



CUTTING COMPLAINTS

Manhole ventilation helps prevent odors & overflows in rural Louisiana system

By David Putnam

West Ouachita Sewer District No. 5 of West Monroe, La., had three nettlesome problems.

One of its systems generated complaints about an intense odor at the pump station located at the end of 2 miles of 30-in. trunk main and saw significant deterioration of the 12-in. pumps, piping and 20-in. force main because of hydrogen sulfide levels as high as 25 ppm.

Two of the district's other systems had a 10-year history of widespread sanitary sewer overflows (SSOs), with loud complaints from nearby residents. Worse, during heavy rainstorms, businesses and homes were almost guaranteed to flood. Additionally, rainy months saw treatment and electricity costs spike.

"We have more than 3,000 manholes, 53 lift stations, 750 miles of gravity sewer main and flowmeters on five of the largest lift stations," said Terry Cox, manager of West Ouachita Sewer District No. 5, which is one of Louisiana's largest

rural systems. "Since 2010, Lazenby and Associates has monitored the flowmeters every two days and compared flow to rainfall. The data showed that inflow was immediate during rainstorms."

A Need for Improvements

Cox tried everything he knew to resolve the SSOs, including purchasing CCTV equipment to search for problems, smoke testing, doing point repairs and dig and replace, inspecting manholes, cleaning out pump stations to increase holding capacity, and installing larger pumps and a larger force main.

The results of these exhaustive and expensive attempts at a fix were, "very little," Cox said. "They didn't address the real problem, the large volume of rainwater that was coming in through manhole pick holes and covers. It took us a while to realize the source of the problem—manhole covers—because no one talks about it."

According to a study by the Neenah Foundry Co., a manufacturer of manhole rings and covers, a 24-in. manhole cover with just one 1-in. hole lets in an average of 13.23 gal per minute of water during a rainstorm. West Ouachita Sewer District No. 5 has a pump station that serves 2,010 manholes. The normal flow is 2 million gal per day (mgd) during dry periods. During a rain event, the flow can more than double to almost 5 mgd.

Meanwhile, in another part of the district, corrosion due to high hydrogen sulfide levels necessitated frequent repairs to a third system's 12-in. pumps, piping and 20-in. force main. The culprits were dozens of manhole covers that had no vent holes and were rusted shut. Additionally, Cox got regular calls from customers who lived near the pump station about a pungent odor at the end of 2 miles of 30-in. trunk main, which was releasing highly concentrated hydrogen sulfide.



The device creates a raised vent hole that is $\frac{5}{8}$ in. higher than the manhole cover.

Eliminating Complaints

JABAR Corp. installed a device called the Sewer Sentry on manhole covers in affected areas. This device creates a raised vent hole that is $\frac{5}{8}$ in. higher than the manhole cover, diverting most storm water during rainstorms and venting the system of corrosive gases during dry

weather. The device, which costs less than \$100, takes a two-man crew about 20 minutes to install using common tools.

In the first system, Lift Station F, JABAR installed 41 ventilation devices and then watched the system during 18 rain events during the first quarter of 2015, which had above-average rainfall. There were no SSOs and the pump station

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actually cycled during rainstorms. During rainy months, the lift station's electricity bill dropped 41% compared with those in earlier months with comparable rain.

JABAR installed 50 devices in the second system, Lift Station D2. SSOs—and complaints—immediately ceased. Particularly pleased was one landowner who previously had “the [Environmental Protection Agency], [Department of Environmental Quality], the assistant district attorney and the parish leadership on speed dial,” according to Cox. Additionally, the kilowatt usage by the lift station fell 38% on average during rainy months.

Across town, in a third system, tightly sealed manhole covers contributed to high hydrogen sulfide levels, people grousing about smell and corrosion of pumps, pipe and a large force main.

After prying loose the rusted-on manhole covers, JABAR installed 31 Sewer Sentries to vent the system. The flow of fluid in the 30-in. main creates a vacuum that draws air into the system, diluting both the corrosive activity of hydrogen sulfide and the noxious smell.

In the two years since the devices were installed, there have been no complaints about smell and most of the manholes now register no hydrogen sulfide gas.

After seeing these results, Cox and the board of directors made Sewer Sentries mandatory on every manhole cover in their system and for all sewer districts that dump into that system. **SWS**

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