



THE METROPOLITAN WATER DISTRICT  
OF SOUTHERN CALIFORNIA

# Board Report

## Engineering Services Group

- **Engineering Services Monthly Activities Report for September 2024**

### Summary

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This monthly report provides a summary of Engineering Services Group activities for September 2024 in the following key areas:

- Colorado River Aqueduct (CRA) Program
- Dams & Reservoirs Program
- Distribution System Program
- Additional Facilities and Systems Program
- Prestressed Concrete Cylinder Pipe (PCCP) Program
- Water Treatment Plants Program
- Pure Water Southern California
- Drought Mitigation – State Water Project Dependent Areas
- Value Engineering Program
- The Great Builders Series

### Purpose

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Informational

### Attachments

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Attachment 1: Detailed Report - Engineering Services Group's Monthly Activities for September 2024

# Engineering Services Key Activities Report for September 2024

Engineering Services manages and executes projects within the Capital Investment Plan (CIP) to maintain infrastructure resiliency, ensure regulatory compliance, enhance sustainability, and provide flexibility in system operations to address uncertain water supply conditions. In addition, Engineering Services provides technical services to enhance reliable system operation and real property planning, valuation, acquisition, and disposition services to protect Metropolitan's assets. Engineering Services empowers our staff and partners with our business partners and the communities we serve to accomplish Metropolitan's mission.

Recent activities on CIP programs and other key engineering functions are described below.



Protect public health, the regional economy and  
Metropolitan's assets

## Colorado River Aqueduct (CRA) Program

The CRA program is composed of CIP projects to replace or refurbish facilities and components of the CRA system to reliably convey water from the Colorado River to Southern California.

- **Gene Communications System Upgrade** – This project will construct a new fiber optic cable line from Parker Dam to Gene Pumping Plant. The new line is predominantly located within the Metropolitan property on new power poles with a small underground portion of the alignment within the Bureau of Reclamation's property. The pole installation has been completed. The contractor continues with underground work, fiber installation, and splicing. Construction is approximately 85 percent complete and is scheduled for completion in November 2024.
- **Eagle Mountain Utilities** – This project will replace the existing potable water, non-potable water, and sewer lines at the Eagle Mountain Pump Plant housing village. Final design is 90 percent complete and is scheduled to be complete in January 2025.
- **Hinds Discharge Valve Platform** – This project will replace corroded steel members, such as ladders and floor grates at all nine discharge valve pits at the Hinds Pumping Plant. Preliminary design is 90 percent complete and is scheduled to be complete in November 2024.

- **Main Pump Access Improvements** — This project will construct new platform systems at each pumping plant and implement additional access improvements to enhance the efficiency of maintenance activities on the lower motor guide bearing assemblies. Preliminary design is approximately 10 percent complete and is scheduled to be complete in January 2025.



Gene Communications System Upgrade – Pole #1 Replacement

## Dams & Reservoirs Program

The Dams & Reservoirs Program is composed of CIP projects to upgrade or refurbish Metropolitan’s dams, reservoirs, and appurtenant facilities to reliably meet water storage needs and regulatory compliance.

- **Garvey Reservoir Rehabilitation** — This project will replace the aging reservoir floating cover and liner, structurally strengthen the outlet tower, upgrade the on-site water quality laboratory building, rehabilitate the junction structure, and replace the existing standby generator and a portion of the security perimeter fence. Certification of the final Environmental Impact Report (EIR) for this rehabilitation effort will be considered in a November board action. Final design is approximately 42 percent complete and is scheduled to be complete in July 2025.
- **Diamond Valley Lake Dam Monitoring System Upgrade** — This project will upgrade the aging dam monitoring system with an automated data acquisition system that collects data from over 200 instruments located in and around the dams and the inlet/outlet tower. The new system design was completed in September. The anticipated completion date for system installation, testing and commissioning is June 2025.
- **Copper Basin Discharge** — This project installs a new 54-inch fixed cone valve and actuator at the base of the dam, refurbishes a slide gate and the existing valve house, and upgrades all associated electrical systems and access ladders at the Copper Basin Reservoir. This project will also include the

replacement of access ladders at the Gene Wash Dam. Final design is complete and the acquisition of environmental permits is in progress.

