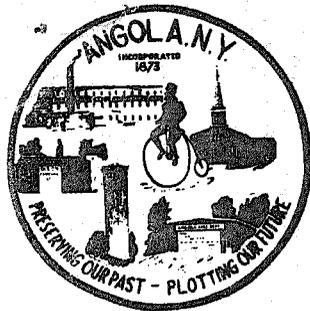


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Mayor Frawley

RE: Item for Sewer Board Meeting

Attached is a copy from an article from a recent magazine about controlling odors from sewer man holes and also cutting down on storm water infiltration into the sanitary sewer system. The article is short and to the point and seems very practical. More than likely the sewer people are aware of this system but it might be something that could help with the smell on the sewer lines through the village, although those smells seem to have gone away in the recent past.

Thank you,

Bill Houston

CC: Chuck Katra ✓

Ray Ashton

Flem
3(a)



CUTTING COMPLAINTS

on
ors
& overflows in rural
Louisiana system

nam

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."

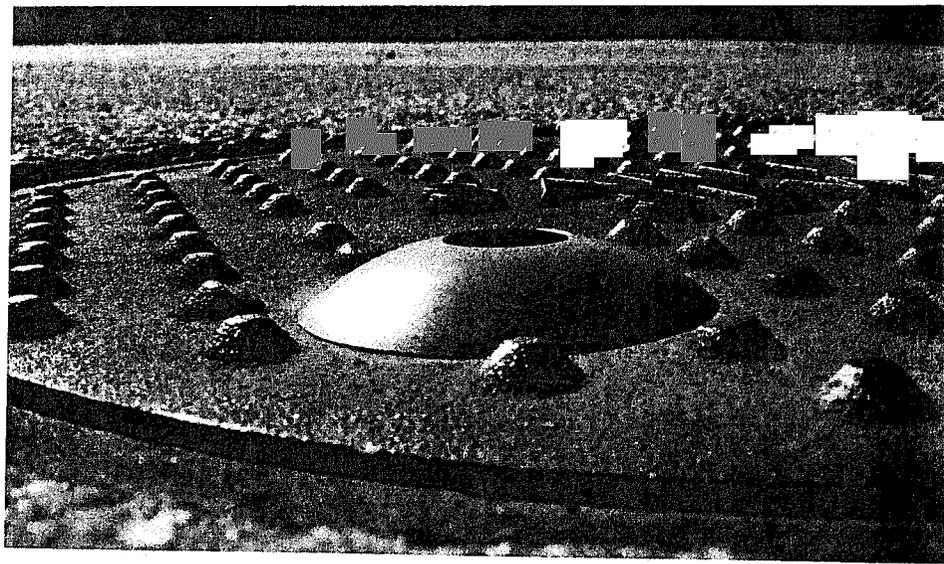
A Need for Improvements

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.

