THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Board Report

Engineering Services Group

- **ESG Monthly Activities Report for June 2024**

Summary

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

- Colorado River Aqueduct (CRA) Program
- Dams & Reservoirs Program
- Distribution System Program
- Information Technology and Control Systems 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
- Community Outreach
- Mentoring Programs

Purpose

Informational

Attachments

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

Date of Report: 7/8/2024

Engineering Services
Key Activities Report for June 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.

- CRA Storage Buildings—This project furnishes and installs storage buildings at Hinds, Eagle Mountain, and Iron Mountain pump plants. The contractor has mobilized at all three pumping plants, and concrete placement for the building footings and slabs is underway at all three plants. Construction is 33 percent complete and is scheduled to be complete in April 2026.
- 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 the access ladders at the Gene Wash Dam. Final design is complete, and the acquisition of environmental permits necessary to advertise the project is in progress.
- 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 October 2024.
- 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 October 2024.

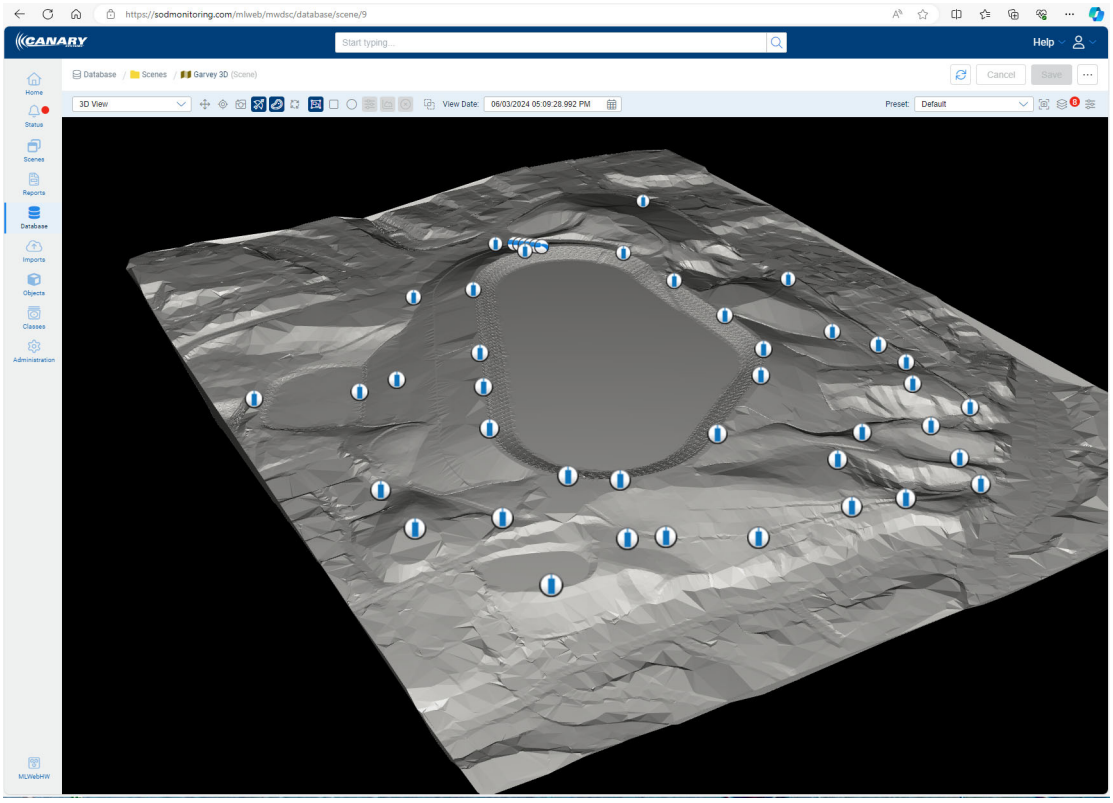
CRA Storage Buildings—Placing Concrete for Storage Building Slab at Eagle Mountain Pump Plant

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 Dam Monitoring System Upgrade Project—This project was completed in June. New instrumentation was installed in 39 groundwater monitoring wells and three underdrain structures. A weather station and a seismic accelerograph were installed on the crest of the north embankment. The upgrade project also included a new automated data acquisition system and dashboard to allow for efficient monitoring of the performance of the reservoir liner and embankments.
- City of Monterey Park—Garvey Reservoir is located in the City of Monterey Park. In anticipation of upcoming projects at the reservoir site, Metropolitan staff provided a tour of the facilities to councilpersons from the City, along with city support staff.

