

Case Study: Biologic Lift Station Reduces Hydrogen Sulfide in High-Volume Force Main

SUMMARY

A high-volume wastewater force main was treated daily with Biologic Lift Station and over time showed a significant reduction in hydrogen sulfide (H₂S). Hydrogen sulfide concentrations were >350ppm and causing significant corrosion to the concrete and metal infrastructure. After three weeks of treatment, concentrations were reduced by at least 54% and continued to decline.

BACKGROUND

A municipal collection system located in the southern United States was identified with high concentrations of H₂S gas. With a daily flow of 3 million gallons per day (GPD) that pumps into 5-mile-long force main, the highest concentrations were detected at the outfall. Over time, this resulted in corrosion to both concrete and steel infrastructure. It also led to the emission of unpleasant odors into the community.

OBJECTIVE

The objective of treatment was to prevent the production of H₂S and stop the corrosion, hazardous conditions, and associated odor.

MATERIALS AND METHODS

A lift station located upstream of the effected force main was initially treated with Biologic Lift Station. This was then followed by a daily dosing of Biologic Lift Station through an automated dosing pump. Liquid dosing was distributed evenly between four periods of low flow. To demonstrate success, a H₂S gas monitor was installed downstream of the lift station at the outfall of the force main. The monitor collected data for a duration of one month.

RESULTS

After one month, the gas monitor was removed and the data was analyzed. During the first two weeks of treatment the H₂S levels were at or above 350 ppm (Figure 1). After five weeks of treatment, the concentration of hydrogen sulfide was decreased by 54%. Note: This monitor had a maximum threshold of 350 ppm. Any concentration above this level would have been beyond its sensitivity and read as 350 ppm regardless of actual concentration. Because of this, we cannot accurately quantify the initial concentration.

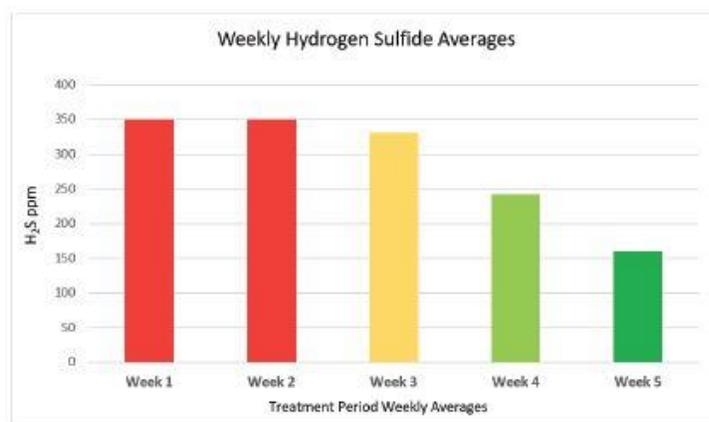


Figure 1: Weekly H₂S averages during the first five weeks of biological treatment with Biotifx®.