Fund Obligations         Other City General Fund Obligations         Water District General Fund Obligations         Los Angeles Unified School District Certificates of Participation	_	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100 99.991 100 99.95 Various Various 99.34	- - - -	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000 1,291,405,177 508,563,265 642,050,994 8,515,681,108 54,971,404 97,224,058
OVERLAPPING GENERAL FUND DEBT:         Los Angeles County Obligations         Orange County Obligations         Riverside County Obligations         San Diego County Obligations         San Diego County Obligations         San Diego County Obligations         City of Anaheim General Fund Obligations         City of Long Beach General Fund Obligations         City of Los Angeles General Fund Obligations         City of Pasadena General Fund Obligations         City of San Diego General Fund And Pension Obligation Bonds         City of San Diego General Fund Obligations         Other City General Fund Obligations         Unter City General Fund Obligations         Unter City General Fund Obligations         Unter City General Fund Obligations         Water District General Fund Obligations         Los Angeles Unified School District Certificates of Participation         Other School District General Fund Obligations	_	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100 99.991 100 99.95 Various Various 99.34 Various	\$	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000 1,291,405,177 508,563,265 642,050,994 8,515,681,108 54,971,404 97,224,058 2,079,551,374
OVERLAPPING GENERAL FUND DEBT:         Los Angeles County Obligations         Orange County Obligations         Riverside County Obligations         San Bernardino County Obligations         San Diego County Obligations         San Diego County Obligations         City of Anaheim General Fund Obligations         City of Long Beach General Fund Obligations         City of Los Angeles General Fund Obligations         City of Pasadena General Fund Obligations         City of San Diego General Fund Obligations         Other City General Fund Obligations         Unter City General Fund Obligations         City of San Diego General Fund Obligations         Other City General Fund Obligations         Unter City General Fund Obligations         Unter City General Fund Obligations         Los Angeles Unified School District Certificates of Participation         Other School District General Fund Obligations         Los Angeles Unified School District Certificates of Participation         Other School District General Fund Obligations         Other School District General Fund Obligations         Other School District General Fund Obligations	_	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100 99.991 100 99.95 Various Various 99.34 Various Various	\$	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000 1,291,405,177 508,563,265 642,050,994 8,515,681,108 54,971,404 97,224,058 2,079,551,374 64,844,984
OVERLAPPING GENERAL FUND DEBT:         Los Angeles County Obligations         Orange County Obligations         Riverside County Obligations         San Bernardino County Obligations         San Diego County Obligations         San Diego County Obligations         City of Anaheim General Fund Obligations         City of Long Beach General Fund Obligations         City of Long Beach General Fund Obligations         City of Pasadena General Fund Obligations         City of San Diego General Fund Obligations         Other City General Fund Obligations         Unter City General Fund Obligations         City of San Diego General Fund Obligations         Unter City General Fund Obligations         Unter City General Fund Obligations         Unter City General Fund Obligations         Los Angeles Unified School District Certificates of Participation         Other School District General Fund Obligations         Los Angeles Inified School District Certificates of Participation         Other School District General Fund Obligations         Other School District General Fund Obligations         Other Special District General Fund Obligations         Other Special District General Fund Obligations         Other Special District General Fund Obligations         Other Special District General Fund Obligations      <	_	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100 99.991 100 99.991 100 99.95 Various Various 99.34 Various Various	- \$ 	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000 1,291,405,177 508,563,265 642,050,994 8,515,681,108 54,971,404 97,224,058 2,079,551,374 64,844,984 18,719,254,923
OVERLAPPING GENERAL FUND DEBT:         Los Angeles County Obligations         Orange County Obligations         Riverside County Obligations         San Diego County Obligations         San Diego County Obligations         San Diego County Obligations         San Diego County Obligations         San Diego County Obligations         San Diego County Obligations         City of Anaheim General Fund Obligations         City of Long Beach General Fund Obligations and Pension Obligation Bonds         City of Los Angeles General Fund Obligations         City of San Diego General Fund Obligations         Other City General Fund Obligations         Water District General Fund Obligations         Los Angeles Unified School District Certificates of Participation         Other School District General Fund Obligations         Los Angeles Unified School District Certificates of Participation         Other School District General Fund Obligations         TOTAL GROSS OVERLAPPING GENERAL FUND DEBT         Less: Obligations unported from other revenue sources	_	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100 99.991 100 99.991 100 99.95 Various Various 99.34 Various Various	- 	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000 1,291,405,177 508,563,265 642,050,994 8,515,681,108 54,971,404 97,224,058 2,079,551,374 64,844,984 18,719,254,923 884 557,563
OVERLAPPING GENERAL FUND DEBT:         Los Angeles County Obligations         Orange County Obligations         Riverside County Obligations         San Bernardino County Obligations         San Diego County Obligations         San Diego County Obligations         City of Anaheim General Fund Obligations         City of Long Beach General Fund Obligations         City of Los Angeles General Fund Obligations         City of San Diego General Fund Obligations         Other City General Fund Obligations         Other City General Fund Obligations         Utar District General Fund Obligations         Other City General Fund Obligations         Los Angeles Unified School District Certificates of Participation         Other School District General Fund Obligations         TOTAL GROSS OVERLAPPING GENERAL FUND DEBT         Less: Obligations supported from other revenue sources         TOTAL NET OVERLAPPING GENERAL FUND DEBT	_	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100 99.991 100 99.991 100 99.95 Various Various Various Various	- <u>s</u> <u>s</u>	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000 1,291,405,177 508,563,265 642,050,994 8,515,681,108 54,971,404 97,224,058 2,079,551,374 64,844,984 18,719,254,923 884,557,563 17,834,697,360
OVERLAPPING GENERAL FUND DEBT:         Los Angeles County Obligations         Orange County Obligations         Riverside County Obligations         San Diego County Obligations         San Diego County Obligations         San Diego County Obligations         San Diego County Obligations         Ventura County Obligations         Ventura County Obligations         City of Anaheim General Fund Obligations and Pension Obligation Bonds         City of Log Beach General Fund Obligations         City of Log Angeles General Fund Obligations         City of San Diego General Fund Obligations         Other City General Fund Obligations         Water District General Fund Obligations         Los Angeles Unified School District Certificates of Participation         Other School District General Fund Obligations         Other School District General Fund Obligations         TOTAL GROSS OVERLAPPING GENERAL FUND DEBT         Less: Obligations supported from other revenue sources         TOTAL NET OVERLAPPING GENERAL FUND DEBT         OVERLAPPING TAX INCREMENT DEBT (Successor Agencies):	_	Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100 99.991 100 99.991 100 99.95 Various Various Various Various	- - - - - - - - - - - - - - - - - - -	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000 1,291,405,177 508,563,265 642,050,994 8,515,681,108 54,971,404 97,224,058 2,079,551,374 64,844,984 18,719,254,923 884,557,563 17,834,697,360 4,637,081,998
OVERLAPPING GENERAL FUND DEBT:         Los Angeles County Obligations         Orange County Obligations         Riverside County Obligations         San Dego County Obligations         San Diego County Obligations         San Diego County Obligations         Ventura County Obligations         Ventura County Obligations         City of Anaheim General Fund Obligations and Pension Obligation Bonds         City of Log Beach General Fund Obligations         City of Log Angeles General Fund Obligations         City of San Diego General Fund Obligations         Other City General Fund Obligations         Other City General Fund Obligations         Los Angeles Unified School District Certificates of Participation         Other School District General Fund Obligations         TOTAL GROSS OVERLAPPING GENERAL FUND DEBT         Less: Obligations supported from other revenue sources         TOTAL NET OVERLAPPING GENERAL FUND DEBT         OVERLAPPING TAX INCREMENT DEBT (Successor Agencies):         GROSS COMBINED TOTAL DEBT		Percentage Applicable 93.099 99.925 66.616 50.753 96.726 76.244 99.892 100 99.991 100 99.991 100 99.95 Various Various Various Various	- - - - - - - - - - - - - - - - - - -	Debt June 30, 2023 2,425,186,840 461,678,481 956,150,658 134,437,084 497,756,832 226,345,563 621,197,101 142,210,000 1,291,405,177 508,563,265 642,050,994 8,515,681,108 54,971,404 97,224,058 2,079,551,374 64,844,984 18,719,254,923 884,557,563 17,834,697,360 4,637,081,998 90,538,728,550 <sup>(0)</sup>

