MT. VIEW SANITARY DISTRICT

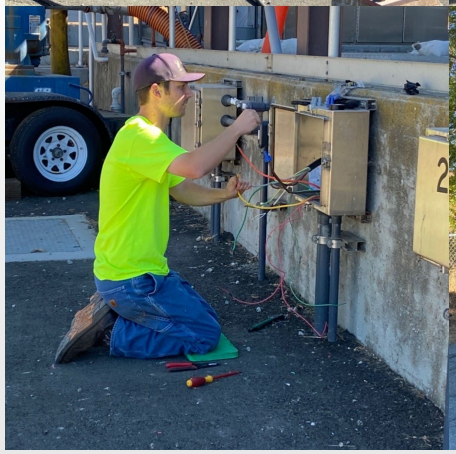
Contra Costa Special Districts Association Presentation

March 21, 2022

Mt. View Sanitary District has been serving the public since 1923. We currently serve approximately 22,000 residents in the northeasterly portion of the City of Martinez and adjacent unincorporated lands. The plant receives 1 million gallons per day during dry weather.

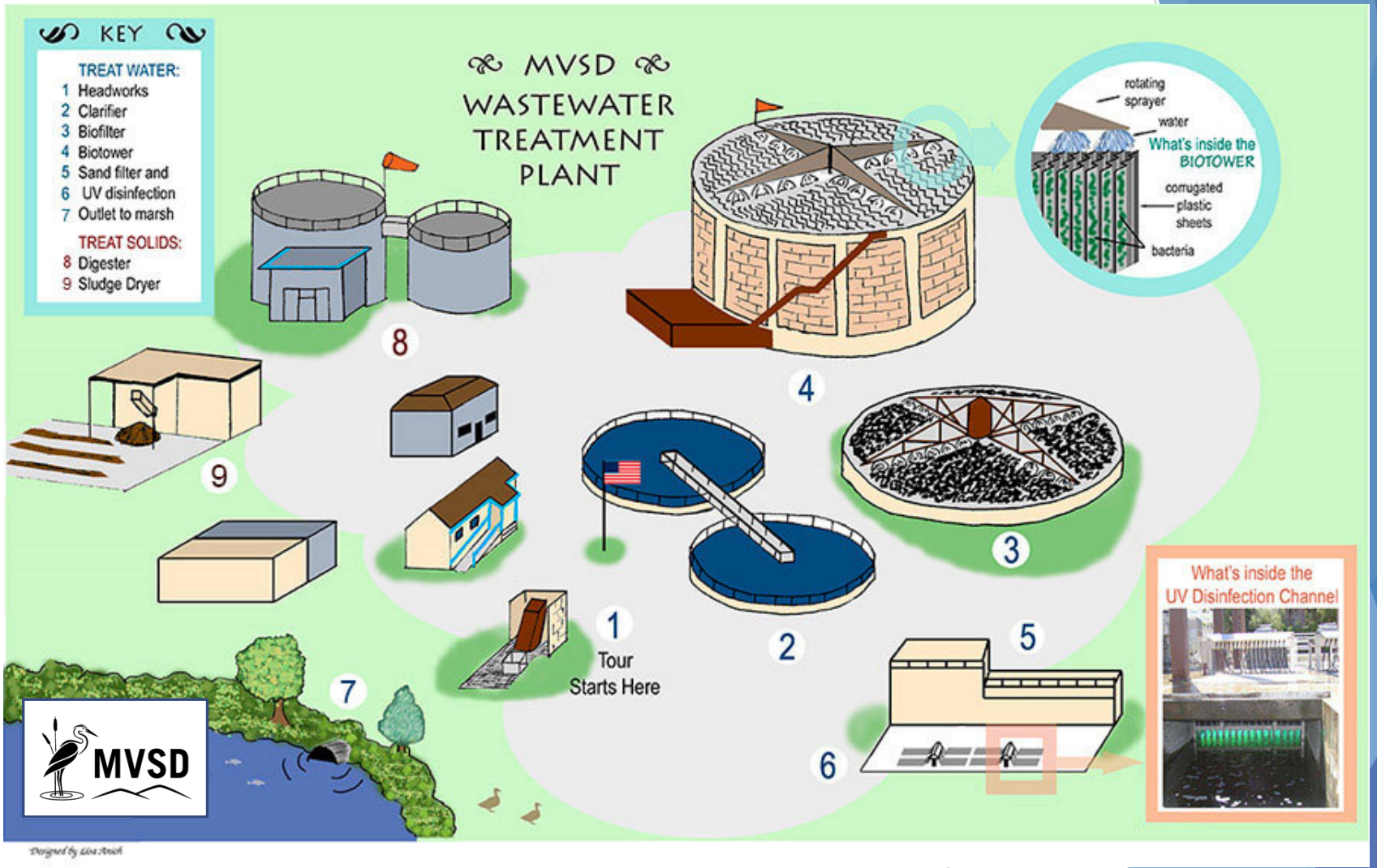
Engineers during early construction of the clarifier

