

A plan to clean wastewater better

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Workers use a crane at the Visalia Water Conservation Plant on Friday to remove temporary barriers made of steel beams and plywood.(Photo: Ron Holman)

Story Highlights

- In March, work began on a \$140 million project to renovate the Visalia Water Conservation Plant
- Improvements will include using ultraviolet light kill bacteria and viruses instead of chlorine
- Recycled sewage water will irrigate Valley Oaks Golf Course, Plaza Park

In the middle of the Visalia Water Conservation Plant, a lot more than sewage is moving these days.

Workers used a crane on Friday to remove temporary barriers made of steel beams and plywood use to shape walls made of poured concrete and rebar sitting in a large ditch dug more than 30 feet deep.

In the coming months, this structure will be topped with five powerful pumps capable of moving up to 22 million gallons of brackish sewage water to other parts of the city's sewage treatment plant to undergo further processing.

The structure is part of a \$140 million project to renovate the wastewater treatment plant near Visalia's southwest border.

When the work is done, the treated water released from the plant will meet California's highest cleanliness standards for recycled water, making it usable to water lawns at public areas and to irrigate crops edible for

humans, though it can't be used for drinking.

"The quality of the water, in general, is good. But the problem is what you're allowed to do with the [treated] water we produced has changed," he explained. "They will be able to use the water for edible crops, not just non-edible [to human] crops.

"We could use it for golf courses or public parks," said Jim Ross, Visalia's public works manager, who also is overseeing the Conservation Plant upgrades that began in March. "Right now, we're at 98.5 percent removal efficiency, and after this is done, it's going to be 99.999 percent." That is just about clean enough to swim in, though the recycled wastewater never will be used for that, he said.

When finished in 2017, it will be the costliest public works project in Visalia's history.

Although the city obtained up to a \$143.5 million California Clean Water State Revolving Fund loan to pay for the project, Ross said the final price likely will come closer to \$140 million.

In addition, Visalia has \$2.9 million in grants to help pay some of the costs.

As for how the city is paying for the rest, Visalia voters approved a series of small sewage fee increases in their water bills that began in 2007 and continued for four subsequent years.

The new, higher rate of \$24.60 remains in effect, and Ross said that rate covers the costs of operating the plant and the anticipated loan payments without any plans for any further rate hikes to pay for the renovations.

A key feature is the planned installation of a massive filtration system that — combined with naturally-occurring bacteria used earlier in the cleaning process — will remove fine and dissolved particles from the water after the heavier waste products have been separated.

"We are going to be using microfiltration. The water will be going through a giant coffee filter," though the series of filters will fill a basin roughly the size of an Olympic-size pool, Ross said.

The holes in the filter are so small and the filters are so efficient, bacteria can't get through it. Most viruses can't get through it," and any viruses that get through should be killed by a new decontamination system using ultraviolet light, which will replace the costlier and less ecologically-friendly system currently used treating the wastewater with chlorine, Ross said.

In the next few weeks, work will begin to tear out two of five 1.5 million basins at the conservation plant and replace them with filtration basins.

The renovated plant also will include a "sludge disintegration system" that should increase the amount of methane gas collected during sewage treatment.

Captured methane already is used to power a generator at the facility, saving the city about \$300,000 a year in electrical costs, and Ross. And the new system from Germany — which will be the first of its kind used in the United States once it's installed — could improve methane capture by 18 percent, according to the website of its manufacturer, Biogest AG.

While most of the project money is earmarked to pay for treatment plant improvements and new equipment purchases, more than \$ 1 million will go to build a solar panels to help power the facility.

In addition to that, more than \$11 million will be spent to buy and lay underground about 2.5 miles of large, concrete pipes that will deliver the treated water from the conservation plant to the Valley Oaks Golf Course and Plaza Park for irrigation, so city well water will not be needed for this.

Currently, some of the treated sewage water is used to irrigate nearby livestock feed crops at nearby, city-owned farmland. Part of the new system of pipes will extend to pipes belonging to the Tulare Irrigation District.

In exchange for the treated water from the city — which will be used to irrigate farms growing crops for animal feed and human consumption — the water district will provide Visalia with half as much surface water it receives through the Frant-Kern Canal.

That surface water will be directed to ponding basins on Visalia's east side, across town from the conservation plant, to percolate into the ground and help recharge the city's groundwater, Ross said.

Some of the recycled sewage water will continue to irrigate city-owned farms around the Visalia Municipal Airport.

One thing that will change well before all the multimillion-dollar improvements are done, Visalia will stop in the next couple of weeks putting some of its processed wastewater into Mill Creek and instead direct it into a ponding basin on the city's west end.

New state rules require that if the city continues this, expensive testing will have to be done, and fines will be imposed if the water doesn't meet cleanliness levels — even if it's due to mistakes in testing.

"If we're going to spend the money to do that, we might as well spend the money and get something out of it," said Ross, noting that this was part of the reason city officials decided to upgrade the plant.

He added that the plant was designed to exceed city officials' estimates of whatever clean-water requirements the state may issue for the next 10 to 15 years.

Before the construction began, the treatment plant was designed to process up to 22 million gallons of sewage a day, and it could have exceeded that. But in general, only about 13 million gallons comes through, on average, Ross said.

And because there are so many redundant systems, Ross said he doesn't anticipate any problems handling the city's sewage flow when portions of the system are taken offline or torn down during the renovations.

When it's done, the amount of sewage that facility can treat will not change, though some of the new equipment and buildings will be designed to be easily added onto if the city's population grows significantly and the plant has to grow with it, Ross said.

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