

4.0 Water Operations

4.1 Facilities

4.1.1 San Diego County Water Authority

The Authority purchases water from Metropolitan and delivers it to member agencies through two aqueducts containing 274 miles of five large-diameter pipelines. The predominantly gravity-fed system follows a north-south alignment with a combined capacity of the Authority's pipelines of 1,260 cubic feet per second (cfs). The water is then delivered to retail customers via 7,800 plus miles of eight-inch or greater pipeline in member agency distribution systems. Neither the Authority nor any member agencies have any lined or unlined canals, drains or tailwater and spill recovery systems.

The Authority does not own any reservoirs; however, Authority member agencies own 24 surface reservoirs with a combined capacity of 571,000 AF and an annual yield of 85,600 AF. Eight of the reservoirs are connected to the aqueducts. Additionally, the Authority's 23 member agencies have 348 covered reservoirs to store 4,000 AF of potable water and 120 AF of reclaimed water. The Emergency Storage Project (ESP) currently under construction now will provide additional storage of water for use in the event of a declared water emergency. See Section 4.1.4 for additional detail. **Table 6-1** lists the 16 largest reservoirs in the county and **Figure 6-1** shows their locations.

4.1.2 Changes to Service Area

No significant changes are expected in the region in the future that might affect operations. The population is growing at the rate of 2 percent per year primarily as a result of natural increase. Agriculture is expected to remain strong with the continued trend toward smaller operations producing high-value products not subject to foreign competition. The Capital Improvements Program (CIP) and the Emergency Storage Project, both currently under construction, address the issues of increasing demand and emergency demand.

4.1.3 Capital Improvements Program

In 1989, the Authority embarked upon its Capital Improvements Program to plan and to implement projects necessary to meet the region's water needs to 2010. The goals of the program are to:

- Increase pipeline capacity to meet present and future demands, particularly during times of peak usage;
- Eliminate "bottlenecks" in the existing pipeline system;
- Increase reliability where water delivery is dependent upon a single pipeline; and
- Increase operational flexibility to make pipeline maintenance easier.

Total costs of all active and future CIP work, including ESP, is expected to be \$1.18 billion.

4.1.4 Emergency Storage Project

Included in the CIP is the ESP, which is a system of reservoirs, pipelines and other facilities that will work together to store and move water around the county during emergencies. Currently, imported water from Metropolitan is used to meet 75 to 95 percent of the region's demand. With pipelines transporting this water crossing several major fault lines, an earthquake or other disaster could interrupt the Authority's imported water supply for up to six months. The ESP will connect existing reservoirs, assuring that water flows throughout the system in the event of a disaster. The project will also provide an additional 90,100 AF of stored water. Combined with member agencies' local water supplies available for emergency use, additional capacity is projected to meet emergency needs to 2030.

The facilities that make up the ESP will be located throughout San Diego County. They will be constructed in phases and include:

- Olivenhain Dam, a new 318-foot high dam and 24,000 AF reservoir near Lake Hodges;
- New pipelines to connect Olivenhain Dam to the Authority's Second Aqueduct and to Lake Hodges;
- Raising San Vicente Dam by 54 feet to provide room to store an additional 52,100 AF;
- A new pipeline to connect San Vicente Reservoir to the Second Aqueduct; and
- Additional pump stations and other facilities to move water within the system to meet emergency needs.

All phases of the ESP are estimated to cost \$827 million and are expected to be completed by 2010.

4.1.5 Valley Center Municipal Water District

Valley Center MWD purchases water from the Authority, a member agency of Metropolitan, and is entirely dependent upon imported water delivered by gravity feed via seven connections to the First and Second Aqueducts to Valley Center MWD's system of 265 miles of closed mains and 7,334 meters. The treated water is then delivered on demand to customers. The service area has no lined or unlined canals, drains, tailwater or spill recovery devices. Valley Center MWD has only one open reservoir with a capacity of 1,612 AF of non-potable water. Forty-one closed reservoirs with a capacity of 416 AF of treated water ensure water supplies to retail customers.

No major changes in the Valley Center area are expected in the future. The topography, rural character, lack of sewer capacity, and development trends for large residential lots will ensure that Valley Center will grow at a slow pace and maintain its low density, rural environment for the foreseeable future. Zoning changes are expected to support the gradual transition from predominantly agricultural to agricultural/residential mix.

4.2 Operating Rules

4.2.1 San Diego County Water Authority

Member agencies may place orders for water in accordance with Administrative Code, Section 16.3, attached in **Appendix D**. Member agencies request changes in flow rate at 7:00 am and Authority staff request changes in aqueduct flows from Metropolitan at 8:00 am each working day. Emergency flow adjustments are made as soon as possible

while request for flow changes made at other times will be accomplished as soon as practical.

Barring a prolonged drought or catastrophic failure of Metropolitan or Authority aqueducts, there are no regulatory or operational restrictions on water sources that might cause operational constraints or affect water delivery operations to member agencies. All water is metered and supplied on demand. During an emergency, the Authority may determine how much water an agency will receive based primarily on the total amount of deliveries from Metropolitan, but it is the responsibility of each member agency to allocate water to its respective retail customers in an equitable manner.

