

6.0 WATER SUPPLY

6.1 WATER SOURCE

As described in Section 2.5.6, project water requirements for process makeup water will average approximately 1,063 gallons per minute and peak at a maximum of 1,361 gallons per minute (see Table 2.5-6).

Recycled water will be supplied to the Marsh Landing Generating Station (MLGS) by Delta Diablo Sanitation District (DDSD). The Applicant has a will-serve letter (see Appendix I) with DDSD for use of recycled water at the MLGS. This will-serve letter was signed in May 2008. DDSD has a sufficient amount of recycled water available to the region and is currently in the process of expanding the existing capacity of its wastewater treatment plant and system. The will-serve letter from DDSD confirms adequate water supply is available for the project.

The water supply facilities will include a water treatment plant and conveyance facilities to produce and supply recycled water generated from untreated wastewater collected at the Bridgehead Lift Station (BLS), at the intersection of Bridgehead Road and Wilbur Avenue. BLS is a facility designed to convey untreated wastewater collected from the area to an existing regional treatment plant in Pittsburg, California, that is owned and operated by DDSD. The current design flow of the lift station is 11.75 million gallons per day (MGD). The new satellite treatment plant will be designed, constructed, and operated by DDSD.

The satellite treatment plant would only process the amount of water required by the MLGS. Therefore, the Applicant will fund these improvements at the BLS. Additional flow of untreated wastewater received at BLS would bypass the recycled water facility and be conveyed to the regional wastewater treatment plant. A preliminary layout drawing of the proposed treatment facilities at the Bridgehead Lift Station is provided in Figure 6-1.

The new satellite treatment plant would produce up to 1,000 gallons per minute (gpm) (or 1.44 MGD) of recycled water suitable for use at the MLGS facility. The recycled water will be conveyed via a new water supply pipeline and stored in a raw water storage tank at MLGS during off-peak times to meet peak water demand. Provisions will be included to handle nitrogen and phosphorus in the treated water. Removal of these substances, which are commonly found in untreated wastewater, is intended to reduce scaling, corrosion, and fouling of the MLGS facilities.

The treatment facilities will require a high level of reliability. Therefore, redundant, standby equipment and process tanks would be provided where needed to maintain treatment capacity even if a system fails.

The quality of the water produced will need to comply with Reverse Osmosis feedwater specifications as given in Table 2.5-7. Although this water is not required to meet California's Code of Regulations Title 22, because it will not be used for cooling tower makeup water, the quality of the water produced at the satellite treatment plant will meet or exceed most of the Title 22 requirements.

In order to sustain one day of water usage under peak operating conditions in the event of a water supply interruption, a 1.8-million-gallon raw water storage tank will be provided on the MLGS site. The water will be conveyed to the site using two 50 percent centrifugal pumps nominally sized for 500 gpm each.

Potable water will be provided by the City of Antioch. The MLGS potable water system will distribute potable water to the plant's washrooms, safety eyewash showers, and other potable water uses.

6.2 WATER CONVEYANCE

Recycled water for the MLGS plant will be conveyed via a new underground pipeline from BLS along Wilbur Avenue to the new onsite raw water storage tank. The new pipeline will be constructed along existing road right-of-ways. The total length of the pipeline from BLS to the MLGS site is approximately 4,700 feet, of which approximately 3,600 feet would be along Wilbur Avenue (see Figure 2.3-1a). The remainder would be along the existing Contra Costa Power Plant (CCPP) access road. The makeup water pipeline is expected to be a 10-inch-diameter, high-density polyethylene (HDPE) pipe. Final size and material will be determined during detailed design.

The project will connect to an existing 6-inch-diameter potable water line that runs north-south through the CCPP property. The total length of the new 4-inch-diameter connection pipeline will be approximately 100 feet (see Figure 2.5-10).

6.3 CONSTRUCTION

6.3.1 Treatment Facility Construction

DDSD will construct the new satellite treatment facility at BLS. The new facilities will be constructed within the northern portion of DDSD's BLS property (on approximately 1.7 acres of the 3.4-acre property). As part of previous DDSD construction activities, this portion of the property has been rough graded such that extensive regrading of the site is not anticipated. Excavation and/or pile driving would be expected to be limited to that required for building and tank foundations.

6.3.2 Water Pipeline Construction

The new water supply pipeline between BLS and the new MLGS plant will be installed in a trench within the existing road rights-of-way using standard pipeline installation techniques and in accordance with the manufacturer's requirements for the installation of HDPE piping (see Figure 2.5-9). Topsoil will be removed and stored prior to excavation of the pipeline trench. Any portion of existing roads or pavement that must be removed in the trenching process will be disposed of offsite in an appropriate disposal area. Spoils from trenching will be stored alongside the trench. The pipe sections will be joined by fusion welding and laid in the trench on a sand base. To the extent possible, excavation spoils will be used for backfill. Where trenching spoils are not suitable, imported backfill will be used. Once backfilled, the surface will be repaved.

The potable water supply pipeline will connect to the existing water supply pipelines and will be installed in a trench. Standard pipeline installation techniques will be used. Spoils from trenching will be stored alongside the trench. The pipe sections will be joined by fusion welding and laid in the trench on a sand base. To the extent possible, excavation spoils will be used for backfill. Where trenching spoils are not suitable, imported backfill will be used. Once backfilled, the surface will be either paved or covered with compacted soil and/or gravel.

Dewatering during construction may be required where excavation is below the groundwater table. To ensure proper disposal of dewatered groundwater, a dewatering plan will be developed prior to excavation. The plan will include requirements for water sampling, analysis, and analytical review. The plan will define discharge options based on volume, chemical analysis, and permit discharge limits. Prior to proceeding with discharge, all appropriate regulatory agencies will be consulted and/or notified and all required special conditions or permit variance conditions will be met.

6.4 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

All applicable state and local regulations concerning the construction of the treatment facilities and the connection and routing of water piping used for potable services will be followed in the design of this system. A description of the laws, ordinances, regulations, and standards that pertain to the construction of the treatment system is included in Section 2.10. Those that pertain to the water supply pipeline are included in Sections 7.14.5 through 7.14.7, inclusive.