Clarifier today

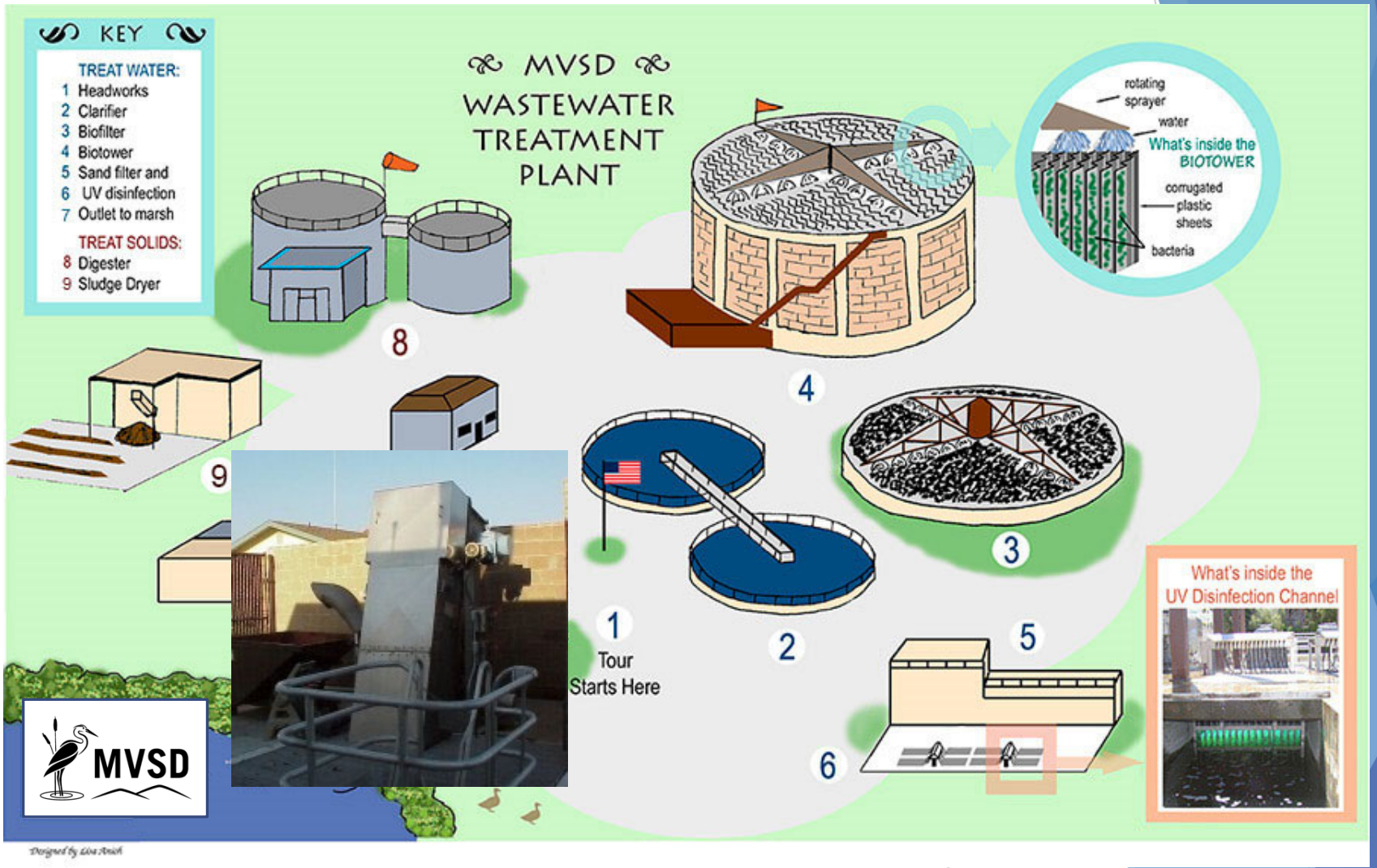


Operators at MVSD New Easement Jetter

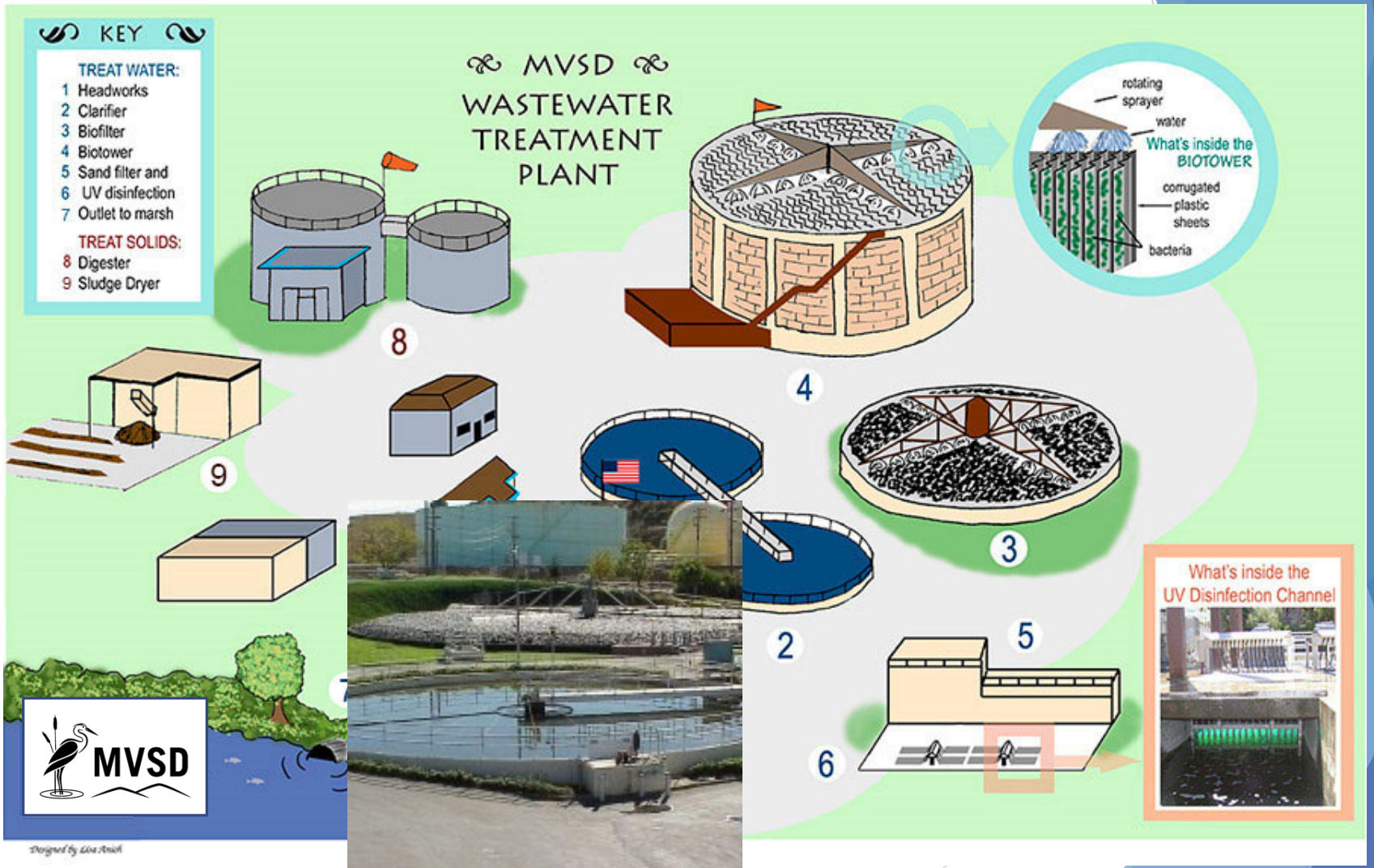
Let's take a tour of the treatment plant…