4.2.2 Valley Center Municipal Water District

All water to Valley Center MWD customers is metered and delivered on demand. No operating rules for delivery of water to retail customers exists at this time. No regulatory or operational restrictions on delivery are in effect except in the event of a prolonged drought or catastrophic failure of Metropolitan or Authority aqueducts. The Authority's CIP and ESP address the mechanical needs of the district during emergencies. Metropolitan's IAWP and the Authority's SAWR place limits on water deliveries during emergencies but how water is allocated to individual customers, M&I or agricultural, during an emergency is the responsibility of the member agency.

In early 1999, SB 314 was enacted giving agricultural customers paying full M&I rates parity with other commercial customers. M&I agricultural customers are not subject to the drought and emergency cutbacks as are IAWP customers. Water district managers report no dramatic changes in the billing classification of agricultural customers. Managers conjecture that M&I agricultural customers probably were operating under this assumption already, but SB 314 provides legal support for the assumption.

4.3 Water Delivery Measurement

4.3.1 San Diego County Water Authority

Regulations regarding Authority meters are set forth in Section 16.2 of the Administrative Code attached in **Appendix D**. All water delivered by the Authority is metered by venturi meters and a few sonic meters in 1,000 cubic foot units. Although the Administrative Code requires annual calibration of meters, all meters are calibrated on a quarterly basis with general maintenance also performed at this time. The Administrative Code requires meters to have an accuracy of plus or minus 2 percent; however, overall accuracy during FY 2000 was plus or minus 0.6 percent. Gains and losses in the system are calculated during each monthly billing cycle with typical losses and gains of less than two percent.

4.3.2 Valley Center Municipal Water District

Procedures for reading, calibration and maintenance of meters in Valley Center MWD are determined by the Board of Directors and the Director of Operations. The turbo meters along with a few sealed registered meters are read and customers are billed per hundred cubic feet on a monthly basis. Meters with a high volume usage are tested one to two times per year using a portable, in-field test bench. Every three years, 1 1/2" to 3" meters are tested and exchanged if not 98.5 percent accurate. Three-quarter inch meters are exchanged after every 900,000 cubic feet, and 1.5 million cubic feet for one-inch meters. Routine maintenance is performed as needed in conjunction with monthly reading. Diligent maintenance results in an annual system water loss calculated to be about 5 percent.

4.4 Water Rate Schedules

4.4.1 San Diego County Water Authority

Billing rates and procedures are stated in Article 15, Water Rates and Charges, of the Authority's Administrative Code along with treated and untreated water rates in **Appendix D**. The Authority reads all meters and bills the member agencies on a monthly basis at a uniform rate per acre-foot. Other charges, not based upon the quantity of water, provide a source of fixed income to the Authority or are Metropolitan charges that the Authority passes through to member agencies. These charges include the New Demand Charge, Readiness-to-Serve Charge, Infrastructure Access Charge and others that apply to specific and limited circumstances.

4.4.2 Valley Center Municipal Water District

The Schedule of Rates for Valley Center MWD is attached in **Appendix E**. All water is charged at a uniform block rate per hundred cubic feet (hcf) with meters read and customers billed on a monthly basis. Additionally, water delivered in Zones One through Ten is charged a pumping rate based upon the number of feet of lift. Other charges such as Water Service Charge and Infrastructure Access Charge are also applied. Exclusive of Pumping Rates and other service charges, the agricultural rate is \$1.0769 per hcf or \$469.10 per AF.

4.5 Water Shortage Allocation Policy

4.5.1 San Diego County Water Authority

Water supply reliability is a major goal of the Authority. The County Water Authority Act states that the Authority shall provide water to meet the needs of its member agencies and in times of shortage shall allocate water for the greatest public interest and benefit. San Diego's arid climate, high reliance on imported water from Metropolitan, and location at the end of the pipeline leave the area vulnerable to water emergencies arising from earthquake damage to aqueducts or from droughts in the Sierra or Colorado River basin. To help eliminate potential shortages, the Authority has taken steps to diversify supplies and reduce dependence upon imported water. This is outlined in the Authority's 2000 Urban Water Management Plan.

The Authority is implementing the CIP and ESP to decrease as much as possible the economic damage and disruption of daily life resulting from a water emergency. Section 15.3.4 (c) Discounted Interim Agricultural Water Rate in **Appendix D** states

how a reduction in deliveries shall be passed on to member agencies. Acceptance of the discounted (IAWP and SAWR) rate is agreement that Metropolitan can reduce interim agricultural water deliveries up to 30 percent before any reductions of firm deliveries and by a greater percentage if mandatory reduction targets are imposed for firm deliveries. The Authority passes through any reductions in delivery imposed by Metropolitan on to the member agencies.

Section 15.3.6 (d) Special Agricultural Water Rate, **Appendix D**, and the SAWR Handbook, **Appendix F**, state the details of how a reduction in deliveries to the member agencies shall be implemented. Under the SAWR program, agricultural water deliveries to the member agencies are subject to a level of service reduction at double the rate of system-wide reductions, up to a maximum of 90 percent. It is the responsibility of each member agency to determine exactly how water delivery reductions are implemented among its retail customers.

4.5.2 Valley Center Municipal Water District

Valley Center MWD is dependent upon the Authority for virtually all water served in the district and thus is particularly at risk for water emergencies from drought or catastrophic pipeline failure. To address emergency water issues, the Valley Center MWD Board adopted Article 235 Emergency Water Management of the Administrative Code, attached in **Appendix G**, covering measures for all classes of customers. Specific requirements for agricultural customers will be set by Valley Center MWD based upon the severity and estimated duration of the emergency.