



Biotifx[®] Helps Municipality Forgo Lagoon Dredging

SUMMARY

A municipal wastewater treatment lagoon had accumulated high levels of sludge after decades of loading and was due to be dredged. They began treatment with Biotifx to help digest their organic sludge and forgo dredging. After three months of treatment, the lagoon experienced significant sludge reduction and an excellent return on investment for the municipality.

BACKGROUND

The municipal lagoon was eight feet deep with a design volume of 99 million gallons. After fine screen primary treatment, it performed secondary treatment with aeration (Figure 1). Historically, the lagoon received an average of 2.5 million gallons per day at 112mg/L TSS (2,340lbs/day). The lagoon was measured and found to contain 20.5% sludge. The cost to dredge the entire lagoon was estimated at \$2.5 million dollars.

Concerns for the facility included;

- High sludge levels in lagoon, limiting hydraulic retention time
- Dredging cost to remove sludge

TREATMENT OBJECTIVE

The goal of treatment with Biotifx was to reduce the sludge in the lagoon and prevent dredging.

MATERIALS AND METHODS

Before treatment, the lagoon was surveyed with sonar by a third-party engineering firm to measure the volume of sludge in the lagoon. After three months of treatment with Biotifx, this process was repeated to measure results. Treatment began by initially dosing the lagoon with Biotifx at 1ppm of its total volume. Subsequent dosing at a rate of 1ppm of daily flow continued five days a week for three months. Biotifx powder was hydrated in water for 1-4 hours prior to dosing. After hydration, the solution was applied directly into the lagoon around its perimeter. Treatment was stopped after three months once the lagoon temperature fell below 50°F.



Figure 1: Municipal wastewater lagoon before treatment with Biotifx.



Figure 2: Municipal wastewater lagoon after treatment with Biotifx.



RESULTS

REDUCED SLUDGE

Sludge volume in the lagoon decreased significantly after treatment despite continuous loading of solids into the lagoon. It was calculated that 425,674 dry pounds of sludge were removed from the lagoon.

Since the wastewater treatment plant was continuously adding solids during this time, the total amount of sludge digested by Biotifx is (total solids before – total solids after) + solids loaded. The average daily flow and influent suspended solids concentrations are summarized below (Table 1).

	AVERAGE DAILY FLOW MGD	AVERAGES OF SUSPENDED SOLIDS		TOTAL LOADING
		mg/L	Lbs/Day	Lbs over 5 months
SOLIDS LOADING	3.08	97.2	2,323	352,835

Table 1: Average lagoon flow and loading data (MGD = million gallons/day)

Given a loading of 352,835 dry pounds over the course of 5 months, it is estimated that 246,985 lbs would have remained in the lagoon (70% retention based on an engineering firm's calculations). Therefore, the total sludge reduction by Biotifx was 672,659 dry lbs (425,674 lbs + 246,985 lbs).

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Treatment and how to
become a partner
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