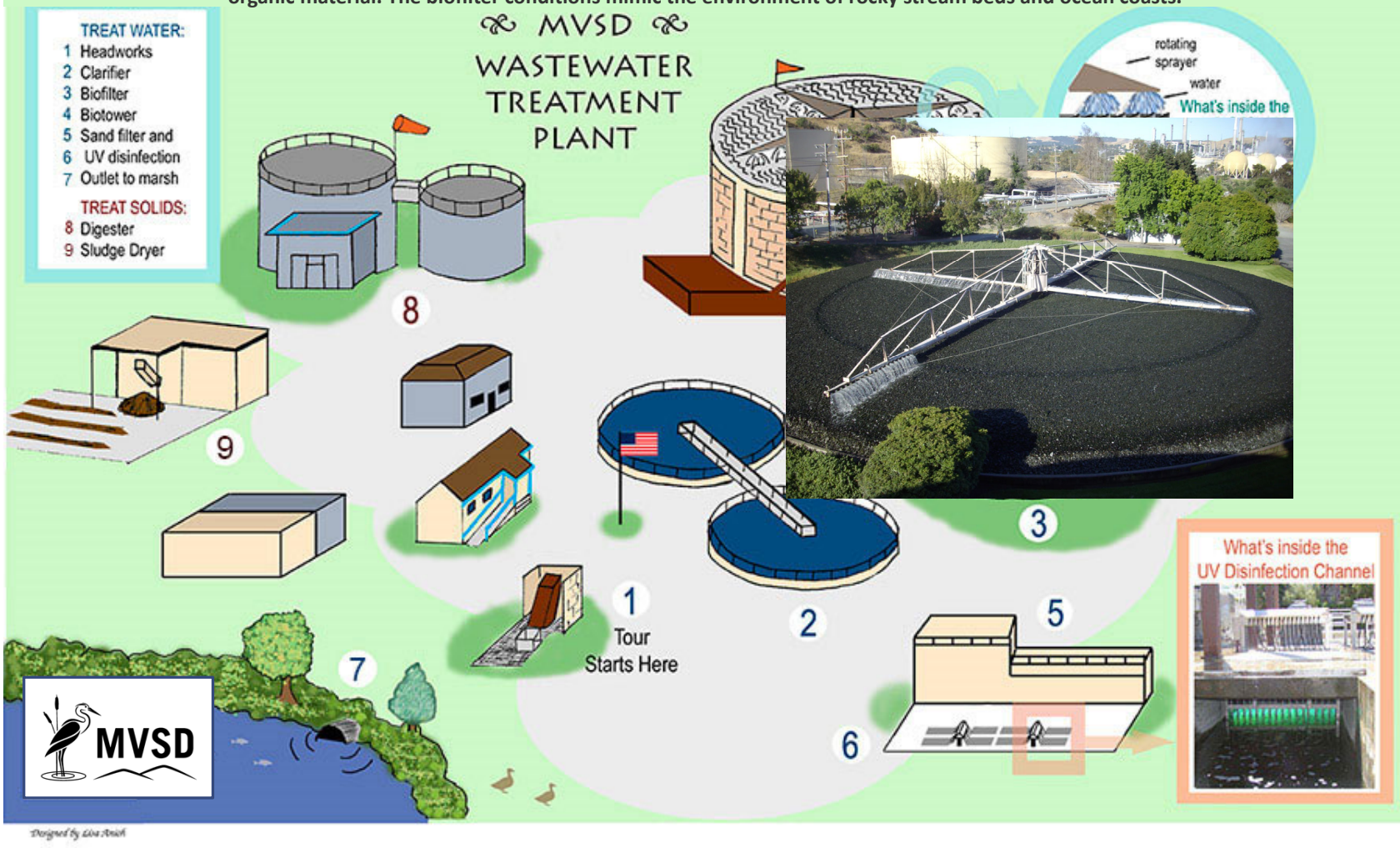
As wastewater comes in through the headworks, it enters through a series of bar screens to remove large debris that could damage the plant's equipment



