

## STAFF REPORT APPENDIX 7

### RECYCLED WATER FACILITY TREATMENT PROCESSES

Evaluation of secondary effluent water quality data demonstrated the need for a tertiary treatment process to reduce effluent turbidity levels to enable disinfection to reduce bacteria to less than 2.2 MPN/100 mL. The chosen processes are Coagulation-Flocculation-Sedimentation (CFS).

The Supplier considered two CFS processes for this project. Validation testing of both units occurred in August and September 2004 (the peak food processing season) to determine the degree of treatment provided. A competitive preselection process identified the Desadeg process as having the most benefits for the Recycling Project.

The chosen process routes the secondary effluent through a rapid-mix chamber for high-energy mixing of the coagulant and the coagulant aid into the wastewater. The next tank, the reactor chamber, mixes the secondary effluent with a polymer and sludge that has been recirculated from the settling tank. The mixture then flows into the settling tank where the coagulated and flocculated solids settle to the bottom while the clear water rises through a set of tubes into effluent channels for conveyance to the filtration process.

In 2004, the Supplier tested a pilot filtration unit at the WWTF during the peak food processing season. The pilot tests results established the need for a CFS process upstream of the filters and identified design criteria for chemical dosage and filter loading rates. The pilot tests demonstrated that cloth media filters (preceded by the chosen CFS) could filter solids from the wastewater and meet the Title 22 standards. The California Department of Public Health (CDPH) approved the chosen filtration process for Title 22 water reclamation installations.

The Supplier chose to disinfect clarified secondary effluent via an ultraviolet (UV) disinfection system. The UV channel will contain the number of lamps necessary to provide the required UV exposure to treat the Recycling Plant's flows, with one additional bank of lamps available as standby. A future channel will be constructed but is not planned to be equipped with banks at this time. Channel water depth will be set by effluent weirs that divert disinfected recycled water into an effluent basin for conveyance to the recycled water distribution pump station.

The Supplier designed the UV disinfection system according to the *Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse (2003)*, and according to designs developed from the CDPH-approved research on reclaimed water disinfection system design.