



Water flows from Sedimentation Basin No. 3 at the F.E. Weymouth Water Treatment Plant, as solids are skimmed from the surface prior to being filtered. Filter Building No. 1 is in the background.

Water System Operations

The Water System Operations Group treats, conveys and distributes water throughout Metropolitan's 5,200-square-mile service area. WSO ensures excellent water quality for Southern California that meets all state and federal drinking water requirements, and it operates and maintains Metropolitan's five treatment plants with a combined operational capacity of more than 2.5 billion gallons of water per day. WSO also manages, operates and maintains Metropolitan's water and power systems; balances demand and supplies; oversees security; provides technical advice and support to member agencies, customers and other entities; provides machine and fabrication services to support MWD infrastructure; runs Metropolitan's apprenticeship program; delivers training to provide an effective and safe work environment; assists in planning design and construction of new facilities, and responds to emergencies to restore service in the shortest time possible.

Water Treatment

Metropolitan operates five water treatment plants to treat and disinfect water from Northern California and the Colorado River. Typically the F.E. Weymouth Water Treatment Plant serves parts of Los Angeles County, the San Gabriel Valley and areas of Orange County. The Robert B. Diemer Water Treatment Plant also provides treated water to areas of Orange County and coastal Los Angeles. The Joseph Jensen Water Treatment Plant supplements local water supplies in the San Fernando Valley, Ventura County and Central Los Angeles. The Robert A. Skinner Water Treatment Plant and Lake Skinner serve western Riverside County and Moreno Valley and supply approximately 95 percent of San Diego's treated and raw water needs. Finally, the Henry J. Mills Water Treatment Plant also serves western Riverside County and Moreno Valley.

Water treatment staff continued to adjust treatment strategies to provide maximum system flexibility and high-quality water. The ozone processes at Jensen and Mills proved effective in minimizing disinfection byproducts while controlling taste and odors from the source water reservoirs. New solids-handling facilities became operational at Weymouth and Diemer, which improved their ability to process large volumes of treatment residuals until ozone facilities can be completed.

Construction for ozone facilities continued throughout the year at Skinner and Diemer. New water treatment processes came on-line at the Skinner treatment plant at the end of the fiscal year, which increased treated water deliveries to the Skinner area by 110 million gallons per day.

Finally, emergency power improvements were completed to better protect the water treatment plants from unstable retail power supplies during peak summer months. Examples of the electrical improvements included installation of monitors and capacitor banks by the electric utility; increasing the run-time of the emergency generators following the initial power problem; adding secondary starting systems to the emergency generators; and adjusting the electronic controls of the generators so that they were less sensitive to momentary power blips. During this fiscal year, more than \$331 million has been invested in upgrading, expanding and refurbishing the five water treatment plants.

Water Quality

Legislation and Regulations

Metropolitan began compliance with the USEPA's Long Term 2 Enhanced Surface Water Treatment Rule in July 2006. The LT2 Enhanced Surface Water Treatment Rule required systems to monitor their source water, determine the average *Cryptosporidium* concentration, and use those results to decide if they must provide additional treatment. The Stage 2 Disinfectants/Disinfection Byproducts (D/DBP) Rule was promulgated in January 2006 and Metropolitan began the required initial evaluations for future compliance.

The discovery of quagga mussels in the Colorado River in January 2007 led to the introduction of AB 1683. The bill's requirements included: prohibiting possession or transport of Dreissenid mussels in California; requiring inspection and impoundment of boats that may carry these mussels; and development of a control plan to prevent the spread of mussels to uninfested bodies of water.

Water Quality Monitoring

Water quality staff performed 315,000 analytical tests using 200 methods on 47,000 samples collected from Metropolitan's service area and source waters during this period.

Compliance

Chemical/Physical

Staff monitored inorganic and organic compounds, physical parameters, and other constituents in Metropolitan's source waters and treatment plant effluent. For example, Table 3-1 shows the sample locations for organic compounds, while Tables 3-2 through 3-6 show monitoring for other materials.

TABLE 3-1
SAMPLE LOCATIONS FOR ORGANIC COMPOUNDS
Fiscal Year 2006/07

| Source Waters | Treated Waters |
|--------------------------------------|----------------------------|
| Devil Canyon Afterbay | Diemer Plant Effluent |
| Diamond Valley Lake | Jensen Plant Effluent |
| (West Basin Center/12-meter depth) | Mills Plant Effluent |
| Jensen Plant Influent | Skinner Reservoir Effluent |
| Foothill Pressure Control Structure | Weymouth Plant Effluent |
| Lake Havasu Intake (12-meter depth) | |
| Lake Mathews Headworks | |
| Lake Perris | |
| (near outlet tower at 9-meter depth) | |
| Lake Skinner Outlet Conduit | |
| San Jacinto Tunnel | |

Total Dissolved Solids

Figure 3-1 shows the total dissolved solids (TDS) levels in three source waters, while Figure 3-2 shows TDS levels as the water leaves Metropolitan's five water treatment plants. TDS in Colorado River water is the highest among the three sources, due to the geology in the watershed. The amount of precipitation affects the concentration of TDS, with the levels higher in drier years. The high volume of river flow and multiple reservoirs along the Colorado River attenuate TDS fluctuations.

TABLE 3-2
TRACE METALS IN METROPOLITAN WATER SUPPLIES
 Fiscal Year 2006/07 Averages (µg/L)

| Metal | SOURCE WATERS | | | | | | | | | | | | | | | | | | |
|------------|---------------------------------|-------------------------|----------------------------------|--------------------------------|-----------------------|---|-------------------------------|---------------------------------|---------------------------------|---------------|-----------------|---------------|---------------------|--------------------------------|--------------------------|--------------|--------------|----------------------------------|-------------|
| | Colorado River Water | | | State Project Water | | | | | | Blended Water | | | | | TREATMENT PLANT EFFLUENT | | | | |
| | Maximum Contaminant Level (MCL) | Minimum Reporting Level | Lake Havasu near Whitsett Intake | San Jacinto Tunnel West Portal | Lake Mathews Effluent | Castaic Lake at Foothill Feeder Control Structure | Castaic Lake at Jensen Inflow | Silverwood Lake at Devil Canyon | Silverwood Lake at Mills Inflow | Lake Perris | Weymouth Inflow | Diemer Inflow | Diamond Valley Lake | Lake Skinner at Outlet Conduit | Weymouth Plant | Diemer Plant | Jensen Plant | Skinner Plant Reservoir Effluent | Mills Plant |
| Aluminum | 1000 (200*) | 10 | 39 | 31 | 42 | 52 | 43 | 58 | 49 | 35 | 45 | 59 | 16 | 32 | 36 | 44 | 84 | ND | 70 |
| Antimony | 6 | 2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Arsenic | 10** | 0.5 | 2.5 | 2.6 | 2.4 | 1.7 | 1.8 | 2.0 | 2.0 | 2.2 | 2.1 | 2.2 | 1.7 | 2.2 | 0.8 | 0.9 | 1.4 | ND | 1.3 |
| Barium | 1000 | 5 | 159 | 150 | 150 | 29 | 29 | 32 | 33 | 52 | 71 | 89 | 65 | 92 | 66 | 87 | 29 | 79 | 33 |
| Beryllium | 4 | 0.5 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Cadmium | 5 | 0.1 | ND | 0.2 | ND | ND | ND | ND | ND | 0.2 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chromium | 50 | 1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chromium 6 | -- | 0.03 | ND | ND | ND | 0.05 | 0.06 | 0.08 | 0.10 | ND | 0.07 | 0.06 | 0.04 | ND | 0.09 | 0.09 | 0.07 | 0.09 | 0.11 |
| Copper | 1300# (1000*) | 10 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Iron | 300* | 50 | ND | ND | ND | ND | ND | ND | ND | 50 | 50 | 60 | ND | ND | ND | ND | ND | ND | ND |
| Lead | 15# | 1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Lithium | -- | 10 | 46 | 44 | 44 | ND | ND | ND | ND | ND | 17 | 22 | 20 | 22 | 16 | 22 | ND | 20 | ND |
| Manganese | 50* | 5 | ND | ND | ND | ND | ND | 17 | 10 | 25 | 18 | 13 | 6 | 9 | ND | ND | ND | ND | ND |
| Mercury | 2 | 0.2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Molybdenum | -- | 2 | 6 | 7 | 7 | 2 | 2 | ND | ND | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 3 | 4 | ND |
| Nickel | 100 | 2 | 3 | 3 | 3 | ND | ND | ND | ND | 2 | ND | ND | 5 | 3 | ND | ND | ND | 3 | ND |
| Selenium | 50 | 5 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Silver | 100* | 5 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Strontium | -- | 20 | 1180 | 1160 | 1150 | 239 | 242 | 191 | 194 | 244 | 496 | 648 | 608 | 671 | 484 | 627 | 243 | 621 | 196 |
| Thallium | 2 | 1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vanadium | 50## | 1 | 2.4 | 2.3 | 3.0 | 2.5 | 2.6 | 3.7 | 3.7 | 4.3 | 3.5 | 3.6 | 1.9 | 3.2 | 2.9 | 3.1 | 2.5 | ND | 3.5 |
| Zinc | 5000* | 20 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

Notes:

* Secondary standard based on consumer acceptance rather than health considerations.

** Federal MCL was changed from 50 µg/L to 10 µg/L in January 2006.

Action level. The MCL for lead has been replaced with a treatment technique requiring agencies to optimize corrosion control treatment when the action level is exceeded in more than 10 percent of the samples collected at consumers' taps. There is a similar treatment technique requirement for copper, in addition to the secondary

Notification level: health-based advisory level.

ND = None Detected

TABLE 3-3
TRIENNIAL RADIOLOGICAL COMPLIANCE MONITORING REPORT¹
 Average Values of Four Consecutive Quarters from July 2005 to April 2006
 Results in picoCuries per Liter (pCi/L)

| LOCATION | GROSS ALPHA | GROSS BETA | RADIUM226 | RADIUM228 | COMBINED RADIUM | STRONTIUM90 | TRITIUM | TOTAL URANIUM | RADON222 |
|--------------------------------|-----------------|------------|-----------|-----------|-----------------|-------------|---------|---------------|---------------|
| Lake Havasu Intake | ND ² | ND | ND | ND | ND | ND | ND | 3.5 | ND |
| San Jacinto Tunnel West Portal | 4.2 | 4.8 | ND | ND | ND | ND | ND | 3.8 | ND |
| Lake Mathews Headworks | ND | ND | ND | ND | ND | ND | ND | 3.7 | ND |
| Lake Mathews Inlet | 5.1 | ND | ND | ND | ND | ND | ND | 3.8 | ND |
| Foothill Control Structure | ND | ND | ND | ND | ND | ND | ND | 1.4 | ND |
| Devil Canyon Afterbay | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Lake Perris | ND | ND | ND | ND | ND | ND | ND | 1.4 | ND |
| Diamond Valley Lake | 4.1 | ND | ND | ND | ND | ND | ND | 2.2 | ND |
| Lake Skinner Outlet Conduit | 3.5 | ND | ND | ND | ND | ND | ND | 2.5 | ND |
| Weymouth Plant Influent | ND | ND | ND | ND | ND | ND | ND | 1.8 | ND |
| Weymouth Plant Effluent | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Diemer Plant Influent | 3.0 | ND | ND | ND | ND | ND | ND | 1.8 | ND |
| Diemer Plant Effluent | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Jensen Plant Influent | ND | ND | ND | ND | ND | ND | ND | 1.0 | ND |
| Jensen Plant Effluent | ND | ND | ND | ND | ND | ND | ND | 1.4 | ND |
| Mills Plant Influent | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Mills Plant Effluent | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Skinner Plant 1 Influent | ND | ND | ND | ND | ND | ND | ND | 2.4 | ND |
| Skinner Plant 2 Influent | 3.7 | ND | ND | ND | ND | ND | ND | 2.7 | ND |
| Skinner Reservoir Effluent | ND | ND | ND | ND | ND | ND | ND | 2.3 | ND |
| MCL ³ | 15* | 50 | | | 5** | 8 | 20000 | 20 | 300 (4000)*** |
| DLR ⁴ | 3 | 4 | 1 | 1 | 1 | 2 | 1000 | 1 | 100 |

Notes:

¹The Radionuclides Rule requires four consecutive quarters of monitoring every three years.

²ND: Not detected. All results less than DLR were reported as ND.

³MCL: Maximum Contaminant Level

⁴DLR: Detection Limits for Purposes of Reporting

*Not including uranium and radon.

**Standard is for radium-226 and radium-228 combined.

***Proposed standard. An alternative standard of 4000 pCi/L is also proposed if the state has a U.S. Environmental Protection Agency approved multi-media mitigation program to reduce radon levels in indoor air.

TABLE 3-4
GENERAL MINERAL AND PHYSICAL ANALYSIS OF METROPOLITAN'S WATER SUPPLIES
 Fiscal Year 2006/07 Averages

| CONSTITUENTS | SYMBOLS AND UNITS | SOURCE WATERS | | | | | | | | TREATMENT PLANT EFFLUENT | | | | |
|------------------------------|-----------------------|----------------------------------|--------------------------------|--------------|---------------------------------|----------------------------------|-------------|---------------------|--------------------------------|--------------------------|--------------|--------------|---------------|-------------|
| | | LAKE HAVASU NEAR WHITSETT INTAKE | SAN JACINTO TUNNEL WEST PORTAL | LAKE MATHEWS | CASTAIC LAKE AT JENSEN INFLUENT | SILVER-WOOD LAKE AT DEVIL CANYON | LAKE PERRIS | DIAMOND VALLEY LAKE | LAKE SKINNER AT OUTLET CONDUIT | WEY-MOUTH PLANT | DIEMER PLANT | JENSEN PLANT | SKINNER PLANT | MILLS PLANT |
| SILICA | SiO ₂ mg/L | 7.6 | 7.9 | 8.1 | 13.2 | 12.9 | 15.2 | 10.6 | 10.6 | 11.4 | 10.5 | 12.6 | 10.1 | 12.4 |
| CALCIUM | Ca mg/L | 78 | 78 | 75 | 25 | 18 | 25 | 50 | 50 | 33 | 40 | 25 | 50 | 19 |
| MAGNESIUM | Mg mg/L | 31 | 31 | 32 | 12 | 11 | 15 | 21 | 21 | 16 | 19 | 12 | 21 | 11 |
| SODIUM | Na mg/L | 100 | 101 | 106 | 39 | 41 | 58 | 71 | 72 | 67 | 72 | 44 | 76 | 49 |
| POTASSIUM | K mg/L | 5.1 | 5.1 | 5.3 | 2.5 | 2.4 | 3.3 | 4.1 | 3.9 | 3.1 | 3.5 | 2.6 | 3.9 | 2.5 |
| CARBONATE | CO ₃ mg/L | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| BICARBONATE | HCO ₃ mg/L | 163 | 162 | 152 | 94 | 86 | 110 | 126 | 128 | 95 | 103 | 98 | 115 | 79 |
| SULFATE | SO ₄ mg/L | 267 | 267 | 277 | 51 | 30 | 48 | 153 | 156 | 117 | 140 | 57 | 160 | 42 |
| CHLORIDE | Cl mg/L | 94 | 95 | 99 | 47 | 55 | 80 | 75 | 75 | 69 | 76 | 50 | 84 | 61 |
| NITRATE | NO ₃ mg/L | 1.6 | 1.6 | 0.9 | 2.2 | 2.7 | 0.2 | 0.9 | 1.3 | 2.3 | 2.2 | 2.2 | 1.4 | 2.9 |
| FLUORIDE | F mg/L | 0.34 | 0.34 | 0.35 | 0.16 | 0.09 | 0.12 | 0.22 | 0.23 | 0.14 | 0.17 | 0.16 | 0.22 | 0.08 |
| BORON | B mg/L | 0.14 | 0.14 | 0.14 | 0.18 | 0.13 | 0.18 | 0.14 | 0.13 | 0.13 | 0.12 | 0.18 | 0.13 | 0.13 |
| TOTAL DISSOLVED SOLIDS | TDS mg/L | 667 | 668 | 679 | 239 | 217 | 299 | 449 | 456 | 371 | 415 | 255 | 464 | 241 |
| TOTAL HARDNESS AS CaCO3 | TH mg/L | 323 | 321 | 317 | 113 | 91 | 124 | 214 | 215 | 152 | 178 | 113 | 214 | 92 |
| TOTAL ALKALINITY AS CaCO3 | TA mg/L | 135 | 134 | 124 | 77 | 71 | 90 | 104 | 106 | 78 | 84 | 81 | 94 | 68 |
| FREE CARBON DIOXIDE | CO ₂ mg/L | 1.4 | 2.2 | 3.1 | 2.9 | 2.2 | 2.5 | 3.3 | 1.3 | 1.0 | 1.2 | 0.9 | 1.5 | 0.4 |
| H ⁺ CONCENTRATION | pH | 8.31 | 8.20 | 8.03 | 7.76 | 7.91 | 7.90 | 7.96 | 8.26 | 8.23 | 8.17 | 8.26 | 8.11 | 8.50 |
| SPECIFIC CONDUCTANCE | EC µmho/cm | 1070 | 1070 | 1090 | 421 | 394 | 544 | 759 | 761 | 644 | 712 | 451 | 790 | 435 |
| COLOR | COLOR CU | 5 | 3 | 3 | 8 | 11 | 12 | 7 | 7 | 1 | 2 | 1 | 2 | 2 |
| FILTER EFFLUENT TURBIDITY | FE TUR NTU | -- | -- | -- | -- | -- | -- | -- | -- | 0.06 | 0.05 | 0.04 | 0.05 | 0.05 |
| TURBIDITY | TURB NTU | 0.83 | 0.60 | 1.5 | 1.4 | 1.5 | 2.0 | 0.50 | 1.0 | 0.06 | 0.05 | 0.04 | 0.05 | 0.04 |
| TEMPERATURE | TEMP °C | 20 | 20 | 18 | 14 | 17 | 18 | 16 | 19 | 19 | 20 | 18 | 20 | 19 |
| ASBESTOS | ASB MFL | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| BROMIDE* | Br mg/L | 0.09 | 0.09 | 0.11 | 0.15 | 0.18 | 0.25 | 0.16 | 0.13 | 0.15 | 0.15 | 0.15 | 0.13 | 0.17 |
| CYANIDE | CN mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| FOAMING AGENTS (MBAS) | MBAS mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| TOTAL ORGANIC CARBON | TOC mg/L | 2.99 | 3.34 | 2.83 | 2.86 | 3.17 | 4.00 | 2.90 | 3.05 | -- | -- | -- | -- | -- |
| THRESHOLD ODOR NUMBER | TON | 14 | 14 | 14 | 6 | 14 | 14 | 14 | 14 | 1 | 2 | 2 | 2 | 2 |
| LANGELIER INDEX@SOURCE TEMP. | LI | -- | -- | -- | -- | -- | -- | -- | -- | 0.20 | 0.25 | 0.17 | 0.34 | 0.21 |
| PCT. STATE PROJECT WATER | %SPW % | 0 | 0 | 0 | 100** | 100 | 100 | 46 | 47 | 73 | 62 | 100** | 46 | 100 |

