THE OPERATIONS AND MAINTENANCE DEPARTMENT

AN INSIDE LOOK

FISCAL YEARS 2010-2011
OPERATIONS AND MAINTENANCE DEPARTMENT
MISSION STATEMENT

Operate and maintain the Aqueduct Delivery System in a reliable fashion and at a reasonable cost to the member agencies

The Operations and Maintenance Department (O&M) operates and maintains the San Diego County Water Authority’s (Water Authority) Aqueduct Delivery System, which consists of approximately 300 miles of large-diameter pipeline in two aqueducts, 1,600 appurtenant structures, and over 100 flow control facilities, occupying 1,400 acres of right-of-way. Management of hydroelectric plants, pump stations, flow regulatory facilities, the diversion structure, dams, and reservoirs, and Twin Oaks Valley Water Treatment Plant are also the responsibility of the O&M department.

The department supports Asset Management program development as part of the Board’s Strategic Plan and leads program efforts in Asset Management, Operations & Maintenance, and Facilities Security & Emergency Preparedness as defined in the Water Authority’s 2012 Business Plan.

The department is organized into five main areas: Administration, System Operations, System Maintenance, Water Quality, and Planning. There are eight budget cost centers (divisions): Administration (431), System Operations (432), Technical Services (433), System Maintenance (434), Fleet Services (435), Member Agency Reimbursables (437), Operational Planning (438), and Water Quality (439).

The O&M department is located at the Fred A. Heilbron Operations Center in Escondido, CA. There are 77 O&M employees, as well as staff from other departments and consultants who are stationed at this location. The four buildings (Office, Shop, Training/Warehouse, and Warehouse) located on approximately 2.7-acre site.

The Escondido facility includes:
- Operations Center Control Room
- Machine shop
- Fleet repair
- Vehicle bays & storage
- Valve service and repair shop
- Carpentry shop
- Radio room
- Offices
- Library
- Conference and meeting rooms
- Training facility
- Records storage
- Supplies, materials, and small equipment storage

O&M staff store reserve and emergency parts and equipment in several locations throughout the county for quick access during an emergency.

The following pages describe O&M in general terms. For more specific information about the department, please contact Gary Eaton, Director of Operations and Maintenance, at (760) 233-3237.
Total Water Authority Operating Budget FY 10-FY 11=$90.8 Million

<table>
<thead>
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<th>Department</th>
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<tr>
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Total O&M Operating Budget FY 10-FY 11=$15 Million

O&M Resource Allocation

Division | FY10 Budget | FY11 Budget |
---------|-------------|-------------|
431 Administration | 985,921 | 1,069,359 |
432 System Operations | 2,680,411 | 3,514,096 |
433 Technical Services | 2,649,752 | 2,584,786 |
434 System Maintenance | 3,853,246 | 4,088,545 |
435 Fleet Services | 1,183,653 | 1,109,063 |
437 Member Agency Reimbursables | 103,800 | 155,860 |
438 Operational Planning | 2,054,907 | 2,252,469 |
439 Water Quality | 204,487 | 226,672 |
**Total** | **13,716,179** | **15,000,849** |
ADMINISTRATION
(431)

Develop, implement, and maintain an administrative management program that fulfills the needs of our internal and external customers. Act as a liaison to Board and external customers in support of Water Authority objectives.

The Administration division has wide ranging responsibilities including:

- Executive/Management support
- Budget management
- Procurement processing
- Contract administration
- Payment processing
- Strategic and Business Plan updates
- Regulatory review and compliance
- Website maintenance
- Staff training
- Maximo administration
- Records management
- Performance plan management
- Electronic document access
- Manual updates and publication
- Management reporting
- Communications and correspondence oversight
- Emergency management program coordination
- Quagga mussel control/monitoring

The Administration division is home to the Director of O&M as well as six other members who provide administrative services within the department. Through organized central support, staff fulfills the administrative needs of the Operations and Maintenance department at the Fred A. Heilbron (Escondido) Operations Center.
Administrative division staff is heavily involved in all aspects of budget management including development, expenditure forecasting, cost analysis, and account reconciliation. Closely tied to this effort and equally involving are the efforts of staff in scope and schedule development for procurement, other procurement and proposal processing, contract administration, payment processing, and contract filing.

In addition, to these and other general administrative duties, staff coordinates and supports Water Authority-wide efforts in emergency management as well as member agency coordination for emergency preparedness. This effort includes monitoring for compliance with the National Incident Management System (NIMS) and coordinating an annual update to the Member Agency Communication System (MACS), which includes communication protocol, member agency contacts and sharing assets. Training is also a large part of this program and is conducted internally and in conjunction with other regional agencies on an annual basis. Division staff represents the agency at the County EOC and participate in the County Unified Disaster Council’s Operations group as well as other regional preparedness groups.