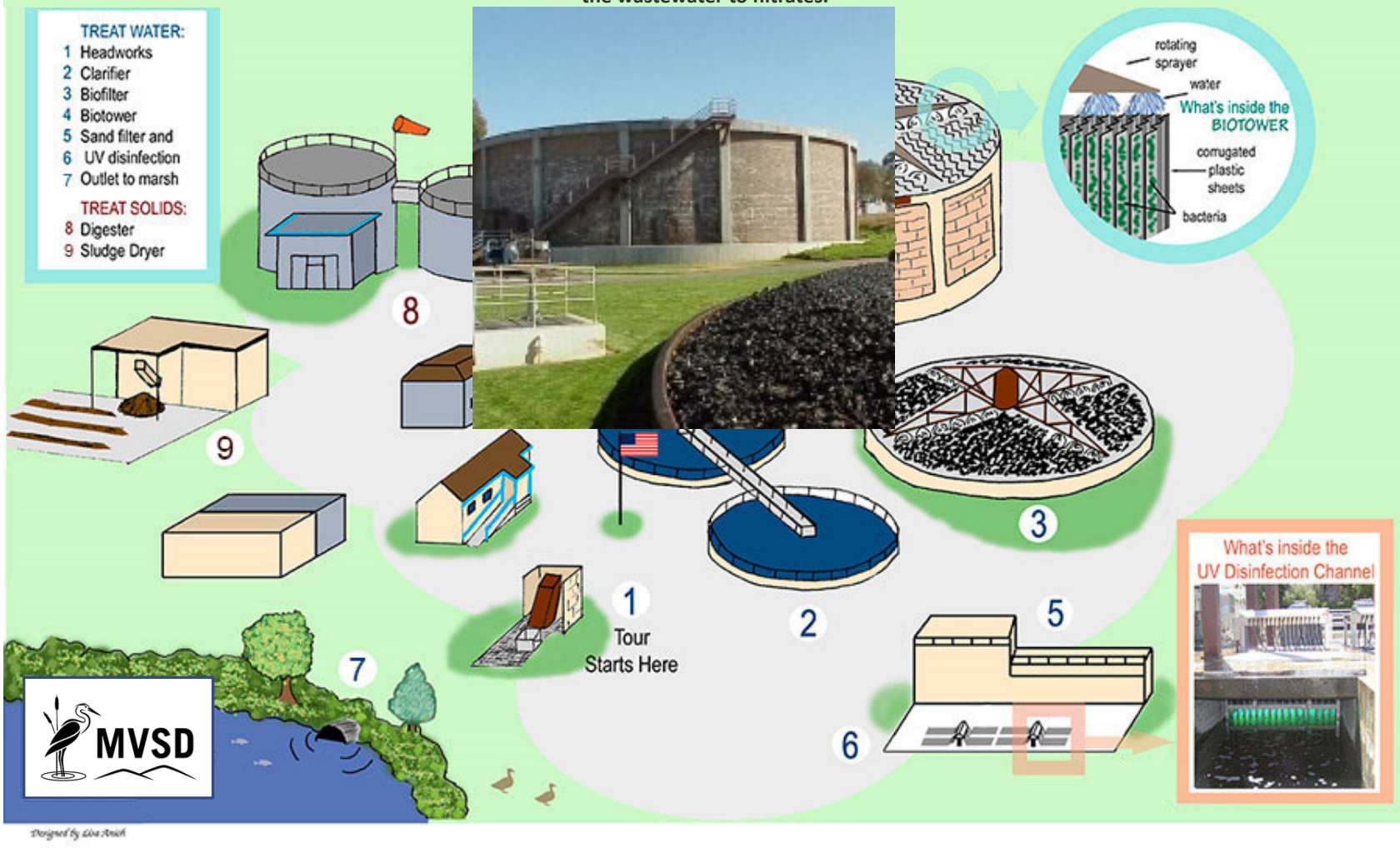
Wastewater flows into the primary clarifier where it slows down and the heavy particles settle to the bottom. The solids or sludge are pumped to the sludge thickener.