(<sup>1)</sup> Debt instruments included are general obligation bonds, lease revenue bonds and certificates of participation (when supported by the general fund), pension obligation bonds, 1915 Act special assessment bonds and Mello-Roos Act special assessment bonds. Excluded are enterprise revenue bonds, mortgage revenue bonds, tax and revenue anticipation notes and non-bonded capital lease obligations. Qualified Zone Academy Bonds are included based on principal due at maturity.

Ratios to 2022-23 Net Assessed Valuation:		
Direct Debt (\$19,215,000)		0.001%
Total Direct and Overlapping Tax and Assessment Debt		1.85 %
Gross Combined Total Debt		2.5 %
Net Combined Total Debt		2.47 %
Ratios to Redevelopment Incremental Valuation:	\$ 522,778,621,451	
Total Overlapping Tax Increment Debt		0.89 %
See accompanying Independent Auditors' Report.		

Source: California Municipal Statistics, Inc. San Francisco, California

#### Ten-Year Summary of Legal Debt Margin Information (Unaudited) (Dollars in millions)

								Fis	cal Year E	nd	ed June 30	,							
		2023		2022		2021	2020		2019		2018		2017		2016		2015		2014
15 Percent of Assessed Value <sup>(Ia)</sup>					_			_		_				_		_		_	
Debt limit	\$	545,916	\$	508,810	\$	489,492	\$ 463,864	\$	437,493	\$	411,095	\$	387,508	\$	367,651	\$	347,242	\$	327,508
Debt applicable to the limit <sup>(2)</sup>		4,378		4,329		4,521	 4,455		4,335		4,507		4,842		4,773		4,478		4,616
Legal debt margin	\$	541,538	\$	504,481	\$	484,971	\$ 459,409	\$	433,158	\$	406,588	\$	382,666	\$	362,878	\$	342,764	\$	322,892
Total debt applicable to the limit as a percentage of debt limit	_	0.81 %	_	0.85 %	_	0.92 %	0.96 %	_	0.99 %	-	1.10 %	-	1.25 %	_	1.30 %	_	1.29 %		1.41 %
100 Percent of Equity (1b)																			
Debt limit	\$	7,451	\$	7,456	\$	7,194	\$ 6,940	\$	6,836	\$	6,686	\$	6,758	\$	6,684	\$	6,882	\$	7,201
Debt applicable to the limit <sup>(2)</sup>		3,881		3,848		3,994	 3,969		3,933		4,234		4,302		4,189		4,157	_	4,272
Legal debt margin	\$	3,570	\$	3,608	\$	3,200	\$ 2,971	\$	2,903	\$	2,452	\$	2,456	\$	2,495	\$	2,725	\$	2,929
Total debt applicable to the limit as a percentage of debt limit		52.09 %		51.61 %		55.52 %	57.19 %		57.53 %		63.33 %		63.66 %		62.67 %		60.40 %		59.32 %