- **Lake Skinner Dam Perimeter Road Drainage Improvements** – This project consists of replacing 4,800 linear-feet of concrete channel, grading of the adjacent roadway, and other appurtenant work. Final design is complete and board award of a construction contract is scheduled for January 2025.

## Distribution System Program

The Distribution System Program is composed of CIP projects to replace, upgrade, or refurbish existing facilities within Metropolitan’s distribution system, including pressure control structures, hydroelectric power plants, and pipelines, to reliably meet water demands.

- **Foothill Hydroelectric Plant and Control Building Seismic Upgrade** – This project strengthens the Foothill Hydroelectric Plant and Control Building to withstand a major earthquake and retain its functionality as an essential facility. The contractor completed the structural strengthening of the roof, continued setting concrete forms around the existing columns of the building, and began backfilling around the building. Construction is approximately 82 percent complete and is scheduled to be complete in December 2024.
- **Service Connection OC -88 Chillers Replacement** – This project replaces deteriorated cooling equipment including three chillers and two chilled water pumps that provide cooling for the pump station’s pump motors and air conditioning system. The contractor has completed the installation of the first chiller and the stainless-steel chilled water piping, and has begun the demolition of the second chiller. Construction is approximately 70 percent complete and is scheduled to be complete in November 2024.
- **Rialto Pipeline Rehabilitation** – This project replaces a 35-foot-long, 121.5-inch diameter section of welded steel pipe on the Rialto Pipeline in the city of Upland, where the mortar lining has failed. This project also replaces the deteriorating pipe spool and isolation valve at the CB-11 service connection. The construction contract was awarded July 2024, and the shutdown to do the work is scheduled for February 2025.
- **Hollywood Tunnel North Portal Valve Replacement** – This project will replace two failing control sleeves and two isolation conical plug valves on the Santa Monica Feeder with two new sleeve and two knife gate valves. On the bypass line, the plug valve will be replaced with a control globe valve and isolation butterfly valves in addition to upgrading the associated instrumentation and electrical equipment in the Pressure Control Structure. Procurement specifications are being completed and will advertise in Fall 2024. Board award of a procurement contract is scheduled for January 2025.



Service Connection OC -88 Chillers Replacement – Chiller Installation

## Additional Facilities and Systems Program

The Additional Facilities and Systems Program is composed of CIP projects to refurbish, replace, upgrade, or provide new facilities and systems that support Metropolitan’s business and district-wide operations.

- **Headquarters Physical Security Upgrades** – This project implements comprehensive security upgrades for the Metropolitan Headquarters Building. These upgrades are consistent with federally recommended best practices for government buildings. The work has been prioritized and staged to minimize rework and impacts on day-to-day operations within the building. Stage 1 work is complete and provides enhanced security related to perimeter windows and doors. Stage 2 work is complete and provides security system upgrades inside the building with a focus on the main entry rotunda area, boardroom, executive dining lounge, and security control room. Construction of Stage 3 improvements provide security system upgrades around the perimeter of the building. Construction is complete and Notice of Completion was issued in September 2024.
- **Headquarters Building Fire Alarm and Smoke Control System Upgrades** – This project upgrades Metropolitan’s Union Station Headquarters fire life safety systems, which includes replacement of the fire detection and alarm system and HVAC system improvements for smoke control. The fire alarm and smoke control systems in Metropolitan’s Headquarters Building provide detection, notification,

and control of building functions so that occupants and visitors can safely exit in the event of a fire. The contractor continued final testing and sign-off of the fire alarm and smoke control systems by the LAFD and Los Angeles Department of Building and Safety. Construction is 99 percent complete and will be deemed complete upon final certification by these agencies.