Quagga mussel control and monitoring has been a part of the division’s role since 2007. Primarily this role is one of coordination and planning in response to emerging regulatory issues and consolidating response options applicable to San Diego county and the Water Authority’s system. Operations, Water Quality, and Maintenance staff also participate heavily in this effort.
Major Objectives – FY 2010-2011

- Provide continued support for the San Diego Region Water/Wastewater Internship Program in order to increase the pool of skilled water and wastewater system operators in the region. *This program’s management was transferred to Human resources in 2009.*

- Complete annual updates for the Member Agency Communication System, O&M Policies and Procedures, Water Authority strategic and business plans, and Department operating plans.

- Maintain a NIMS/SEMS compliant Integrated Contingency Plan (ICP) to encompass all aspects of security and emergency response at Water Authority facilities.

- Conduct at least one emergency response exercise focused on interagency coordination in conjunction with annual County exercise.

- Participate in national, regional, and member agency meetings and working groups to further interagency communication.

- Maintain and administer the Maximo computerized maintenance management system, including training, modifications, and reporting for the department.

- Complete a Water Authority quagga mussel response and control plan including budget implications of proposed measures.

![Budget Chart](image)
SYSTEM OPERATIONS
(432)

Monitor and operate the delivery system at a high level of reliability and meet appropriate federal, state, and local environmental health, safety, and training requirements.

The System Operations section controls and monitors the flow of water in the water delivery system and consists of two divisions: Control Room Operations and Field Operations.

The water delivery system is monitored and controlled 24-hours a day, 7-days a week from the Control Room in Escondido. Metropolitan Water District of Southern California (MWD) controls water flows into the water delivery system from the Robert A. Skinner Filtration Plant Operations Center. Control Room operators request flow changes three times a day or at any time in the event of an emergency. Operators regulate water flow requests from Member Agencies through a computerized Supervisory Control and Data Acquisition system (SCADA), which displays each pipeline’s current flow, requested flows, critical pipeline flows, meter and valve information, pipeline pressures, and data communication. Flow changes are carefully coordinated to balance the system and maintain proper flows to the terminal service connections. The SCADA system warns operators of potential problems with alarm displays, audible warning, and may be monitored and controlled from select remote locations.

The Field Operations division provides routine maintenance and calibration of a variety of equipment and is responsible for monitoring and operating pump stations, pressure control stations, flow control facilities, and hydroelectric plants. Field Operators perform a variety of duties including: valve changes necessary to meet system requirements, power plant and pump station control and adjustment, regulatory inspections of facilities, sampling for water quality, and responding to Member Agency requests for service. In addition, they are responsible for managing the Olivenhain Reservoir, monitoring the water quality parameters of the lake, and managing the Olivenhain Dam and related facilities.

Bi-monthly meetings are held with the heads of the Member Agency Operation Departments to exchange information pertaining to operations and maintenance issues.

All operators in this section are certified for water distribution and water treatment by the California Department of Health Services.
Major Objectives – FY 2010-2011

- Integrate new facilities into the SCADA system as placed into operation.
- Maintain a three-year shutdown schedule to aid in effective resource loading.
- Coordinate and perform two aqueduct shutdowns per year in support of the APP, CIP, and preventive maintenance programs.
- Provide technical oversight, as needed, for CIP and ESP projects.
- Continue development and updating of written operational policies, practices, and procedures.
- Conduct monthly Water Authority member agency meetings and attend MWD member agency meetings focusing on system operation issues and topics.
- Coordinate water demand management strategies with member agencies and regional agencies.
- Continue routine aqueduct operations in support of customer service.
- Expand water quality sampling program at the Olivenhain Reservoir in coordination with the City of San Diego’s program at Lake Hodges to track exchange effects on both bodies of water when the Hodges Pumped Storage Project goes on-line.
- Perform water quality sampling as required by state regulatory agencies.
- Assist with implementation of Maximo 6.2.
- Develop annual regional treatment plant shutdown and expansion schedules with contingency plans for expansion delays.
- Assist development of member agency website for operational and water resource data.

![Budget Graph]

2010 – 2011 Operations and Maintenance Department

2010 Budget = 2680K  
2011 Budget = 3514K
TECHNICAL SERVICES
(433)

Ensure reliable, efficient operation, maintenance, and repair of the electrical/electronic components of the water delivery system.