New Automated Data Acquisition Equipment



Garvey Reservoir—New Monitoring System Dashboard


Bashar Sudah, Mai Hattar, Sam Mouawad and Lizeth Martinez with
Monterey Park City Councilmembers and city staff at Garvey Reservoir

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 and continued installation of shoring soldier piles around the building. Construction is approximately 65 percent complete and is scheduled to be complete in December 2024.
- La Verne Shop Improvements—This project will complete the La Verne Shops building improvements and install Metropolitan-furnished shop equipment. The contractor continued installing electrical conduits for branch circuits, began installing reinforcing steel for the new blast booth foundation, continued installing maintenance holes for the new electrical ductbank, began installing concrete formwork for the blast booth pit walls, and began installing new underground natural gas lines. Construction is approximately 91 percent complete and is scheduled to be complete in August 2024.
- Service Connection OC-88 Chiller 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 installed and commissioned the first new chiller and has begun demolition of the existing 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. Final design is complete, and a board award of a construction contract is scheduled for July 2024.

- Perris Valley Pipeline—This project will complete construction of the Perris Valley Pipeline and provide service connections to Eastern and Western Municipal Water Districts. This project installs 3,000 linear feet of tunnel that crosses the Interstate 215 freeway. The contractor has excavated all four shafts and completed construction of two of the three tunnel reaches. Construction of the last tunnel reach, which crosses I-215 and the railroad tracks, is scheduled to commence in early July 2024. Overall construction is 60 percent complete and is scheduled to be complete in early 2025.

Perris Valley Pipeline—Hole-through TBM at second shaft

Information Technology and Control Systems Program

The Information Technology and Control Systems Program is composed of projects to replace, upgrade, or provide new facilities, software applications, or technology that will enhance cyber security, reliability, flexibility, and capability of information, communication, and control systems.

- SCADA System Upgrades—This project will upgrade Metropolitan's entire control system in incremental stages, spanning the Colorado River Aqueduct, the five water treatment plants, and the conveyance and distribution system. The first stage of this project replaces the control system at the Mills plant, starting with a pilot effort on one of the plant's remote terminal units to demonstrate the proposed technology and the consultant's approach to the plant and the overall project. Staff continued evaluating the results of the recently installed pilot equipment. The pilot phase is approximately 99 percent complete and is scheduled to be complete in July 2024. The system upgrades at the Mills plant are scheduled to be complete in October 2026.
- Gene Communications 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 Metropolitan fee property on new power poles with a small underground portion of the alignment within the Bureau of Reclamation's property. The contractor has forwarded contract submittals to support the upcoming construction work. Construction is approximately 7 percent complete and is scheduled to be complete in October 2024.

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 is underway and will provide security system upgrades around the perimeter of the building. The contractor continued installation of the ornamental fence around the courtyard and concrete placement for the fixed bollards. Construction is 85 percent complete and is scheduled to be complete in August 2024.
- Headquarters Building Fire Alarm and Smoke Control System Upgrades—This project upgrades the Metropolitan Headquarters Building 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.

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. Relining of the AMP is being performed in stages to minimize impacts to member agencies by installing a bulkhead and returning the northern portion of the pipeline to service while the southern portion remains under construction. 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 within the northern portion of the AMP was successfully completed in April 2024. The remaining 2,300 feet of steel liner installation in the southern portion is underway and will be completed by October 2024. The Stage 1 excavation of the site is complete, and steel pipe delivery is in progress. Stage 1 is approximately 50 percent complete. 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, and construction is planned to be complete by December 2024.
- Second Lower Feeder Valves—This procurement contract provides 13 conical plug valves for the Second Lower Feeder PCCP rehabilitation. Metropolitan's Board awarded a procurement contract for the valves in December 2018. Ten valves have been delivered as of January 2024. The eleventh and twelfth valves are scheduled to be shipped in the Fall of 2024. Fabrication of the final valve will be completed in late 2024 and delivery is projected for early 2025.
- Second Lower Feeder Reach 3B—This project installs steel lining and three conical plug valves (described above) along a 3.7-mile-long portion of the Second Lower Feeder that traverses the cities of Lomita, Los Angeles, and Torrance. The contractor is currently preparing for a shutdown in winter 2024. Construction is 49 percent complete and is scheduled to be complete in September 2025.
- Sepulveda Feeder Rehab Reach 1—This project rehabilitates PCCP segments of the Sepulveda Feeder. Reach 1 of the Sepulveda Feeder spans 4.7 miles through several cities including the cities of Hawthorne, Inglewood, and Los Angeles. Final design is approximately 75 percent complete and is scheduled to be complete in June 2025.