- **DVL Wave Attenuator** —This project adds a second attenuator to the existing wave attenuating system at the East Marina in Diamond Valley Lake. The second attenuator will protect the boats and launch ramp from excessive wave action. As part of the improvements, the existing wave attenuator will be relocated to a new location and the new attenuator will be installed in its place. Additional anchors will be placed on the bottom of reservoir to provide anchorage for the new longer attenuator. The contractor is preparing submittals, and construction is scheduled to be complete by May 2026.

## Prestressed Concrete Cylinder Pipe (PCCP) Program

The PCCP Program is composed of CIP projects to refurbish or upgrade Metropolitan's PCCP feeders to maintain water deliveries without unplanned shutdowns.

- **Allen-McColloch Pipeline Urgent PCCP Rehabilitation** — This project will perform urgent relining of approximately three miles of distressed PCCP segments of the Allen-McColloch Pipeline (AMP) that were discovered during an inspection in 2023. The urgent relining of the AMP is being performed in stages. Stage 1 includes carbon fiber reinforced polymer (CFRP) lining of four segments and steel relining of approximately 4,500 feet of pipeline. Construction of the CFRP and 2,100 feet of steel liner was successfully completed in April 2024. The remaining 2,300 feet of steel liner installation is in progress and is expected to be finished by October 2024. Stage 2 work consists of 12,600 feet of steel liner installation and appurtenant work. The Board awarded the Stage 2 contract in May 2024. The Stage 2 work is approximately 30 percent complete and is expected to be complete by January 2025.
- **Sepulveda Feeder PCCP Rehabilitation North Reach** — This PCCP rehabilitation project was re-prioritized to support the West Area Water Supply Reliability Improvements. The North Reach project, in conjunction with the Sepulveda Feeder Pump Stations, will allow the reversal of normal flow in the Sepulveda Feeder to augment treated water deliveries to the west service area. The North Reach of the Sepulveda Feeder is approximately 20 miles long and has been broken out into 5 segments for the purposes of contract work packages. Utility potholing and geotechnical boring are ongoing along all 5 segments of the North Reach. Permitting and public outreach processes have been initiated. The North Reach preliminary design is approximately 75 percent complete and is scheduled to be complete in December 2024. Staff anticipates that construction contracts will eventually be awarded in a sequential manner for each of the segments over a series of several years with overall relining completed in the 2031/32 timeframe.
- **Sepulveda Feeder PCCP Rehabilitation Reach 9** — Reach 9 is the initial segment of the North Reach and extends approximately 3.8 miles from State Route 118 to just north of the Van Nuys Airport in the City of Los Angeles. This project will reline approximately 19,600 feet of the Sepulveda Feeder with coiled steel liner. This project also includes installation of a large diameter sectionalizing valve, which will enable continued water deliveries to the west service area during future relining of the North Reach. The new steel liner sections will also accommodate pumped flow conditions that will result from the operation of Stage 2 of the Sepulveda Feeder Pump Stations project. Final design is scheduled to kick off in early September and will be complete in September 2025.



## Water Treatment Plants Program

The Water Treatment Plants Program comprises CIP projects to replace or refurbish facilities and components at Metropolitan's five water treatment plants and the chemical unloading facility to continue to reliably meet treated water demands.

- **Weymouth Basins 5–8 and Filter Building No. 2 Rehabilitation** – This project rehabilitates major mechanical and structural components of Basins 5–8 and Filter Building No. 2 at the Weymouth plant, including the flocculation/sedimentation equipment, sludge pumps, baffle boards and walls, launders, inlet gates, and outlet drop gates. Rehabilitation work also includes seismic upgrades of basin walls and inlet channel, hazardous material abatement, and replacement of filter valves and actuators in Filter Building No. 2. The contractor completed all rehabilitation work in Basins 7 and 8, and continued construction activities in Basins 5 and 6 and Filter Building No. 2. Construction is approximately 80 percent complete and is scheduled to be complete in July 2025.
- **Weymouth Administration Building Upgrades** – This project upgrades the Weymouth Administration Building to withstand a significant earthquake. The planned upgrades include structural strengthening consistent with current seismic standards for essential facilities as well as accessibility and fire/life safety improvements, architectural modifications near the areas of structural upgrades, and improvements associated with the preservation of historic architectural features. The project constructability review workshop was completed in July 2024. Final design is approximately 75 percent complete and is scheduled to be complete in April 2025.
- **Diemer Filter Rehabilitation** – This project rehabilitates the 48 filters at the Diemer plant to enhance filter performance, minimize filter media loss, and rehabilitate or replace aging components. The project upgrades include replacing filter media, filter valve actuators, and instruments; and modifying the filter upstream influent weir and surface wash laterals. The planned upgrades also include improving the coal grit removal facilities for the east and west side of the plant. Final design is approximately 80 percent complete and is scheduled to be complete in December 2024.
- **Diemer Chemical Tank Farm Rehabilitation** – This project rehabilitates the fluoride tank farm at the Diemer plant by replacing the two fluoride tanks, associated feed equipment and tank farm's roof. A temporary fluoride feed system and appurtenant equipment will be installed in order to maintain operations during construction. Final design is approximately 85 percent complete and is scheduled to be complete in December 2024.