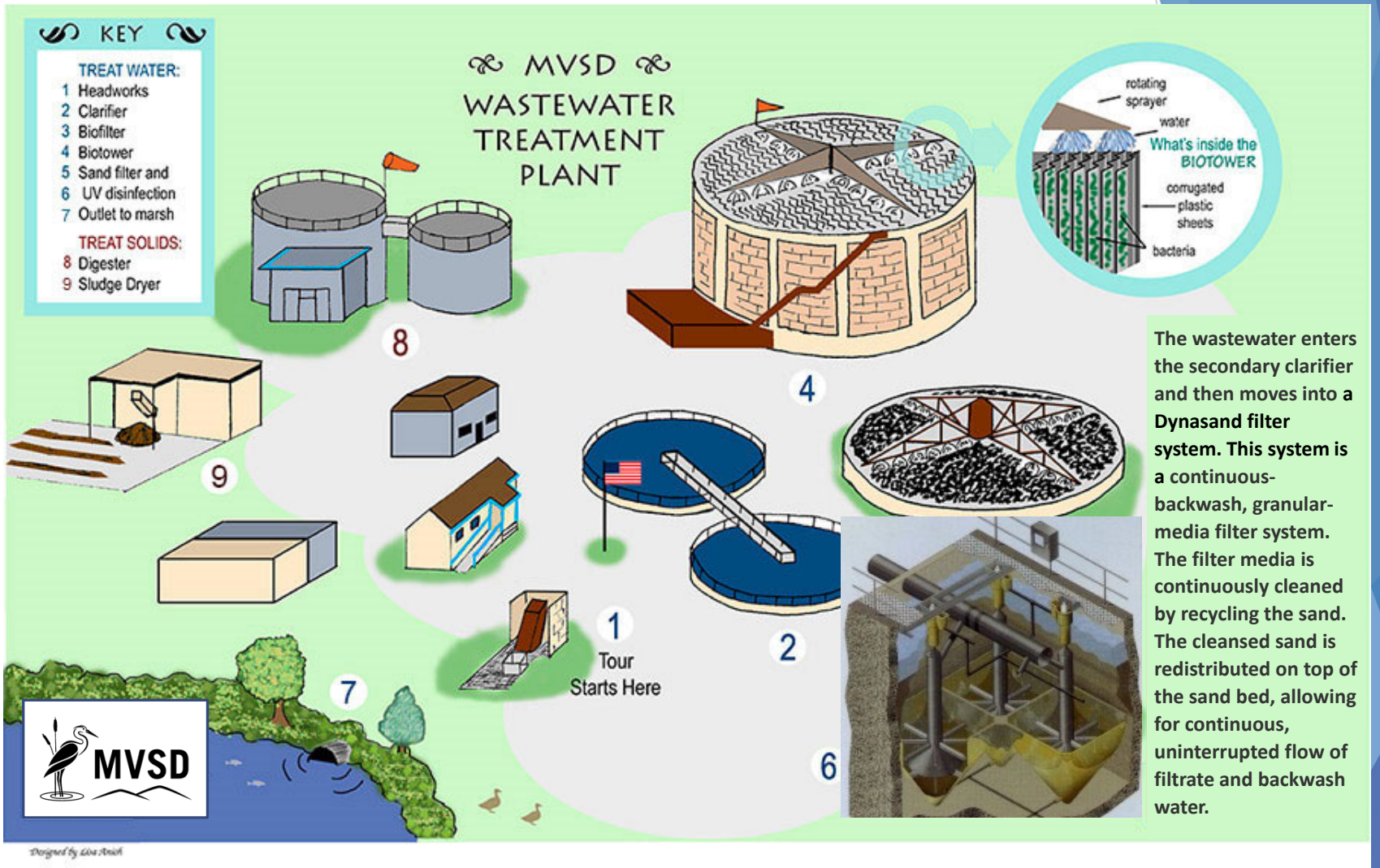


The wastewater is then sent to the biofilter, which continually distributes water over rocks which provide a home for microorganisms that breaks down organic material. The biofilter conditions mimic the environment of rocky stream beds and ocean coasts.

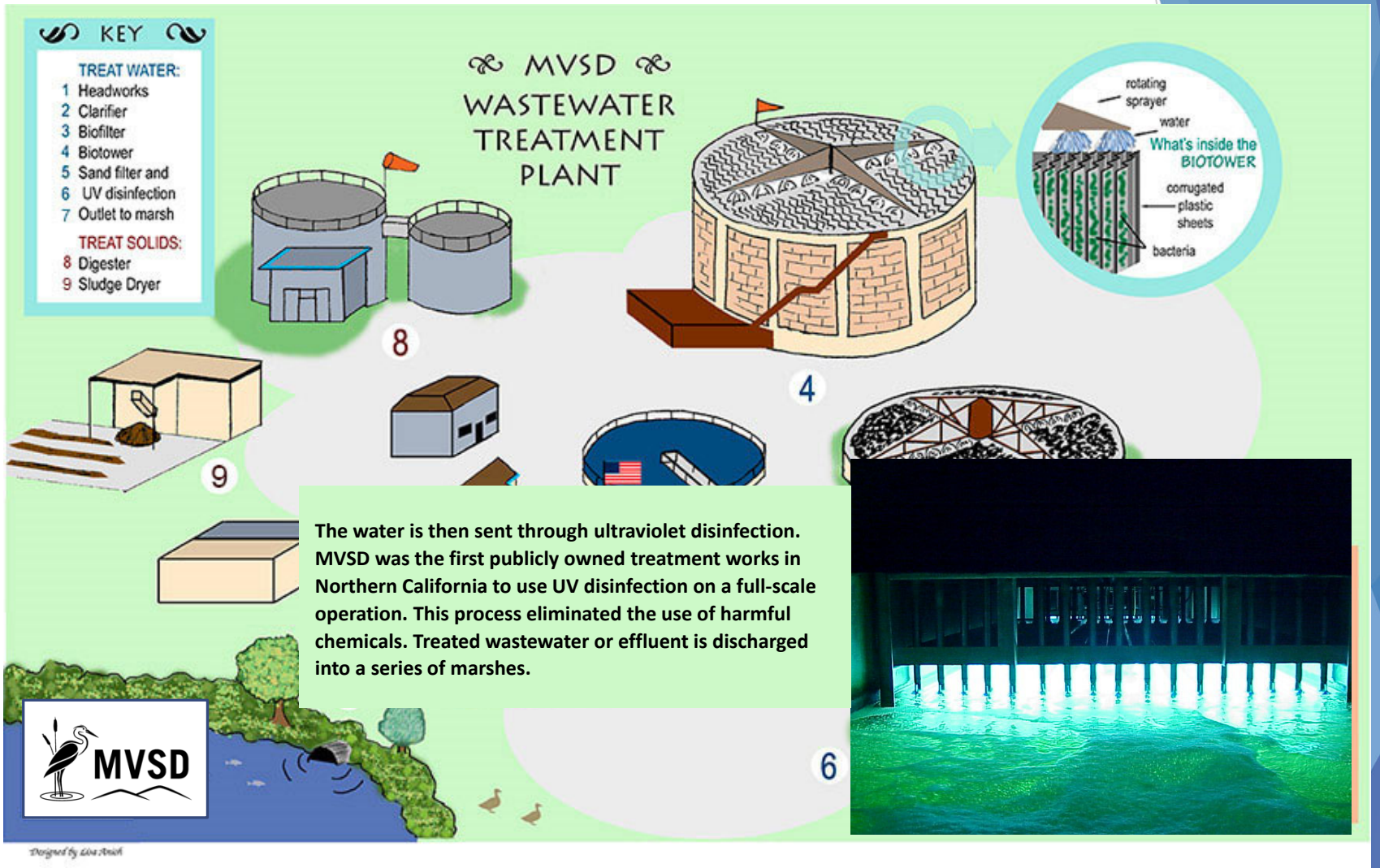


Then the water is off to the biotower, which distributes the water over sheets of corrugated plastic. Bacteria living on these sheets converts ammonia in the wastewater to nitrates.