#### Legal Debt Margin Calculations for Fiscal Year Ended June 30, 2023

#### 15 Percent of Assessed Value

2022-23 taxable gross assessed valuation	\$ 3,639,440
Debt limit (15% of total assessed value)	\$ 545,916
Applicable debt outstanding as of June 30, 2023	\$ 4,378
Legal debt margin	\$ 541,538

#### 100 Percent of Equity (Net Position)

Net position of Metropolitan as of June 30, 2023	\$ 7,451
Debt limit (100% of equity/net position)	\$ 7,451
Revenue bonds outstanding as of June 30, 2023	\$ 3,881
Legal debt margin	\$ 3,570

<sup>(1)</sup> The Metropolitan Water District Act (Act) provides for two limitations on indebtedness, which may be incurred by Metropolitan:

<sup>(a)</sup> Indebtedness is limited to 15 percent of the assessed value of all taxable property within Metropolitan.

(b) Revenue bonds limited to 100 percent of equity (net position) as of the end of the last fiscal year prior to the issuance of such bonds.

<sup>(2)</sup> The Act defines the calculations for debt limits based on gross debt outstanding. Accordingly, debt applicable to the limit is not netted for applicable reserves.

See accompanying Independent Auditors' Report.

#### Ten-Year Summary of Revenue Bond Debt Service Coverage <sup>(1)</sup> (Unaudited) (Dollars in millions)

	Fiscal Year Ended June 30,									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Water Revenues <sup>(2)</sup>	\$ 1,323	\$ 1,515	\$ 1,405	\$ 1,188	\$ 1,149	\$ 1,285	\$ 1,151	\$ 1,166	\$ 1,383	\$ 1,485
Additional Revenues <sup>(3)</sup>	182	172	165	165	170	172	184	200	199	182
Total Revenues	1,505	1,687	1,570	1,353	1,319	1,457	1,335	1,366	1,582	1,667
Operating Expenses <sup>(4)</sup>	(1,275)	(1,255)	(1,029)	(1,026)	(916)	(963)	(927)	(1,201)	(1,005)	(854)
Net Operating Revenues	230	432	541	327	403	494	408	165	577	813
Power Sales & Other <sup>(5)</sup>	183	47	32	30	40	52	72	252	171	34
Interest on Investments <sup>(6)</sup>	21	7	10	20	34	8	4	18	13	19
Adjusted Net Operating Revenues	434	486	583	377	477	554	484	435	761	866
Senior and Subordinate Bonds Debt Service <sup>(7)</sup>	(293)	(275)	(279)	(272)	(333)	(340)	(306)	(309)	(280)	(343)
Subordinate Revenue Obligations							(2)	(1)	(1)	(1)
Funds Available from Operations	\$ 141	\$ 211	\$ 304	\$ 105	\$ 144	\$ 214	\$ 176	\$ 125	\$ 480	\$ 522
Ratios										
Debt Service Coverage on all Senior and Subordinate Bonds <sup>(8)</sup>	1.48	1.77	2.09	1.39	1.43	1.63	1.58	1.41	2.72	2.52
Bonds and Additional Bonds Debt Service Coverage <sup>(9)</sup>	_	_	_	_	_	_	1.57	1.41	2.71	2.51

<sup>(1)</sup> Prepared on a cash basis in fiscal year 2023 and modified accrual basis for fiscal years 2014 through 2022.

<sup>(2)</sup> Water Revenues include revenues from water sales, exchanges, and wheeling.

<sup>(3)</sup> Additional Revenues include readiness-to-serve and capacity charges.

(4) Operating expenses include only the expenses applicable to the debt service coverage calculation. Therefore, operating expenses in this table don't tie to Total operating expenses per the Statement of Revenues, Expenses and Changes in Net Position.

<sup>(5)</sup> Fiscal year 2023, includes \$153 million transfers from revenue reserves to fund overall O&M expenses.

<sup>(6)</sup> Excludes interest applicable to Bond Construction accounts, Excess Earning account(s), and Other Trust accounts.

<sup>(7)</sup> Previously reported as Bonds and Additional Bonds Debt Service for fiscal years 2014-2017.

<sup>(8)</sup> Previously reported as Bonds and Additional Bonds Debt Service Coverage for fiscal years 2014-2017.

(9) Previously reported as Debt Service Coverage on all Obligations for fiscal years 2014-2017. The State Revolving Fund Loan was paid off at the end of fiscal year 2017, therefore the ratio is the same as Debt Service Coverage on all Senior and Subordinate Bonds and is not presented beginning with fiscal year 2018.

See accompanying Independent Auditors' Report.