Notes:

* Treatment plant bromides are influent values

** Jensen plant treated 100% Los Angeles Department of Water and Power water from January 18 to January 27, 2007

ND = None Detected

TABLE 3-5
2007 ANNUAL PESTICIDE, HERBICIDE, AND SEMI-VOLATILE
ORGANIC COMPOUNDS RESULTS
STATE AND FEDERAL DRINKING WATER
STANDARDS AND REPORTING LEVELS

| Analyte | EPA Method Number | CDPH Notification / Advisory Level ¹ (mg/L) | CDPH MCL ² (mg/L) | USEPA MCL ³ (mg/L) | CDPH DLR ⁴ (µg/L) | Laboratory | Laboratory Minimum Reporting Levels (µg/L) | Analytical Results (µg/L) |
|----------------------------------|-------------------|--|------------------------------|-------------------------------|------------------------------|--------------|--|---------------------------|
| Organochlorine Pesticides | 508 | | | | | | | |
| Aldrin | | 0.000002 | | | 0.075 | Contract Lab | 0.075 | ND ⁵ |
| α-BHC | | 0.000015 | | | 0.01 | Contract Lab | 0.010 | ND |
| β-BHC | | 0.000025 | | | 0.05 | Contract Lab | 0.050 | ND |
| δ-BHC | | | | | 0.05 | Contract Lab | 0.050 | ND |
| γ-BHC (Lindane) | | | 0.0002 | 0.0002 | 0.2 | Contract Lab | 0.2 | ND |
| Chlordane | | | 0.0001 | 0.002 | 0.1 | Contract Lab | 0.1 | ND |
| Chlorothalonil | | | | | 5 | Contract Lab | 5 | ND |
| 4,4'-DDD | | | | | 0.02 | Contract Lab | 0.02 | ND |
| 4,4'-DDE | | | | | 0.01 | Contract Lab | 0.01 | ND |
| 4,4'-DDT | | | | | 0.02 | Contract Lab | 0.02 | ND |
| Dieldrin | | 0.000002 | | | 0.02 | Contract Lab | 0.02 | ND |
| Endosulfan I | | | | | 0.02 | Contract Lab | 0.02 | ND |
| Endosulfan II | | | | | 0.01 | Contract Lab | 0.01 | ND |
| Endosulfan sulfate | | | | | 0.05 | Contract Lab | 0.05 | ND |
| Endrin | | | 0.002 | 0.002 | 0.1 | Contract Lab | 0.1 | ND |

TABLE 3-5 (Continued)
2007 ANNUAL PESTICIDE, HERBICIDE, AND SEMI-VOLATILE
ORGANIC COMPOUNDS RESULTS
STATE AND FEDERAL DRINKING WATER
STANDARDS AND REPORTING LEVELS

| Analyte | EPA Method Number | CDPH Notification / Advisory Level ¹ (mg/L) | CDPH MCL ² (mg/L) | USEPA MCL ³ (mg/L) | CDPH DLR ⁴ (µg/L) | Laboratory | Laboratory Minimum Reporting Levels (µg/L) | Analytical Results (µg/L) |
|--|-------------------|--|------------------------------|-------------------------------|------------------------------|--------------|--|---------------------------|
| Endrin aldehyde | | | | | 0.05 | Contract Lab | 0.05 | ND |
| Heptachlor | | | 0.00001 | 0.0004 | 0.01 | Contract Lab | 0.01 | ND |
| Heptachlor epoxide | | | 0.00001 | 0.0002 | 0.01 | Contract Lab | 0.01 | ND |
| Hexachlorobenzene | | | 0.001 | 0.001 | 0.5 | Contract Lab | 0.5 | ND |
| Hexachlorocyclopentadiene | | | 0.05 | 0.05 | 1 | Contract Lab | 1 | ND |
| Methoxychlor | | | 0.03 | 0.04 | 10 | Contract Lab | 10 | ND |
| Polychlorinated biphenyls (PCB) | | | 0.0005 | 0.0005 | 0.5 | Contract Lab | 0.1 | ND |
| Propachlor | | 0.09 | | | 0.5 | Contract Lab | 0.5 | ND |
| Toxaphene | | | 0.003 | 0.003 | 1 | Contract Lab | 1 | ND |
| Trifluralin | | | | | | Contract Lab | 0.01 | ND |
| Organophosphorus Pesticides and Triazine Herbicides | 525.2 | | | | | | | |
| Alachlor | | | 0.002 | 0.002 | 1 | Contract Lab | 0.1 | ND |
| Atrazine | | | 0.001 | 0.003 | 0.5 | Contract Lab | 0.1 | ND |
| Bromacil | | | | | 10 | Contract Lab | 1 | ND |

TABLE 3-5 (Continued)
2007 ANNUAL PESTICIDE, HERBICIDE, AND SEMI-VOLATILE
ORGANIC COMPOUNDS RESULTS
STATE AND FEDERAL DRINKING WATER
STANDARDS AND REPORTING LEVELS

| Analyte | EPA Method Number | CDPH Notification / Advisory Level ¹ (mg/L) | CDPH MCL ² (mg/L) | USEPA MCL ³ (mg/L) | CDPH DLR ⁴ (µg/L) | Laboratory | Laboratory Minimum Reporting Levels (µg/L) | Analytical Results (µg/L) |
|----------------------------------|-------------------|--|------------------------------|-------------------------------|------------------------------|--------------|--|---------------------------|
| Butachlor | | | | | 0.38 | Contract Lab | 0.2 | ND |
| Diazinon | | 0.006 | | | | Contract Lab | 0.1 | ND |
| Dimethoate | | 0.001 | | | | Contract Lab | 0.2 | ND |
| Metolachlor | | | | | | Contract Lab | 0.1 | ND |
| Metribuzin | | | | | | Contract Lab | 0.1 | ND |
| Molinate | | | 0.02 | | 2 | Contract Lab | 0.1 | ND |
| Prometon | | | | | | Contract Lab | 0.2 | ND |
| Prometryn | | | | | 2 | Contract Lab | 0.1 | ND |
| Simazine | | | 0.004 | 0.004 | 1 | Contract Lab | 0.1 | ND |
| Thiobencarb | | | 0.07(0.001)* | | 1 | Contract Lab | 0.2 | ND |
| Organochlorine Herbicides | 515.3 | | | | | | | |
| Acifluorfen | | | | | | Contract Lab | 0.5 | ND |
| Bentazon | | | 0.018 | | 2 | Contract Lab | 2 | ND |
| 2,4-D | | | 0.07 | 0.07 | 10 | Contract Lab | 0.5 | ND |
| 2,4-DB | | | | | | Contract Lab | 2 | ND |
| 3,5-Dichlorobenzoic acid | | | | | | Contract Lab | 1 | ND |
| Dacthal (DCPA) | | | | | | Contract Lab | 0.1 | ND |
| Dalapon | | | 0.2 | 0.2 | 10 | Contract Lab | 0.5 | ND |

TABLE 3-5 (Continued)
2007 ANNUAL PESTICIDE, HERBICIDE, AND SEMI-VOLATILE
ORGANIC COMPOUNDS RESULTS
STATE AND FEDERAL DRINKING WATER
STANDARDS AND REPORTING LEVELS

| Analyte | EPA Method Number | CDPH Notification / Advisory Level ¹ (mg/L) | CDPH MCL ² (mg/L) | USEPA MCL ³ (mg/L) | CDPH DLR ⁴ (µg/L) | Laboratory | Laboratory Minimum Reporting Levels (µg/L) | Analytical Results (µg/L) |
|---------------------|-------------------------|---|------------------------------------|-------------------------------------|------------------------------------|--------------|--|---------------------------------|
| Dicamba | | | | | 1.5 | Contract Lab | 0.6 | ND |
| Dichlorprop | | | | | | Contract Lab | 0.3 | ND |
| Dinoseb | | | 0.007 | 0.007 | 2 | Contract Lab | 0.5 | ND |
| Pentachlorophenol | | | 0.001 | 0.001 | 0.2 | Contract Lab | 0.2 | ND |
| Picloram | | | 0.5 | 0.5 | 1 | Contract Lab | 1.0 | ND |
| 2,4,5-TP (Silvex) | | | 0.05 | 0.05 | 1 | Contract Lab | 0.2 | ND |
| 2,4,5-T | | | | | | Contract Lab | 0.2 | ND |
| Carbamates | 531.1 | | | | | | | |
| Aldicarb | | 0.007 | | 0.003 [#] | 3 | Contract Lab | 2.0 | ND |
| Aldicarb sulfone | | | | 0.002 [#] | 4 | Contract Lab | 2.0 | ND |
| Aldicarb sulfoxide | | | | 0.004 [#] | 3 | Contract Lab | 2.0 | ND |
| Baygon (Propoxur) | | 0.03 | | | | Contract Lab | 5.0 | ND |
| Carbaryl | | 0.7 | | | 5 | Contract Lab | 2.0 | ND |
| Carbofuran | | | 0.018 | 0.04 | 5 | Contract Lab | 5.0 | ND |
| 3-Hydroxycarbofuran | | | | | 3 | Contract Lab | 2.0 | ND |
| Methiocarb | | | | | | Contract Lab | 3.0 | ND |

TABLE 3-5 (Continued)
2007 ANNUAL PESTICIDE, HERBICIDE, AND SEMI-VOLATILE
ORGANIC COMPOUNDS RESULTS
STATE AND FEDERAL DRINKING WATER
STANDARDS AND REPORTING LEVELS

| Analyte | EPA Method Number | CDPH Notification / Advisory Level ¹ (mg/L) | CDPH MCL ² (mg/L) | USEPA MCL ³ (mg/L) | CDPH DLR ⁴ (µg/L) | Laboratory | Laboratory Minimum Reporting Levels (µg/L) | Analytical Results (µg/L) |
|-----------------------------|-------------------|--|------------------------------|-------------------------------|------------------------------|--------------|--|---------------------------|
| Methomyl | | | | | 2 | Contract Lab | 2.0 | ND |
| Oxamyl | | | 0.05 | 0.2 | 20 | Contract Lab | 2.0 | ND |
| Fumigants | 504.1 | | | | | | | |
| Dibromochloropropane (DBCP) | | | 0.0002 | 0.0002 | 0.01 | Contract Lab | 0.01 | ND |
| Ethylene dibromide (EDB) | | | 0.00005 | 0.00005 | 0.02 | Contract Lab | 0.02 | ND |
| SVOC | 525.2 | | | | | | | |
| Benzo(a)pyrene | | | 0.0002 | 0.0002 | 0.1 | Contract Lab | 0.1 | ND |
| Di(2-ethylhexyl)adipate | | | 0.4 | 0.4 | 5 | Contract Lab | 5 | ND |
| Di(2-ethylhexyl)phthalate | | | 0.004 | 0.006 | 3 | Contract Lab | 3 | ND |
| Miscellaneous | | | | | | | | |
| Diquat | 549.2 | | 0.02 | 0.02 | 4 | Contract Lab | 4 | ND |
| Endothall | 548.1 | | 0.1 | 0.1 | 45 | Contract Lab | 45 | ND |
| Glyphosate | 547 | | 0.7 | 0.7 | 25 | Contract Lab | 5 | ND |
| Dioxin (2,3,7,8-TCDD) | 1613A | | 3 x 10 ⁻⁸ | 3 x 10 ⁻⁸ | 5 x 10 ⁻⁶ | Contract Lab | 5 x 10 ⁻⁶ | ND |
| 1,2,3-Trichloropropane | 524.2M | 0.000005 | | | 0.005 | Contract Lab | 0.005 | ND |

TABLE 3-5 (Continued)
**2007 ANNUAL PESTICIDE, HERBICIDE, AND SEMI-VOLATILE
ORGANIC COMPOUNDS RESULTS
STATE AND FEDERAL DRINKING WATER
STANDARDS AND REPORTING LEVELS**

Notes:

- ¹ California Department of Public Health (CDPH) Drinking Water Notification Levels (December 14, 2007)
(<http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Notificationlevels/NotificationLevels.pdf>). Archived advisory levels
(<http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Notificationlevels/Archivedadvisorylevels.pdf>) (March 7, 2007)
- ² CDPH Chemical Contaminants in Drinking Water Maximum Contaminant Levels.
(<http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-10-11-07.pdf>) page 77 (October 11, 2007)
- ³ USEPA Office of Ground Water and Drinking Water, List of Maximum Contaminant Levels (September 10, 2007)
(<http://www.epa.gov/OGWDW/mcl.html#mcls>)
- ⁴ CDPH Detection Limits for purposes of Reporting (DLR) December 19, 2007
(<http://www.cdph.ca.gov/certlic/drinkingwater/Documents/EDTlibrary/storlist.xls>)
- ⁵ ND Not Detected
- * Secondary CDPH Maximum Contaminant Level
- # Effective date of January 1, 1993, has been postponed pending revised MCL(Federal Register, May 27, 1992).

TABLE 3-6
VOLATILE ORGANIC COMPOUNDS
DRINKING WATER STANDARDS AND REPORTING LEVELS
 Fiscal Year 2006/07

| Analytes | CDPH Notification/ Advisory Level ¹ (mg/L) | CDPH MCL ² (mg/L) | USEPA MCL ³ (mg/L) | CDPH DLR ⁴ (µg/L) | Minimum Reporting Level (µg/L) | Analytical Results ⁵ (µg/L) |
|-----------------------------------|---|---------------------------------|----------------------------------|---------------------------------|--------------------------------------|---|
| Oxygenates | | | | | | |
| tert-amyl-methyl ether (TAME)* | | | | 3.0 | 0.5 | ND ⁶ |
| tert-butyl alcohol (TBA)* | 0.012 | | | 2.0 | 2.0 | ND |
| Diisopropyl ether (DIPE) | | | | | 0.5 | ND |
| ethyl-tert-butyl ether (ETBE)* | | | | 3.0 | 0.5 | ND |
| methyl tert-butyl ether (MTBE) | | 0.013 (0.005**) | | 3.0 | 0.5 | ND |
| VOCs | | | | | | |
| benzene | | 0.001 | 0.005 | 0.5 | 0.5 | ND |
| bromobenzene | | | | 0.5 | 0.5 | ND |
| bromochloromethane | | | | 0.5 | 0.5 | ND |
| bromomethane | | | | 0.5 | 0.5 | ND |
| n-butylbenzene | 0.26 | | | 0.5 | 0.5 | ND |
| sec-butylbenzene | 0.26 | | | 0.5 | 0.5 | ND |
| tert-butylbenzene | 0.26 | | | 0.5 | 0.5 | ND |
| carbon disulfide | 0.16 | | | 0.5 | 0.5 | ND |
| carbon tetrachloride | | 0.0005 | 0.005 | 0.5 | 0.5 | ND |
| chlorobenzene | | 0.07 | 0.1 | 0.5 | 0.5 | ND |
| chloroethane | | | | 0.5 | 0.5 | ND |