Weymouth Basins 5–8 and Filter Building No. 2 Rehabilitation –  
Installing the clarifier column cap at Basin 6, view to the west.



## Adapt to changing climate and water resources

### Pure Water Southern California

The Pure Water Southern California (PWSC) Program is a large regional recycled water program that will provide a new local source of safe and reliable drinking water for Southern California. PWSC currently focuses on four areas: demonstration testing, environmental planning, technical studies, and preliminary design of



initial pipeline reaches. PWSC will produce up to 150 million gallons per day (mgd) of purified water from the Advanced Water Purification Facility (AWPF) in Carson, for indirect potable reuse (IPR) and direct potable reuse (DPR) applications.

- **Demonstration Testing** – Demonstration testing began in 2019 with N-only tertiary membrane bioreactor (tMBR) testing completed in 2021 and secondary MBR (sMBR) testing completed in 2023. Modifications for tMBR optimization testing have been completed. The system is online and currently operating in the nitrification/denitrification mode. Modifications to the system are in progress to allow testing of potential DPR processes and to include additional safety features.
- **Environmental Planning** – The environmental planning phase began in 2020 with the goal of preparing an EIR for approval in 2026. Various technical studies have been prepared to support the effort. The draft EIR is currently scheduled for publication in early 2025, with board certification of the document in early 2026. Biological surveys were completed, and staff continues to prepare and review individual draft technical sections.
- **Program Management** – PWSC program management efforts lead the planning for the PWSC Program, including project controls, scheduling, budget development, risk management, coordination with program partners and stakeholders, grants and funding, and preparation of various plans and studies.
  - Metropolitan received notice in May 2024 that it was one of the recipients of the U.S. Bureau of Reclamation (USBR) Large-Scale Water Recycling grant (LSWR). The USBR announced that they intend to grant Metropolitan up to \$99,199,096 to advance the PWSC planning and design efforts. A second grant application to the LSWR program was prepared and submitted to the USBR in May for up to \$26 million dollars, or the difference between the initial grant request of \$125 million and the amount awarded. Staff provided an update to the Board in August 2024 on the grant. A November board action is planned to authorize a resolution to accept the USBR grant. Following discussions with USBR on the terms and scope of the agreement, staff plans to return to the Board to authorize the agreement.
  - In September, the Board approved an amended and restated agreement with Los Angeles County Sanitation Districts (LACSD). With this amendment, LACSD assumes responsibility for the pretreatment system, including the MBR, which substantially reduces Metropolitan’s overall program cost.
  - Program status, phasing options, and the DPR white paper were presented at the September PWSC/Regional Conveyance Subcommittee meeting.
  - Program governance and program management information systems are currently being developed. Technical studies are underway to support planning of DPR implementation, and EIR analysis on per- and polyfluoroalkyl substances (PFAS) compounds, and development of program phasing options.
- **Advanced Water Purification Facility** – The AWPF will purify treated wastewater from LACSD’s A.K. Warren Water Resource Facility (Warren Facility) using membrane bioreactors (MBRs), reverse osmosis (RO), and ultraviolet/advanced oxidation (UV/AOP). With its expertise in biological wastewater treatment, LACSD will assume the responsibility of implementing the AWPF pretreatment and the MBR facilities.