#### Ten-Year Summary of Demographic Statistics (Unaudited)

	Calendar Year									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Population (in thousands) <sup>(1)</sup>										
Los Angeles County	9,792	9,905	10,014	10,064	10,101	10,223	10,215	10,192	10,069	10,020
Orange County	3,149	3,164	3,187	3,191	3,193	3,189	3,182	3,165	3,133	3,105
Riverside County	2,438	2,431	2,422	2,401	2,384	2,383	2,362	2,331	2,295	2,268
San Bernardino County	2,183	2,187	2,186	2,174	2,160	2,147	2,145	2,128	2,092	2,076
San Diego County	3,279	3,284	3,302	3,294	3,293	3,315	3,297	3,276	3,212	3,182
Ventura County	830	839	845	845	850	849	854	853	844	840
Per Capita Income <sup>(2)</sup>										
Los Angeles County	n/a	\$ 74,141	n/a	\$ 65,094	\$ 62,224	\$ 58,419	\$ 55,624	\$ 53,521	\$ 49,366	\$ 46,530
Orange County	n/a	81,034	n/a	71,711	69,268	65,400	60,360	57,749	55,200	54,519
Riverside County	n/a	51,180	n/a	42,418	40,637	39,261	36,782	35,589	33,945	33,278
San Bernardino County	n/a	49,493	n/a	42,043	40,316	38,816	36,835	35,431	32,932	32,747
San Diego County	n/a	72,637	n/a	63,729	61,386	57,913	55,168	53,298	51,711	51,384
Ventura County	n/a	73,375	n/a	64,715	61,712	59,178	55,779	54,155	50,928	50,507
Median Household Income <sup>(3)</sup>										
Los Angeles County	n/a	\$ 77.456	n/a	\$ 72,797	\$ 68,093	\$ 65,006	\$ 61,338	\$ 59,134	\$ 55,746	\$ 54,529
Orange County	n/a	100.559	n/a	95,934	89,759	86,217	81,827	78,428	76,306	74,163
Riverside County	n/a	79.024	n/a	73,260	66,964	63,944	60,134	58,292	57,006	54,095
San Bernardino County	n/a	74.845	n/a	67,903	63,857	60,420	56,337	53,803	52,041	52,323
San Diego County	n/a	91.003	n/a	83,985	79,079	76,207	70,824	67,320	66,192	61,426
Ventura County	n/a	96.454	n/a	92,236	84,566	82,857	80,135	80,032	75,449	77,363
Unemployment Rate <sup>(4)</sup>										
Los Angeles County	4.9 %	8.9 %	12.3 %	4.4 %	4.7 %	4.8 %	5.3 %	6.6 %	8.2 %	9.8 %
Orange County	3.2	6.0	8.9	2.8	3.0	3.5	4.0	4.4	5.5	6.5
Riverside County	4.2	7.3	10.2	4.3	4.5	5.3	6.1	6.7	8.2	10.3
San Bernardino County	4.1	7.4	9.7	3.9	4.1	5.0	5.8	6.4	8.0	10.3
San Diego County	3.4	6.5	9.4	3.3	3.4	4.0	4.7	5.2	6.4	7.8
Ventura County	3.7	6.2	8.7	3.7	3.8	4.5	5.2	5.6	6.6	7.9

n/a: not available

Sources:

(1) Data from State of California Department of Finance (DoF). The most recent calendar year for which information is available is 2022. Includes population for the entire county. Amounts from prior years reflect revisions based on current data.

(2) Data from U.S. Department of Commerce. The most recent calendar year for which information is available is 2021.

(3) Data from U.S. Census Bureau (American Community Survey). The most recent calendar year for which information is available is 2021. Calendar year 2020 data is not included due to a change in methodology for surveying and calculating the data in that year, which was not comparative to the prior years presented. Calendar year 2021 returned to the prior methodology for surveying and calculating data.

(4) Data from U.S. Bureau of Labor Statistics and State of California Employment Development Department (EDD). The most recent calendar year for which information is available is 2022. Rates from prior years reflect revisions based on current data.

	Calendar Year								
				2013					
Company or Organization	Employees	Rank	Percentage of total employment	Employees	Rank	Percentage of total employment			
Allied Universal	800,000	1	26.14 %	n/a	n/a	n/a %			
Walt Disney Co	220,000	2	7.19	175,000	1	9.40			
Taco Bell Corp	210,000	3	6.86	166,000	2	8.92			
Chipotle Mexican Grill Inc	104,958	4	3.43	n/a	n/a	n/a			
Alorica Inc	100,000	5	3.27	n/a	n/a	n/a			
Gores Group	84,000	6	2.74	84,000	5	4.51			
Kaiser Permanente Southern CA	75,740	7	2.47	n/a	n/a	n/a			
Advantage Solutions Inc	75,000	8	2.45	n/a	n/a	n/a			
Dole Food Co Inc	74,800	9	2.44	74,800	6	4.02			
Board of Trustees California State University	47,000	10	1.54	47,000	8	2.52			
	1,791,498		58.53 %	546,800		29.37 %			
Total Employment	3,060,520			1,861,518					

n/a: not available

Note: The most recent year for which information is available is 2022. Population includes companies with employees of 10,000 or more.

See accompanying Independent Auditors' Report.