Allen-McColloch Pipeline Urgent Relining—New pipe liner installation

Water Treatment Plants Program

The Water Treatment Plants Program is composed of CIP projects to replace or refurbish facilities and components at Metropolitan's five water treatment plants and the chlorine 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. Overall construction for this contract is approximately 65 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. Final design is approximately 50 percent complete and is scheduled to be complete in April 2025.

- Mills Electrical Upgrades—This project upgrades the electrical system with dual-power feeds to key process equipment to comply with current codes and industry practice, improve plant reliability, and enhance worker safety. Stage 1 construction is complete. Stage 2 improvements will add a second incoming 12 kV service from Riverside Public Utilities, reconfigure the existing 4160-volt switchgear, and replace the standby generator switchgear and the emergency generator programmable logic controller. The contractor completed installation of the fiber optic cable and electrical conduit installation and began bench testing of the switchgear doors inside the ORP Switchgear Building. Construction is approximately 65 percent complete and is scheduled to be complete in August 2025.
- Jensen Ozone PSUs Replacement—This project rehabilitates the ozone generation system at the Jensen plant by replacing four existing ozone power supply units (PSUs) and four sets of generator dielectrics. The project also makes required modifications to the associated electrical, control, and cooling water systems. Replacement of the PSUs had been staged to ensure continuous use of ozone during construction. The contractor has completed the replacement of all PSUs and the ozone generator dielectrics. Performance testing is underway. Construction is currently 99 percent and is scheduled to be complete in July 2024.

Weymouth Basins 5-8 and Filter Building No. 2 Rehabilitation—Weymouth Basin 5 Bridge Demolition

Adapt to changing climate and water resources

Pure Water Southern California

The Pure Water Southern California (PWSC) Program is a large regional recycled water project that will provide a new local source of safe and reliable drinking water for Southern California. PWSC currently focuses in four areas: demonstration testing, environmental planning, technical studies, and preliminary design of initial pipeline reaches. PWSC will produce 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, with the initial deliveries by 2030 and completion by 2035.

- 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.
- Environmental Planning: The Environmental Planning Phase began in 2020 with the goal of preparing an Environmental Impact Report (EIR) for approval in 2025. Various technical studies have been prepared to support the effort. The draft EIR is currently scheduled for publication in late 2024 or early 2025, with board certification of the document in the third quarter of 2025. Staff continues to review individual draft technical sections and prepare the remaining technical studies.
- Program Management: PWSC program management efforts lead the planning for the 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 hosted a grant award ceremony at the Napolitano Innovation Center (NIC) in Carson on May 28, 2024, for recipients of the U.S. Bureau of Reclamation (USBR) Large-Scale Water Recycling grant (LSWR), where the USBR announced they intend to grant Metropolitan $99,199,096 to advance the PWSC planning and design efforts. To receive funding, Metropolitan is required to contribute 75 percent in matching funds, or approximately $300 million, a portion of which would be met with contributing funds from program partners including the Los Angeles County Sanitation Districts (LACSD). Staff plans to provide an update to the Board in August and return to the Board in September to amend the agreement with LACSD and request authorization to adopt a resolution to receive and match the USBR grant funding.
    - 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 from Metropolitan's and LACSD's Pure Water Southern California team participated in a well-attended panel session at this week's AWWA Annual Conference and Exposition in Anaheim. The focus of the panel was the risks and challenges with implementing a large

recycled water program. Bruce Chalmers gave an overview of the Program, Derek Zondervan from LACSD highlighted LACSD's work on nitrogen management processes, Gloria Lai-Bluml described the treatment and conveyance facilities, Heather Collins gave a strong argument for implementing DPR, and Rupam Soni provided background on Metropolitan's extensive public outreach efforts. Kim Wilson moderated the panel and handled questions from the audience.

