



Understanding the Process

Dublin San Ramon Services District (DSRSD) provides wastewater collection and treatment services in Dublin and southern San Ramon areas. Treated wastewater is recycled primarily for landscape irrigation, and the rest is disposed of in the San Francisco Bay.

1 Collection System

Wastewater (sewage) from homes, commercial businesses, and industrial facilities flows into the treatment plant through more than 160 miles of underground pipeline (also known as sanitary sewers). Most of the pipes slope downward to allow the wastewater to flow by gravity. For areas where gravity cannot be relied on, the wastewater is pumped up and over hills by strategically located pumping stations. The system of sewers must be continually cleaned and maintained in order to transport millions of gallons of wastewater to the plant daily.

2 Pretreatment - Barscreen

After entering the plant, wastewater passes through bar screens where large objects (rags and branches) are removed. Screenings are then compacted and the water is removed (dewatered) so that they can be disposed of in a landfill.

3 Pretreatment - Pre-Aeration and Grit Removal

The path of the wastewater continues on to pre-aeration tanks where grit (inorganic material such as sand, gravel, and metal shavings, and non-degradable organic material such as coffee grounds, eggshells, and hard-shelled seeds) is removed. Then the grit is dewatered and disposed of in a landfill. Removal of screenings and grit from the wastewater helps to protect mechanical equipment and pumps from abnormal wear, and prevents clogged pipes in the treatment plant. Pre-aeration aids in separating oils and grease from the wastewater and it reduces odors.

4 Primary Treatment - Sedimentation Tanks

These clarifiers, also known as primary sedimentation tanks, are where material that floats (scum) is skimmed from the water surface, and material that settles (primary sludge) is scraped from the tank bottom. The primary sludge is pumped to the solids handling system for further processing.

5 Secondary Treatment - Aeration Basins

Following primary sedimentation, the wastewater enters aeration basins where a biological process occurs. In these tanks, millions of beneficial microscopic organisms, commonly called "bugs" by plant operators, break down and feed off dissolved organic wastes and material that neither sink nor float. As the "bugs" eat the "food," "cleaning" the wastewater, they grow and reproduce.

6 Secondary Treatment - Clarifier

These clarifiers are also known as secondary sedimentation tanks. Similar to the primary sedimentation process, scum is skimmed off the water surface, while blades scrape the solids from the bottom of the tank. To maintain an adequate population of "bugs" in the aeration basins, a portion of the settled solids are returned to the aeration basins, and the remainder is sent to the solids handling system for processing.

7 Disinfection

Sodium hypochlorite is used to disinfect the treated wastewater that is discharged to the Livermore Amador Valley Water Management Agency (LAVWMA) Export System. The chlorine contact tank provides adequate time to attain proper levels of disinfection.

8 The Bay

The treated wastewater is pumped through the LAVWMA pipeline to the East Bay Dischargers Authority (EBDA) System. EBDA de-chlorinates the treated wastewater (chlorine is harmful to aquatic life) and transports it with treated wastewater from other East Bay agencies to the San Francisco Bay. The treated wastewater is discharged into a deepwater outfall near the San Leandro Marina. The final disposal point is 3,700 feet from shore, and 23.5 feet below the surface. Prior to discharge into the Bay, extensive testing ensures that water quality standards are met and the discharge is safe for the marine environment.

9 Tertiary Treatment for Recycled Water

Some of the secondary treated wastewater is diverted to a recycled water treatment plant where it goes through tertiary treatment. First it passes through a ballasted flocculation system - a physical chemical clarification process that fixes suspended solids onto ballast (sand) with the aid of a polymer to quickly settle out particles. Then the liquid passes through sand filters and ultraviolet disinfection. The resulting recycled water irrigates parks, roadway medians, golf courses, and schoolyards.

10 Solids Handling

Solids collected from the primary and secondary sedimentation tanks are sent to a sludge thickener to remove water. The thickened sludge enters the digesters, large heated mechanical "stomachs" in which anaerobic micro-organisms break down the sludge solids into stable compounds. Digested sludge, also known as bio-solids, still contains a significant amount of water. These bio-solids are sent to facultative sludge lagoons and after six years, the solids are removed and injected 18" under the surface in the dedicated land disposal site.

Learn more at www.dsrds.com