Source: Data Axle (formerly Infogroup)

#### The Metropolitan Water District of Southern California Table 15 Ten-Year Summary of Operating Information (Unaudited)

**Mission Statement:** 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.

	Fiscal Year Ended June 30,									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Acre-feet <sup>(1)</sup> water sold:										
Treated	636	825	771	705	707	788	736	731	892	1,029
Untreated	394	540	520	381	449	553	573	683	829	846
Exchange	274	298	304	277	221	219	178	179	180	180
	1,304	1,663	1,595	1,363	1,377	1,560	1,487	1,593	1,901	2,055
Acre-feet <sup>(1)</sup> water sold by usage:										
Domestic and municipal uses	1,273	1,612	1,522	1,255	1,352	1,481	1,454	1,569	1,858	2,039
Agricultural uses	_	_	_	_	_	_	_	_	_	_
Replenishment and other	31	51	73	108	25	79	33	24	43	16
	1,304	1,663	1,595	1,363	1,377	1,560	1,487	1,593	1,901	2,055
Source of Water Supplies-Acre-feet <sup>(1), (2), (3)</sup> :										
Local Supplies	1,699.5	1,696.9	1,831.1	1,697.0	1,667.1	1,742.9	1,717.2	1,679.9	1,711.7	1,925.6
L.A. Aqueduct	207.8	62.2	133.0	274.2	322.6	307.7	224.7	57.9	57.7	61.0
Colorado River Aqueduct	839.6	1,082.8	891.1	410.0	601.8	494.6	594.6	1,086.5	1,184.4	1,103.0
State Water Project (California Aqueduct)	627.8	516.2	633.3	1,036.4	921.8	1,222.5	1,242.7	691.7	592.4	805.8
	3,374.7	3,358.1	3,488.5	3,417.6	3,513.3	3,767.7	3,779.2	3,516.0	3,546.2	3,895.4
Number of employees	1,847	1,838	1,879	1,876	1,877	1,832	1,794	1,772	1,770	1,765
Colorado River Aqueduct (miles)	242	242	242	242	242	242	242	242	242	242
Distribution System Pipeline (miles)	830	830	830	830	830	830	830	830	830	830
Storage Capacity (thousand acre-feet)	1,072	1,072	1,072	1,072	1,072	1,072	1,072	1,072	1,072	1,072
Pumping Plants	6	6	6	6	6	6	6	6	6	6
Water Filtration Plants	5	5	5	5	5	5	5	5	5	5
Hydroelectric Plants <sup>(4)</sup>	15	16	16	16	16	16	16	16	16	16

<sup>(1)</sup> Water volumes are reported in thousand acre-feet. Includes water transactions from non-member agencies.

(2) Reflects regional sources of water supply within Metropolitan's service area.

<sup>(3)</sup> Actual production data from prior years are updated based on the most current available information.

(4) Greg Avenue plant was converted into a Pressure Control Structure.

See accompanying Independent Auditors' Report.

Completion Date	Contract/ Spec. No.	Project	Bid Amount <sup>(1)</sup>	Final Amount <sup>(2)</sup>
7/7/22	1984/1984	Skinner water treatment plant facility area paving	<b>\$</b> 1,936,977	\$ 2,110,339
7/8/22	1951/1951	Skinner water treatment plant cathodic protection	240,933	247,053
7/25/22	1884/1804	Garvey reservoir sodium hypochlorite feed system	2,418,149	2,430,457
9/16/22	2045/2045	Upper Feeder Santa Ana River crossing expansion joint replacement <sup>(2)</sup>	1,200,000	855,624
9/26/22	1970/1970	Garvey reservoir drainage and erosion improvements - areas 6, 7, 8, 10 and 11	1,294,800	1,542,553
10/7/22	1886/M-3050	Jensen plant vehicle maintenance building roof replacement	282,390	286,890
11/1/22	1887/1822	Western San Bernardino County Region erosion control improvements - stage 1	677,898	681,557
11/23/22	1938/1938	MWD headquarters building physical security upgrades and improvements	5,822,000	5,980,868
12/6/22	M-3049/M-3049	Metropolitan delta properties flow meter, datalogger and telemetry installation, phase 4	137,500	148,149
12/15/22	M-3024A/M-3024A	OC-88 pump station fire protection system upgrades	197,600	196,143
1/11/23	M-3043/M-3043	Lake Mathews tank farm roof modifications	209,680	209,680
2/17/23	1905/1863	Metropolitan headquarters building improvements	43,998,000	51,130,359
3/17/23	1981/1981	West Orange County feeder and lower feeder blow-off drain line rehabilitation	163,850	171,580
3/29/23	2038/2038	San Diego pipeline No. 1 rainbow tunnel concrete liner rehabilitation	1,228,607	1,229,306
3/31/23	1964/1964	Live Oak Reservoir Pipelines Cathodic Protection	182,800	182,800

Projects Completed as of June 30, 2023 (Unaudited)

(1) Bid amount represents the original approved contract amount and does not include approved change orders.

rehabilitation

<sup>(2)</sup> Final contract amounts represent actual earnings through end of June 2023 and may change as resolution of pending issues are finalized.

Colorado River Aqueduct (CRA) pumping plants sump

Second lower feeder PCCP rehabilitation - reach 3A

(3) This contract was awarded under the General Manager's Authority, after a leak was discovered. As the leak had the potential to cause imminent failure to an essential public facility, the emergency contracting provisions of the Public Contract Code and Metropolitan's administrative code were invoked. Competitive bidding was waived and Metropolitan entered into a contract with the contractor in an amount not to exceed \$1.2 million. The Board ratified the final contract amount in October 2022.