TABLE 3-6 (Continued)
VOLATILE ORGANIC COMPOUNDS
DRINKING WATER STANDARDS AND REPORTING LEVELS
 Fiscal Year 2006/07

| Analytes | CDPH Notification/ Advisory Level ¹ (mg/L) | CDPH MCL ² (mg/L) | USEPA MCL ³ (mg/L) | CDPH DLR ⁴ (µg/L) | Minimum Reporting Level (µg/L) | Analytical Results ⁵ (µg/L) |
|--------------------------|---|---------------------------------|----------------------------------|---------------------------------|--------------------------------------|---|
| chloromethane | | | | 0.5 | 0.5 | ND |
| 2-chlorotoluene | 0.14 | | | 0.5 | 0.5 | ND |
| 4-chlorotoluene | 0.14 | | | 0.5 | 0.5 | ND |
| dibromomethane | | | | 0.5 | 0.5 | ND |
| 1,2-dichlorobenzene | | 0.6 | 0.6 | 0.5 | 0.5 | ND |
| 1,3-dichlorobenzene | 0.6 | | | 0.5 | 0.5 | ND |
| 1,4-dichlorobenzene | | 0.005 | 0.075 | 0.5 | 0.5 | ND |
| dichlorodifluoromethane* | 1.0 | | | 0.5 | 0.5 | ND |
| 1,1-dichloroethane | | 0.005 | | 0.5 | 0.5 | ND |
| 1,2-dichloroethane | | 0.0005 | 0.005 | 0.5 | 0.5 | ND |
| 1,1-dichloroethene | | 0.006 | 0.007 | 0.5 | 0.5 | ND |
| cis-1,2-dichloroethene | | 0.006 | 0.07 | 0.5 | 0.5 | ND |
| trans-1,2-dichloroethene | | 0.01 | 0.1 | 0.5 | 0.5 | ND |
| 1,2-dichloropropane | | 0.005 | 0.005 | 0.5 | 0.5 | ND |
| 1,3-dichloropropane | | | | 0.5 | 0.5 | ND |
| 2,2-dichloropropane | | | | 0.5 | 0.5 | ND |
| 1,1-dichloropropene | | | | 0.5 | 0.5 | ND |
| cis-1,3-dichloropropene | | 0.0005# | | 0.5 | 0.5 | ND |

TABLE 3-6 (Continued)
VOLATILE ORGANIC COMPOUNDS
DRINKING WATER STANDARDS AND REPORTING LEVELS
 Fiscal Year 2006/07

| Analytes | CDPH Notification/ Advisory Level ¹ (mg/L) | CDPH MCL ² (mg/L) | USEPA MCL ³ (mg/L) | CDPH DLR ⁴ (µg/L) | Minimum Reporting Level (µg/L) | Analytical Results ⁵ (µg/L) |
|---|---|---------------------------------|----------------------------------|---------------------------------|--------------------------------------|---|
| trans-1,3-dichloropropene | | 0.0005# | | 0.5 | 0.5 | ND |
| ethylbenzene | | 0.3 | 0.7 | 0.5 | 0.5 | ND |
| hexachlorobutadiene | | | | 0.5 | 0.5 | ND |
| hexachloroethane | | | | 5.0 | 0.5 | ND |
| isopropylbenzene | 0.77 | | | 0.5 | 0.5 | ND |
| p-isopropyltoluene | | | | | 0.5 | ND |
| methylene chloride (dichloromethane) | | 0.005 | 0.005 | 0.5 | 0.5 | ND |
| methyl ethyl ketone (MEK) | | | | 5.0 | 5.0 | ND |
| methyl isobutyl ketone (MIBK) | 0.12 | | | 5.0 | 0.5 | ND |
| naphthalene | 0.017 | | | 0.5 | 0.5 | ND |
| n-propylbenzene | 0.26 | | | 0.5 | 0.5 | ND |
| styrene | | 0.1 | 0.1 | 0.5 | 0.5 | ND |
| 1,1,1,2-tetrachloroethane | | | | 0.5 | 0.5 | ND |
| 1,1,2,2-tetrachloroethane | | 0.001 | | 0.5 | 0.5 | ND |
| tetrachloroethene (tetrachloroethylene) | | 0.005 | 0.005 | 0.5 | 0.5 | ND |
| Toluene | | 0.15 | 1 | 0.5 | 0.5 | ND |
| 1,2,3-trichlorobenzene | | | | 0.5 | 0.5 | ND |
| 1,2,4-trichlorobenzene | | 0.005 | 0.07 | 0.5 | 0.5 | ND |

TABLE 3-6 (Continued)
VOLATILE ORGANIC COMPOUNDS
DRINKING WATER STANDARDS AND REPORTING LEVELS
 Fiscal Year 2006/07

| Analytes | CDPH Notification/ Advisory Level ¹ (mg/L) | CDPH MCL ² (mg/L) | USEPA MCL ³ (mg/L) | CDPH DLR ⁴ (µg/L) | Minimum Reporting Level (µg/L) | Analytical Results ⁵ (µg/L) |
|---|---|---------------------------------|----------------------------------|---------------------------------|--------------------------------------|---|
| 1,1,1-trichloroethane | | 0.200 | 0.2 | 0.5 | 0.5 | ND |
| 1,1,2-trichloroethane | | 0.005 | 0.005 | 0.5 | 0.5 | ND |
| trichloroethene (trichloroethylene) | | 0.005 | 0.005 | 0.5 | 0.5 | ND |
| trichlorofluoromethane | | 0.15 | | 5.0 | 0.5 | ND |
| 1,1,2-trichloro-1,2,2- trifluoroethane | | 1.2 | | 10 | 0.5 | ND |
| 1,2,4-trimethylbenzene | 0.33 | | | 0.5 | 0.5 | ND |
| 1,3,5-trimethylbenzene | 0.33 | | | 0.5 | 0.5 | ND |
| 1,2,3-trichloropropane | | | | | 0.5 | ND |
| vinyl chloride | | 0.0005 | 0.002 | 0.5 | 0.5 | ND |
| m-xylene | | 1.750## | 10 ^{##} | 0.5 | 0.5 | ND |
| o-xylene | | 1.750## | 10 ^{##} | 0.5 | 0.5 | ND |
| p-xylene | | 1.750## | 10 ^{##} | 0.5 | 0.5 | ND |

Notes:

¹ California Department of Public Health (CDPH) California Drinking Water Notification Levels (December 14, 2007)
<http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Notificationlevels/NotificationLevels.pdf> Archived advisory levels
<http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Notificationlevels/Archivedadvisorylevels.pdf> (March 7, 2007)

² CDPH Chemical Contaminants in Drinking Water Maximum Contaminant Levels (September 20, 2007)
<http://www.cdph.ca.gov/certlic/drinkingwater/Documents/DWdocuments/EPAandCDPH.pdf> (page 2 of the regulation)

TABLE 3-6 (Continued)
VOLATILE ORGANIC COMPOUNDS
DRINKING WATER STANDARDS AND REPORTING LEVELS
Fiscal Year 2006/07

³ USEPA Office of Ground Water and Drinking Water, List of Drinking Water Contaminants & MCLs (September 2007) <http://www.epa.gov/safewater/mcl.html#mcls>

⁴ CDPH detection limits for purposes of reporting. (December 19, 2007) <http://www.cdph.ca.gov/certlic/drinkingwater/Documents/EDTlibrary/storlist.xls> and WriteOn version 3.0

⁵ Analyses conducted by Metropolitan's Water Quality Laboratory using USEPA Method 524.2 Rev. 4.1.

⁶ ND Not Detected in source and finished water

* CDPH unregulated VOCs (February 2007)

<http://www.cdph.ca.gov/certlic/drinkingwater/Documents/CCR/CCR3SWSAttachments1to5.doc> (Attachment 3 of the document)

**Secondary MCL set for taste, odor, or appearance of drinking water.

MCL for 1,3-dichloropropene is either for a single isomer or for the sum of the cis and trans isomers.

MCL for xylene is either for a single isomer or for the sum of the three isomers.

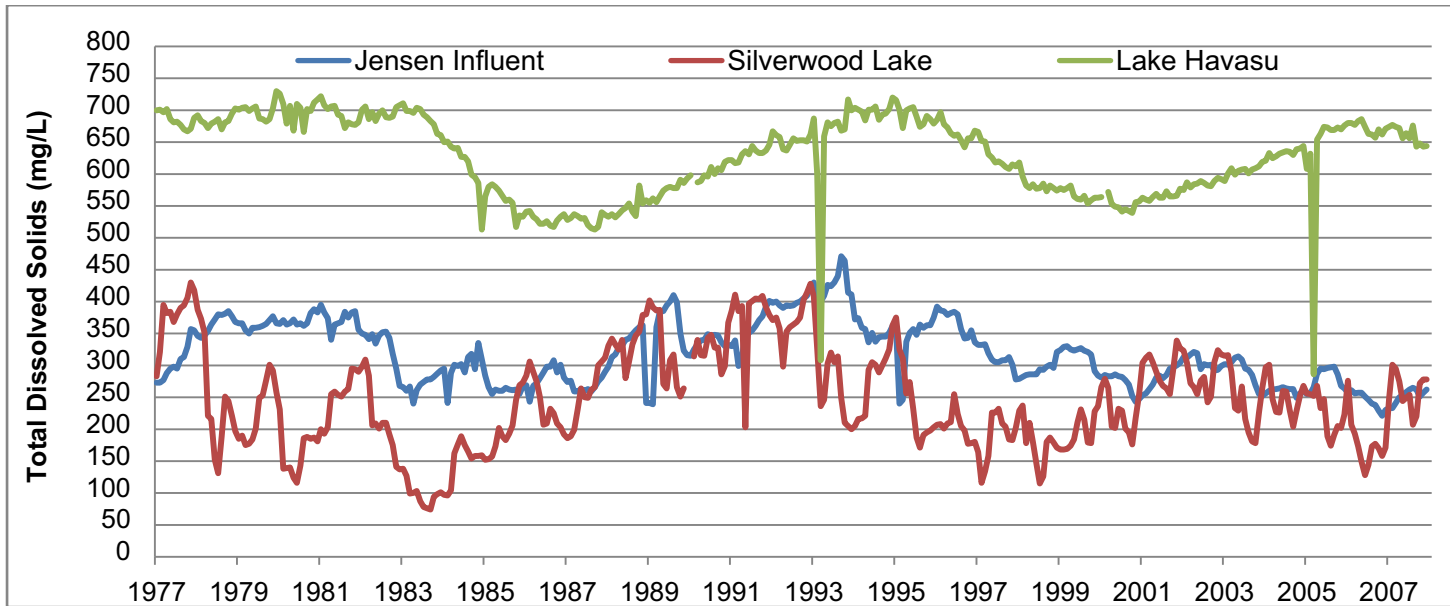


Figure 3-1. Total Dissolved Solids in East Branch SWP (Silverwood Lake), West Branch SWP (Jensen Influent), and CRA (Lake Havasu)*

*The higher TDS level in the Colorado River Aqueduct (Lake Havasu) is a result of the geology and size of the basin. The two steep declines in TDS were due to high rainfall events in the Bill Williams River watershed, delivering large volumes of dilute runoff to Lake Havasu. The East Branch TDS responds to changes in the SWP system more rapidly due to the small volume of Silverwood Lake. The bigger Pyramid and Castaic Lakes in the West Branch SWP provide buffer to TDS fluctuations, and evaporation in the lakes from higher detention time causes West Branch SWP to be on the average higher than the East Branch SWP.

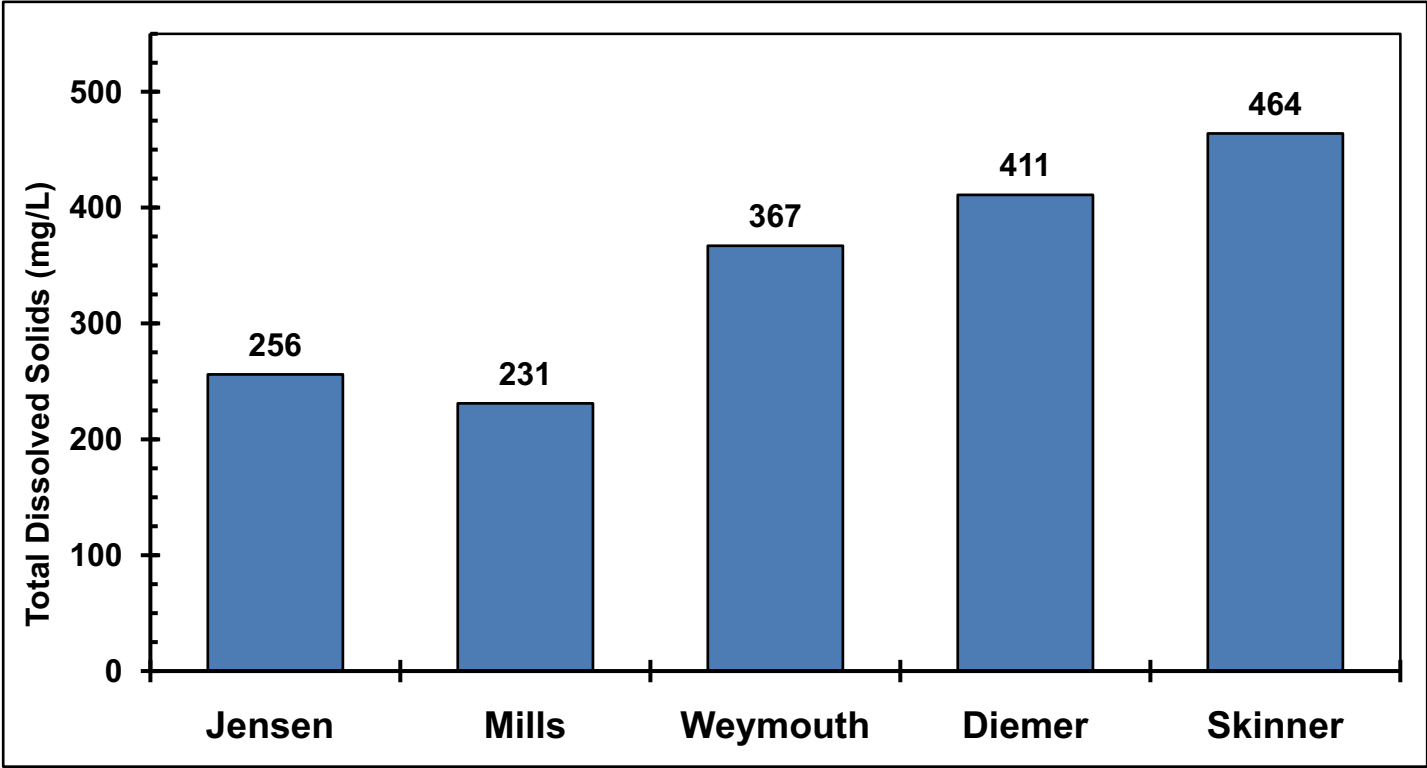


Figure 3-2. Yearly Average TDS in Plant Effluent, Fiscal Year 2006/07

TDS levels in the State Water Project vary seasonally with increases in the summer and fall, when Delta outflow decreases and allows increased influence of the San Joaquin River and saltwater intrusion from San Francisco Bay. Longer-term changes in TDS are driven by hydrology in the state with especially wet or dry years resulting in greater or lesser fresh water flows into the Delta.

Disinfection Byproducts

Table 3-7 presents disinfection byproduct (DBP) levels for plant effluent, while Figures 3-3 through 3-6 summarize historical levels for total trihalomethanes (TTHMs), five haloacetic acids (HAA5), total organic carbon (TOC), bromide, and bromate. TTHMs, HAA5, and bromate were regulated under the Stage 1 D/DBP Rule by reducing public exposure to some D/DBPs.

TABLE 3-7
PLANT EFFLUENT TOTAL TRIHALOMETHANES (TTHMS)/
HALOACETIC ACIDS (HAA5) RESULTS
Fiscal Year 2006/07

| Plant Effluent | THM (µg/L) | | HAA5 (µg/L) | |
|----------------|--------------|----------------|---------------|----------------|
| | Weekly Range | Annual Average | Monthly Range | Annual Average |
| Diemer | 32–64 | 47 | 12–25 | 19 |
| Jensen | 15–48 | 23 | 5.0–12 | 7.2 |
| Mills | 7.0–79 | 17 | 2.7–9.5 | 5.7 |
| Skinner | 37–64 | 50 | 14–29 | 20 |
| Weymouth | 34–66 | 49 | 16–34 | 25 |

Microbiological

Staff detected no coliforms in any of the 8,953 samples analyzed under the Total Coliform Rule (Fig. 3-7).

The Water Quality laboratory and three analysts became USEPA-approved for LT2 Enhanced Surface Water Treatment Rule analysis. Table 3-8 shows results for *Cryptosporidium* and *E. coli* analysis.

Cryptosporidium was detected once in the Jensen plant influent at a concentration of two oocysts/10 L, but in no other plant influent.

TABLE 3-8
RAW WATER *E. COLI* ANALYSES
LT2 Enhanced Surface Water Treatment Rule Compliance
 Fiscal Year 2006/07

| | Treatment Plant Influent | | | | |
|-----------------------------|--------------------------|--------|--------|---------|----------|
| | Diemer | Jensen | Mills | Skinner | Weymouth |
| | (CFU/100 mL) | | | | |
| <i>E. Coli</i> ¹ | | | | | |
| Range | 2 - 19 | ND - 8 | 1 - 14 | ND - 17 | 1 - 23 |
| Average | 7 | 2 | 4 | 5 | 9 |

¹Samples were analyzed by membrane filtration and recovered on MI agar (EPA 1604).

Treatment

Metropolitan met all treatment technique requirements of the USEPA Stage 1 D/DBP Rule. The rule established new standards for D/DBPs and enhanced coagulation or enhanced softening to improve removal of DBP precursors.