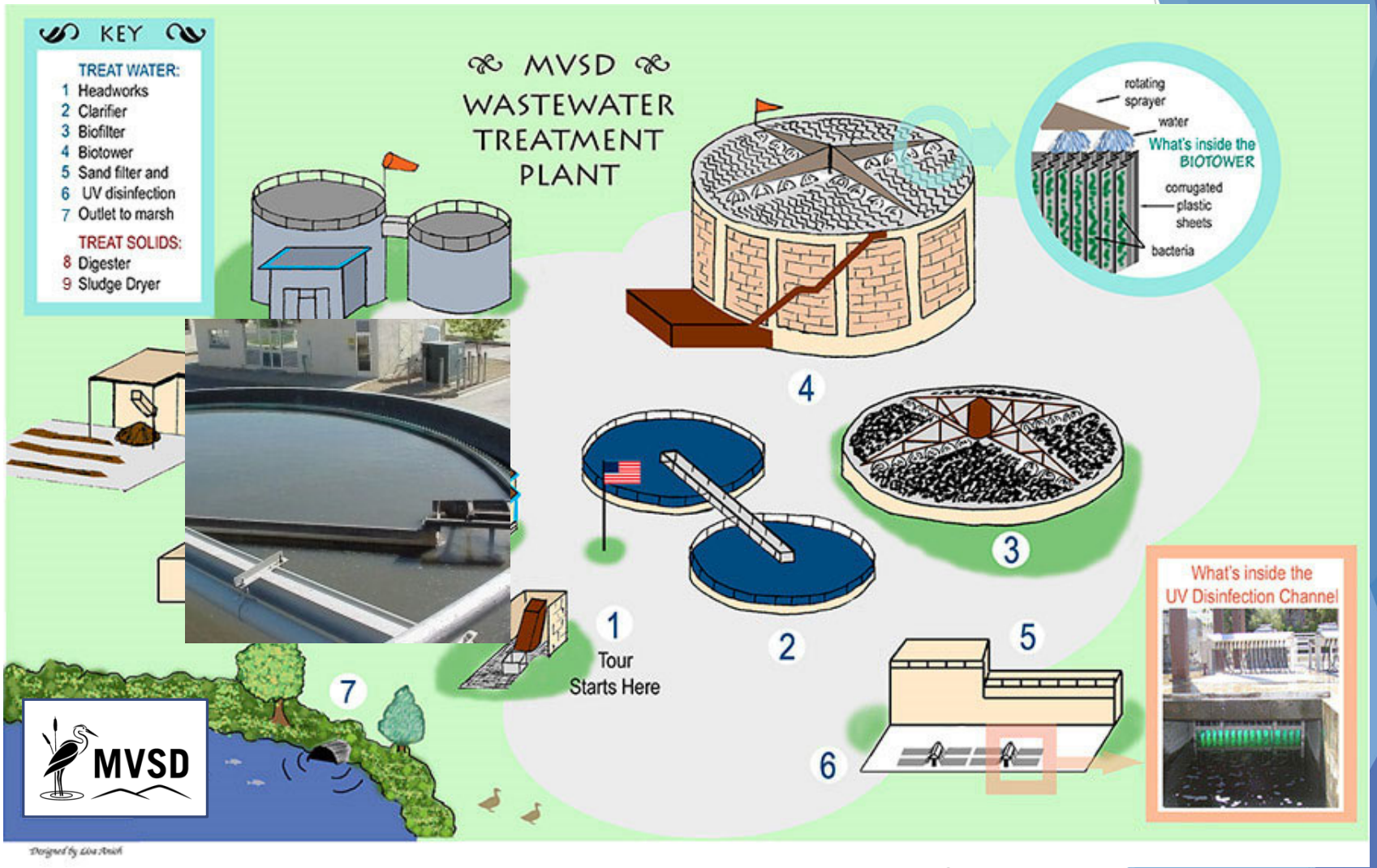


The wastewater enters the secondary clarifier and then moves into a **Dynasand filter system. This system is a** continuous-backwash, granular-media filter system. The filter media is continuously cleaned by recycling the sand. The cleansed sand is redistributed on top of the sand bed, allowing for continuous, uninterrupted flow of filtrate and backwash water.

