Aqua DNA
by Jacobs

CASE STUDY

Jacobs and the City of Wilmington: Transforming CSO Management

THE CHALLENGE

In 2020, Jacobs was contracted to manage and maintain the wastewater treatment plant (WWTP) and 41 combined sewer overflows (CSOs) for the City of Wilmington, Delaware. The WWTP processes flow from both the City and New Castle County, Delaware. Previously, the CSOs were managed and maintained manually by a dedicated crew of four individuals. These individuals were tasked with inspecting each of the 41 CSOs five days a week, which involved driving to each location, opening manholes, and checking for blockages.

This manual process was time-intensive, requiring substantial driving and traffic management, and posed significant safety risks, including confined space entry at some locations to clear blockages. The evident need for a more efficient and safer management system led to the exploration of modern solutions to enhance the operation and maintenance of Wilmington's WWTP.

OUR SOLUTION

At the beginning of the contract to operate and maintain the WWTP and CSO system, Jacobs initiated a CSO monitoring expansion project alongside upgrading the Supervisory Control and Data Acquisition (SCADA) system. A pivotal component of this solution was the integration of Aqua DNA, a tool that facilitated system visualization for the CSOs. Jacobs installed one flow meter and level sensors at 35 of the City's 41 CSO locations that were previously unmonitored and implemented Palantir's Foundry platform.

This implementation enabled the visualization of data from level sensors, rain gauges, river gauges, and flow meters, providing comprehensive oversight of the entire system. To ensure proactive management, alert systems were established. These alerts, indicating potential blockages, were directed to the CSO crew lead after being verified by an operator at the WWTP. The crew lead could then field verify these alerts using Aqua DNA, ensuring timely and effective responses to any issues that arose.

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THE RESULTS

The crew initially reduced their investigations to three days per week before Aqua DNA's full deployment. With Aqua DNA's visualization and alerting now implemented, they plan to reduce this to just one day per week. This system has been instrumental in preventing potential overflows by alerting blockages before they escalate. Utilizing Aqua DNA's system has led to significant time and financial savings, such as clearing a blockage within two hours of an alert, compared to an overflow that could have lasted another 41 hours. Additionally, it has helped prevent potential environmental issues and enhanced the understanding of CSO behavior.

FUTURE PLANS

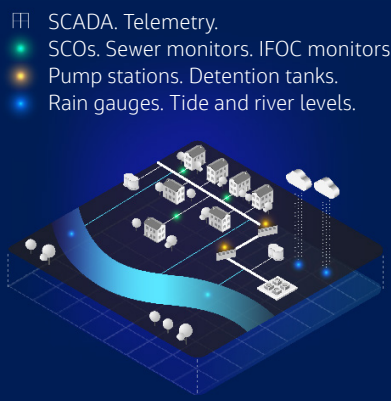
Jacobs is developing a system optimization module for Aqua DNA. This module, based on the City's hydraulic model, will incorporate machine learning techniques to forecast flow patterns. The primary objective of this initiative is to maximize the system's capture capacity and minimize the occurrence of CSOs. This innovative approach is expected to revolutionize operational procedures and significantly enhance the efficiency of the collection and treatment system's holistic operation. The module will assist Wilmington in meeting their goal of an 85% capture rate, marking a significant step towards sustainable urban management.

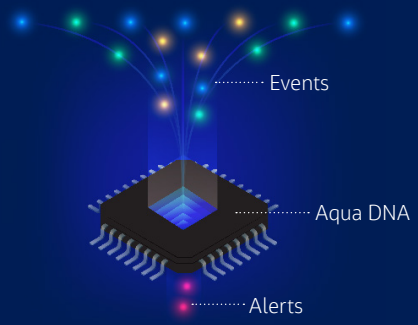
How Aqua DNA works.

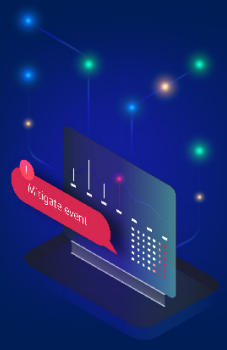
Aqua DNA dynamic models predict behavior from your **existing systems and analytics**.

Our AI monitors your network to evaluate abnormal events and **prioritize alerts**.

Our platform directs your staff to the right issues and helps you **monitor the impact**.







Ready to boost your wastewater network's performance?

Email us for a live demo at: aquaDNA@jacobs.com jacobs.com/aquaDNA