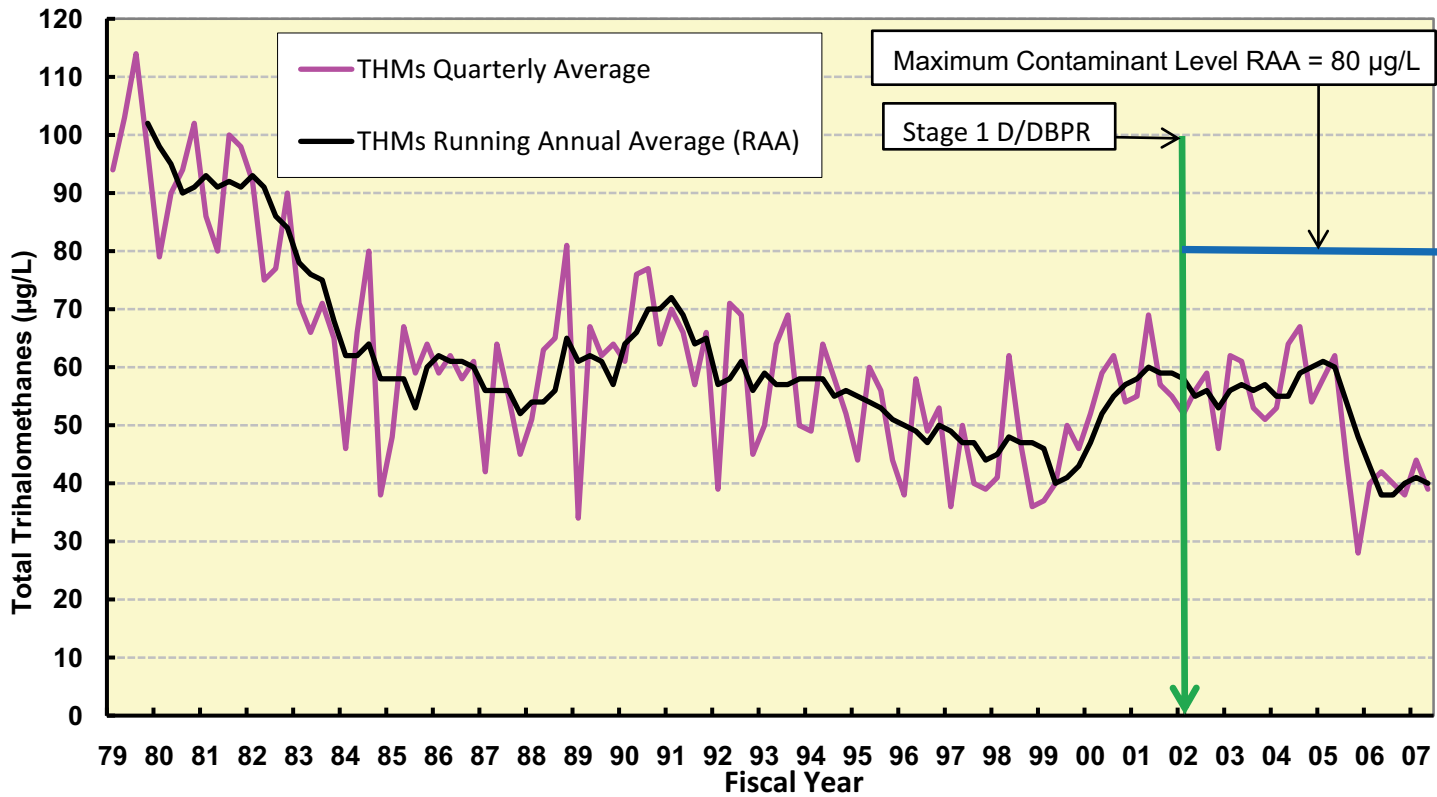


Figure 3-3. Metropolitan's Trihalomethane For All Plants Quarterly and Running Annual Averages

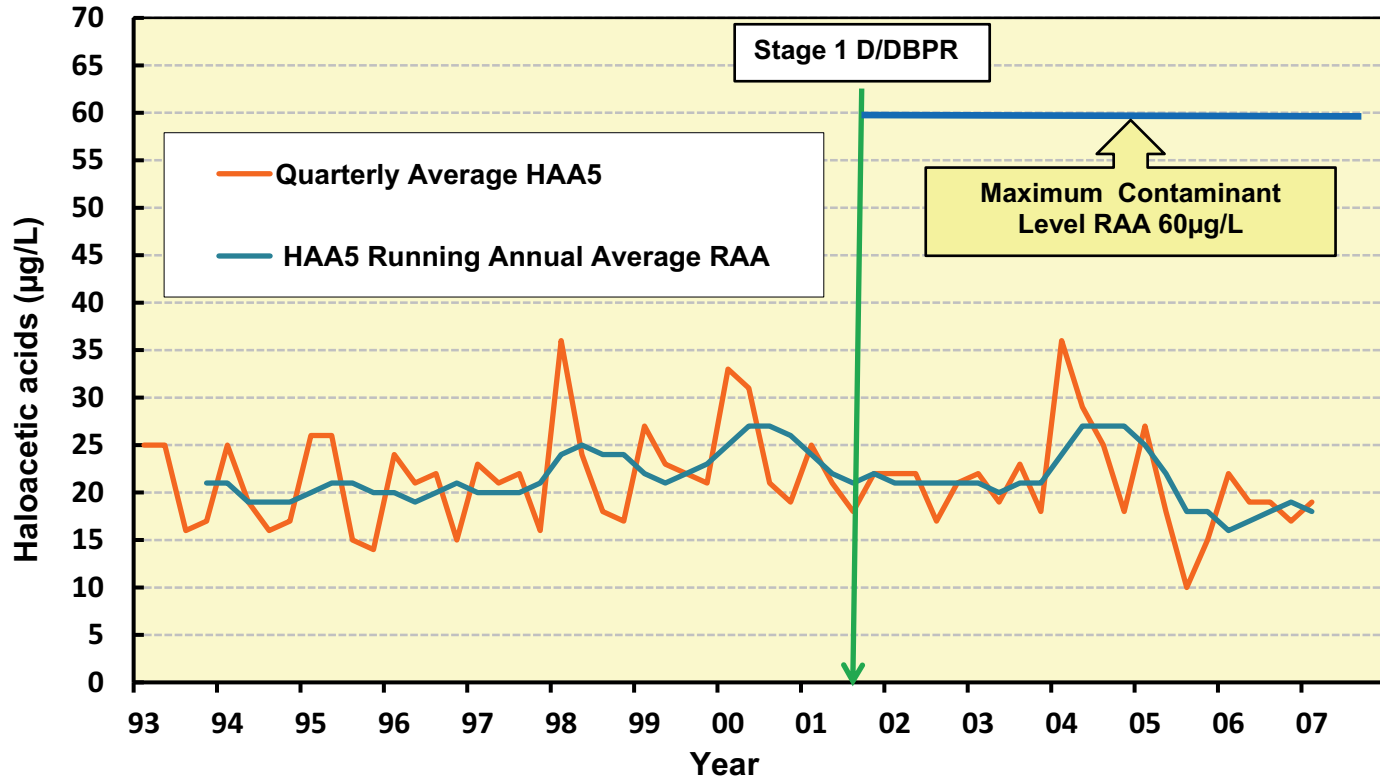
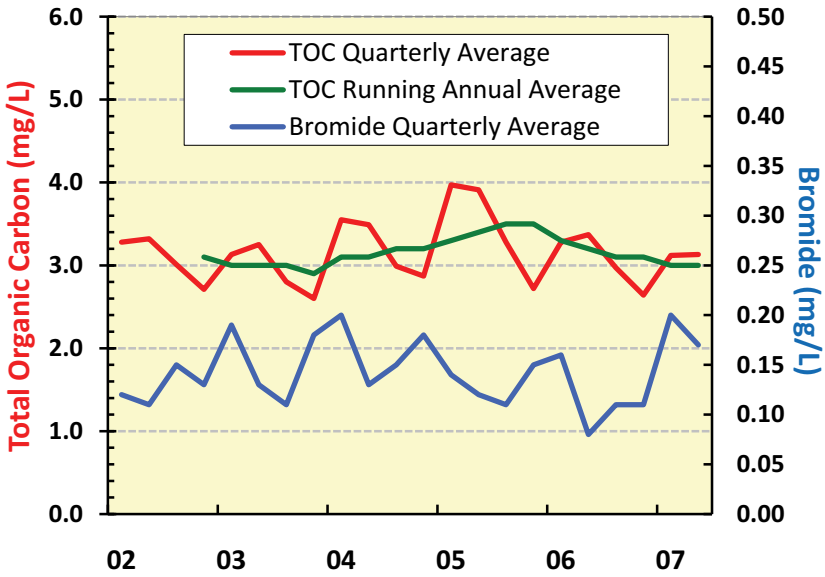


Figure 3-4. Metropolitan's Haloacetic Acid Distribution System-wide Quarterly and Running Annual Averages

Diemer Treatment Plant Influent



Skinner Treatment Plant Influent

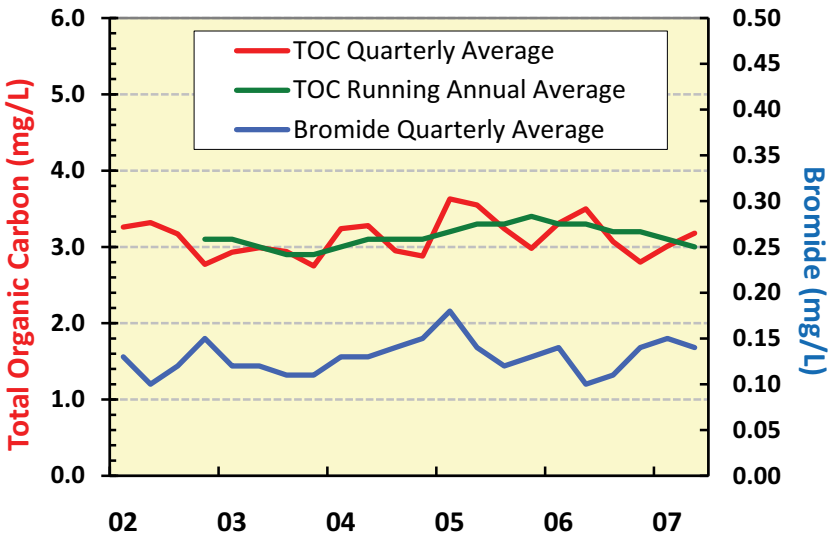
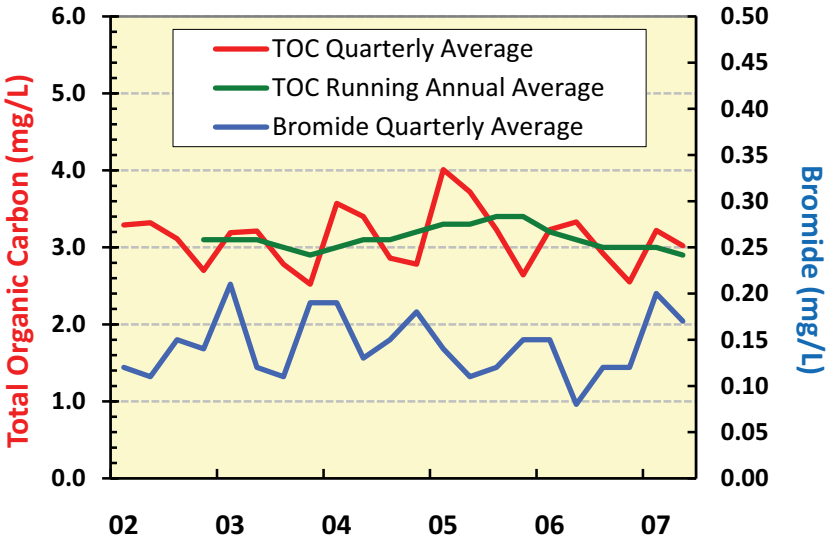


Figure 3-5. Quarterly TOC and Bromide at Treatment Plant Influent, 2002 – 2007

Weymouth Treatment Plant Influent



Jensen Treatment Plant Influent

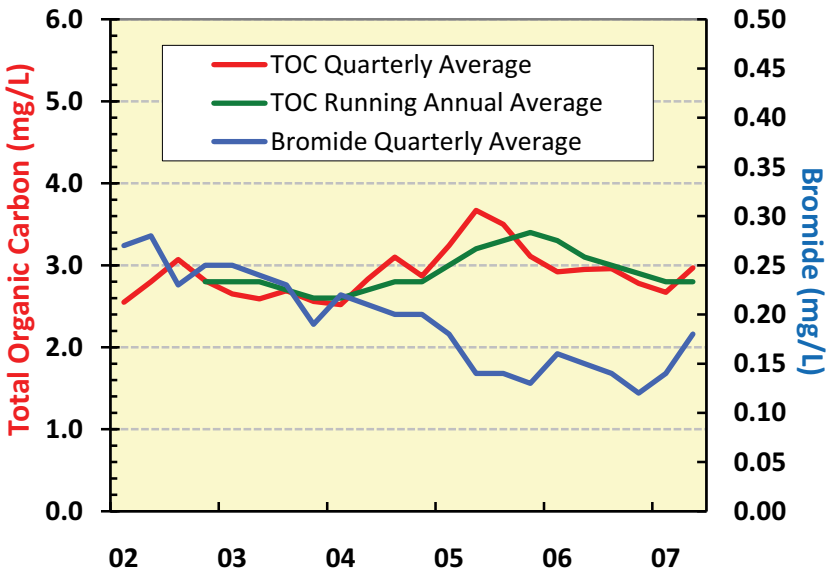


Figure 3-5 (Continued). Quarterly TOC and Bromide at Treatment Plant Influent, 2002 – 2007

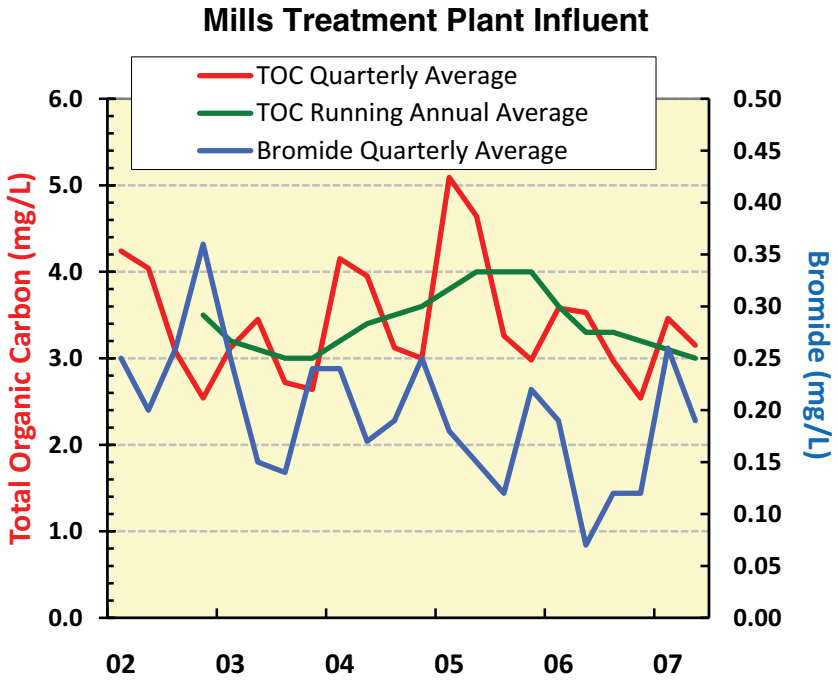


Figure 3-5 (Continued). Quarterly TOC and Bromide at Treatment Plant Influent, 2002 – 2007

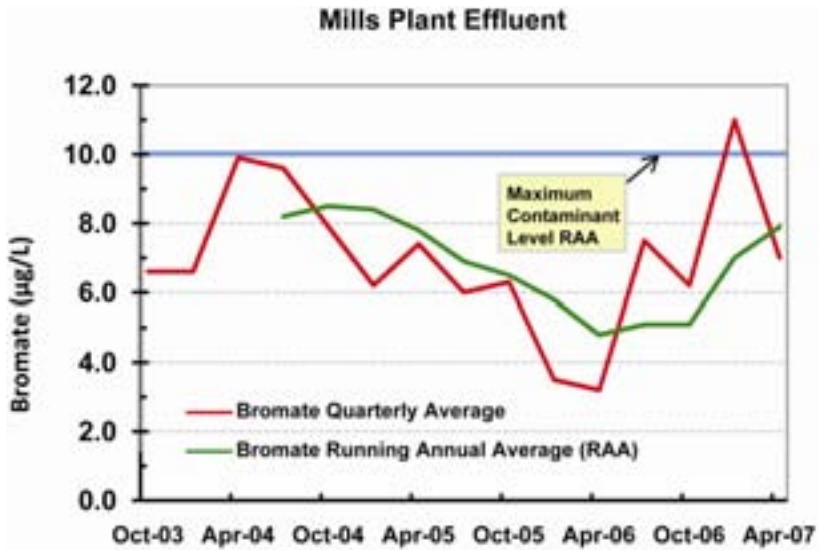
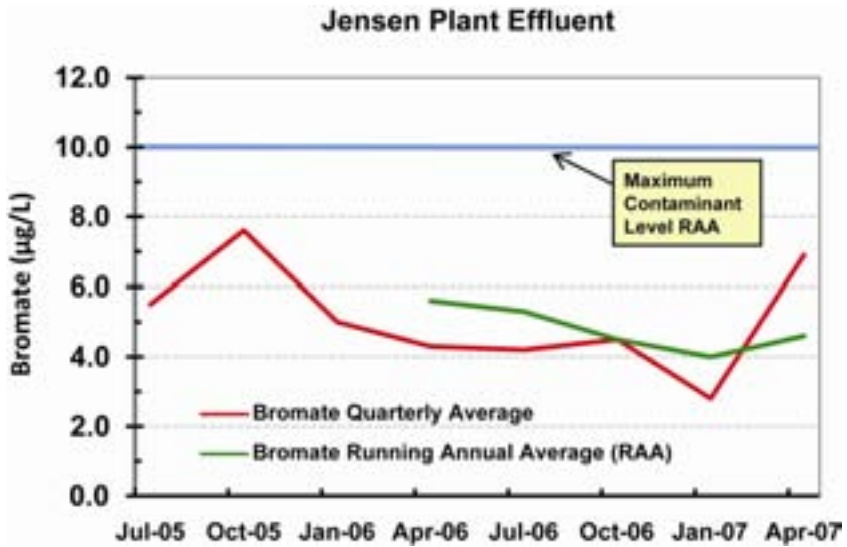


