

EFFECTIVE ODOR CONTROL IN A LOW PRESSURE SEWER SYSTEM IN NASHVILLE, TENNESSEE

WHEN METRO WATER SERVICES RECEIVED COMPLAINTS ABOUT ODOR IN A RESIDENTIAL SUBDIVISION, EVOQUA PROVIDED A RAPID, COST-EFFECTIVE SOLUTION.

The Metropolitan Government of Nashville and Davidson County received odor complaints from the Seven Points subdivision in Nashville, TN. The community consists of about 150 homes located near the 22 square mile J. Percy Priest Reservoir. The homes in the subdivision each feature grinder pump stations that discharge into a 2.5" to 4" main for transport to a local pump station.

Low pressure sewer systems like this are often used in small communities where wastewater cannot be moved by the force of gravity. In many cases, these systems are found on lake front properties that lie at low elevations relative to pump stations or treatment plants. Grinder pump systems are prone to hydrogen sulfide production and release due to the small diameter pipes and low linear velocities. In addition, homes owned in lake communities may not be occupied year-round, resulting in longer retention times during periods of low occupancy.

As a result of residential odor complaints, Metro Water Services contacted Evoqua to evaluate the problem and propose a solution.

Evaluating Hydrogen Sulfide Levels

Evoqua measured hydrogen sulfide levels at the intersection of two busy roads where the odor issues had been identified. The hydrogen sulfide graph on page two shows the untreated system experienced peak sulfide concentrations exceeding 950ppmv and an average concentration of 603ppmv.

Treating odors from low pressure sewer systems is complicated by the number of Grinder pumps in the system. An odor control solution application point must be selected that allows the total flow to be treated and provides sufficient reaction time for the solution to be effective. Evoqua proposed dosing VX 456 solution directly into the low pressure force main due to its quick reaction time and specificity towards sulfides in order to establish rapid control over the biofilm in the pipe and to provide a nitrate residual for longer lasting results.

Industry

Municipal Wastewater

Business Challenge

Effectively treat odor issues in a low pressure sewer system

Keys to Success

- VX 456 mixed oxidant solution
- Safe-L dosing and storage system
- Odalog hydrogen sulfide monitor



VX 456 solution installation - Seven Points subdivision

VX 456 Mixed Oxidant Solution

VX 456 Solution is a proprietary mixed oxidant solution designed to remove odors in wastewater streams, it has a specificity to sulfides and other organic odor causing compounds. VX 456 reacts rapidly and provides extended duration odor control.

An application of 12GPD of VX 456 solution was applied at a continuous rate upstream of the odor issues using a Safe-L dosing and storage system with intergrated containment for safety. An Odalog monitor was also installed to measure hydrogen sulfide levels.

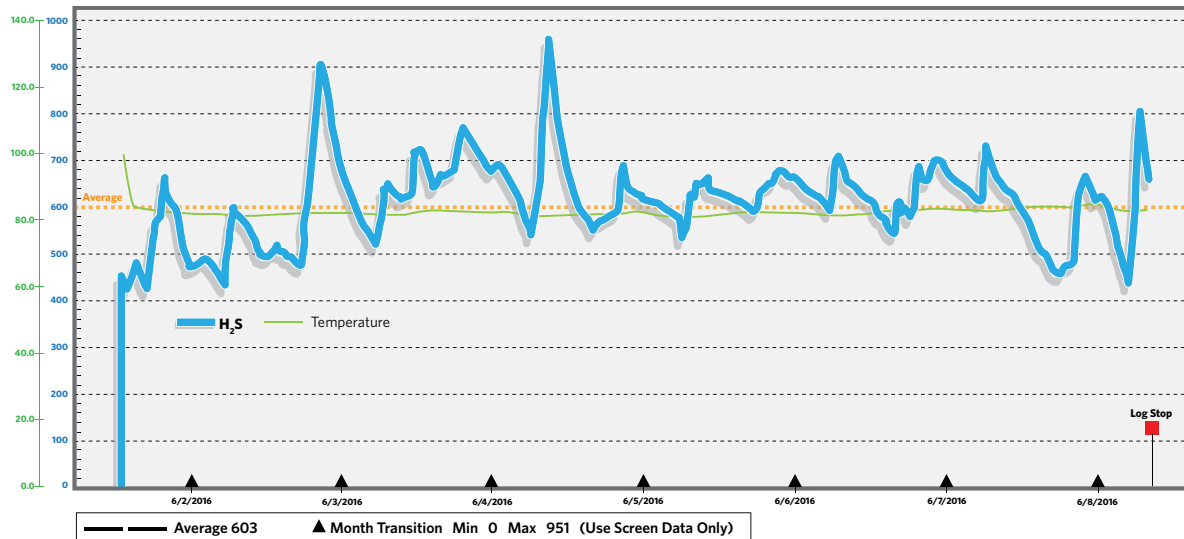
Rapid and Effective Results

VX 456 effectively reduced hydrogen sulfide levels from an average of 603ppmv to 5ppmv as seen in the chart below. Odor issues have been mitigated and the municipality no longer receives complaints from residents.

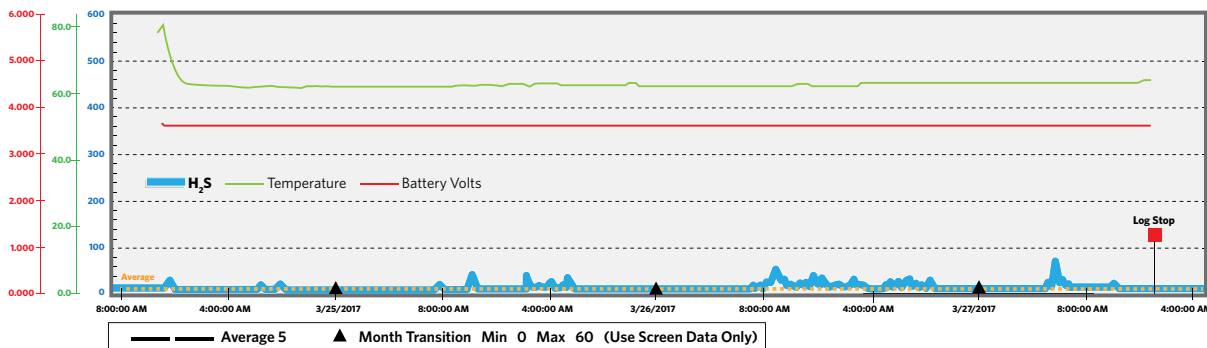
“Evoqua was very helpful in providing an effective odor control solution for the Seven Points subdivision” says Matt Lott, System Services Engineer, Metro Water Services.

Evoqua continues to monitor H₂S levels on a monthly basis to ensure long-lasting performance.

Hydrogen Sulfide Levels Before Treatment - Seven Points



Hydrogen Sulfide Levels After Treatment - Seven Points



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