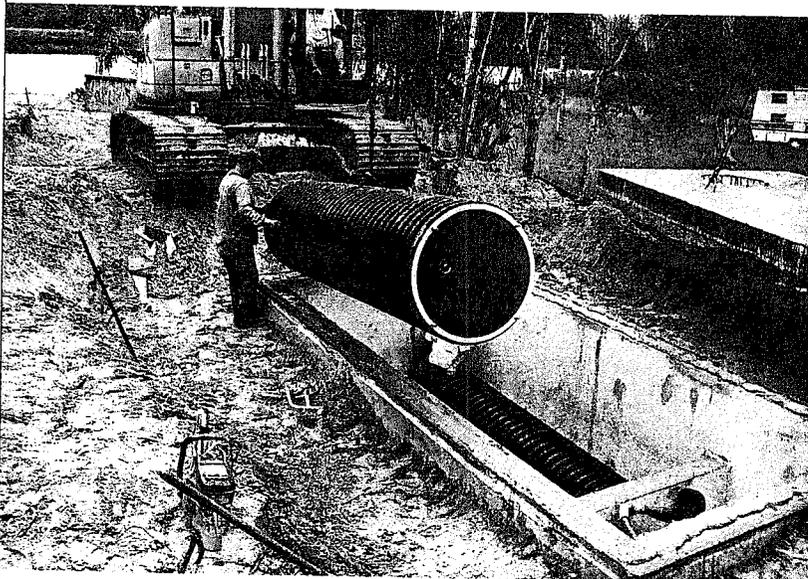
Eliminating Complaints

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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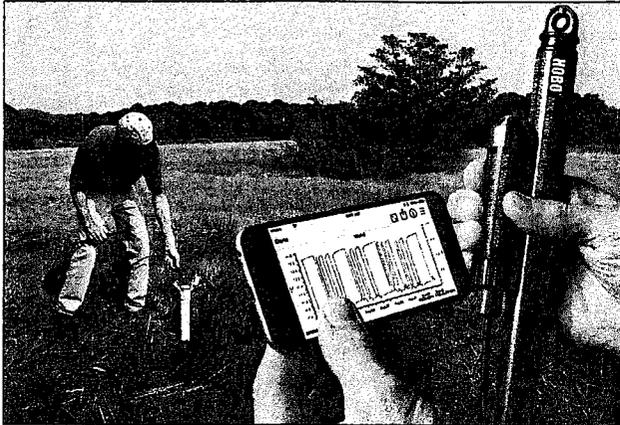
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Assessing Salt Marsh Responses to Sea Level Rise



A study conducted by the Narragansett Bay National Estuarine Research Reserve (NBNERR) in Rhode Island focused on assessing marsh vegetation responses to sea level rise during the current period of extreme water level increases. Although stresses on marsh systems from sea level rise are well understood, most studies on these impacts in southern New England predate the more recent cycle of rapidly accelerating sea level rise coupled with episodic events of extreme water level surges.

To investigate this, the NBNERR leveraged data from two salt marsh monitoring and assessment programs designed to evaluate marsh responses to sea level rise. Data from these programs were combined to document temporal and spatial patterns in marsh vegetation during the current period of extreme

water level increases.

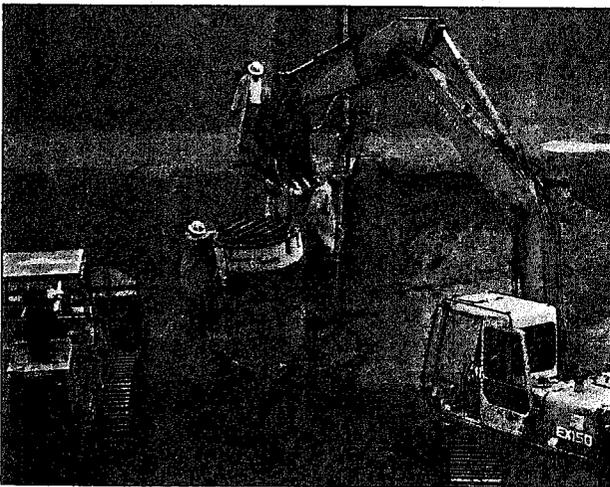
In running the study's monitoring programs—which covered dozens of marsh plot locations—Kenneth Raposa, Ph.D., research coordinator for NBNERR, and his colleagues used HOBOT water level data loggers offered by Massachusetts-based Onset. The research team used the level loggers to track and record short-term fluctuations in marsh water levels.

Results from the NBNERR's research revealed the ongoing decline of a high salt meadow foundation species, called *Spartina patens*, which is being replaced mostly by *Spartina alterniflora*, a low marsh grass species that thrives in lower elevations and is adapted to withstanding more tidal inundation.

"These findings were supported with additional, ancillary data such as elevations and water levels that were obtained through monitoring, which helped form a more accurate and comprehensive understanding of the processes that are occurring," said Raposa. "From this, we conclude that changes in salt marsh ecosystem dynamics are tightly linked to higher water levels in Narragansett Bay, which, in turn, are associated with sea level rise."

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Preventing Manhole Inflow



The Metropolitan Sewer District (MSD) of Greater Cincinnati had two combined sewer overflow (CSO) manholes at the Mill Creek Interceptor that became surcharged and overflowed to the river. The district tried a typical fix by bolting down the manhole lids to prevent the discharge, but the lids would break off due to surge pressures in the CSO from the throttling of flow into the plant.

When the river water level rose, the broken-off lids allowed river water into the CSO and ultimately into the treatment plant. The MSD estimated an inflow of 10 to 50 million gal per day. This is the "inflow" problem of the well-known "inflow and infiltration" phrase. A detention facility was not feasible, because it would need to contain 16.8 million gal of flow.

Hydro Controls, the local Red Valve Co. and Tideflex Technologies representative, was contacted to help find a

solution. After consulting with Tideflex engineers, two 48-in. Waterflex WF-3 valves were custom engineered with a four-quadrant opening disc, so they would not clog. The valves were designed with a preload of 8 in. before they started to overflow when the CSO surcharged. The valves provide low head loss characteristics, with high back pressure ratings.

Todd Trabert, manager of the Wastewater Collection Div. of the MSD of Greater Cincinnati, is happy with the results of the manhole rehabilitation to eliminate the inflow and infiltration sources. The custom check valves will provide a long service life because the reinforced elastomer disc is the only moving part and requires no maintenance.

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