

Water treatment plant saves money, time with water intelligence system

Problem

A wastewater treatment plant was using manual processes for data collection, yielding inconsistent and often inaccurate data, leading to numerous permit violations, wasted staff time, and excess costs associated with overtreatment.

Solution

The plant chose an intelligent solution to manage their data collection and process controls to provide immediate data access, data analysis, and process control.

Benefits

New equipment and processes have enabled the plant to save time and money while staying within compliance with no further permit violations. Staff time can now be refocused to more strategic initiatives, and the plant has expanded flow capacity while significantly reducing overall costs.

Background

The large plant, located along Colorado's South Platte River, is required to exceed secondary treatment requirements by removing ammonia and nitrate from water. The plant is the third-largest publicly-owned treatment works in the state.

Manual processes

Technicians at five different locations would fill data into paper reports, which were later entered into spreadsheets. Automated data collection was limited to lab-generated data only, and did not include operations or field data such as flow indications or pump status.

Data analysis

Data analysis was severely limited, essentially used only to generating regulatory reports. Little time was given to interrogating the data for excursions.

Permit violations, excess costs, wasted time

During the 1990s, the plant averaged two permit violations per year. The manual system didn't help troubleshoot the causes of the violations or provide information to help prevent them. Overtreatment meant excess costs, and staff were unable to focus on higher-priority initiatives.



The plant's large size and sprawling layout created a challenging environment for manual data collection. Automated data collection has resulted in time savings and greater data accuracy and reliability.

Solutions & Improvements

A water intelligence system was selected to manage the data flow, providing actionable insight for critical decision-making around plant optimization. Accurate real-time data allowed the utility to update operations, eliminating inaccuracies and alleviating the critical time drain of the manual process. The system was a cost-effective solution that helped save both time and money.

Data access, operational efficiency

The operators can quickly check the accuracy of their data by pulling up correlation information to compare data relationships for optimizing plant processes. The process control manager analyzed the effects of pump configurations. By systematically testing the operations and configurations, he was able to optimize the equipment's performance and immediately wrote these new processes into the plant's standard operation procedures. In just three to four months, changes were made that result in saving \$70,000 annually.

The plant now includes a denitrification process in its plant that uses methanol. The plant had been using nearly 900 gallons of methanol a day in order to perform the task. By monitoring the results with the water intelligence system, they found the plant could operate on only 500 gallons a day with the same output results, providing \$176,000 in annual savings.

Refocussing staff resources

Data entry time among several employees was immediately reduced by 32 hours a week, allowing the plant to refocus those employees on more strategic initiatives. A plant expansion to increase flow capacity and denitrification generated 10 times more data, and the intelligent system's automated data entry made it



possible to gather and analyze the additional data without increasing resources.

Today, the staff is able to spend 25 percent of its time on strategic analysis looking for opportunities to increase cost savings, which is something it did not have the time to do with the manual process.

Compliance

For large wastewater treatment plants, discharge monitoring reports (DMRs) are vital. The task of generating the reports has been reduced from 2-3 days to about 30 minutes; using the data, operators can spend just a few minutes looking over the numbers, and if any concerns arise, they can immediately dive into the system's audit trail. The audit trail identifies the origin of the data and provides a track all the way back to the supervisor who approved it.