    - The next PWSC/Regional Conveyance Subcommittee meeting will be in June 2024 and will include a Program update, grant status, and an agreement discussion.
    - Project management efforts include continuing development of program governance and applicable program management information systems. Technical studies are being prepared for support of a direct potable reuse white paper, treated water augmentation at the Diemer Water Treatment Plant, how to address PFAS compounds in the EIR, and development of program phasing options.

- Advanced Water Purification Facility: The AWPF will purify 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).
    - A draft conceptual facilities plan has been prepared to document key assumptions of AWPF components. The final draft plan is currently being prepared.
    - The progressive design build alternative delivery methodology will be employed to design and construct the treatment plant facilities.
    - A proposed Request for Qualifications (RFQ) from qualified firms to design and construct the AWPF is scheduled for the third quarter of 2024. Authorization of this procurement is planned for late 2024, pending acceptance of federal grant funds.
    - Metropolitan has finalized the Method of Services (MOS) study agreements with Southern California Edison (SCE) for SCE to evaluate SCE 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. 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 technical workshop was held with the Independent Scientific Advisory Panel (ISAP) on March 5 and 6, 2024, to discuss bench-scale testing data and proposed DPR treatment train. A DPR white paper has been developed to establish Metropolitan's DPR implementation approach via the PWSC Program. Potential opportunities for treated water augmentation (TWA) are also investigated, and a technical memorandum is being prepared.

- Conveyance Pipeline System: The program's backbone conveyance system consists of over 40 miles of pipeline and two pump stations. Metropolitan's Board authorized consulting agreements for preliminary design of the first two pipeline reaches in March 2023, and both projects are on schedule to complete preliminary design by end of the year. A value engineering workshop was conducted for the design of the first two pipeline reaches during the week of May 20, 2024, with an independent panel of subject matter experts in the areas of pipeline and tunneling design and/or construction, geotechnical engineering, construction cost estimating, and traffic control. The results of the study will be reviewed by the project team to ensure that each design is providing the most value to Metropolitan.
    - Reach 1—This reach is approximately 6 miles long and runs through the city of Carson. Current work includes utility field investigation and geotechnical work, as well as the completion of the draft preliminary design report and associate engineering drawings. Preliminary design is 75 percent complete and is scheduled to be complete by Fall 2024.
    - Reach 2—This reach is approximately 8 miles long and runs through the cities of Long Beach and Lakewood. Current work includes utility field investigation and geotechnical work, as well as coordination with Caltrans and other permitting entities for the major tunnel crossing of the I-710 and Los Angeles River. Preliminary design is 30 percent complete and is scheduled to be complete by late 2024.

Bureau of Reclamation Grant Funding Event—
Bureau of Reclamation Commissioner Camille Touton (center)

Pure Water Southern California AWWA ACE 2024 Conference Presentation Pane—
Kimberly Wilson, Rupam Soni, Gloria Lai-Bluml, Heather Collins, Bruce Chalmers, and Derek Zondervan (LACSD) (left to right)

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.

- Furnishing Butterfly Valves for the Wadsworth Bypass Pipeline, Inland Feeder-Rialto Intertie, and Badlands Tunnel Surge Tanks—This project furnishes three 84-inch diameter butterfly valves to improve the water supply reliability of the Rialto Pipeline. The fabrication of the three valves is complete, and they were shipped from the port of Osaka, Japan.
- Sepulveda Feeder Pumping Stations, Stage 1—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. The contractor and Metropolitan are coordinating with both Southern California Edison and the Los Angeles Department of Water and Power on upgrades to the incoming power service at both locations. Phase 1, which includes site investigation, design to the 70 percent level, environmental planning, and preparation of long-lead-item procurement documents, is scheduled to be complete in September 2024. Design work continues with the preliminary Basis of Design Report (BODR) being reviewed in June followed by the 30 percent design package review in July. A July board action is planned to amend the agreement for procurement of the transformers. A fall board action is planned for procurement of the remaining long-lead equipment.

