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REMOTE MONITORING & INTELLIGENT PUMPING

Monitoring Brings Reliability to Wastewater Collection System

Remote terminal units help an Oregon utility monitor 40 major pump and lift stations.

BY **LAURYN COLQUITT**
MISSION COMMUNICATIONS

Clean Water Services (CWS), a water reuse provider in Oregon that serves more than 500,000 residents, has partnered with local organizations to educate the public about the importance of wastewater reuse.

CWS Government and Public Affairs Manager Mark Jockers says they intend to increase public understanding and acceptance of water reuse as well as the importance of recycled wastewater. CWS has formed partnerships with groups within the community to start a dialogue about the urban water cycle.

“This whole project is really about starting a conversation about the nature of water. It’s about the fact that all water has been consumed before and will be consumed in the future,” Jockers says. “We are trying to broaden the discussion of water reuse in Oregon and in the nation in terms of how water is recycled.”

Wastewater Treatment

CWS runs four wastewater treatment facilities serving more than 500,000 residents in Washington County, Oregon. The company has provided reuse water for irrigating athletic fields and golf courses and for wetland recharge for more than 25 years.

CWS uses a High Purity Water system that treats effluent in a three-step process, which includes reverse osmosis (RO), ultra-filtration and disinfection. Ultra-filtration membranes first remove bacteria, protozoans and other pathogens. RO membranes then eliminate salt, organics, trace pollutants and additional pathogens.

The final step involves disinfection/advanced oxidation oxidants and ultraviolet technology to kill remaining pathogens, destroy N-Nitrosodimethylamine (NDMA) and other trace pollutants. The end product of the three-step process meets federal safe drinking standards.

“It is getting people to understand there isn’t any new water. All water is reused,” Jockers says. “I think we are shortening the distance between used and reused.”

Remote Monitoring

CWS officials use remote terminal units (RTUs) and equipment to monitor their 40 major pump and lift stations. Personnel oversee wet well levels, pump runtimes, pump amperage and pump capacity. They also monitor flowmeters and watch for pump, generator and air failures.

Forest Grove Treatment Plant Manager C.J. Baxter says all treated wastewater must meet strict pH standards and be biologically treated to Department of Environmental Quality (DEQ) requirements.

Baxter says before partnering with a managed supervisory control and data acquisition (SCADA) provider, they used an older, unreliable autodialer system. Personnel were unable to determine if they lost communications with remote equipment until long after an interruption occurred. The dialers at several treatment plants monitored after-hours alarms. Because lift stations were on a weekly maintenance schedule, there was a significant lag time between communication interruptions and when personnel discovered them.

Scheduling employees and destinations for after-hours alarms was also difficult.

“You could visit the station one day and have communication and the next time you visited the station, you might not have telephone service,” Baxter says. “You wouldn’t know when you actually lost that service.”

Baxter says they looked into radio telemetry but found it too cumbersome and costly to install. CWS required a reliable alarm or data logging system that would detect communication failures at pump and lift stations. They also needed to be able to handle at least eight alarms and call out to different alarm groups.

Baxter says that the managed SCADA provider gives notification if communication with the pump station is lost. With the new system, schedules and access can be altered on one website, rather than having to go to each individual site and reprogram dialer units.

Real-Time Data

Baxter says he especially likes the ability to view pump station status in real time during a rainstorm or severe weather event. He says it gives them a current snapshot of what is occurring at the stations.

“When we had a wind storm, we were having problems with power bumps to one of our stations,” Baxter says. “Using the real-time SCADA software, we were able to see how the pumps were performing to determine whether we needed to call in staff during the night.”

Service personnel can also troubleshoot stations at multiple locations. The software provider’s real-time data and alarms have prevented pump failure when a pump started to get plugged.

Baxter regularly uses a pump runtime variance report and weekly communication management report. The pump runtime variance data has allowed him to flag abnormal runtimes at one or more pumps.

He says the real-time viewer application and trending data help him decide whether or not to schedule



Image 1. An RTU monitors a Clean Water Services pump station. (Courtesy of Clean Water Services)

maintenance ahead of normally scheduled rounds if he finds an issue.

Two or three problems are averted every month because of the report.

“I’m really happy that our new SCADA provider has been eager to listen to our feedback and prompt to address any concerns we have had,” Baxter says. “That has been a real positive benefit of working with the company and their local distributor.” ■

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