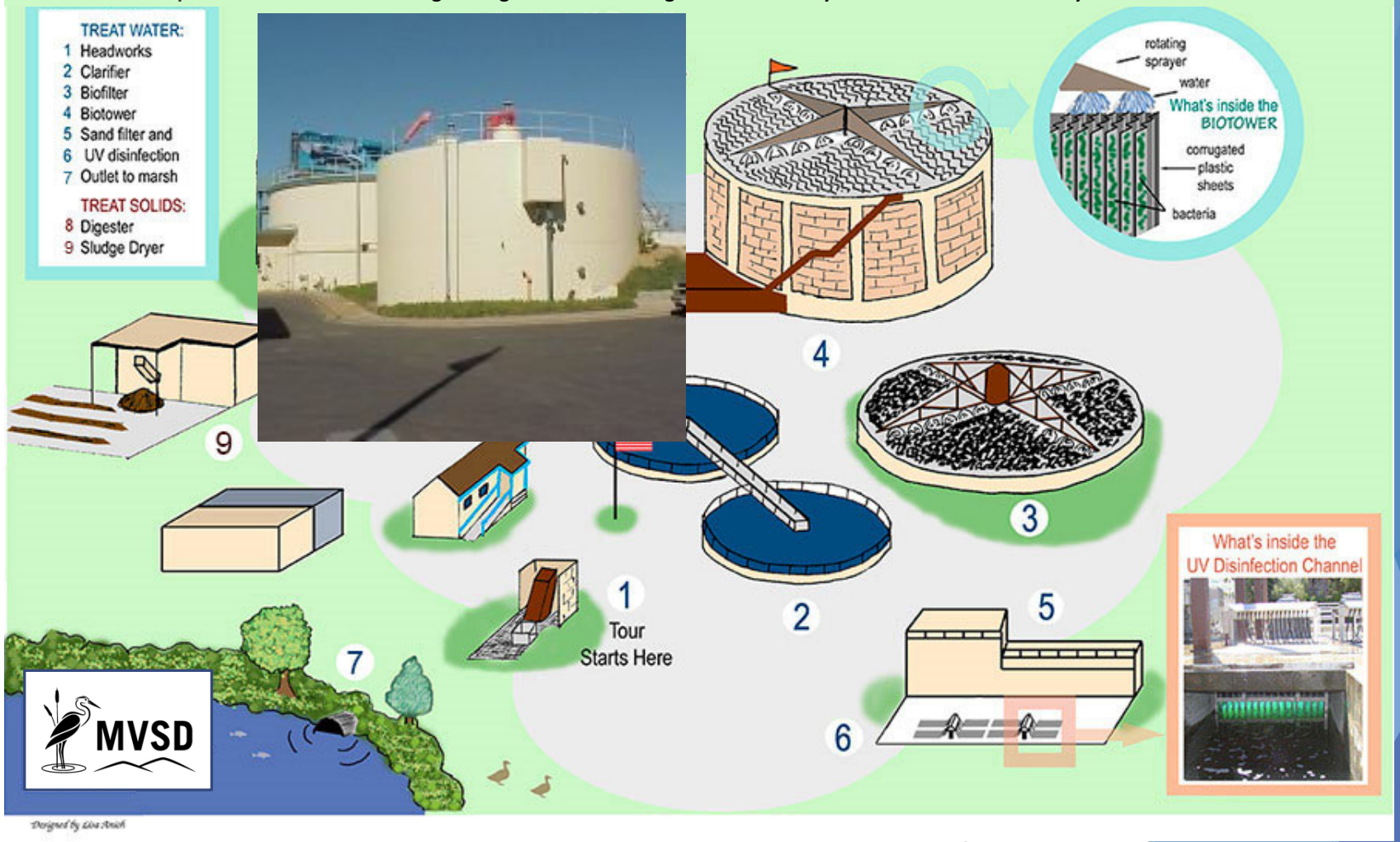


The water is then sent through ultraviolet disinfection. MVSD was the first publicly owned treatment works in Northern California to use UV disinfection on a full-scale operation. This process eliminated the use of harmful chemicals. Treated wastewater or effluent is discharged into a series of marshes.

As for the solids or sludge, they were sent to the Sludge Thickener, a settling tank to further separate solids from liquids.

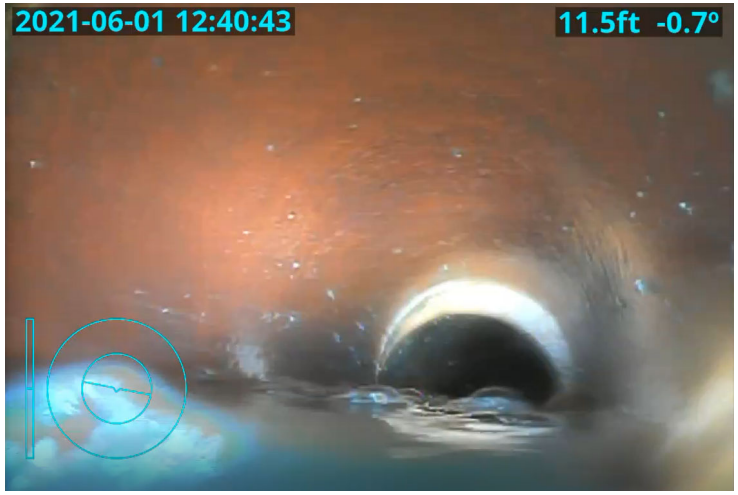


Sludge solids are pumped into anaerobic digesters where bacteria further breaks down the solids, producing methane gas. The gas is used to fuel the plant boiler. Biosolids leaving the digester are centrifuged to remove any excess water and then they are off hauled.