Figure 3-6. Bromate Levels in Treatment Plant Effluent, 2003-2007 (Jensen Ozone came online in 2005)

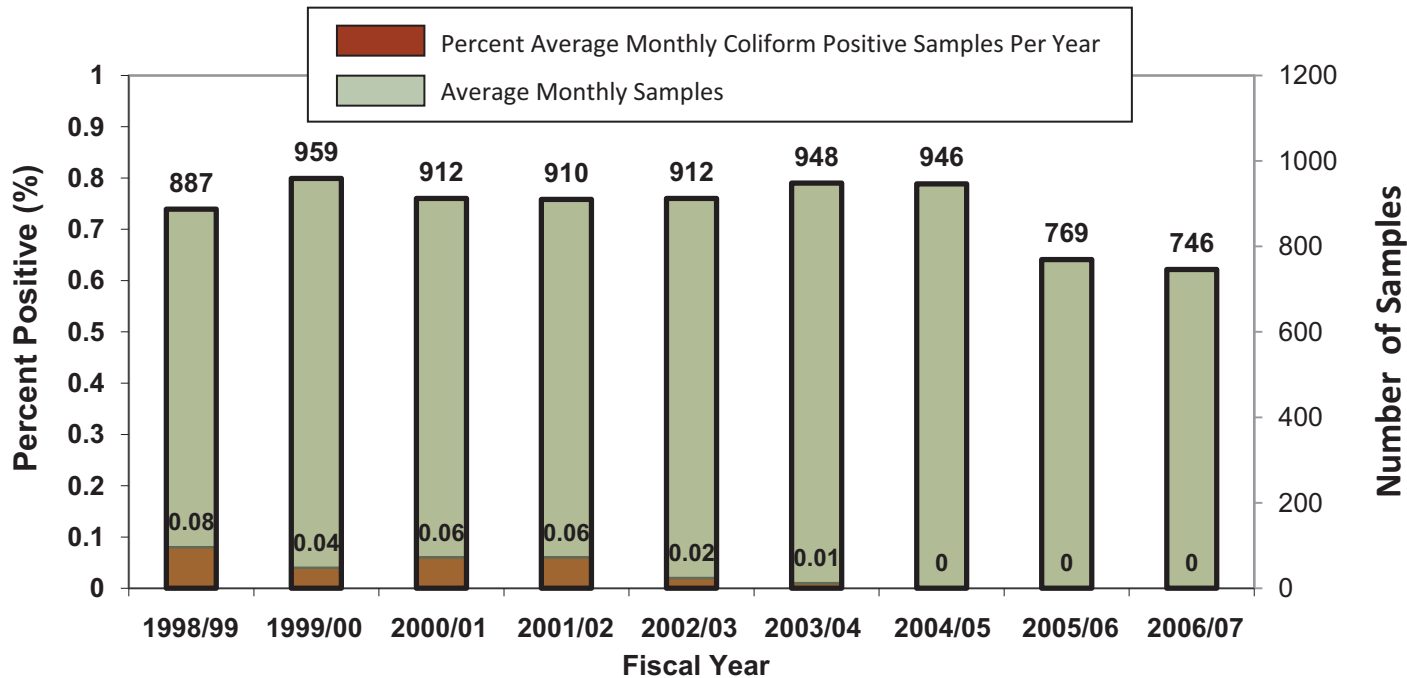


Figure 3-7. Percent Average Monthly Coliform Positive Samples Per Year in Metropolitan's Drinking Water Distribution System, Total Coliform Rule Compliance

Notes on Coliform Maximum Contaminant Level:

Total Coliform MCL: No more than 5.0% of the monthly samples may be total coliform-positive. The MCL was not violated.

Fecal Coliform/*E. coli* MCL: The occurrence of two consecutive total coliform-positive samples, one of which contains fecal coliform/*E. coli*, is an acute violation. The MCL was not violated.

System Management and Pathogen Monitoring

Algae Control Program

Staff analyzed samples for the taste and odor compounds methylisoborneol and geosmin (measured in nanograms per liter or ng/L) from Metropolitan's water system during taste and odor events (Fig. 3-8 through 3-10) and applied copper sulfate to reduce the T&O problems caused by cyanobacteria or blue-green algae (Table 3-9 and Fig. 3-10A).

TABLE 3-9
COPPER SULFATE TREATMENTS TO CONTROL TASTE
AND ODOR EVENTS IN MWD LAKES
 Fiscal Year 2006/07

| | Taste-and-Odor Treatments | Copper Sulfate (tons) |
|---------------------|--------------------------------------|----------------------------------|
| Lake Mathews | 0 | 0 |
| Lake Skinner | 1 | 8 |
| Diamond Valley Lake | 0 | 0 |
| TOTAL | 1 | 8 |

Quagga Mussel Control Program

In January 2007, live quagga mussels were found in Lake Mead and along the Colorado River. Metropolitan formalized the Quagga Mussel Control Program and initiated surveillance, coordination and mitigation activities. The board appropriated \$180,000 for equipment, and staff prepared for interim chlorination at Copper Basin.

Pathogen Monitoring Program

The Pathogen Monitoring Program screens source waters, plant influent, and plant effluent monthly for *Cryptosporidium* and *Giardia*. Neither pathogen was detected in any of Metropolitan's waters except for one *Cryptosporidium* detection indicated in Table 3-8. Staff also monitored for pathogenic enteric viruses in the plant influent and effluent quarterly, but did not detect any.

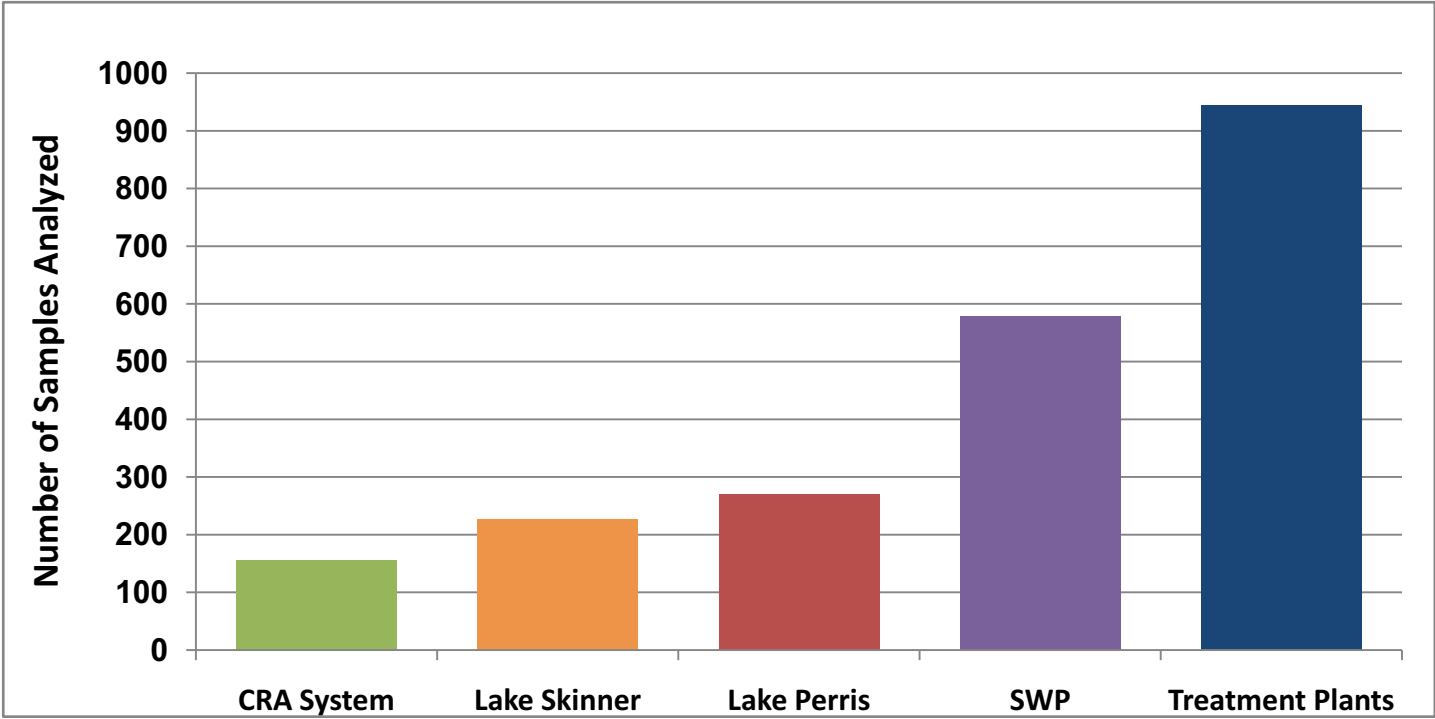
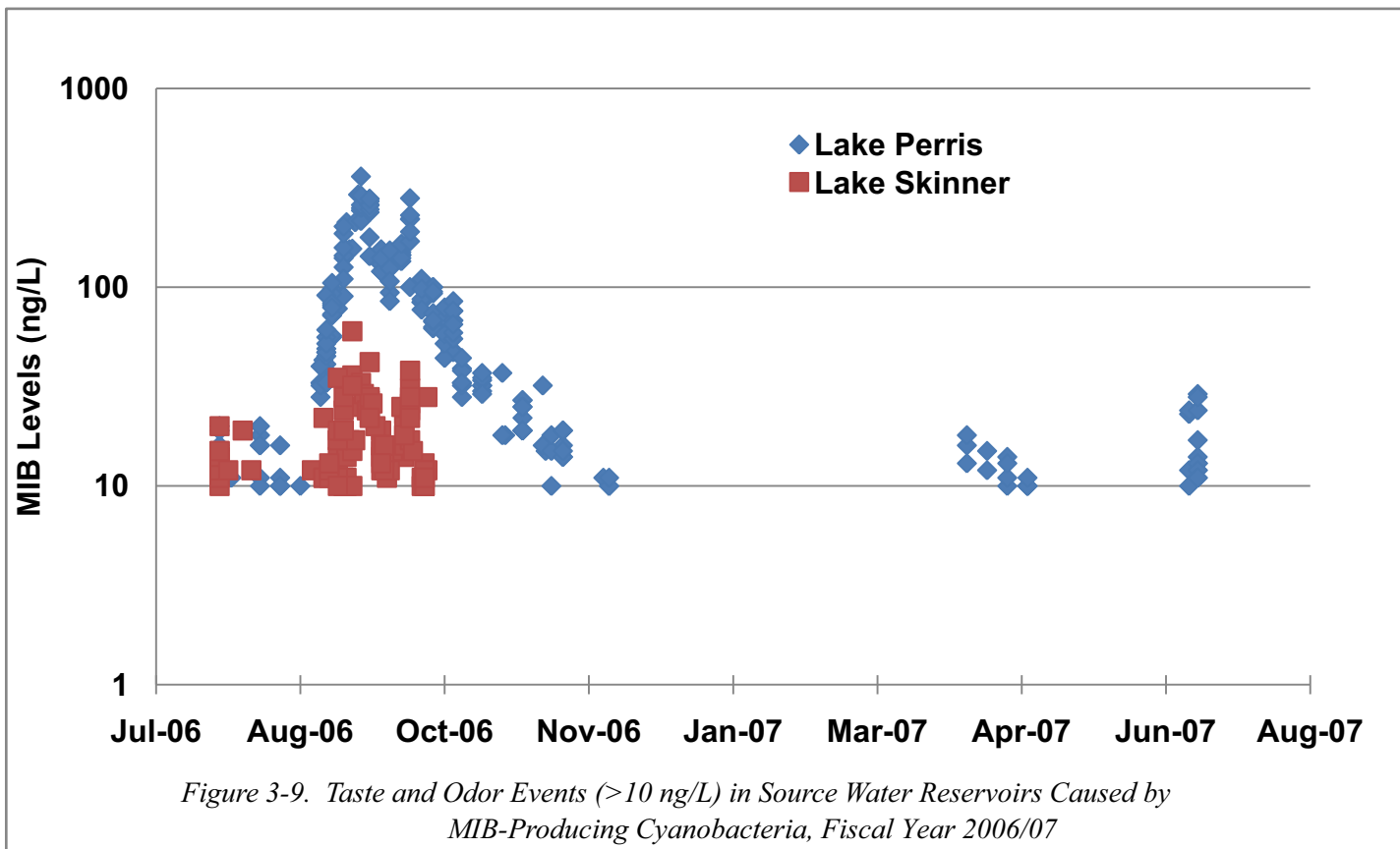


Figure 3-8. Number of Samples Analyzed for the Taste and Odor Compounds, Methylisoborneol (MIB) and Geosmin, in Metropolitan's Source and Finished Waters, Fiscal Year 2006/07, Total (n=2174)



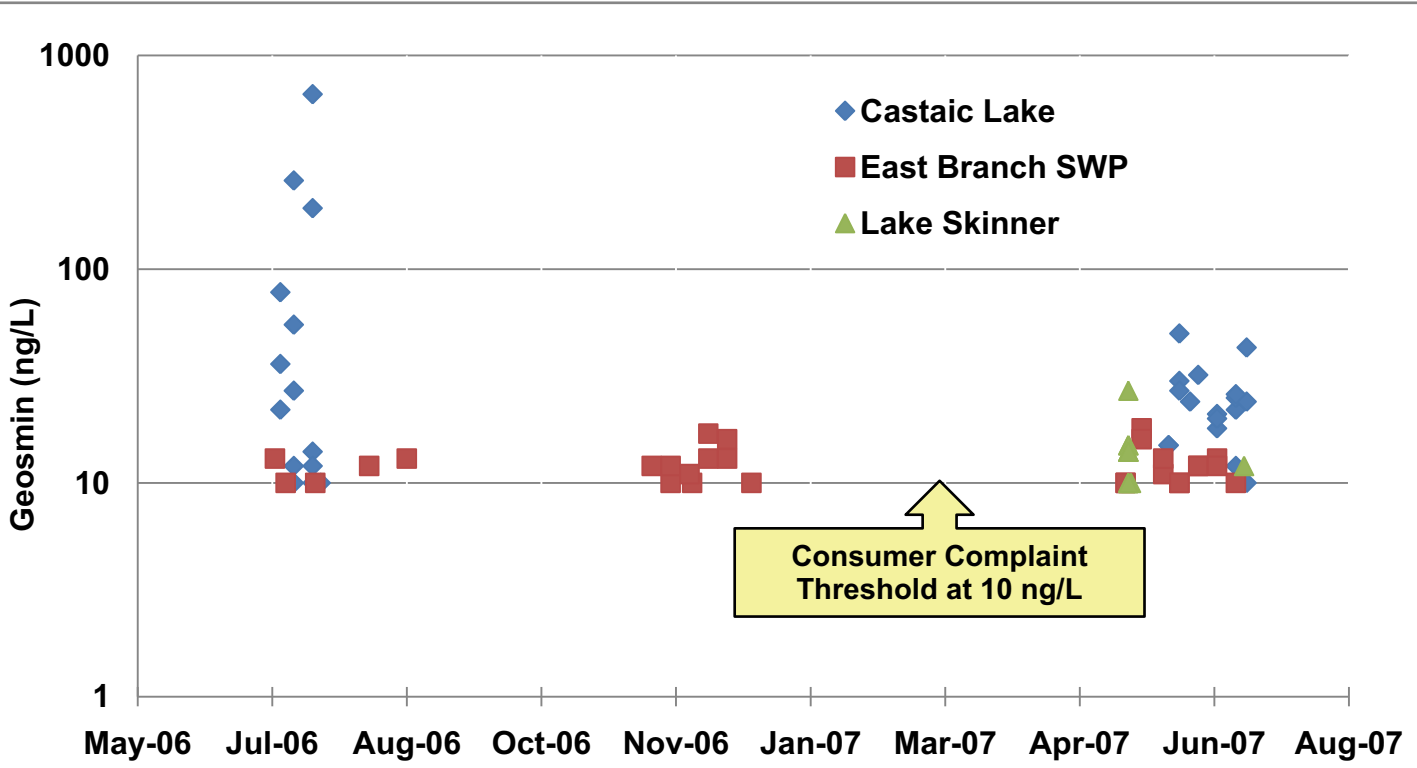


Figure 3-10. Taste and Odor Events (>10 ng/L) in Source Water Reservoirs Caused by Geosmin-Producing Cyanobacteria, Fiscal Year 2006/07

