METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

F.E. Weymouth Filtration Plant

HIGHLIGHTS

- 520-mgd water treatment plant.
- 13,000 ppd of ozone generation capability.
- pH adjustment upstream and downstream of the ozone contactors for bromate minimization.
- Taste and odor control provided with hydrogen peroxide.

Implementing ozonation at MWDSC's F.E. Weymouth Filtration Plant will allow unrestricted blending of Colorado River Water and State Project Water and optimize source water usage.

Built in 1939, The Metropolitan Water District of Southern California's (MWDSC) 520-mgd F.E. Weymouth Filtration Plant is one of the largest conventional treatment/filtration plants in the United States. This facility treats water delivered from the Colorado River Aqueduct and the State Project Water (SPW) California Aqueduct. As a result of the upcoming Stage 2 Disinfectant/Disinfection By-Products Rule, the U.S. EPA essentially requires the use of ozone or other alternative (non-chlorine) disinfection at all plants treating significant amounts of SPW due to elevated levels of DBP precursors. The blended water at the Weymouth plant currently undergoes primary disinfection using chlorine gas and secondary disinfection using chloramines for residual preservation. MWDSC has been preparing for the conversion of disinfection facilities at several of its filtration plants through extensive pilot testing and other applied research, including the 5.5-mgd oxidation demonstration plant at Weymouth. The result of these applications led to the planned Oxidation Retrofit Program (ORP).

In early 2003, MWDSC selected Carollo to provide perform a Site Engineering Study for the Weymouth plant. This study essentially determined a site master plan that incorporated near-term and possible future projects. As the Site Engineering Study task nearly completion, MWDSC contracted with Carollo to perform preliminary design of the ORP facilities at Weymouth. The following components provide a design ozone dosage of 2.0 mg/L for up to 520 mgd, or nearly 8,700 ppd of on-site generated ozone to the Weymouth facility: With redundancy, the ozone generation system will be capable of producing up to 13,000 ppd.

- Liquid oxygen storage, with subsequent oxygen separation and ozone generation.
- Four ozone contactors with ten chambers each for a design contact time of ten minutes.
- An off-gas ozone destruction system and an effluent ozone quenching system.
- pH adjustment upstream of the contactors to minimize bromate formation, with readjustment downstream of the contactors.
- Standby primary disinfection with sodium hypochlorite or gaseous chlorine.
- Taste and odor control with hydrogen peroxide.
- Relocation and replacement of the plant flow meter and rapid mix unit, and rerouting of the filter backwash return upstream of the ozone contactors.
- A new railway spur for improved delivery of sulfuric acid and caustic soda.