

Cleveland Metroparks Zoo



Home to more than 3,000 animals representing 600 species, the [Cleveland Metroparks Zoo](#) is a popular attraction enjoyed by people of all ages. The Zoo's Facilities Operations Department tasks, many of which are performed behind the scenes, ensure that all of their visitors have a safe and enjoyable visit by keeping everything running smoothly. The monitoring of wastewater flow is one of those 'out of sight, out of mind' operations that visitors don't ever have to think about, however it's definitely on the minds of those working in the Facilities Operations Department.

According to Ann Kaminsky, Systems & Records Administrator-Facilities Operations, "We have two pump houses that pump all of the sewage from the Zoo that are monitored by our main flow meter, except for a couple of smaller buildings that are sub-metered. The wastewater continues out through a 12" pipe to the street." A flow meter sensor is installed in the manhole and the monitor is located in their service building. In this billing application, the Zoo reports their flow totals on a quarterly basis to the [Northeast Ohio Regional Sewer District \(NEORS\)](#). The data is used to determine wastewater processing fees to be billed to the Zoo.

Flow data from a 20-year old submerged style open channel flow meter had been used to determine flow rates. Since the 20-year old flow meter was no longer serviced by the manufacturer, the Zoo had the meter overhauled by a local equipment service firm. Kaminsky adds, "When we had the meter overhauled in 2005 I'm sure it wasn't as reliable as it could have been and I think that edged our numbers up." Additionally, the sewer line had a slight bend that created a swale, which Kaminsky felt also affected the flow data they were getting from the submerged sensor.

In 2007, the Zoo made a decision to purchase a new open channel flow meter that utilized the latest technology. Local Hach flow meter rep, Tim Carrig of [Carrig & Associates](#), recommended the Marsh-McBirney Flo-Dar Open Channel Flow Meter. Flo-Dar's uniqueness lies in its ability to accurately monitor flow from above the fluid utilizing radar technology that eliminates sensor fouling and other issues inherent with submerged style sensors. Kaminsky states that the Flo-Dar meter was chosen because it utilized the latest technology and addressed both time saving and safety issues. She adds, "Because the sensor was not submerged our guys wouldn't have to be constantly pulling the sensor out for cleaning."

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*Ann Kaminsky
Cleveland Metroparks Zoo*

The Flo-Dar sensor and Flo-Station permanent AC/DC powered monitor were installed in September 2007. Upon presenting their first flow data readings from the new Flo-Dar, NEORSD personnel were concerned that the meter was inaccurate because the amount of flow reported was extremely low when compared to the readings they had been accustomed to seeing from the 20-year old meter. At that time, the NEORSD began to estimate the flow based on readings from the old flow meter. Kaminsky states, “I think that the old meter edged our numbers up so when the NEORSD started estimating them it was based on numbers that were probably inflated already. It was kind of frustrating because we had spent money on this new meter and they were telling us the readings could not be right, however, I could understand their concern because the numbers were so low that I was kind of skeptical too.”



Kaminsky contacted Carrig who visited the site with Hach Field Service personnel and determined that the meter was indeed providing accurate readings. The Flo-Dar meter was checked multiple times by Carrig and the readings were always found to be accurate, however, the NEORSD continued to estimate flow readings for a period of one year. “Carrig was so wonderful about coming in so often and he never even charged us,” she adds.

Kaminsky states, “We were at a real impasse, however in the end it was very much NEORSD’s solution that helped bring this to a good resolution.” The NEORSD’s Sewer System Operations and Maintenance Department brought in their own flow meter and

installed it in a manhole downstream from the Flo-Dar and left it in for a period of time to compare the flow data. She adds, "Lo and behold our numbers were just a little bit higher than their numbers which was probably due to compensation for the curvature in our line. The comparison testing resulted in a significant refund to the Zoo for flow rate overcharges. She adds, "Not only has the meter more than paid for itself but I now have peace of mind that when I turn in a flow data report it will reflect the right numbers and be accepted. So in the end, it took the pressure off of us to prove it right by them not proving it wrong."