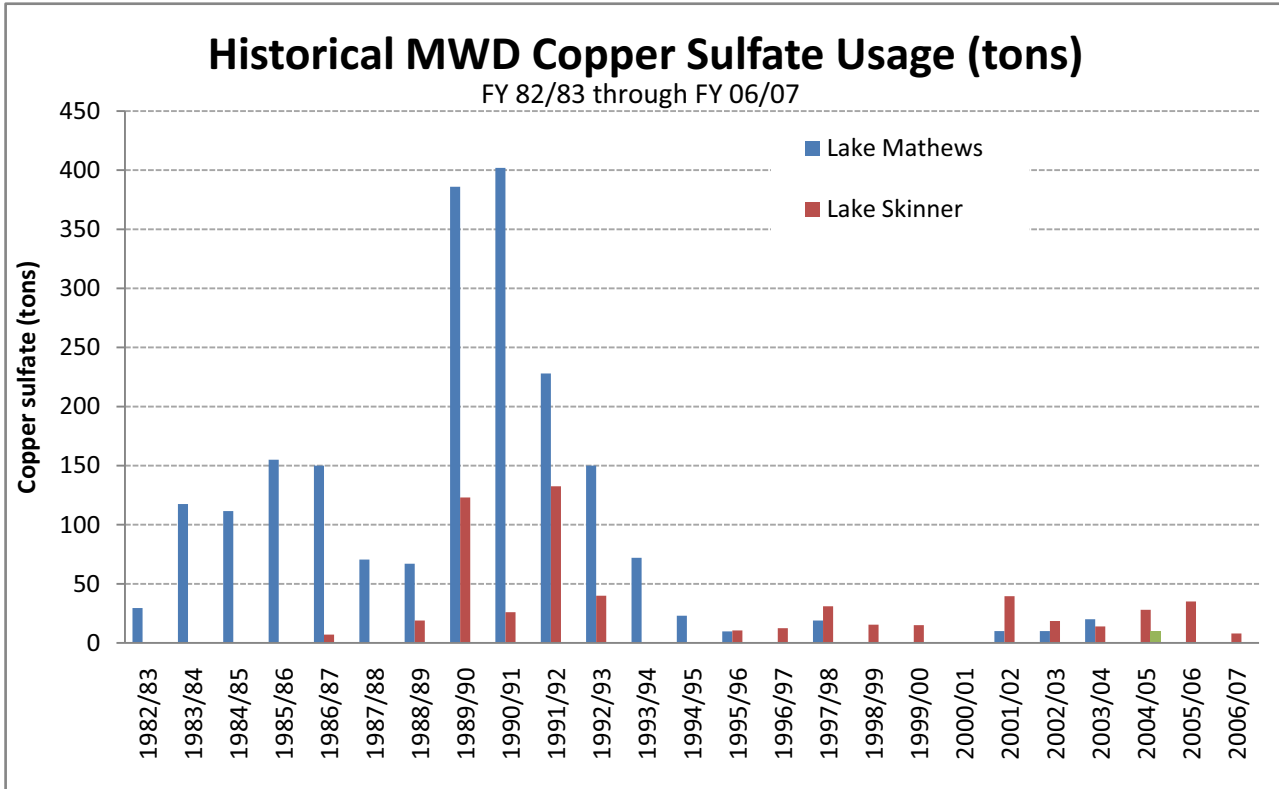


Figure 3-10A. Copper Sulfate Usage Between 1982 and 2007 in MWD Reservoirs

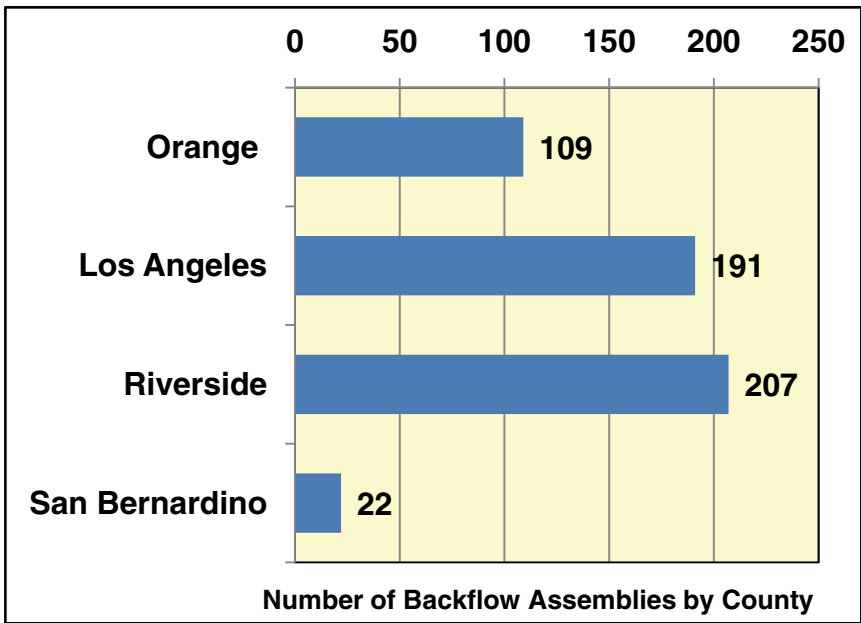
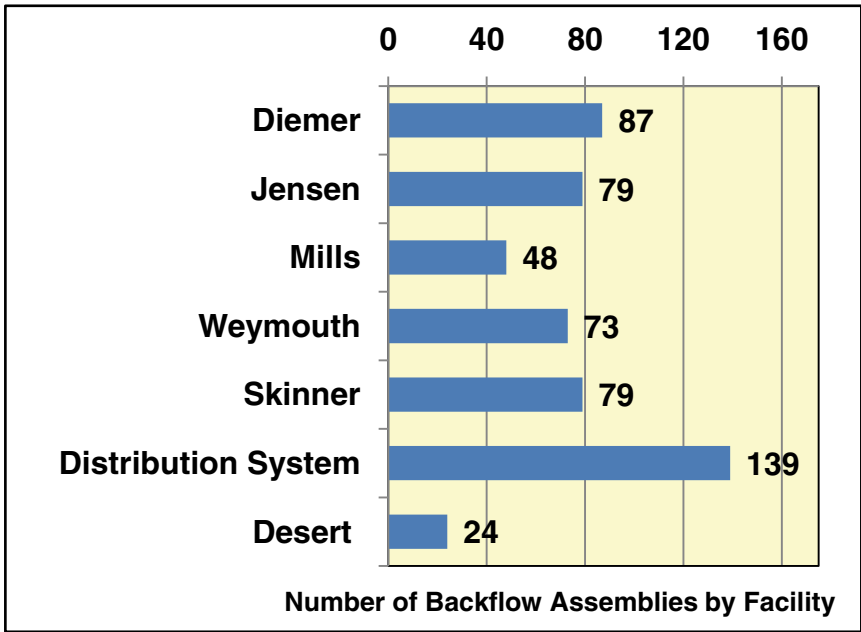


Figure 3-11 Metropolitan’s Cross-Connection Program Includes the Annual Certification of 529 Backflow Prevention Assemblies Located Throughout its Service Area

Cross-Connection Program

Metropolitan conducts cross-connection surveys of its facilities, and reviews plans and drawings to address cross-connection issues (Fig. 3-11). In a major construction effort involving communities and property owners, Metropolitan is in the process of eliminating more than 300 potential cross-connections to keep contamination (such as contaminated runoff) from getting into Metropolitan's potable water lines. This is accomplished by relocating below-ground vacuum and air release valves to above-ground locations.

Water Quality Issues

Uranium Mill Tailings

The U.S. Department of Energy awarded a contract to move the 16-million-ton tailings pile from Moab to Crescent Junction, Utah. The off-site disposal and active groundwater remediation were the preferred alternatives in the final Environmental Impact Statement issued by DOE. Metropolitan has been engaged in coalition efforts with a local agency (Grand County Council), elected officials, and DOE to ensure that the remediation stays on schedule. Movement of this pile has been a long-term Metropolitan priority.

Topock Chromium VI Remediation Project

The state Department of Toxic Substance Control established a schedule for the Pacific Gas and Electric groundwater chromium VI remediation along the Colorado River near Topock, Arizona. Metropolitan actively participates in the remediation process through the Consultative Work Group (CWG), Technical Work Group (TWG), and the PG&E Task Force. The CWG and TWG (i.e., technical experts) are comprised of regulators (state and federal agencies), stakeholders (e.g., Metropolitan and Colorado River Board), and Indian tribes. The CWG and TWG provide forums for stakeholder participation in the corrective action process.

Perchlorate

Metropolitan joined efforts with the Nevada Department of Environmental Protection and other agencies in tracking perchlorate loading into Las Vegas Wash and the Colorado River. Remediation in Henderson resulted in approximately 90 percent reduction in loading (measured in pounds per day) since 1997 (Fig. 3-12). Levels at Lake Havasu intake have dropped to below Metropolitan's reporting level, 2 µg/L (micrograms/L or ppb) since June 2006 (Fig. 3-13).

Metropolitan routinely monitors perchlorate at 34 locations within its system and has not detected any this year. No perchlorate has been detected in the SWP system since 1997.

Pharmaceuticals and Personal Care Products (PCCPs)

PCCPs are emerging contaminants that occur at very low levels in drinking water sources. Metropolitan actively investigates sources, occurrence, and environmental consequences of PCCPs in water supplies.

N-Nitrosodimethylamine (NDMA)

NDMA, an organic chemical associated with liquid rocket fuels and a DBP from chloramines, has been monitored in Metropolitan's waters since 1999. State health officials established a notification level of 10 nanograms per liter for NDMA in 1998 in the absence of a maximum contaminant level. Table 3-10 shows distribution system levels for FY 2006/07.

Fluoridation

In February 2003, Metropolitan's Board of Directors voted to adopt a policy calling for implementation of a drinking water fluoridation program at each of its five treatment plants. Fluoridation systems were under construction at all treatment plants during 2006/07. Staff trained on operations and safety procedures; met with member agencies and regulatory agencies; generated outreach communications; developed control system programming, operations, monitoring and notification plans; and submitted operating permits. Fluoridation is scheduled to go online in fall 2007.

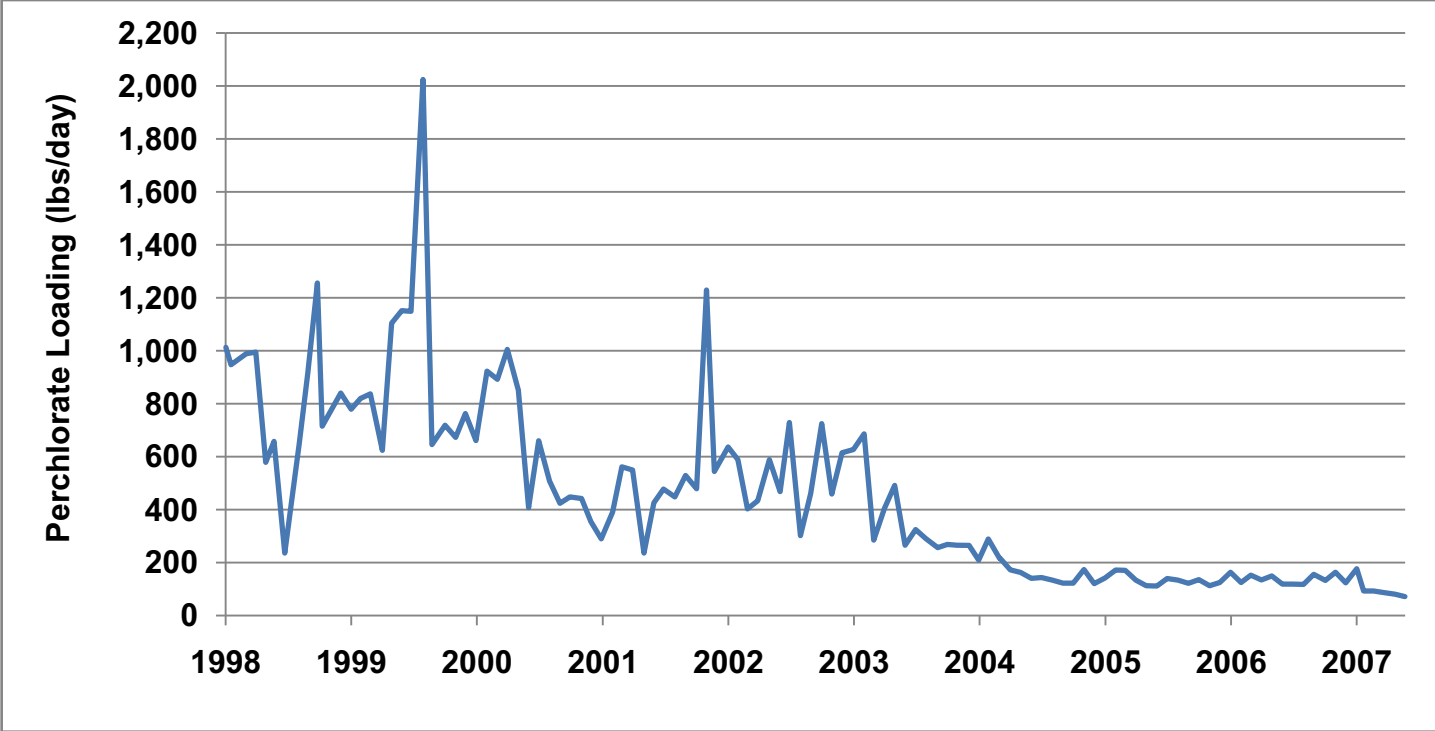


Figure 3-12. Perchlorate Loading in Las Vegas Wash at Northshore Road (1/2 mile upstream of Lake Mead)

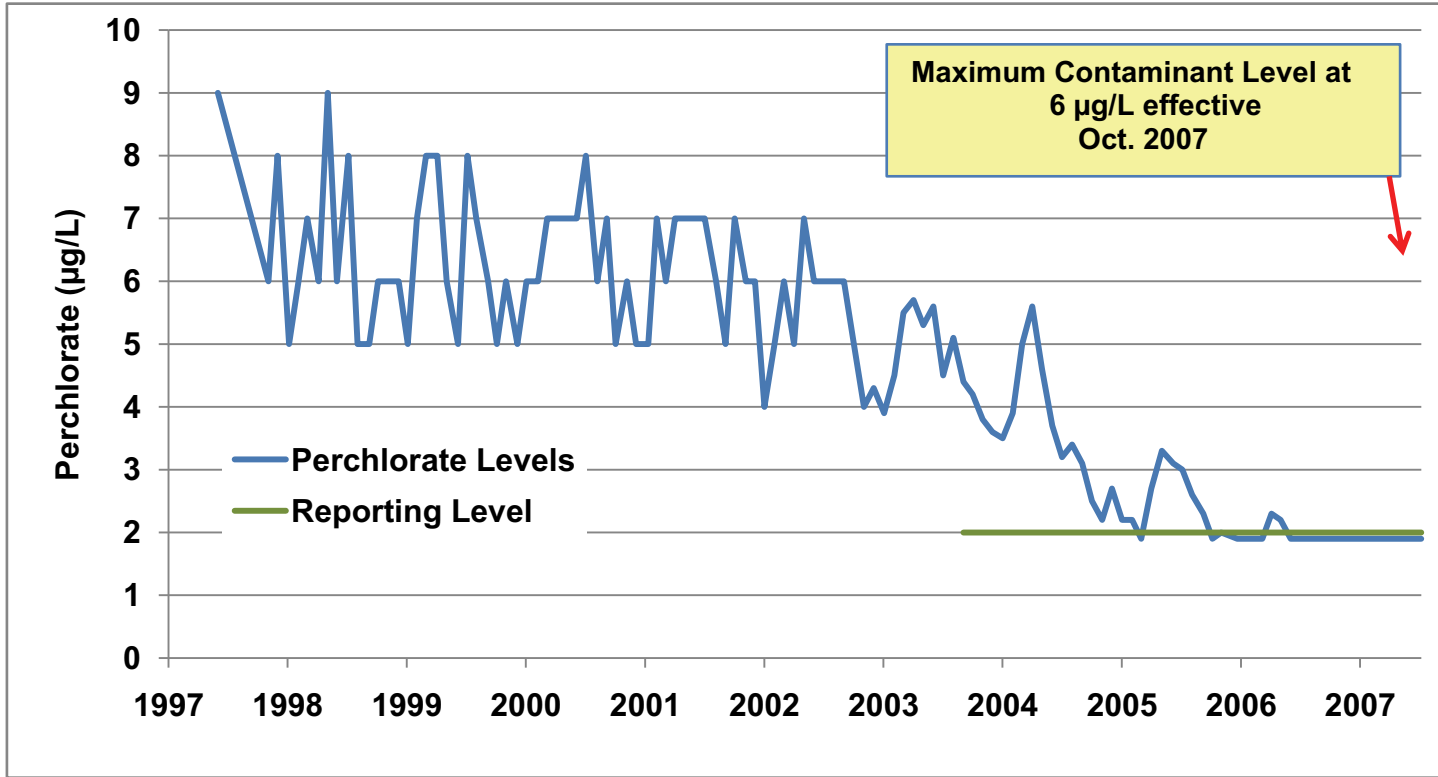


Figure 3-13. Perchlorate Levels at Metropolitan's Whitsett Intake at Lake Havasu

TABLE 3-10
DISTRIBUTION SYSTEM N-NITROSODIMETHYLAMINE
(NDMA) LEVELS (ng/L)
 Fiscal Year 2006/07

| Sample Location | Running Annual Average | Range |
|--|------------------------------|----------------------|
| Diemer Plant DS ¹ | | |
| SA-06 (Santa Ana) | 2.2 | ND ² -3.4 |
| CM-01* (MWDOC) | 4.1 | 2.0-8.2 |
| Jensen Plant DS | | |
| LV-02 (Las Virgenes) | 3.4 | 2.3-4 |
| CA-02* (Calleguas) | 2.7 | 2.0-3.8 |
| Mills Plant DS | | |
| EM-12C (Eastern) | ND | ND-2.5 |
| Skinner Plant DS | | |
| EM-17* | ND | ND-2.1 |
| SD-07 (SDCWA) | ND | ND |
| Weymouth Plant DS | | |
| PM-22 (Three Valleys) | 2.2 | 2.0-2.4 |
| Garvey Reservoir Influent | 5.0 | 3.5-7.5 |
| Garvey Reservoir Effluent | 6.5 | 5.9-7.2 |
| Central Pool Sites | | |
| SMN-01* (Santa Monica) | 3.3 | 2.3-4.5 |
| Palos Verdes Reservoir Influent | 4.7 | 3.4-6.5 |
| LA-21 (Palos Verdes Res. Eff.) (LADWP) | 6.4 | 5.7-7.2 |
| WB-23* (West Basin) | 3.1 | 2.2-3.9 |
| WB-17* | 3.2 | 2.5-4.1 |
| LB-07A* (Long Beach) | ** | ** |
| WB-28* | 3.6 | 2.3-4.7 |
| WB-04* | 3.7 | 2.9-4.8 |
| WWB-* ⁴ | | |
| T-01* (Torrance) | 5.8 | 3.2-7.7 |

¹ DS - distribution system

² ND - not detected

Letters and numbers represent member agencies service connections

* Distribution System terminus

** To be determined after four consecutive quarters have been collected

Watershed and Water Supply

Watershed and Source Water Protection

Metropolitan submitted the 2005 Colorado River Watershed sanitary survey to the state in December 2006 and participated in the technical review of the 2006 State Water Project Watershed sanitary survey.

