

REDUCED COLIFORMS & INCREASED ORP AT STORMWATER RETENTION BASIN IN CALIFORNIA



Client Case Study: Stormwater Basin

Unit Type:

Two 2,200-gallon-per-minute (GPM) trailer-mounted air nanobubble generators

Challenges:

- Foul odors
- Microbial contamination
- Poor water quality

Results:

- Increased dissolved oxygen from 0.5 mg/L to 4.4 mg/L at the sediment
- Elimination of H2S odors
- Increased sediment ORP -260 to +160mV
- Reduced coliforms up to 75% in 8 days

A stormwater retention basin for the southern region of a California city has historically been plagued with odor emissions and microbial contamination. During extended dry periods, reports of odors, likely a consequence of hydrogen sulfide production and a by-product of anoxic conditions within the water body, occurred resulting in complaints from the community. During rain events, high levels of microbial contamination, measured by total coliforms, accumulated in the water body leading to microbial health and safety concerns.

To address both anoxia and microbial contamination concerns, Moleaer installed two 2,200-gallon-per-minute (GPM) trailer-mounted air nanobubble generators to recirculate on the basin. The nanobubble generators were installed after a rainfall event and operated for two weeks until the water level had decreased below the suction lift capacity of the nanobubble generator pumps.

As part of the nanobubble treatment, Moleaer conducted a water quality analysis to characterize the basin prior to, throughout, and after treatment.

To measure the conditions that cause odors, dissolved oxygen and oxidation-reduction potential (ORP) profiles were collected at four sampling locations across the basin over the course of treatment. At the benthic layer, average dissolved oxygen concentrations increased from less than 0.5 mg/L to 4.4 mg/L. Additionally, ORP levels increased from an average of -260mV to 160mV demonstrating a shift towards a more oxidative environment in which odor-causing sulfides are not produced. Microbial testing for E. coli and total coliforms was also conducted and indicated a reduction of 75% across both parameters.

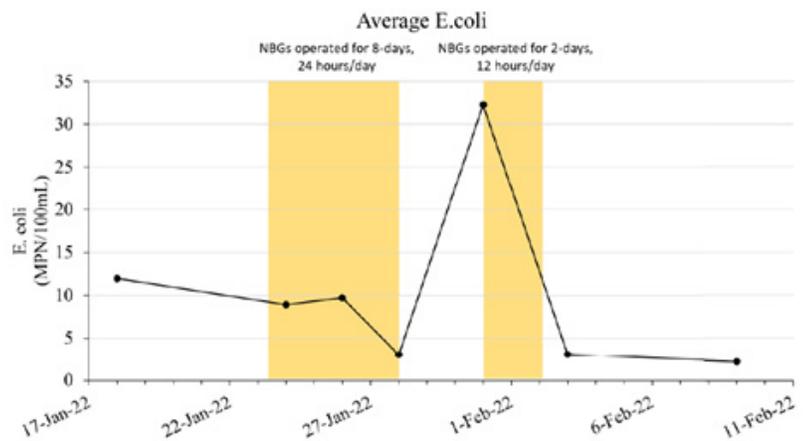


Figure 1: Average E. coli before, during and after nanobubble treatment.



Figure 2: Flexible installation was required for this project.



Figure 3: Moleaer's nanobubble generators are modular and scalable to fit any installation.