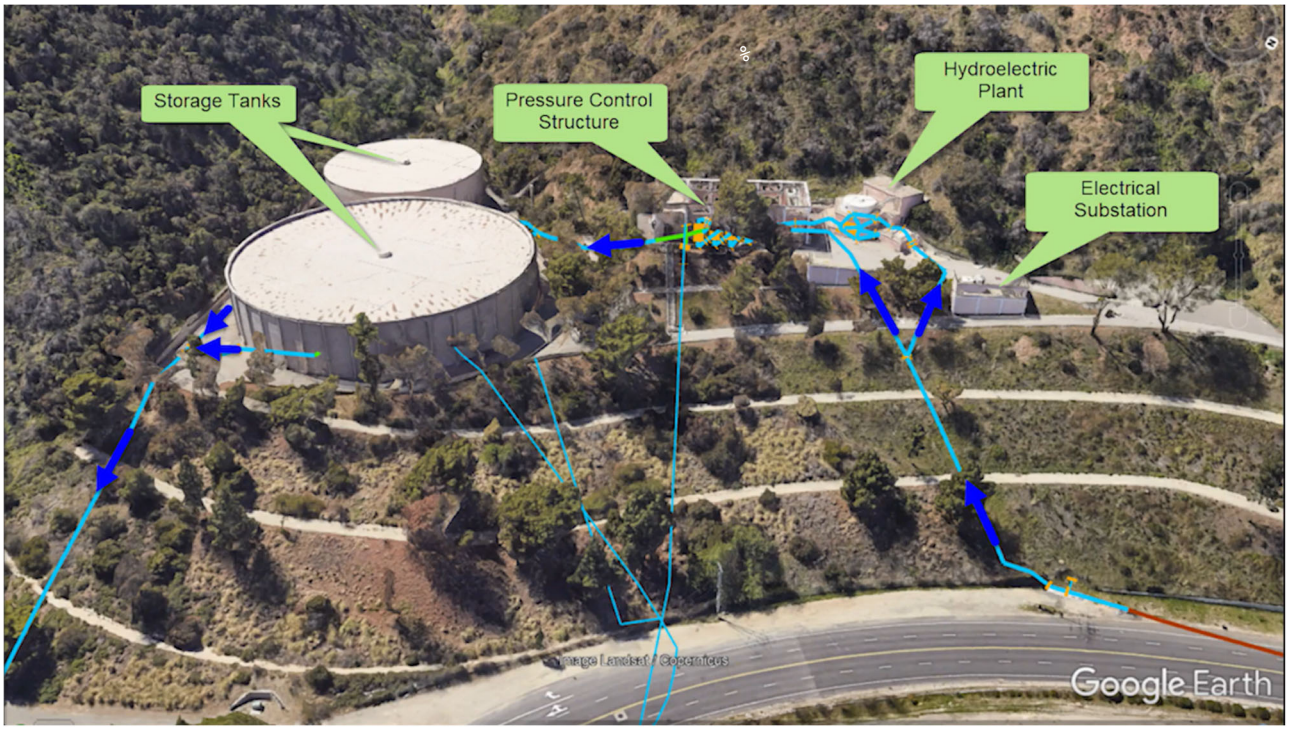
Sustain Metropolitan's mission with a strengthened business model

