

Winning Strategy Pays in Reno

By Steve London

Sewer maintenance group trades in wet well FOG cleanouts for a submersible mixer

The city of Reno, Nev., and the surrounding suburbs have experienced strong population growth in recent years that resulted in numerous housing developments and supporting infrastructure. The investment in wastewater collection and treatment infrastructure has been significant—not just in the initial construction cost, but in the ongoing maintenance that absorbs direct workforce man-hours and outlays for a finite number of Reno public works employees.

The city of Reno recently introduced an initiative that promises to significantly reduce the annual line item for the upkeep of the lift stations leading to the treatment plants. In the pristine air of the eastern slopes of the Sierra Nevada Range, the city of Reno has battled fat, oil and grease (FOG) that builds up in the wet wells of the lift stations in the high desert valleys north of the city.

“Our enforcement people do a good job of preventing the release of grease and other restricted waste into the mostly gravity sewer lines in the core of Reno, where you find the casinos, restaurants and related tourist development,” said Tony Sallaberry, a supervisor in the sewer maintenance group. “Until recently, we have faced a much greater problem with grease in the lift stations that serve residential areas in the outlying valleys, as well as odorous sediments in the small lift stations of the more mountainous areas.”

“Until recently, we relied heavily on a contractor with a vacuum truck to clean out the wet wells on a regular basis,” Sallaberry said. “The city’s environmental policy prohibits the introduction of additives and enzymes into the system, which limited us to using mechanical methods. We wanted to investigate an alternative to combat the problem.”

Many communities face a similar problem with

their lift stations. The waste in the Reno lift stations could accumulate into a 6- to 8-in.-thick mat of solidified grease, paper and rags, which would interfere with the level control system and give the SCADA false alarms. The problem was further aggravated by complaints about the associated odor, Sallaberry said.

Solution Swap

Instead of continuing the practice of contracting wet well cleanouts of the 28 lift stations—some as frequently as every three months—Ace Ariaz of the lift station crew and Pete Galati of ITT Flygt tested an alternative. A few months of testing promised a significant reduction in the \$700-contractor charges to clean a wet well and the eight man-hours that each of those cleanings absorbed from the lift station workforce.

“In addition to the quarterly wet well cleaning needed at our six or seven more troublesome stations, all of them were scheduled at least once a year,” Sallaberry said. “It has amounted to a significant expenditure.”

Ariaz’s test convinced Sallaberry that a submersible mixer was a practical means of keeping the solids and sediment churned up in the most problem-prone wet wells. Mixers are often used to create turbulence in clarifiers at wastewater treatment plants and in the high-sediment wastewater chain of industrial facilities.

For the test site, Ariaz selected the Model 4630 mixer supplied by ITT Flygt. The manufacturer’s field manager recommended this particular mixer because it could deliver a powerful 460 Newtons, an output measurement of thrust. Flygt designed the unit with a cutter behind the six-degree propeller that also prevents stringy fibrous material from eventually building up. A basic timer was set for the mixer to run two minutes at half-hour intervals.

“The test station was an 8-ft-diameter installation built five or six years ago in an area of mixed warehouse and housing,” Sallaberry said. “We noticed an immediate improvement in maintaining the 300- to 400-gal-per-minute (gpm) flow and have had no problems there ever since. We have since equipped three other stations with the same mixer and a smaller unit—155 Newtons—to handle a 20-gpm station in a residential area.”

“We now have seven months of operating history for the first two stations that gave us the most problems,” Sallaberry said. “There is still not the slightest indication that they need to be cleaned out. We have incurred slightly higher necessary maintenance costs because of some debris catching on flappers in the check valves; however, the labor is a fraction of the cost of the former wet well cleaning labor. We have had similar results at other lift stations, so we intend to add even more mixers as the budget and time allows.” **WWD**

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These photos illustrate the wet well just after the installation of a mixer, then 24 hours later. The color photo shows how the greasy build-up is no longer present in the well.

Right: A mixer that was attached to a submersible pump base. The location is used for a pump-around submersible. If the team determines that a pump-around is necessary, they can pull the mixer and slide in the pumparound pump.



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