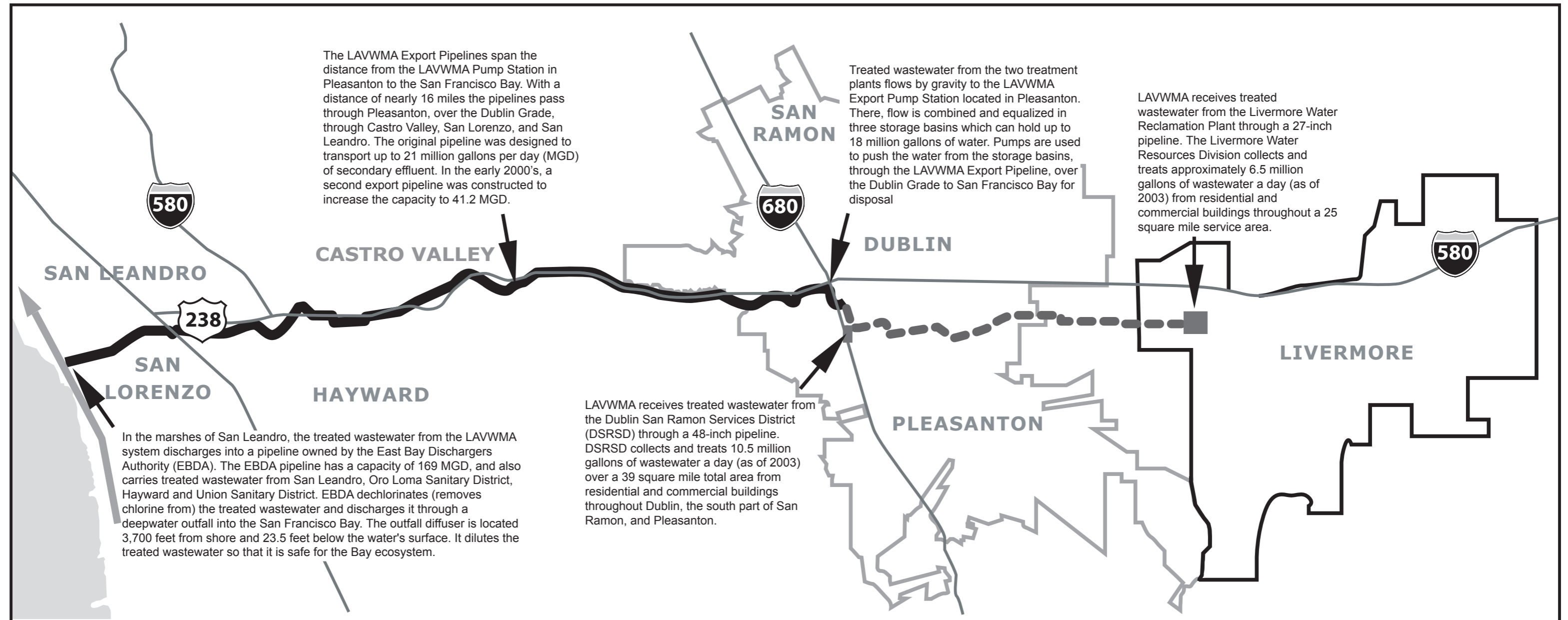







The LAVWMA System

The Livermore-Amador Valley Water Management Agency (LAVWMA) is a Joint Powers Agency comprised of the cities of Livermore and Pleasanton, and the Dublin San Ramon Services District. LAVWMA was created in 1974 when the three entities agreed to cooperate in the construction, operation and maintenance of facilities for the disposal of treated wastewater from the Livermore-Amador Valley.



