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Where does it go after Lamorinda flushes? A tour of Central San explains it all

By Vera Kochan



Primary Sedimentation process Photo Vera Kochan

On a recent tour of Central Contra Costa Sanitary District, more commonly referred to as Central San, this reporter tagged along with about 20 other members of the public who were also interested in finding out where everything goes after you flush.

For Central San, located in Martinez, it all began in the 1940s when the area contained mostly farms, orchards and ranches. Waste was disposed of through septic tanks which became inefficient due to the heavy adobe clay soil. During a general election in 1946, the County Board of Supervisors approved the creation of the Central Contra Costa Sanitary District. By the end of 1948, wastewater flowed into the 4.5 million-gallons-per-day treatment plant.

The system was designed to last 30 years, but by 1952, when the area turned suburban rather than rural, Central San was operating at capacity. Plans for

expansion and improvements quickly came into play.?

During the 1960s, Central San became a trailblazer throughout the state of California when it came to innovative pipeline construction, inspection methods, and energy-saving engines that ran on gas from decomposed bacteria.

In the 1970s, environmental awareness prompted the new California Environmental Quality Act (CEQA) and Federal Clean Water Act to instill stronger regulations with regards to discharging wastewater. Halfway through Central San's building of an advanced treatment facility, the powers that be decided that it was unnecessary after all, so the design was modified to provide a secondary treatment plant that processed 35 million gallons per day.

Growing pains once again prompted Central San to turn to computer technology in the 1980s with the utilization of trenchless sewer construction methods for municipal pipelines and the pioneering of a curbside collection recycling program.

In the early 1990s, Central San's chemists found that toxic household compounds were detected in the wastewater causing a harmful influence on marine organisms. A Pollution Prevention Program was launched to keep toxins from entering the sewer system from both residential and commercial customers.

With the 2000s came national consciousness about stock market woes, over-spending and layoffs. Central San concentrated on customer service, full regulatory compliance, responsible rates and high performance from all employees. It now covers 1,540 miles of underground sewer pipes; operates 18 pumping stations; some of its largest pipes are 102 inches in diameter; functions 24 hours per day; cleans an average of 800 miles of pipe per year; recycles 600 million gallons of water each year; and treats 13 billion gallons of wastewater per year.

All of this back-history is vital in order to appreciate how Central San operates today. Our tour guide was Community Affairs Representative Ben Lavender who made certain that everyone wore a hard hat and was equipped with a headset that served as both earphones and speaker-system in order to be heard above the noise of machinery during the 90-minute, all-outdoor experience.

The first stop was the Headworks. Lavender explained that each day 35 million gallons of wastewater flows, by gravity, through the 1,500 miles of underground pipes. The wastewater then flows through bar screens on conveyor belts where large objects are screened and raked from the sewage. The debris is ground up and returned to the treatment process. This treatment also provides odor control through hydrogen peroxide. Foul air from the Headworks is removed by a ventilation system and scrubbed with a sodium hypochlorite shower. A truck picks up the solid waste and delivers it to a landfill, while the pumps send the wastewater to Primary Sedimentation.

At this point in the tour, Lavender was asked if "flushable wipes" really are flushable. He replied in the negative, stating that they don't degrade enough in the pipes and can often get snagged on something and block solid wastes in the system, causing an expensive visit from a plumber. He also stated that there is legislation in the works to remove the term "flushable wipes" from packaging.

Lavender also noted that Central San has backup generators in the event of a power outage to keep the plant running 24/7, all year long.

The Primary Sedimentation process uses several physical and mechanical methods to remove additional solids from wastewater. The collection system that brings the wastewater to the plant is designed to keep the water moving swiftly enough to continually mix the wastewater. Once it reaches the Primary process, the speed is reduced to minimize turbulence and allow material to separate from the flow by floating or settling. The floatables are gathered and removed using a recycled water spray system, revolving conveyors, and scum pumps. The sludge that settles is mechanically scraped from the bottom and removed for processing.

Secondary Treatment uses a biological process to further remove organic material which is pumped into aeration tanks where bacteria will absorb these as food and break them down into simpler substances such as carbon dioxide and water. These billions of naturally occurring bacteria that consume the organic matter and other nutrients in the wastewater are known as activated sludge. Air is added to the activated sludge to encourage the growth of aerobic bacteria. The water then travels to secondary clarifiers where the sludge settles to the bottom of the tank and is removed. Most of this sludge is pumped back into the tanks to repeat the process. These tanks are located outdoors, and it is interesting to note that several ducks did not seem to mind what they were swimming on.

The Ultraviolet Disinfection process uses thousands of ultraviolet light bulbs to disinfect secondary liquid waste before it's discharged into Suisun Bay. The bulbs are submerged in concrete channels to treat the wastewater that flows around them. The UV light disrupts the DNA chain in bacteria and viruses and destroys their ability to reproduce and then kills them, making the water safe to discharge. Central San has a permit for this process. Lavender noted that during COVID the labs were constantly checking samples of water before releasing it into Suisun Bay.

A portion of the treated secondary flow is diverted to the filter plant where it receives additional treatment and disinfection before being used for landscape irrigation, industrial process cooling and other recycled water needs. Customers are also encouraged to bring receptacles to fill and use in watering their own landscapes at home, free of charge.

For more information visit: centralsan.org

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