By William Paul

Dosing for Odor Control

The South Coast Water District (SCWD) provides freshwater and sewer service to more than 40,000 residents and two million visitors per year in the California coastal communities of Dana Point, South Laguna Beach and San Clemente. The district delivers 7 million gal of water each day to homes and businesses and removes 4 million gal of wastewater for treatment.

Customers breathe easier after district implements a hydrogen sulfide control plan

The SCWD's facilities are extensive. The sewer system contains 136 miles of pipelines, 3,800 manholes, 14 lift stations and three miles of force mains. The district's commitment to quality service is evident in its efforts to meet or exceed state and federal standards through disciplined maintenance and repair, as well as the addition of capital improvements to its facilities.

Toxic Odor Problem

Lift Station Nine is located in the environmentally sensitive marina area of Dana Point Harbor, with the force main discharge manhole very near a highly used jogging and bike path. Restaurants and businesses provide the lift station's primary influent.

Unfortunately, most of the restaurants in the marina area are older, meaning that they do not have the grease interceptors required of new food service establishments. The influent to the lift station, therefore, contains an inordinate amount of grease and food wastes. Rapidly decaying waste and normal sewage, along with long periods of very low flow, provide an environment for heavy production of liquid sulfides. Add the turbulence that is created as the effluent of the force main drops almost 10 ft to the floor of the force main discharge manhole, and the ideal situation exists for the release of extremely high levels of hydrogen sulfide gas (H_2S). The result is both significant odor complaints and corrosive damage to the manhole cover, ring and lining.

SCWD turned to BioMagic for a solution. To determine the extent of the problem, baseline measurements were taken in the force main discharge manhole for one week using an OdaLog H_2S data logger. The average H_2S concentration for the baseline test was 527 ppm and at least once each day, H_2S levels exceeded the instrument's 1,000 ppm upper limit, meaning the air inside the manhole was literally toxic.

Resolution & Results

A chemical injection system was set up to deliver BioMagic's M6 BioOdorStop product directly into the wet well. Because of the extremely high sulfide levels, an aggressive dosing scheme of 5 gal per day (gpd) was implemented. This dosing was semi-continuous, delivering about 1.5 ounces every three minutes.

H_2S levels dropped dramatically to fewer than 25 ppm during the 15 hours after treatment began—a 20-times reduction. Dosing continued at 5 gpd for an additional 17 days. Average H_2S levels were reduced even further during this time frame to 9 ppm.

Dosing was reduced to 3 gpd, which was the maintenance dosing level that was originally agreed on. Treatment continued at this level for about one additional month. Testing showed that average H_2S levels had dropped to 2 ppm. Odor complaints had been eliminated.

Eight weeks after initial treatment, average H_2S readings were even better, having been reduced further to 0 ppm, with minor spikes of 2 to 15 ppm. Despite the option of reducing M6 BioOdorStop dosing to lower costs further, the district decided to stay with the 3-gpd maintenance dosing. Odor complaints had been eliminated, corrosion damage had been stopped and SCWD and its customers are all breathing easier. WWD

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