- A draft conceptual facilities plan has been prepared to document key assumptions of AWPf components. The final draft plan is currently being prepared.
- Southern California Edison (SCE) is performing a Method of Services (MOS) study to identify infrastructure needed to meet AWPf power requirements. The MOS investigation is anticipated to be complete later this year.
- **Direct Potable Reuse (DPR)** – The California Division of Drinking Water (DDW) published the final DPR regulations in December 2023. On August 6, 2024, the California Office of Administrative Law approved these DPR regulations, which will take effect on October 1, 2024. Metropolitan has completed bench-scale testing to screen the potential DPR treatment processes that could be used for the program. Planning of pilot-scale testing is in progress. A DPR white paper has been developed to establish Metropolitan’s DPR implementation approach and was presented at the September PWSC subcommittee.
- **Conveyance Pipeline System** – The PWSC conveyance system consists of the backbone pipeline, which extends over 40 miles from the AWPf in the city of Carson to as far north as the city of Azusa; repurposing an existing pipeline owned by the San Gabriel Valley Municipal Water District; and a new DPR pipeline to convey water from the backbone eastward for raw water augmentation at Metropolitan’s Weymouth Plant in the city of La Verne. It also includes several pump stations, service connections, isolation valves, and other pipeline appurtenances. As part of the current environmental planning phase efforts, the project team is preparing the Conveyance Facilities Conceptual Design Report to support the environmental studies and permitting processes required by CEQA. The draft report was recently completed, with the final report anticipated by the end of the year. In addition, Metropolitan’s Board authorized consulting agreements for preliminary design of the first two pipeline reaches in March 2023.
  - **Reach 1** – This reach is approximately 6 miles long and runs through the city of Carson, with service connections for LADWP and West Basin MWD. Current work includes utility field investigation and geotechnical work, incorporating value engineering comments and assessing the need for more tunneling to minimize project risks, as well as the completion of the preliminary design report and associated engineering drawings. Preliminary design is 83 percent complete.
  - **Reach 2** – This reach is approximately 8 miles long and runs through the cities of Long Beach and Lakewood, with a service connection for Long Beach Utilities District. Current work includes utility field investigation and geotechnical work, incorporating value engineering comments, as well as coordination with Long Beach Utilities District, Caltrans, and other permitting entities for the major tunnel crossing of the I-710 and Los Angeles River. Preliminary design is 50 percent complete.

## Drought Mitigation—State Water Project Dependent Areas

The Drought Mitigation—State Water Project (SWP)-Dependent Areas Program is composed of CIP projects to replace, refurbish, upgrade, or construct new facilities, which are identified to mitigate the vulnerability experienced by specific member agencies that are affected during shortages of State Water Project supplies.

- **Wadsworth Pumping Plant Bypass** — This project installs a bypass pipeline and an isolation valve to interconnect the Wadsworth Pumping Plant with the Eastside Pipeline. This is one of several projects needed to deliver water from Diamond Valley Lake (DVL) to the Rialto Pipeline. The contractor completed all pipeline tie-in work during a shutdown in April 2024. Remaining work consists mostly of installing long-lead electrical items. Construction is approximately 85 percent complete and is scheduled to be complete in July 2025.
- **Inland Feeder-Rialto Pipeline Intertie** — This project installs an interconnection pipeline and isolation valve structure between the Inland Feeder and Rialto Pipeline, so that water can be delivered from DVL to the Rialto Pipeline. The contractor has mobilized and is placing concrete for the pipe encasement and valve vault structure. Construction is approximately 20 percent complete and is scheduled to be complete in June 2025.
- **Inland Feeder - Badlands Tunnel Surge Protection** — This project installs a new open-to-atmosphere surge tank at the south portal of the tunnel, which will protect the Inland Feeder from hydraulic transients when pumping water from DVL to the Rialto Pipeline through the Inland Feeder. The contractor is constructing the valve vault and surge tank foundation. Construction is approximately 25 percent complete and is scheduled to be complete in June 2025.
- **Sepulveda Feeder Pump Stations** — This project installs new pump stations at the existing Venice and Sepulveda Canyon pressure control facilities, providing the ability to reverse flow in the Sepulveda Feeder and deliver 30 cubic feet per second from the Central Pool to portions of the Jensen plant exclusive area. This project utilizes a progressive design-build (PDB) project delivery method. The Board awarded a Phase 1 PDB agreement in September 2023. Phase 1 includes preliminary design and development of a Guaranteed Maximum Price (GMP) for completion. The contractor is proceeding with the purchase of long lead items including pumps, large valves and electrical switchgear and transformers recently authorized by the Board. Authorization of Phase 2 final design and construction is anticipated in early 2025.