The Technical Services section maintains the electrical, electronic, instrumentation, SCADA and communication systems, and electrical/electronic equipment associated with the water delivery system. Routine work consists of updating and maintaining the Aqueduct Control System (ACS), low and medium-voltage power equipment, emergency generators, data communication systems; conducting daily inspections as well as calibrating flow-metering instruments. Technical Services section provides design and construction support on Capital Improvement Projects that have an electrical/electronic component and technical assistance to the Aqueduct Protection Program.

Active flow control meters are checked at least two times a year to verify calibration and whenever requested by Member Agencies.

The Technical Services section is also responsible for a new project that will upgrade the data communication system. When completed, the radio based system will allow expanded use of security systems to ensure a safe and reliable water supply. These security measures include remote video surveillance capability and a card access system that is used to monitor and control access to all Water Authority buildings.
Major Objectives – FY 2010-2011

- Complete automation of major pumping and hydroelectric facilities.
- Expand use of fiber optic communication system in flow control facilities.
- Provide technical oversight as needed for CIP and ESP projects.
- Perform start-up and commissioning tests, and integrate the San Vicente Pump Station and Surge Control Facility with the aqueduct delivery system.
- Perform start-up and commissioning tests, and integrate the Hodges Pumped Storage Project with the routine operation of the Olivenhain Reservoir.
- Manage and maintain the aqueduct control system (ACS).
- Manage access and alarm security related activities.
- Complete the upgrade of the data communications system including microwave towers high performance antennas, and microwave radios.

![Budget Chart](chart.png)
Maintain and repair the delivery system, right-of-way, and associated properties to ensure a high level of readiness and reliability.

The System Maintenance section consists of three groups. Mechanical maintenance is responsible for valves, piping, pumps, and motors. Facilities maintenance is responsible for the buildings, grounds, and roads. Rotating Equipment is a newly created section that focuses on the maintenance of the soon to be completed Lake Hodges Pump Storage project and the San Vicente Pump Station. Together, these three teams maintain over 1600 structures, 100 flow control facilities, hydroelectric and pumping facilities, and 250 miles of dirt and asphalt access roads. Responsibilities include preventive, predictive, and corrective maintenance on the Water Authority’s Aqueduct. Preventive maintenance includes routine scheduled work required to keep equipment, buildings, and grounds in a standard operating condition and preserve the life of facilities. Predictive maintenance includes testing and analysis of equipment parameters as an indicator of required future maintenance. Corrective maintenance is performed to return equipment and structures to the standard operating condition following a breakdown or failure. In addition to preventive, predictive, and corrective maintenance, the System Maintenance section provides the following services:

- Welding, fabrication, and construction
- Facility/structure repair and upgrades
- Pipeline repairs
- Facility maintenance and painting
- Grading of access roads

- Culvert maintenance
- ROW vegetation maintenance
- ROW and fee property maintenance
- Heavy equipment operations
- Pipeline Shutdown services

Mechanical Maintenance

Facilities Maintenance

Rotating Equipment
Major Objectives – FY 2010-2011

- Perform preventative, predictive, and corrective maintenance on Water Authority Assets.
- Continue system wide physical and video security improvements.
- Conduct two aqueduct shutdowns in support of Aqueduct Protection Program, Capital Improvement Program, and preventative maintenance.
- Manage CIP projects and CIP/ESP liaison services in support of major maintenance and CIP projects.
- Complete equipment inventory for all flow control facilities as necessary for Maximo 6.2 implementation.
- Hold annual maintenance plan and schedule development meetings with stakeholders (member agencies, regulatory agencies and the Water Authority’s department agencies).
FLEET SERVICES
(435)

Establish and maintain a safe and reliable Water Authority vehicle fleet and ensure compliance with federal, state and local laws and regulations.

The safe and reliable operation of the Water Authority’s fleet of vehicles and construction equipment is the responsibility of the Shop section.

The Water Authority’s fleet travels over 1,000,000 miles per year, averaging 4,273 miles per workday. The average life of a vehicle is 7 years. Vehicles and equipment maintained include 30 passenger vehicles, 37 light duty trucks, 31 medium and heavy duty trucks, 9 heavy equipment, 28 construction equipment, 17 bridge cranes, 9 mobile cranes, and numerous forklifts, welders, compressors, pumps, generators, electrical and pneumatic tools.