26,900,000

11,884,700

13,690,970

11,647,384

See accompanying Independent Auditors' Report.

1908/1874

1903/1903

Source: Engineering Services Group

5/24/23

6/29/23

#### Major Construction Contracts in Progress as of June 30, 2023 (Unaudited)-Accrual Basis

Contract No.	Project	Percentage Contract Complete through 6/30/2023	Estimated Contract Completion Date	Contract Earnings through 6/30/2023 <sup>(1)</sup>	Bid Amount <sup>(2)</sup>
1885	La Verne shops building completion - stage 5	50%	June 2024	<b>\$</b> 9,378,590	\$ 18,930,000
1891	Etiwanda pipeline north relining - stage 3	90%	October 2023	23,281,069	25,972,700
1894	Mills plant maintenance building roof replacement	85%	September 2023	291,452	287,824
1895	Colorado River Aqueduct (CRA) conduit structural protection	2%	January 2025	129,849	8,656,568
1896	Jensen admin. bldg. entrance glass fiber reinforced concrete panels replacement	_	January 2024	_	281,900
1926	CRA mile 12 flow monitoring station upgrades	99%	August 2023	2,051,656	2,022,000
1928	Perris Valley pipeline interstate 215 tunnel crossing	8%	February 2025	4,670,057	59,489,720
1944	Lake Mathews reservoir wastewater system replacement	92%	November 2023	3,515,471	3,815,000
1946	CRA pumping plants overhead cranes replacement	48%	September 2023	6,464,015	13,419,000
1949	CRA pumping plants domestic water treatment system replacement	28%	March 2025	9,310,138	32,824,000
1958	CRA replacement of Casa Loma siphon barrel no. 1	99%	July 2023	11,627,319	11,499,000
1961	Orange County Feeder relining - reach 3	72%	October 2023	12,386,595	17,226,250
1962	MWD headquarters building fire alarm and smoke control improvements	90%	September 2023	12,618,720	13,999,000
1966	Sepulveda, West Valley, and East Valley feeders interconnection upgrades	54%	September 2023	1,708,670	3,143,592
1982	Weymouth water treatment plant basins nos. 5-8 & filter building no. 2 rehabilitation	34%	May 2025	31,896,293	93,840,000
1989	Metropolitan headquarters building first floor video suite renovation	_	February 2024	_	637,520
1990	Henry J. Mills water treatment plant electrical upgrades, stage 2	29%	February 2025	2,633,221	9,200,000
1998	Jensen and Skinner water treatment plants battery energy storage systems	37%	June 2024	4,239,443	11,604,521
1999	Foothill hydroelectric power plant seismic upgrade	2%	September 2024	150,120	6,174,000
2001	Jensen water treatment plant ozone power supply units (PSU) replacement	46%	December 2023	1,033,200	2,257,897
2003	Metropolitan headquarters building exterior physical security improvements	25%	January 2024	551,115	2,165,000
2013	Lake Mathews PCCP rehabilitation valve storage building	83%	September 2023	3,948,620	4,759,000
2014	Weymouth plant battery energy storage system	43%	August 2023	2,647,731	6,176,521
2020	Wadsworth pumping plant bypass pipeline	6%	June 2024	839,294	14,820,500
2024	OC-88 pump station chiller replacement	21%	January 2024	549,810	2,654,000
2026	Second lower feeder PCCP rehabilitation - reach 3B	5%	September 2025	3,532,881	68,847,000
2036	Skinner water treatment plant ozone contactor structure rehabilitation	4%	December 2023	17,368	394,534
2042	CRA conveyance system solar level sensor installation	_	May 2024	_	5,266,000
2053	Julian Hinds pumping plant village paving	2%	October 2023	2,194	109,710

(1) Earnings reflected represent the value of work performed by the contractor as of the date indicated and include contract retention and other similar deductions from amounts earned by the contractor but otherwise required to be withheld by Metropolitan by law or contract.

<sup>(2)</sup> Bid amount represents the original approved contract amount and does not include approved change orders.

See accompanying Independent Auditors' Report.

Source: Engineering Services Group



# Finance, Audit, Insurance, and Real Property Committee FY 2022/23 Annual Comprehensive Financial Report

Item 7c January 9, 2024 Item # 7c Receipt of Financial Report

### Subject

• The District's Fiscal Year 2023 Annual Comprehensive Financial Report (ACFR)

### Purpose

- For the Board to receive the audited 2023 ACFR
- Present an analysis of the trends observed in the balance sheet data.



Balance Sheet Trends





### Total Assets and Deferred Outflows





### Total Liabilities, Deferred Inflows and Net Position





## Revenue Bond Debt to Equity Ratio





### Pension Funded Ratio





## Pension Actuarially Determined Contribution<sup>(1)</sup>



<sup>(1)</sup>Annual Required Contribution (ARC) in fiscal years 2012 through 2017

January 9, 2024


### **OPEB** Funded Ratio



Finance, Audit, Insurance, and Real Property Committee



### OPEB Actuarially Determined Contribution<sup>(1)</sup>



<sup>(1)</sup>Annual Required Contribution (ARC) in fiscal years 2012 through 2017

January 9, 2024

Finance, Audit, Insurance, and Real Property Committee







## Finance, Audit, Insurance, and Real Property Committee Diamond Valley Lake Recreation Program

Item 7d January 9, 2024 Item 7d Diamond Valley Lake Recreation Program

### Subject Diamond Valley Lake Recreation Program

### Purpose

Provide updates on Recreation Planning and Development at DVL

Next Steps Review upcoming Capital Projects



### Distribution System



### Agenda

Background
Recreation Areas
Amenities
Recreation Partners
Capital Projects

### Recreation Background

#### **PUBLIC WORKSHOP**



The Methodolitum Water Distance of Southern California and The Domenicous Valley Releases Prophet Represence Worksho Group

RESENT THE

#### DRAFT RECREATION PLAN FOR THE DOMENIGONI VALLEY RESERVOIR PROJECT



Then will be a public toor of recruition lands on Transact pressors, Max 31. See the inside cover for details and a restored that you RSTP.