Wadsworth Pumping Plant Bypass – Placing Rebar Wire Mesh for V-ditch



Inland Feeder-Rialto Pipeline Intertie – Valve Vault Wall Complete – Looking West





Inland Feeder - Badlands Tunnel Surge Protection – Installation of Rebar at the Surge Tank Foundation



## Sustain Metropolitan's mission with a strengthened business model

### Value Engineering Program

Engineering Services conducts a Value Engineering (VE) program to review capital projects and identify opportunities and alternatives to enhance project performance, optimize the use of funding for CIP projects, and demonstrate responsible use of public funds. The objective of the VE program is to improve the overall value of CIP projects by applying an industry-accepted assessment methodology to examine a project's function, design, equipment, material selections, and contracting approach. This comprehensive assessment is conducted at multiple stages in a project's life cycle.

- **Jensen Solids Mechanical Dewatering VE Workshop** – Engineering conducted a Value Engineering workshop for the Jensen Solids Mechanical Dewatering project in September. This project will construct a new mechanical dewatering facility at the Jensen plant sized to process and meet all solids handling requirements for 500 MGD plant capacity. The project will also remediate a portion of

the plant's property, which was determined to involve a significant liquefaction potential and make other facility improvements to solids pumping and conveyance systems. The workshop examined the scope and benefits of a separate, early site preparation contract, site access for solids removal trucks, potential impacts of other projects, construction sequencing, methods to mitigate impacts to ongoing O&M activities, and risk assessment and mitigation. The workshop team included Metropolitan staff from Engineering, Jensen plant management, Water Quality and Environmental Planning; and Engineering's design consultants, and consultant subject matter experts in geotechnical engineering, process design, and cost estimating.

- **La Verne Water Quality Laboratory Building VE Workshop** – In September, Engineering completed a Value Engineering workshop for the La Verne Water Quality Laboratory Building Upgrade project. This project includes a 30,000-square-foot expansion of the existing water quality building, structural improvements to improve seismic resiliency, and reconfiguration of the building layout for improved work flow and functional spaces. The workshop examined the project's relocation plan and addressed alternatives to mitigate impacts and ensure continuous operations and water quality testing capacity throughout construction of the project. The VE team included Metropolitan staff from Engineering, Treatment and Water Quality, Integrated Operations, Planning and Support Services, Environmental, IT, and Security.



Main Entrance to Water Quality Laboratory Building



**Empower** the workforce and promote diversity,  
equity, and inclusion

### The Great Builders Series

Engineering recently hosted "The Great Builders Series" in September with special guest speaker, former Assistant Chief Engineer Dennis Majors, with brown bag hosts Unit Manager Michael Thomas and DE&I Outreach/Engagement Manager Wigs Mendoza. This is one of several brown bag technical series meetings to spotlight the exceptional leaders who transformed blueprints into reality. This series will focus on the world of



mega construction projects and showcase remarkable achievements of builders and project managers. The ESG Brown Bag Technical Series helps to support workforce development in a lunch and learn setting.



Wigs Mendoza, Sepi Shirkhani, Howard Lum, Drew Boronkay, Dennis Majors, Director John Morris, Michael Thomas, John Vrsalovich, Marcia Scully



Wigs Mendoza, Dennis Majors, Michael Thomas