



Flow Meter Installation Helps Reduce Maintenance Issues

Review carried out by North Berkeley Public Service District

The North Berkeley Public Service District (NBPSD) is one of several public service districts operating sewage treatment plants in the Beckley, WV, and region. The NBPSD services the northern third of the City of Beckley and outlying areas north of the city consisting of approximately 3,200 customers.



90deg bend on inlet measuring flow with accuracy of 2%.

Established in 1964, the utility is governed by a three-member Board appointed by Raleigh County Commissioners. Upgrades to the NBPSD's collection system completed in 2006 included the addition of 18 miles of gravity-fed sewer line bringing its total sewer line distance to 103 miles with pipe sizes ranging from 4 to 30 inches. Rebuilding of the sewage treatment plant through the years has resulted in the plant's current rating status of 2.5 mgd. The system is a sequencing batch reactor system capable of treating peak flows up to 7 mgd. Currently the normal dry flow is 1.5 mgd.

The district faced a challenge with monitoring flow in a 30inch line on the influent side of its wastewater treatment facility, said Kim Deane, Plant Manager.

"Our application is really odd because you are in a manhole with a 90 degree bend in it," Deane said. "We could get enough length of straight line typically needed in front of a meter but it could only be inserted a foot upstream from the manhole."

Flow passing through two grit units makes a 90 degree entry to a rectangular channel. "Then there is 13 feet of pipe and then you've got the manhole," Deane said. "This is really a difficult application at best."

Accurate flow data at this site is paramount because the data is used for the District's NPDES permitting requirements as well as overall flow process control at the facility. Several meters, including one with a submerged sensor, had previously been installed with little success due to the unique construction at the monitoring site.

"The site is just problematic due to the way it was built so we needed to get something that would really work and didn't have lots of maintenance issues," Deane said.

The district contacted the local Marsh-McBirney representative, who recommended the Flo-Dar Radar Velocity/Area flow meter. The rep felt that the meter was well suited for this application because of its non-contact sensor. Since this was a permanent application, NBPSD personnel also wanted to use a chart recorder with the meter, so an AC powered/permanent meter was recommended with a permanent sensor mount.

The Flo-Dar Radar Velocity Flow Meter uses an "above-the-flow" sensor that simplifies the flow monitoring process. Due to the constraints at the site, North Beckley personnel felt that the meter would be suited for this application and would eliminate their maintenance issues.

The meter has been installed for just over two years. It continues to perform well and has reduced the need for site visits.

"The meter has performed wonderfully. With flows within our normal ranges the meter has maintained accuracy within less than a 2% error," Deane said. "The best feature for us is the ease of maintenance. Before the Flo-Dar was installed we were putting somebody down that manhole every 2 to 4 weeks to clean the sensor due to grit that would build up around it."