### **Recreation Planning**

- 1992—Metropolitan initiated Recreation Working Group
  - Comprised of stakeholders
  - Held public workshops
- 1997—Adopted Reservoir Recreation Plan
  - Business Planning Framework
  - Developed guiding principles
  - MWD builds core infrastructure
  - Private sector operates amenities
- 2003—DVL Marina Opened



**Diamond Valley Lake Recreation** 

Capital Funding Strategy



### **DVL Recreation Development**

- 2004 Board Directive
  - Consolidate construction costs
  - Use remaining funds
  - Use proceeds from DVL surplus properties
- DVL Recreation Budget
  - \$87M Budgeted
  - \$61M Projects to date
  - \$26M Remaining funds



### **Recreation Area Map**



- 20-Year Anniversary
- Managed by Vista Recreation
  - 10-Year agreement
  - \$750,000 Private investment
  - Rent diverted to Maintenance Fund

### DVL East Marina





- Fishing
- Boat launching
- Boat rental
- Lakeview Trail hiking
   & biking
- Seasonal Wildflower Trail – 50,000 visitors

### DVL East Marina





- 100,000 + Annual Visitors
- Soccer, Baseball, Softball Fields
- Aquatic Center
- Pickleball & Cross-Country

### Valley-Wide Park & Aquatic Center





### Western Science Center Museum



Diamond Valley Lake Recreation Amenities

- DVL Paleontological Resources
- Museum exhibits
- 40,000 + Annual Visitors
- Western Center Academy



- North Hills Trail Equestrian Trailheads
- Clayton A. Record Jr. Viewpoint
- Education field trips
- Amenities managed by MWD

### North Hills Trail & Viewpoint







- Five Participating Agencies
- Implement Recreation Improvements
- Promote public access to natural resources
- Non-Binding Commitment

### **Recreation Partners**



Valley-Wide Recreation & Park District











### Upcoming Capital Project



### Floating Wave Attenuator





1493

Finance, Audit, Insurance, and Real Property Committee



### Upcoming Capital Project

- Rehabilitate & move • attenuator
- Install new attenuator • at original location
- Project is out for bids •
- Feb 2024 Board • award

### Floating Wave Attenuator





Future Capital Projects

### Recreation Rehabilitation & Development

Est. Board Action	Project	Est. Contract Amount	Туре
Feb 2024	Floating Wave Attenuator Replacement	\$10M	Rehabilitation
4Q 2024	Floating Restroom Replacement	\$1.5M	
4Q 2024	Boarding Dock Replacement	\$1.25M	
3Q 2024	DVL to Lake Skinner Trail (Phase 1)	\$2.5M	Development
2025	Marina Potable Water & Sewer Utilities	\$15M	
2027	DVL to Lake Skinner Trail (Phase 2)	\$3M	



January 9, 2024

Finance, Audit, Insurance, and Real Property Committee







### Finance, Audit, Insurance, and Real Property Committee

# **CFO** Activities Report

Item 8b January 9, 2024



### CFO Activities

### Future Agenda items: <u>I) Further Discussion on Pure Water</u>

- Southern California Cost of Service options will be brought back to February FAIRP.
- 2) Cost savings measures will be discussed during the February budget process and elaborated on during the Q2 report at the March FAIRP.
- 3) In February Staff plans to report on Director Smith's request for revenues and expenses variances by rate element going back 10 years.







**Comment from Los Angeles:** The analysis showed a total conservation approach. Request analysis using an increased amount (such as \$100 million) and the acre-feet per year supply reduction. Answer:

- The LRFP-NA analysis included approximately \$30.5M of annual funding for residential, commercial and outdoor conservation programs as assumed in the FY 2022/23 and FY 2023/24 Adopted Budget and 10-year forecast.
- The intent of the LRFP Needs Assessment is to inform the Climate Adaptation Master Plan for Water (CAMP4W) process and assist the Board in selecting a resource development portfolio, while weighing resiliency, reliability, financial sustainability, and affordability objectives. Additional analysis on <u>specific</u> projects and portfolios – including additional conservation funding – will be performed in the CAMP4W process and the next phase of the LRFP.



**Comment from SDCWA:** Use water sales instead of water transactions (correct the whole report). (This results in 25% increase in rates.)

### Answer:

• The modeling in the LRFP-NA estimates average annual overall rate increases from implementing different resource development portfolios. The LRFP-NA acknowledges that rate impacts will vary based on how those projects are functionalized based on Cost of Service principles and on how those costs are recovered for each project. The next iteration of the LRFP document – which will come at a later date – will integrate specific capital projects and outline the funding and financing strategies based on board input, including its policy goals and objectives. The Cost of Service analysis for those projects will show a more refined estimate of the impact on the unbundled rate elements.

