



Balboa Island/Little Island Pump Station

Odor Control & Grease Cap Treatment

Program Objectives

- Reduce Water Usage of Spray System
- Eliminate Formation of Grease Cap
- Reduce H₂S Odors
- Prevent Insect Nesting & Reproduction
- Reduce Pump Out Requirements
- Enhance Sewage Line Maintenance
- Reduce Direct & Municipal Costs

Location of Pump Station, Balboa Island/Little Island



Basic Description of Pump Station

- The pump station, located on the Little Island of Balboa Island, serves as the collection point for all three islands (Little Island, Balboa Island, Collins Island) that comprise the Balboa Island collection system.
- The pump station is adjacent to the bay front and a public pier (40 ft.) at the end of the main street running directly from the bridge onto the island.
- Sewage from the pump station is pumped under the bay channel through a forced main and exits into the OCSD trunk line running along Bayside Drive.
- Sewage flows up to 300,000 gallons daily, with variations due to high visitors during summer months and holidays.

Previous Status of Pump Station, Operations & Maintenance

- Pump Station uses a two-spray bar system that was spraying for 5 minutes during each pump out phase, day and night.
- Based upon the pumping sequence and spray rate consumption of water, the spray system was using 16,000 gallons of water daily.
- The spray system was successful in eliminating the nesting and procreation of small flies that had caused community relationship issues.
- In addition to the spray system, a fan blower evacuates the air within the well continuously, discharging the air up through an adjacent hollow flag pole.
- Grease cap within the well built up continuously (+/-18") and was pumped out every 90 days.

Time Line of Alterations and Introduction of BioCatalyst

- **02/20/13:** 55 gallon drum of EcoSystem Plus installed, along with metered pump, dosing into water tank within dry well that feeds the sprayers in wet well. Dosing rate: 8 GPD. OdaLogger installed.
- **02/26/13:** Substantial reduction in grease cap formation based upon previous baselines. Dosing rate reduced 5.5 GPD. OdaLogger shows 0 – 1 ppm range throughout period.
- **03/06/13:** In order to further improve grease cap formation, a hole was drilled in sewage discharge pipe within well to allow better circulation. Remaining grease cap further reduced, but still forming in corners of well. Decision to install better turbulence and aeration with regenerative blower.
- **03/08/13:** 1.5 hp regenerative blower installed in dry well. 1.5 inch reinforced tubing connected through existing PVC pipe, with another section of tubing running down to one side of well. Dosage rate reduced 4.5 GPD. Water usage reduced by 60% (2 minutes per cycle).

Time Line of Alterations and Introduction of BioCatalyst

- **03/20/13:** Product dosage reduced to 3.5 GPD. Grease cap formation substantially reduced, except for small accumulation in far corner opposite of blower tube outlet. OdaLogger recording continued 0 – 1 ppm H₂S readings.
- **03/27/13:** A second tubing was installed in well with a bifurcation fitting at PVC outlet. Increased circulation immediately cleared remaining floating grease in corners. Dissolved oxygen meter recording 7.8 ppm of DO in well.
- **04/06/13:** Product dosage reduced down to 1.6 GPD with no detriment to break down floating grease cap formation. Spray cycle reduced down to 30 seconds per cycle (95% reduction in water usage). OdaLogger readings recording average 0 – 1 ppm H₂S.
- **Through 05/09/13:** Well continues to show no formation of grease cap or H₂S odors. New installation deemed successful.

Vacuum Cleaning of Pump Station



Breaking the Floating Grease Cap



Accelerating Breakdown of Grease Cap



Highly Degraded Floating Grease Cap



With and Without Air Blower

**Without Air Blower
Slight Grease Cap in Corners**



**With Air Blower
No Grease Caps Remaining**



Results & Conclusions

- Significant savings (95%) in water usage to control fly infestation and subdue H₂S odors.
- Grease cap formation eliminated, thereby removing platform for insect breeding potential, and lowering amount of pumpouts.
- H₂S odor generation eliminated.
- High dissolved oxygen levels in well provide enhanced pre-treatment of sewage and downstream benefits (i.e. FOGs and TKN) to OCSD lines.
- H₂S odor readings at end of forced main outlet on Bayside Drive, prior to entry into OCSD line, showed 0 – 1 ppm H₂S.
- Removal of grease positively contributes to alleviation of binding of rags and other solids.

Little Island/Balboa Island Pump Station Program

Mike Lynch and his entire team were essential and critical to the evolution of the final system deployment of Bio-Organic Catalyst, Inc.'s EcoSystem Plus.

- The successful installation saves over 15,000 gallons of water daily.
- Eliminates the formation of a large grease cap (up to 24") within the well.
- Establishes a highly aerated pre-treatment of sewage prior to discharge into OCSD lines and wastewater treatment system.