To protect source waters from wastewater pollution, Metropolitan tracked the proposed expansion of the Sacramento Regional Wastewater Treatment Plant; participated in the Boulder Basin Adaptive Management Plan process to address expanded wastewater facilities in the Las Vegas area; and supported efforts of the Colorado River Regional Sewer Coalition.

In April 2007, Metropolitan completed a Proposition 13-funded study that investigated sources of elevated *E. coli* in Castaic Lake during the winter months in 1998-2001. The study found that controlling food sources for migratory Western Gulls roosting in the lake and restricting cattle access in the watershed had significantly decreased *E. coli* levels since 2002 (Fig. 3-14).

Pump-in Programs and Water Banking

Water Quality staff worked with Water Resource Management and Operations Planning staff to meet water quality and supply requirements when Metropolitan called upon Arvin-Edison Water Storage District to return stored SWP water to the California Aqueduct.

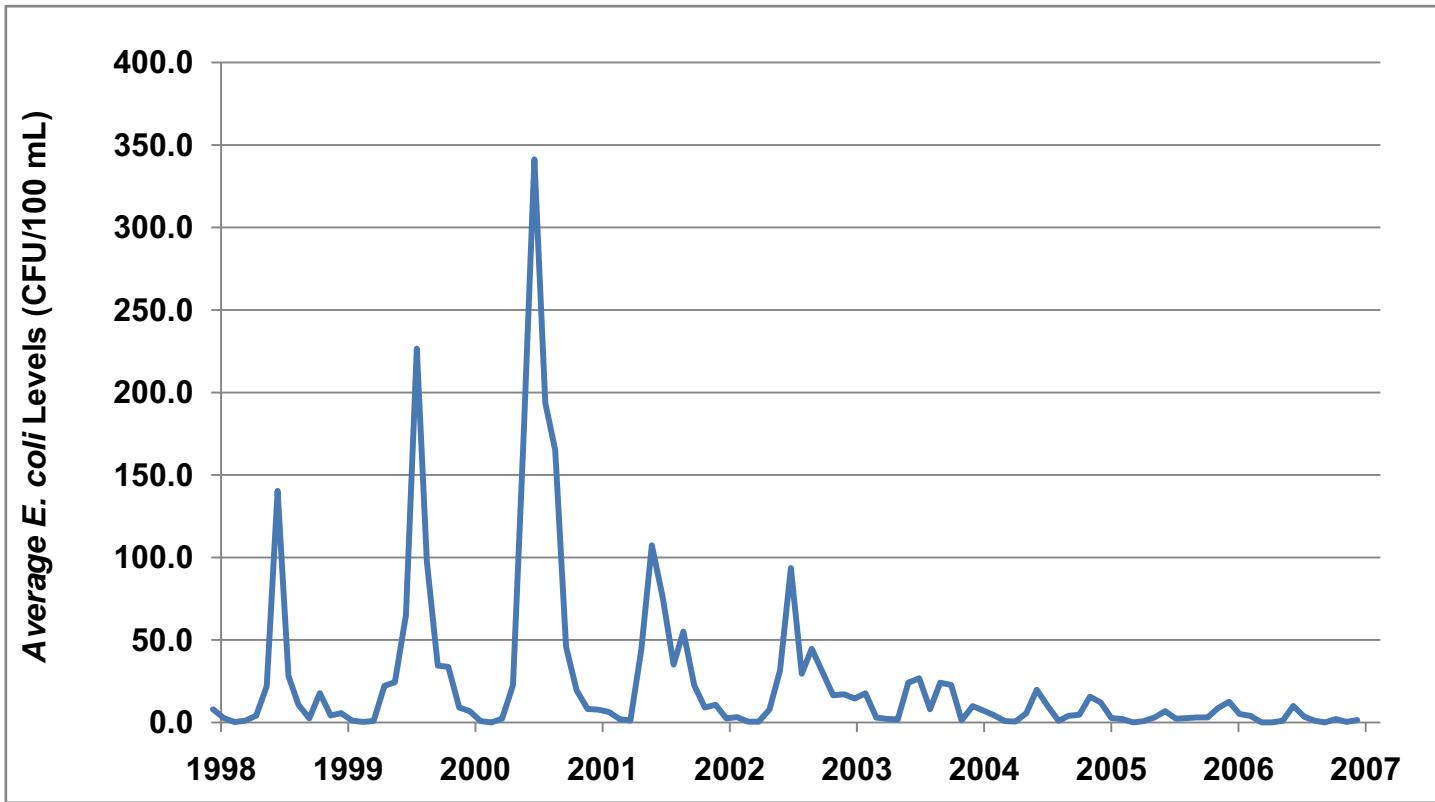


Figure 3-14. Jensen Treatment Plant Influent Average Monthly *E. coli* Levels

Technology Assessment

Treatment Process Optimization and Development

Metropolitan continued studies to evaluate the potential use of ultraviolet light for disinfection of pathogens and reduced formation of DBPs.

Metropolitan has completed the initial four phases of the Partnership for Safe Water and remains committed to optimized treatment and safe drinking water with more than 200 utilities in the partnership.

Desalination Research and Innovation Partnership (DRIP)

Metropolitan entered the final phase of DRIP this year. Staff tested a reverse osmosis (RO) system with 18-inch-diameter RO elements, resulting in 27 percent capital cost savings. Concentrate from this RO system went through an intermediate chemical demineralization process and a secondary RO, increasing overall water recovery to greater than 95 percent. This research showed that optimized conventional treatment can serve as pretreatment for RO.

Funded Projects

Metropolitan partners with funding agencies, including the USEPA, Awwa Research Foundation, universities and other water utilities to conduct applied research on treatment technologies, emerging contaminants, improved analytical methods, and projects that address future regulatory issues (Table 3-11).



These reverse osmosis vessels are the largest of their kind, capable of treating more than 500,000 gallons per day.



Water undergoes optimized conventional pretreatment prior to reverse osmosis.



This "solids contact treatment" system processes 17.5 gallons per minute, increasing overall water recovery for reverse osmosis.

TABLE 3-11
ACTIVE WATER QUALITY GRANTS
 July 1, 2006 through June 30, 2007

The following table represents externally-funded grant projects managed by Water Quality's Principal Investigators during FY 2006/07.

| Prime Funding | | Total Project Budget** | Amount of Award to MWD*** |
|---------------|--|------------------------|---------------------------|
| Agency | Title of Grant Project | | |
| DWR | Safe Drinking Water, Clean Water, Watershed Protection & Flood Protection Act (Proposition 13)* | \$ 7,236,440 | \$ 4,000,000 |
| USEPA | Desalination Research & Innovation Partnership - EPA II* | 3,912,984 | 1,838,597 |
| CALFED | Improving Delta Drinking Water Quality: Managing Sources of Disinfection Byproduct-Forming Material in the State Water Project | 1,502,313 | 195,522 |
| USEPA | Desalination Research & Innovation Partnership - EPA III* | 866,466 | 470,500 |
| AWWARF | Early Detection of Cyanobacterial Toxins Using Genetic Methods | 609,066 | - |
| AWWARF | Contribution of Wastewater to DBP Formation | 750,799 | 449,554 |
| SWRCB | Assessing the Occurrence and Source of <i>E. Coli</i> and EC 0157 Contamination in Castaic Lake | 738,015 | 609,500 |
| AWWARF | Evaluation of Disinfection Practices for DBP and Precursor Occurrence in Consecutive Systems | 545,000 | 80,000 |
| AWWARF | Detection of Infectious <i>Cryptosporidium</i> in Filtered Drinking Water | 1,024,177 | 496,405 |
| AWWARF | Occurrence and Formation of Nitrogenous Disinfection Byproducts | 517,025 | 192,000 |
| USEPA | Desalination Research & Innovation Partnership - EPA IV* | 788,545 | 433,700 |
| AWWARF | Iodinated Acids and Iodide in Drinking Water Supplies | 208,000 | 17,249 |
| USEPA | Four Lab Study: Priority Chlorination Disinfection Byproduct Analysis | 181,035 | 181,035 |
| AWWARF | Challenge Organisms for Inactivation of Viruses by Ultraviolet Treatment | 834,180 | 350,000 |
| USEPA | Detecting Pathogens in Water by Ultrafiltration and Microarray Analysis | 1,253,833 | 599,883 |
| TOTALS | | \$ 20,967,878 | \$ 9,913,945 |

Notes:

*DRIP-related projects

**Reimbursable dollars plus total in-kind commitments; includes payments to subcontractors as applicable.

***Amount managed by Metropolitan.

Service to Member Agencies and Drinking Water Industry

Metropolitan provides its member agencies with technical assistance and information, including water quality data updates, reports, sample analyses, legislative and regulatory guidance, member agency water quality managers meetings, and e-publications, e.g., the *WQ Matters and Reg/Leg Currents*. Additionally, Metropolitan formed a Bromate Task Force with 12 member agencies to establish bromate goals and treatment objectives for Metropolitan's ozone plants; conducted a one-day Source Water Protection Workshop; and provided oversight of pass-through funding to two agencies (Table-3-12).

Security and Emergency Response

Metropolitan participates in USEPA's Environmental Technology Verification Program in verifying the performance of commercially-ready technologies that protect source waters from contamination.

Metropolitan also reviewed USEPA's Water Security Initiative, which includes design, pilot testing, and guidance documents for drinking water contaminant warning systems.

TABLE 3-12
CONGRESSIONALLY-MANDATED GRANTS
AWARDED TO METROPOLITAN

Fiscal Year 2006/07

| Grant Project Title | Term of Award | Total Project Budget (Reimbursable Dollars + In-Kind) | Award Amount to Metropolitan (Reimbursable Dollars) 100% Pass-Thru Funding to Metropolitan | Subrecipient In-Kind | Project Summary |
|---|--|---|--|----------------------|--|
| Biological Treatment for Perchlorate Removal from Groundwater | 9/1/2006–10/31/2010 | \$496,000 | \$496,000 | – | This study will identify, investigate, and resolve the application of hydrogen-based biological treatment for the removal of perchlorate from the city of Pasadena’s groundwater. This grant has been awarded as a result of a congressional mandate and 100% of funding is pass-through to the city of Pasadena (work is being performed by Water Quality & Treatment Solutions, Inc.) under Metropolitan oversight. No in-kind is required for this project. |
| Remediation of Perchlorate-Contaminated Well Water | 10/1/2006–12/31/2007 (Project in closure; final report pending) | \$349,819 | \$192,400 | \$157,419 | This congressional mandate, under Metropolitan oversight, provided 100% pass-through funding to the city of Ontario to address the design of an ion exchange treatment plant at John Galvin Park (city of Ontario) that will remove perchlorate and nitrate contaminated water coming from a groundwater well. Required in-kind of \$157,419 to be met entirely by the city of Ontario. |
| | | \$845,819 | \$688,400 | \$157,419 | |

Conveyance, Distribution and Support

Conveyance & Distribution

Metropolitan's conveyance and distribution system is divided into three regions, western, eastern and desert, spanning portions of Ventura, Los Angeles, Riverside, Orange, San Bernardino and San Diego counties. Collectively, Metropolitan's conveyance and distribution system consists of the 242-mile Colorado River Aqueduct, five pumping plants, 450 miles of high-voltage transmission lines, more than 900 lineal miles of pipelines and canals, 16 hydroelectric plants, five raw-water and three finished-water reservoirs.

Two major shutdowns occurred during the year. The first major shutdown was the Foothill Feeder. During this shutdown a section of 16-foot-diameter pipe was replaced as a result of the prestressed pipeline inspection performed in a previous shutdown, which identified broken wires. Two additional sections of pipe were repaired using carbon fiber. The second major shutdown was the Diemer treatment plant. During this shutdown, a new 144-inch diameter influent conduit was tied into the plant in preparation for future ozone facilities. See Table 1-5 for a full list of shutdowns that occurred during the year.

Operations Support Services

Maintenance support provides various machining, fabrication and welding, coating and mortar lining, valve assembly and disassembly, crane certification, and diving services to MWD internally, and also to member and retail agencies and the Department of Water Resources.

In December and January, for example, maintenance support crews fabricated and mortar-lined three nearly 16-foot-diameter pipe sections for the Foothill Feeder. Even a half-section of pipe is so massive that it takes a forklift to hold the pipe in place while it's being rolled into the proper diameter.

In June, a period that fell outside of Metropolitan's normal shutdown window, construction services crews were called to duty to replace two pipe sections, in two different locations, along the San Diego Pipeline No. 5. The repairs were required as a result of

prestressed pipeline inspections performed in a previous shutdown. Metropolitan's construction crews completed both repairs in nine days.

Security and Emergency Management

By special invitation, on November 15, 2006, Security, System Operations, and Water Quality staff prepared and delivered a comprehensive presentation on Metropolitan's infrastructure, its security challenges, and leading-edge protocols for dealing with water contamination threats. Metropolitan staff presented this before the new Joint Regional Intelligence Center, the nation's first group of this kind formed by the U.S. Department of Homeland Security. Security also hosted DHS and local law enforcement representatives at two critical infrastructure sites as part of DHS's buffer zone protection initiative aimed at improving responsiveness to defense of critical sites within local police and emergency responder jurisdictions.

Emergency Management conducted exercises leading up to a district-wide Enhanced Tabletop Exercise, Operation Hollywood Havoc, on April 4, 2007. The purpose was to practice Metropolitan's ability to use standard plans and procedures to respond to emergencies. Additionally, 3,438 hours of emergency management training was provided to employees during this fiscal year.

Emergency Management coordinated daily with member and outside agencies on planning for emergencies, including Member Agency Response System, Water/Wastewater Agency Response Network, and California Utilities Emergency Association.

In June 2007, training was provided to field and control room personnel on use of two-way radios, planned for use during emergencies in place of cell phones, which are not expected to work in all emergency circumstances.

Energy Management

Colorado River Aqueduct Power

Due to the continuing drought in the Colorado River Basin, Metropolitan has lower CRA pumping requirements than historically experienced prior to 2003. Metropolitan transported 663,000 acre-feet on the CRA in this fiscal year. The current and historical energy resources used to meet CRA water delivery energy requirements are shown in Tables 3-14 and 3-16 and Figure 3-15. Reduced flows on the CRA allowed surplus, non-federal power to be sold to recover more than the cost of CRA power resources (Table 3-15).

Improvements on Hoover Dam turbines and wicket gates have resulted in less water leakage through the wicket gates, improved Hoover unit efficiency, and additional generating capacity when Lake Mead is at an elevation of 1,145 feet or below. Lake Mead was last above 1,145 feet in May 2003. These improvements benefit all the Boulder Canyon Project power contractors.

Alternative Renewable CRA Energy Resource Options

Metropolitan continues to pursue alternative renewable energy resource options for its CRA pump loads. Metropolitan is collecting and analyzing wind meteorological data along the CRA.

State Water Project Power

Metropolitan continues to work with the Department of Water Resources and the State Water Contractors to oversee the State Water Project power costs and associated power portfolio. Metropolitan also coordinates water and power strategies and operations with the DWR through weekly conference calls.

