

**Enviro-Tech**



**of America, Inc**

**ENVIRO-TECH OF AMERICA, INC.**

**MANUFACTURER OF THE ORIGINAL MICROBIAL OPTIMIZER PX-700®**

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Monitoring of Effectiveness of Px700 Bio-stimulant- Microbial Optimizer in Reducing Grease and BOD from selected Lift Stations in Southwest Florida from January 2019 to June 2019.

On January 11, 2019, Envirotech of America installed aeration and a pumping device to incrementally administer a Px-700 bio-stimulant at three selected lift stations in Naples, Florida. The selection process for selecting lift station trials, instillation of equipment, and initially sampling of the selected lift stations was directed by Naples collection system operators. Lift stations 1, 2, and 3 were selected and pretreatment sampling was carried out. The samples were sent to Flowers Chemical Laboratories in Altamonte Springs, Florida for analysis of the concentrations of grease and BOD present in the lift stations prior to administering a bio-stimulate to mitigate FOG problems.

Fat, oil, and grease is an ever-growing environmental concern. FOG is usually produced at food service establishments (FSE or other food preparation facilities) . The by-products and wastes from these FSE include meat, dressings, deep-fried food, baked goods, cheeses, and butter. These wastes are considered FOG and may lead to the FOG build-up in the sewer system when discharged directly into the plumbing system. Other sources of FOG include discharge from industrial activities; for example, palm oil mill effluent and automobile workshop discharge.

Recently, the eating habits of people have changed, with more people eating outside their homes, so that the number of food outlets has increased, resulting in increased blockages sewer systems because of FOG deposition.

FOG blockage is a worldwide concern. The American Environmental Agency estimates that at least 10,350–36,000 sanitary sewer overflows occur per year in the USA, approximately 47% of which is related to FOG. Similarly, in the UK over 25,000 flooding incidents per year are due to sewer blockages, of which, 50% is due to FOG.

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Moreover, up to 70% of the SSOs that occur in Malaysia are due to FOG. In 2010, the wastewater municipality in Malaysia, Indah Water Konsortium reported a total of 22,184 blockage. Continuous build-up of FOG decreases the capacity of the sewer system as the FOG solidifies and deposits on the interior walls of the sewer, causing blockage of pipes and restricting the wastewater flow. Over time, sewers blocked by FOG fail, leading to overflow of sewage from manholes; this sewage may eventually make its way to state water sources as a contaminant. The blockages and sewer flooding may result in other environmental problems, locally and beyond the premises.

Recently, extensive efforts have been expended to investigate the possibility of treating FOG to reduce the amount disposed at landfills. However, understanding the chemical and physical properties of FOG and its deposit-formation mechanism is essential for developing more environmentally and economically efficient methods of controlling, treating, and reusing FOG.

The pretreatment laboratory values for Grease at lift stations 109, 33, and 35 were 1170 mg/L, 142 mg/L, and 134 mg/L, respectively, and the laboratory values for BOD were 149 mg/L, 138 mg/L, and 145 mg/L, respectively.

The Px700 bio-stimulant was applied daily through a flow related dosing system for six months.

On June 21, 2019, laboratory samples of the water present in lift stations 109, 33, and 35 were sampled under the observation of the collection system operators at Naples, and the samples were sent to Flowers Chemical Laboratories in Altamonte Springs, Florida for analysis of the concentrations of grease and BOD present in the lift stations following the administration of a bio-stimulant to mitigate FOG problems in these lift stations.

The post treatment laboratory values for Grease at lift stations 109, 33, and 35 were 9.2 mg/L, 19.6 mg/L, and 7.2 mg/L, respectively. The laboratory values for BOD in lift stations 1, 2, and 3 were 91.0 mg/L, 112 mg/L, and 88.6 mg/L respectively. These values indicated a reduction of Grease and BOD in these lift stations of more than 90% on average. More than 6,000 pounds of grease and 3,000 pounds of BOD were prevented from entering the collection system on average each month.



	Pre-Grease mg/L	Post Grease mg/L	Pre BOD mg/L	Post BOD mg/L	LBS of Grease Reduction per month	LBS of BOD reduction per month	% reduction Grease per month	% reduction BOD per month
LS 1	1170	9.2	149	91.0	809.6	41.6	99%	40%
LS 2	142	19.6	138	112	3285.0	696.0	86%	19%
LS 3	134	7.2	145	88.6	2384.7	2560.2	98%	94%

**Conclusion**

In this case, a bio-stimulant and microbial optimizer, Px700, produced by Envirotech of America definitively reduced grease and BOD in three lift stations in Naples, Florida and prevented the pass through of grease and BOD to the collection system and ultimately to the City’s wastewater treatment plant. The treatment prevented 38,875.8 pounds of grease and 19,786.8 pounds of BOD from leaving the treated lift stations and impacting the downstream collection system and wastewater treatment plant.

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