LEGEND

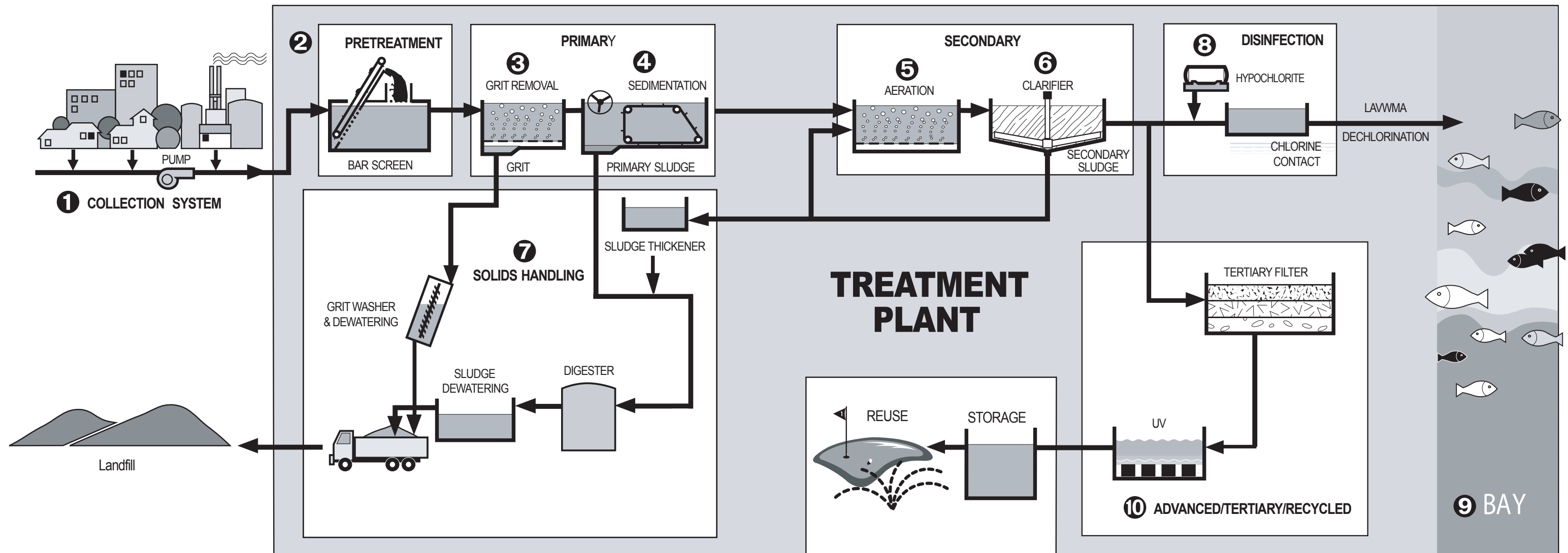
-  LAVWMA Export Pipeline
-  Livermore Pipeline
-  EBDA Pipeline

-  DSRSD Wastewater Service Area
-  Livermore Wastewater Service Area



D Schematic of a Wastewater Treatment Plant

Below is a diagram of the municipal wastewater treatment plant located in Livermore



The Livermore Water Reclamation Plant, operated by the City's Water Resources Division, provides wastewater service to homes and businesses in the City of Livermore. Treated wastewater is recycled primarily for landscape irrigation, and the rest is disposed of in the San Francisco Bay.

1. Collection System

Wastewater (also known as sewage) from homes, commercial businesses, and industrial facilities flows into the treatment plant through miles of underground pipeline, (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 the millions of gallons of wastewater to the plant each day.

2. Pretreatment

After entering the plant, wastewater passes through bar screens where large objects such as rags, branches, and various other floating objects are removed. Screenings are disposed of in a landfill.

3. Pre-Aeration – Grit Removal

The path of the wastewater continues on to pre-aeration tanks where

grit (inorganic material such as sand, gravel, and metal shaving, and non-degradable organic material such as coffee grounds, eggshells, and hard-shelled seeds) is removed. The grit is washed and dewatered prior to disposal 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 plant.

4. Primary Sedimentation Tanks

(also known as Primary Clarifiers)
Next, the wastewater is pumped to large sedimentation tanks where material that floats (scum) is skimmed from the water surface, and material that settles (sludge) is scraped from the tank bottom. The settled material, called primary sludge, is pumped to the solids handling system for further processing.

5. Secondary Aeration

Following primary sedimentation, the wastewater enters aeration tanks 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 sinks nor floats. As the "bugs" eat the "food," "cleaning" the wastewater, they grow and reproduce.

6. Secondary Sedimentation Tanks

(also known as Secondary Clarifiers)
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. Solids Handling

Solids collected from the secondary sedimentation tank are sent to a sludge thickener to remove water. The thickened sludge, along with primary sludge, next enters digesters: large heated mechanical "stomachs" in which anaerobic microorganisms (live in the absence of free oxygen) break down the sludge solids into stable compounds. Digested sludge, (also known as bio-solids), still contains a significant amount of water. Belt presses squeeze out excess moisture, reducing the volume of the bio-solids. The dewatered bio-solids are trucked to a landfill.

8. 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.

9. 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 37,000 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.

10. Advanced Treatment

Some of the secondary flow is diverted to a tertiary treatment plant that produces recycled water that irrigates parks, golf courses, and schoolyards. At some locations in Livermore, recycled water is also used for fire protection purposes.