Energy Management Program

Metropolitan initiated the Energy Management Program in 2006 to help design and operate its facilities in the most energy-efficient and cost-effective manner. Efforts include energy efficiency assessments; preliminary design for a proposed one-megawatt solar generation

facility at the Skinner plant and potentially at other sites; gathering of wind data along the CRA; evaluating current and potential hydro-generation locations to assess the feasibility of expanding generation capabilities; and the voluntary reporting of direct and indirect emissions of greenhouse gases. The reporting of emissions will become mandatory with the passage of AB 32, the Global Warming Solutions Act of 2006. Under this law, California will cap its emissions of greenhouse gases at 1990 levels by 2020. This will result in an estimated 25 percent reduction from what the greenhouse gas emissions would be absent any control measures. Metropolitan is working with other stakeholders and the California Air Resources Board, the agency charged with adopting regulations to achieve this goal, to develop programs that fairly distribute the burdens of reducing greenhouse gas emissions.

Hydroelectric Power Recovery Plant Operations

As shown in Table 3-13, Metropolitan has 16 small-conduit hydroelectric power recovery plants that generated a total of 513 million kilowatt-hours, producing gross revenues of \$26 million for the fiscal year. Generation from 15 plants is sold under existing contractual agreements with Pacific Gas and Electric Company, Southern California Edison and DWR. The Wadsworth Pumping Plant at DVL was originally constructed with 12 vertical turbine pumps. Modifications to the control system in 2001 allow the pumps to operate as turbine generators. Energy produced is sold in the spot energy market.

**TABLE 3-13
HYDROELECTRIC POWER RECOVERY PLANTS
2005–2007 PRODUCTION**

| Power Plant | Capacity (Megawatts) | 2006/07 Production (kWh) | 2005/06 Production (kWh) |
|--------------------|---------------------------------|---|---|
| Greg Ave. | 1 | 259,200 | 321,600 |
| Lake Mathews | 5 | 14,805,376 | 13,493,517 |
| Foothill Feeder | 9 | 36,007,998 | 65,478,367 |
| San Dimas | 10 | 60,215,451 | 66,754,608 |
| Yorba Linda | 5 | 27,684,600 | 31,612,697 |
| Sepulveda Canyon | 9 | 58,242,000 | 62,184,000 |
| Venice | 10 | 36,040,447 | 39,619,259 |
| Temescal | 3 | 10,185,523 | 8,144,506 |
| Corona | 3 | 9,383,421 | 7,431,586 |
| Perris | 8 | 31,073,028 | 24,598,574 |
| Rio Hondo | 2 | 8,862,395 | 7,211,884 |
| Coyote Creek | 3 | 0 | 951,799 |
| Red Mountain | 6 | 21,695,417 | 34,792,042 |
| Valley View | 4 | 8,243,861 | 1,604,419 |
| Etiwanda | 24 | 152,335,103 | 122,669,648 |
| Wadsworth (DVL) | 21 | 38,233,580 | 14,686,611 |
| TOTAL | 122 | 513,267,400 | 501,555,118 |

Annual power generation varies significantly, depending on:
The mix of water sources (Colorado vs. State Water Project), what shutdowns/outages are taking place and each generator's operational constraints

TABLE 3-14
METROPOLITAN'S CRA ELECTRIC ENERGY USE
 Fiscal Year 2006/2007

| Energy Source | kilowatt-hours | Percentage of Total Energy Requirement |
|-------------------------------------|-----------------------|---|
| Hoover Power Plant | 1,143,870,000 | 87.88% |
| Parker Power Plant | 229,881,000 | 17.66% |
| Edison Benefit Energy ¹ | 387,630,441 | 29.78% |
| Exchange (Edison) ² | (38,400,000) | -2.95% |
| Exchange (DWR) ³ | 68,876 | 0.01% |
| Supplemental Energy Purchases/Sales | (421,365,512) | -32.37% |
| TOTAL | 1,301,684,805 | 100.00% |

Notes:

- ¹ Energy provided by Edison at no cost pursuant to 1987 Service and Interchange Agreement.
- ² Energy exchanged (banked) with another utility. Negative number indicates net energy sent to the other utility.
- ³ Energy exchanged (banked) with another utility. Positive number indicates net energy received from the other utility

TABLE 3-15
ENERGY COST FOR PUMPING
COLORADO RIVER WATER
 Fiscal Year 2006/2007

| Energy Source | Cost (\$) |
|--|------------------|
| Hoover Power Plant | 16,580,628 |
| Parker Power Plant | 3,917,104 |
| Supplemental Energy Purchases/Sales | (21,105,221) |
| Exchange (Edison & DWR) ¹ | 0 |
| Colorado River Water Pumping Revenue | (264,917) |
| Benefit Energy and Exchange Surcharge ² | 76,831 |
| Reduction in Energy Surcharge | (137,768) |
| TOTAL | (933,343) |

Notes:

- ¹ Cost of exchanging energy with another utility
- ² Tax paid to State of California for Edison Benefit and Exchange energy

TABLE 3-16
METROPOLITAN'S HISTORICAL CRA ELECTRIC ENERGY USE
 Kilowatt Hours

| | Hoover | Parker | Edison Benefit ¹ | Edison Exchange ² | DWR Exchange ³ | Edison & DWR Exchange & Edison Benefit | Supplemental Energy Purchases/Sales | Total |
|----------|---------------|-------------|--------------------------------|---------------------------------|------------------------------|--|---|---------------|
| 1987/88* | 1,432,001,000 | 290,400,000 | 216,981,190 | 1,764,000 | 0 | 218,745,190 | 832,498,639 | 2,773,644,829 |
| 1988/89 | 1,231,206,000 | 237,142,000 | 215,485,363 | (27,764,000) | 0 | 187,721,363 | 735,276,330 | 2,391,345,693 |
| 1989/90 | 1,205,476,000 | 230,545,000 | 219,139,828 | 24,777,000 | 0 | 243,916,828 | 754,629,485 | 2,434,567,313 |
| 1990/91 | 1,130,155,000 | 223,831,000 | 221,837,010 | 13,298,000 | 0 | 235,135,010 | 871,799,953 | 2,460,920,963 |
| 1991/92 | 1,086,888,000 | 206,513,000 | 210,490,214 | 16,145,000 | 0 | 226,635,214 | 891,296,400 | 2,411,332,614 |
| 1992/93 | 966,614,000 | 182,606,000 | 208,800,738 | (28,220,000) | 0 | 180,580,738 | 1,035,586,974 | 2,365,387,712 |
| 1993/94 | 1,256,009,000 | 214,961,000 | 199,304,945 | (16,175,000) | 0 | 183,129,945 | 914,591,730 | 2,568,691,675 |
| 1994/95 | 1,166,517,000 | 217,365,000 | 186,648,325 | (88,977,000) | 0 | 97,671,325 | 680,010,352 | 2,161,563,677 |
| 1995/96 | 1,357,937,000 | 237,627,000 | 286,971,075 | (32,150,000) | 0 | 254,821,075 | 401,318,041 | 2,251,703,116 |
| 1996/97 | 1,292,375,000 | 243,993,000 | 253,134,785 | 47,302,000 | 0 | 300,436,785 | 595,050,513 | 2,431,855,298 |
| 1997/98 | 1,370,317,000 | 302,069,000 | 200,076,045 | 90,000,000 | (123,316,955) | 166,759,090 | 327,992,313 | 2,167,137,403 |
| 1998/99 | 1,411,403,000 | 297,219,000 | 212,312,000 | 13,490,000 | 108,417,736 | 334,219,736 | 329,691,494 | 2,372,533,230 |
| 1999/00 | 1,392,515,000 | 262,383,000 | 263,326,907 | (26,405,000) | 3,967,942 | 240,889,849 | 646,961,000 | 2,542,748,849 |
| 2000/01 | 1,311,068,000 | 243,647,000 | 173,785,599 | 21,586,000 | 0 | 195,371,599 | 788,937,000 | 2,539,023,599 |
| 2001/02 | 1,322,037,000 | 241,048,000 | 199,205,189 | (54,931,000) | 0 | 144,274,189 | 804,044,166 | 2,511,403,355 |
| 2002/03 | 1,193,682,000 | 230,871,000 | 284,085,067 | 50,371,800 | (162,807,504) | 171,649,363 | 232,051,017 | 1,828,253,380 |
| 2003/04 | 1,179,118,000 | 229,886,000 | 164,721,756 | (61,823,800) | 105,280,095 | 208,178,051 | (141,923,768) | 1,475,258,283 |
| 2004/05 | 931,893,000 | 198,606,000 | 381,481,989 | 18,022,000 | 5,059,196 | 404,563,185 | (39,632,380) | 1,495,429,805 |
| 2005/06 | 1,158,901,000 | 212,687,000 | 405,612,265 | (116,265,000) | 37,054,891 | 326,402,156 | 74,465,049 | 1,772,455,205 |
| 2006/07 | 1,143,870,000 | 229,881,000 | 387,630,441 | (38,400,000) | 68,876 | 349,299,317 | (421,365,512) | 1,301,684,805 |

Notes:

* Includes June 1987 data

1 Energy provided by Edison at no cost pursuant to 1987 Service and Interchange Agreement.

2 Energy exchanged (banked) with another utility. Negative number indicates net energy sent to the other utility.

3 Energy exchanged (banked) with another utility. Positive number indicates net energy received from the other utility.

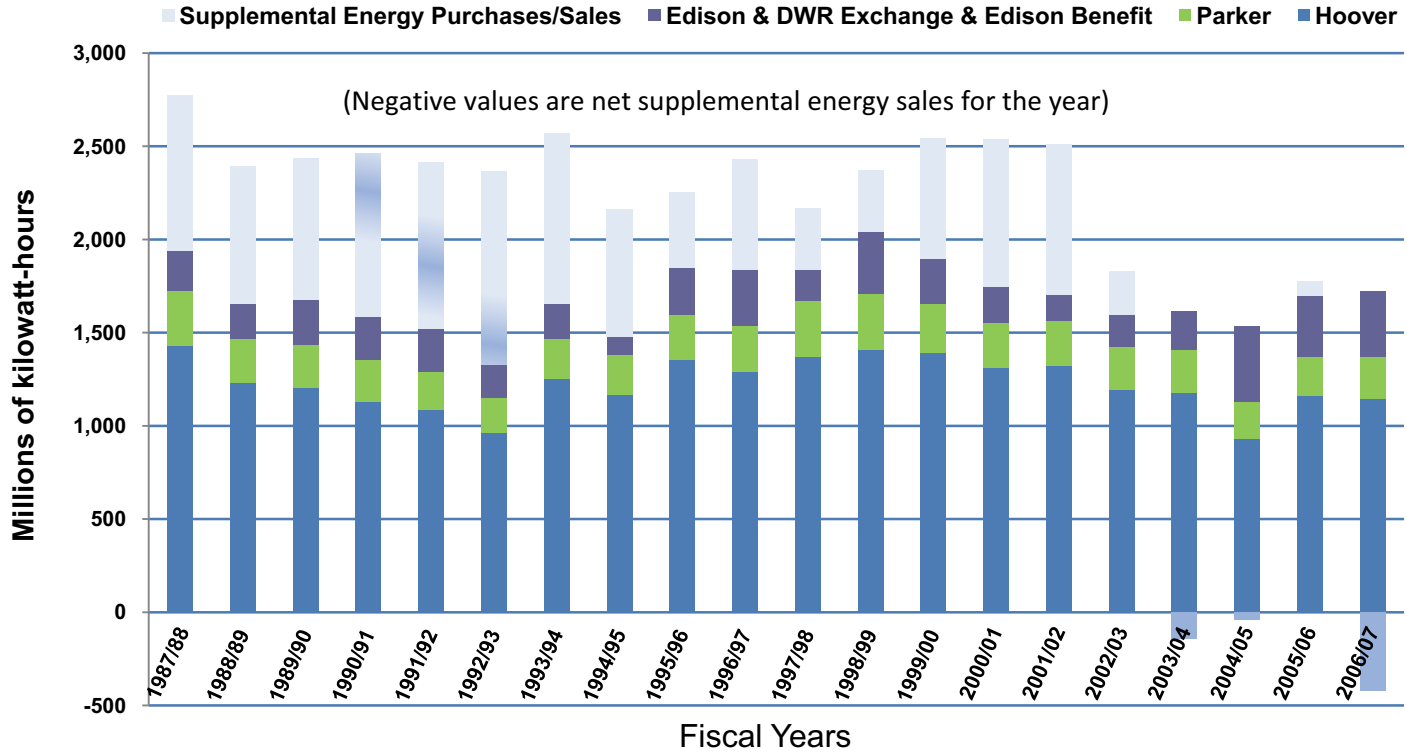


Figure 3-15. CRA Energy Mix 1987 to 2007

Apprenticeship Program

By the end of June 2007, Metropolitan's first class of apprentices was nearing graduation, while a second class was well into its course of study. Apprentices will complete 640 hours of classroom instruction and 7,280 hours of on-the-job training over 4-1/2 years and receive 36 units of college credit through Santiago Canyon Community College. Metropolitan's apprenticeship programs received state certification in November 2005.

Environmental, Health and Safety

Environmental, Health and Safety kicked off a new initiative this year to ascertain how well Metropolitan facilities were complying with CalOSHA regulations. EHS teams were reorganized to focus on field conditions, assess compliance levels at each facility and make immediate corrections, as applicable.

EHS priorities are to integrate safe work practices and EHS requirements into daily operations; improve communication and disclosure so that issues of noncompliance may be adequately addressed in an expedited manner; and recognize employees who use safe work practices, while holding accountable those who disregard safe work practices.

Several goals were achieved during this year:

- Reorganized EHS programs and site support to centralize responsibility and accountability;
- Established performance measures;
- Developed and implemented employee training plans at the operational facilities completing 81 percent of the target to meet regulatory requirements;
- Assessed and corrected deficiencies with facility safety committee compliance; and
- Assessed and updated High-Voltage Switching Training

Starting at Jensen and the Desert facilities, EHS and operational staff assessed compliance levels of EHS programs, corrected compliance gaps and clarified roles and responsibilities towards regulatory compliance. The EHS Facility Tactical Assessment and Compliance Team helped EHS program managers to identify program gaps at the operational facilities and brought supporting expertise where the EHS risks were the highest. Facility managers, front-line managers, and employees worked with the EHS program teams to identify and correct compliance issues in a collaborative process, resulting in a greater understanding of program requirements and a reduced negative impact on operations and maintenance activities.

The issues at Jensen and the Desert facilities varied across the six primary areas of EHS programs:

1. air quality;
2. wastewater;
3. hazardous materials and waste management;
4. injury, illness and prevention program;
5. general and construction safety; and
6. hazardous exposure.

Of the remaining issues to be corrected, some capital improvement programs will be assigned while others will be remediated with district-wide program corrections. For a list of accident incidents during 2006/07, please see Table 3-17.

Training

2006 marked the creation of the Environmental, Safety, and Technical training team in WSO. The EHS training team presented 647 internal training sessions to 8,355 students for a total of 33,579 training hours. In addition to the Metropolitan-provided training, 1,894 students attended 17,606 hours of toolbox, on-the-job, and external training.

A new Web-based system was developed to create individual training plans. This new system provides employees and their managers with a tool to develop individualized training plans, and

track completion of training requirements. The training database was also updated to enable forecasting of training requirements based on the individual training plans. The data is also used to identify training compliance, develop training schedules, and prepare training budgets. To date, 100 percent of Metropolitan employees have individualized training plans.

TABLE 3-17
ACCIDENT INCIDENTS
 Fiscal Year 2006/07

| Location | DART Incident Rate | Total Incident Rate |
|---------------------|-----------------------------------|------------------------------------|
| Diemer | 12.11 | 16.15 |
| Diamond Valley Lake | 6.80 | 23.14 |
| Eagle Mountain | 11.57 | 11.57 |
| Eagle Rock | 0 | 10.21 |
| Gene Camp | 5.45 | 6.55 |
| Hinds | 0 | 0 |
| Inland Feeder | 0 | 0 |
| Intake | 0 | 0 |
| Iron Mountain | 8.57 | 12.86 |
| Jensen plant | 9.31 | 9.31 |
| La Verne | 2.26 | 2.83 |
| Lake Mathews | 15.88 | 18.15 |
| Lake Skinner | 10.76 | 16.15 |
| Mills plant | 4.39 | 7.32 |
| Sacramento | 0 | 0 |
| Soto Street | 0 | 3.31 |
| Sunset | 0 | 0 |
| Union Station | 0.74 | 1.75 |
| Washington, D.C. | 0 | 0 |
| TOTAL | 3.37 | 4.94 |

The Total Case Incidence Rate, what Metropolitan calls the injury/illness rate, is defined by the Occupational Health and Safety Administration as the number of recordable incidents in a year, multiplied by 200,000 and divided by the total hours worked that year. DART is defined by OSHA as the annual number of recordable incidents resulting in days away from work, restricted work or transfer, multiplied by 200,000 and divided by the total hours worked that year. A recordable incident is generally defined as a new work-related injury or illness which results in death, lost time from work, work restriction, or medical treatment beyond first aid.

Please note that there were significant changes to the OSHA recordkeeping rules in 2002 which resulted in a corresponding impact on incident rates. Comparing current rates to years prior to 2002 are not statistically relevant.