Value Engineering Program

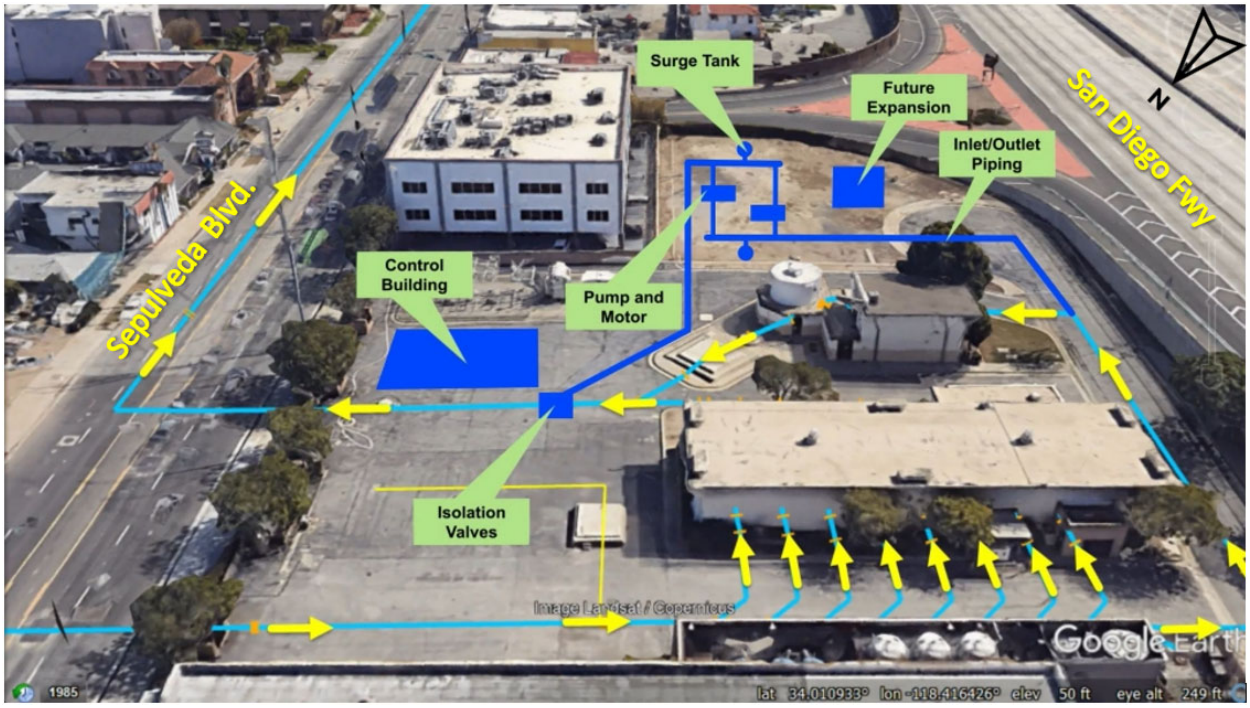
Engineering Services conducts a Value Engineering (VE) program to review capital projects and identify opportunities and alternatives to enhance project performance, optimize the use of funding for CIP projects, and demonstrate responsible use of public funds. The objective of the VE program is to improve 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.

Sepulveda Feeder Pump Stations—Value Engineering Workshop

A VE workshop for this project was completed in mid-June. The primary goal of the workshop was to develop a consensus on the selected design for the construction of pump stations at the Sepulveda Canyon and Venice Pressure Control Facilities. Once completed, this project will allow Metropolitan to deliver CRA supplies to the west service area during low SWP allocation periods. The four-day virtual workshop brought together Metropolitan staff and stakeholders, Metropolitan's progressive design build team, Value Engineering professionals, and consultant subject matter experts. The workshop focused on system hydraulics, project risks related to high-cost and long-lead items, O&M impacts, and options to expand pump station capacity in the future.



Sepulveda Canyon Pressure Control Structure Facility



Venice Pressure Control Structure Facility

Michael Thomas, Engineering Unit Manager, Presenting at IE Construction Network Event

Partner with interested parties and the communities we serve

Community Outreach

Engineering staff presented Metropolitan's upcoming contract opportunities and an update on Metropolitan's CIP at an Inland Empire construction networking event in Pomona, which was attended by contractors and design professionals. Eastern Municipal, Inland Empire Utilities Agency, and Western Water also presented their upcoming opportunities.

Empower the workforce and promote diversity, equity, and inclusion

Mentoring Programs

Engineering Services Mentoring Program—Flash Mentoring Event

The Engineering Services Mentoring Program held its 12th annual flash mentoring event in May. A cross-section of six Metropolitan Group and Section Managers—Francisco Becerra, John Bednarski, Mickey Chaudhuri, Liz Crosson, Mai Hattar, and Silvia Perez—participated in virtual speed mentoring sessions. There were approximately 50 participants consisting of mentees and mentors. The next mentoring module focuses on motivation and will include individual motivational assessments.

Engineering's Virtual Flash Mentoring Event

Engineering Management Mentoring Program

With nine individuals promoted to team manager this past year, Engineering launched a spinoff of its core mentoring program to focus on new engineering managers. The Engineering Management Mentoring Program seeks to provide increased support for these highly motivated leaders by helping these new managers navigate their new roles, optimally use resources to implement their goals, navigate the balance between leading people and performing technical work, and effectively lead and manage to achieve Engineering's and Metropolitan's mission. The mentees and mentors were matched to provide the new managers with an additional resource. A kickoff meeting and a subsequent module on HR transactions and the evaluation process were held. The next modules will include the Engineering Services Group's expectations, culture, and approaches to facilitating effective technical decision-making.

Engineering Management Mentoring Program Kickoff Meeting