# **Comment from SDCWA:** Cost curves for large storage projects shows \$2,500/AF not \$300/AF for storage unit costs. Update inflation assumptions **Answer:**

Because specific IRP resource portfolios have not yet been approved by the board, staff ulletis unable to use project-specific information to calculate unit costs. Instead, staff relied on data from recently completed or studied projects to develop a range of potential unit costs for each resource need, including both O&M and capital financing costs. The unit cost sources for storage are based on Metropolitan's cost for construction of Diamond Valley Lake and preliminary results of an in-region storage study, escalated to current dollars. The storage unit cost is based on built capacity, not a calculation of anticipated yield. As such, \$300/AF can be interpreted as the annual financing and O&M cost per acre foot of built capacity of new storage. The modeled unit costs are priced in 2023 dollars and were escalated at a rate of 3 percent for future years. To the extent specific storage projects are identified in the CAMP4W portfolio, they will be reflected in Phase 2 of the LRFP.

January 9, 2024

Question from SDCWA: What are member agencies' willingness to pay and geographic location of supply gaps?

### Answer:

 Staff recently demonstrated an online dashboard created for the CAMP4W process that highlights Member Agency supplies and demands on Metropolitan over a period of time. This tool will help to inform the Board's questions about the geographic location of supply gaps. Affordability and member agencies' willingness to pay will continue to be addressed in the CAMP4W.



**Comment from SDCWA:** IRP assumption adjustments like conservation rebound, nonfunctional turf legislation impacts to conservation, water efficiency standards impacts to conservation, MWD's contributions to the Colorado River before and after 2026 <u>Answer:</u>

 The IRP Phase 1 Needs Assessment analysis and findings were based on a comprehensive and inclusive process with collaboration from member agency, local agency and expert consultants. The results of each of the four scenarios analyzed in the IRP Needs Assessment provide a plausible range of future reliability impacts and resource development needs that could result due to rapid climate change and economic/demographic growth. The CAMP4W process will inform further iterations of the IRP analysis to include the items identified in the question.



# **Comment from SDCWA:** Need to address and update reliability goal: 100% reliability, 100% of the time

### Answer:

At its February 2023 retreat, the Metropolitan Board of Directors commenced a  $\bullet$ master planning process to set a long-term vision for Metropolitan that would address critical policy issues driven by climate change. This planning process – known as the CAMP4W – seeks to evaluate Metropolitan's resource development objectives through a climate adaptation lens. The policy issues addressed through the CAMP4W process concern the future role of Metropolitan, its water resources portfolio, projected supply and demand gaps under alternative scenarios, new investments for supply reliability and resilience, a business model that promotes financial sustainability and a workforce required to realize this vision. Metropolitan's reliability goal should be addressed through that process.

**Comment from SDCWA:** Need to include distribution costs for all projects (i.e. Pure Water treatment is \$3,000/AF but does not include the 60-mile pipeline/pump station)

### Answer:

• The \$3,000/AF unit cost assumed for the LRFP-NA included all required distribution improvements. Per the November 28 meeting of the Subcommittee on Pure Water Southern California and Regional Conveyance, the \$3,000/AF assumption falls within the range of the estimated PWSC project cost. Specific projects will be evaluated as part of the CAMP4W process.



**Comment from MWDOC:** Incorporate business model discussion in the report LRFP-NA (phase I).



 The business model discussion is happening on a parallel track: on the cost recovery side for the PWSC project in the FAIRP committee and more broadly as an item that is being discussed as part of our overall strategy. These discussions are ongoing, but outside the intended scope of the LRFP-NA (phase 1).



**Comment from MWDOC:** Need a more detailed analysis of replacement/refurbishment requirements above and beyond the \$300 million per year.

### Answer:

 Per the 10-Year Financial Forecast, \$300 million of annual CIP funding is included in the base cost assumptions for all LRFP-NA scenarios, escalating at 3% annually over the forecast period. The CIP funding largely reflects the deferral of facility expansion projects and focuses on necessary refurbishment and replacement of aging infrastructure and compliance with regulatory requirements. R&R needs beyond that baseline are currently being reviewed and will be brought to the board by Engineering as part of the upcoming Biennial Budget discussion in February 2024.



**Comment from MWDOC:** Need to include all envisioned projects above and beyond current CIP and supply/stored (i.e. Sites, Delta Conveyance, SWP subsidence, SWP Dependent Area drought projects, East-West pipeline, in the text and sensitivity analysis. Answer:

The LRFP-NA is designed to (1) provide high-level financial analysis of rate impacts under • various resource development scenarios, (2) discuss the primary capital financing and funding methods Metropolitan has at its disposal, (3) introduce potential financial tools that could become components of a tailored financial strategy, and (4) catalogue Metropolitan's key policies related to the capital markets. Addressing these elements, the LRFP-NA seeks to encourage policy discussion among the Metropolitan Board of Directors, resulting in the codevelopment of the final LRFP document to be produced at the conclusion of phase two, which will analyze the financial impacts of specific portfolios of resource projects selected in the CAMP4W process. A key purpose of the LRFP-NA is to inform the CAMP4W process and assist the board in its strategic decision making for critical issues and evaluation of projects such as those listed in the comment.