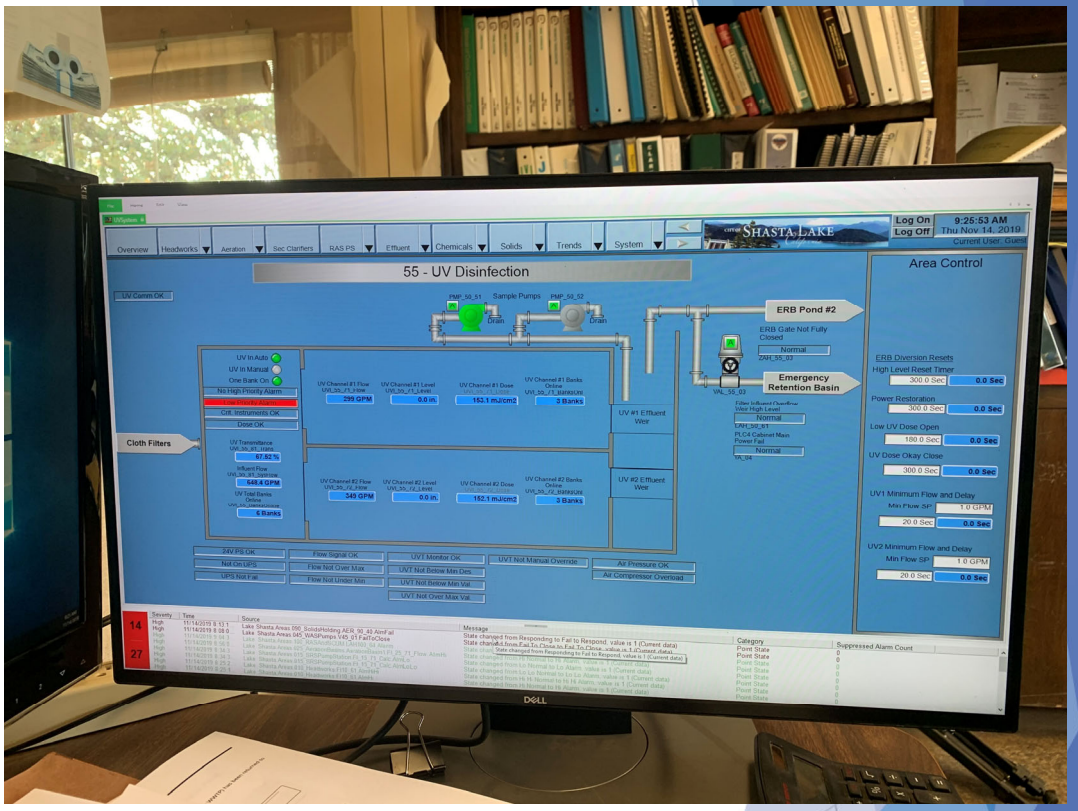


Effluent from MVSD is discharged into a series of marshes, Moorhen and McNabney. Created in 1974, Moorhen Marsh was the first wetlands on the west coast dependent solely on treated effluent as its primary water source. The 21-acre constructed wetland discharges to Peyton Slough which transports the treated wastewater to the Carquinez Strait and provides a critical habitat for native plants and wildlife. 138-acre McNabney Marsh is a historical marsh that was re-exposed to muted tidal action in 2009. MVSD has been a joint owner with East Bay Regional Park Districts since the 1980's. MVSD's treated effluent is also discharged to this brackish marsh that supports native plants and wildlife, including many nesting birds.

Both marshes provide backdrops for educational opportunities for local students from elementary to college, local bird and wildlife enthusiasts. MVSD hosts an award-winning Wetlands Education Program that includes classroom programs as well as field trips to the marshes for over 1,000 students annually (prior to COVID). Here you see students dip netting and observing wildlife. The picture on the right are members of the Mt. Diablo Audubon Society.

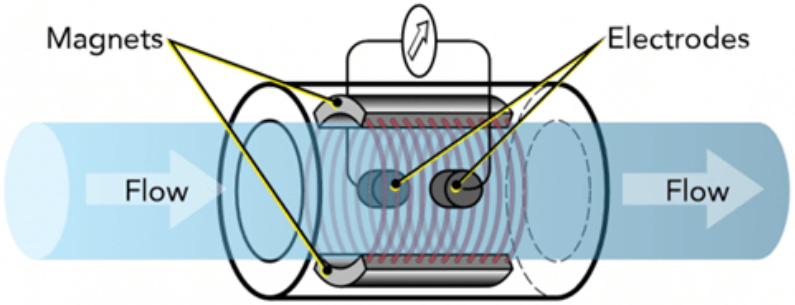


MVSD's entire system, 73 miles of pipeline, is on track to be cleaned every 3 years with 37% of system cleaned in 2021. Our Capital Improvement Project includes pipeline cleaning and televising. Phase 1 saw 75.8 miles of pipes cleaned, which includes repeated cleanings to certain pipes. The pictures at the top of the page are examples of the cleaning and televising. Below are pictures of manholes. 514 manhole inspections were completed in 2021, and the computerized risk model for these is nearly complete.



The biotower pumps and discharge pipes replacement project was completed in early 2021. MVSD replaced one pump, rehabilitated another, and replaced the discharge elbows and associated piping. We also replaced the three pumps' guide rails and made repairs to the sand filter sump pump guide rail system. Efficiency and functionality improved.

<u>Supervisory Control and Data Acquisition (SCADA) System Upgrade</u>: The SCADA system, which houses the facility process data, received an upgrade in early 2021. The hardware components (server, backup server, computer, monitors) and software programs (new licenses, configurations, trainings) were upgraded. New graphics screens were developed that greatly improve plant operations and control. Remote access capabilities improved.



MVSD currently utilizes effluent flow meters only. In looking at ways to better operate the facility, the influent flow meter study began in late 2021 and continues. Pictures on the left show one of the designs being considered. The UV disinfection replacement project is currently underway and replaces the existing UV disinfection equipment and controls with new equipment and controls, monorail crane and its structure, the reclaimed water pumping system, flowmeters, effluent gates, motor control center, and various other automation, electrical, and SCADA upgrades. This picture on the right shows the excavation for the concrete pad that will be the new home of the upgraded Water Reuse Pump Station and hydropneumatic tank.

In honor of Mt. View Sanitary District's upcoming 100-year anniversary, the District is hosting an art contest for local high school and college students. The winning piece will be featured in a mural on the biotower which can easily be seen from the 680 highway. The contest's theme will focus on pollution prevention and its effects on our local wetlands, Moorhen and McNabney marshes.

To address anticipated nutrient removal requirements, MVSD completed a Nutrient Removal Study in 2021 that presented a strategy to enhance nutrient removal capabilities using the floating islands in Moorhen Marsh. This year, some of the floating islands (pictured right) will be moved strategically to Fat Slough. Installing islands over a small area like Fat Slough and placing them close together, creates dense cover and provides more opportunity for contact between wastewater, root-zone and root-zone micro-organisms that help remove nutrients.

THANK YOU!

MVSD

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