Some of the tasks performed by Shop staff include:

- Acquisition of new vehicles
- Outfitting of new vehicles
- Vehicle maintenance and repair
- Vehicle disposal
- Custom equipment design and fabrication
- Roadside assistance and repairs
- Vehicle modifications
- Permits and certifications
- Facility crane maintenance, repair, inspection, and certification
- Fuel card management system
- Support for shutdown projects

The Fleet Maintenance section uses a computerized maintenance management system, Maximo, for managing fleet and facility maintenance tasks, and a vehicle manufacturer’s information system, Alldata, for information on current vehicle and equipment repair and diagnostic procedures, technical service bulletins, and detailed vehicle and equipment schematics.
Major Objectives – FY 2010-2011

- Complete all required preventive and corrective maintenance on Water Authority vehicles.
- Complete required bridge crane inspections.
- Implement the new diesel vehicle regulations.
- Complete required mobile crane inspections.
OPERATIONAL PLANNING/AQUEDUCT PROTECTION PROGRAM
(438)

Ensure the safe and reliable delivery of water through operational planning functions, asset management, and management of operational agreements to ensure a high level of integrity, confidence and reliability.

The Operation Planning/Aqueduct Protection Program (APP) section manages the efficient delivery of water through three groups: Operational Planning, Aqueduct Protection Program (APP) and Agency Agreements. Operational Planning staff performs short term planning functions that impact the delivery of water, act as liaison to Water Resources and Engineering for long term planning and CIP projects respectively, generates project delivery plans for new projects, and develop system models to aid in the operation of the water delivery system during both normal and ESP scenarios. APP conducts scheduled inspections and condition assessments, performs annual corrosion surveys and cathodic protection system monitoring, manages the acoustic fiber optic monitoring system on unlined prestressed concrete cylinder pipelines (PCCP), and provides data to support the asset management model for the timely replacement of the infrastructure. Operational Agreements manages all agreements that are related to the delivery of water through the water delivery system. The services provided by the Operational Planning/APP section include:

- Asset Management
- Pipeline internal inspection/shutdowns
- Cathodic protection system management
- Corrosion monitoring system inspection
- Project Delivery Plans
- Member agency contracts
- System models (including ESP)
- Short term facility planning
- Acoustic Fiber Optic management
- Aqueduct Operating Plan

APP is made up of two Senior Engineering Technicians. Three contract consultants provide corrosion engineering and corrosion technician services. The Operational Planning group is made up of a Principal Water Resources Specialist, a Sr. Water Resources Specialist, and a Water Resources Specialist. Operational Agreements is managed by a Management Analyst. Electrical Engineering services are provided to the group by a contract consultant.
Major Objectives – FY 2010-2011

- Manage the Acoustic Fiber Optic Monitoring System
- Develop Asset Management Funding Policy
- Mitigate corrosion on pipelines and facilities
- Perform four internal pipeline inspections of 34 miles of pipe (27.5 miles of PCCP).
- Review and create a management plan for interagency agreements that relate to the Water Authority’s water delivery system.
- Install acoustical fiber optic monitoring on 3.5 miles of prestressed concrete cylinder pipelines (Pipelines 3 and 4 between Miramar Hill and the City of San Diego’s Miramar Water Treatment Plant.)

- Develop and present annual Aqueduct Operating Plan
- Update the Pipeline Service Life Pipeline Decay Index
- Coordinate with Engineering on activating new CIP projects

![438 Budget chart]

- **2010 Budget** = 2055K
- **2011 Budget** = 2252K
WATER QUALITY

(439)

Ensure high quality and reliable treated water is produced and supplied to meet member agencies demands through management of the Twin Oaks Valley Water Treatment Plant. Ensure untreated water from Olivenhain Reservoir meets water quality requirements for delivery to member agencies.

The water quality section focuses on ensuring that high quality and reliable treated water is produced and supplied to meet member agencies demands, and ensures untreated water delivered from Olivenhain Reservoir meets member agencies water quality requirements.

Primary functions of this section include:

- Management of the Twin Oaks Valley Water Treatment Plant Service Contract
- Providing source water and conveyance system water quality management
- Conducting necessary monitoring (sampling and analysis), database management, and regulatory reporting
- Interfacing with the regulatory agencies, member agencies, and Metropolitan Water District to address water quality issues
- Manage aesthetic water quality complaints and complaint resolution program
- Monitor emerging contaminants and water quality regulation updates
- Identify capital modifications required to maintain water quality objectives

Twin Oaks Valley Water Treatment Plant
Major Objectives – FY 2010-2011

- Maximize production of high quality treated water from TOVWTP.
- Develop water quality monitoring plan for Olivenhain Reservoir to support management of the Lake Hodges Reservoir Regulating Manual.