WASTEWATER TREATMENT ENHANCEMENT AND COST SAVINGS ON SLUDGE HAULING

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The Problem:

This WCID's Wastewater Treatment Plant, an activated sludge (complete mix) facility located in Texas was operating well within State Permit parameters. Waste sludge however was being produced at a rate of 8000 GPD, costing the plant approximately $1000.00 per month to haul sludge from the plant to a landfill operation. The General Manager sought to improve conditions and the environment by limited the wasting necessary to operate the plant within the limits established. He decided to introduce a bio-stimulant (**BYO-GON PX-109**®) to elevate the efficiency of his biomass by increasing the consumption of a volatile organic matter within the plant; and decreasing the waste activated sludge (WAS) being processed for removal. As an innovative technology, **BYO-GON PX-109**® differs from conventional treatment in that it is *not a cultured bacterial product, enzyme or chemical.*

The Testing Process:

Case studies throughout the United States and Texas convinced the General Manager that **BYO-GON PX-109®,** would not adversely affect plant operations while increasing plant efficiency in removing organic matter. Analysis of laboratory results (through an independent laboratory) showed the plant and digester to be carrying a total solids inventory of 30,490 mg/l and 18,930 mg/l (62%) volatile solids in June. On July 1, **BYO-GON PX-109**® was introduced into the plant with a shock dose on the first day only, and then placed on a scheduled maintenance dosage (by pulse metered, timed pump) for the first month, given that the raw flow was < 1 MGD. This method had no impact on daily operational requirements. Laboratory results on July 16 showed that after rising to 31,930 mg/l on July 9th, total solids inventory of the plant and digester had dropped to 19,740 mg/l solids and 12,500 mg/l volatile solids (-38% Total Suspended Solids). Given the rapid reaction, the treatment was then decreased. After the modification (stabilization) of the treatment, total solids (MLSS) initially leveled to 25,400 mg/l in the plant digester until the biomass was methodically saturated with the bio-stimulant.

Results:

On September 17 laboratory analysis showed that the total solids inventory continued to decrease to 16,910 mg/l and the volatile solids dropped to 13,420 mg/l. This represents a decrease of 45% in total solids being carried in the plant and digester. Wasting was stopped in order to return more activated sludge to the aeration basins (RAS). Returning more sludge to the plant for treatment resulted in a decrease of 35,000 gallons of sludge per week being wasted from the plant for removal to a landfill. The plant now saves $650.00 per month in hauling and has cut sludge introduction into a landfill by two-thirds. Cost of the monthly sustained treatment is $208.82 leaving $441.18 in realigned dollars for this WCID. . In addition, effluent TSS/VSS and BOD have consistently decreased from 4/2 and 2, to 2/2/ and 1 respectively since increasing the efficiency of the biomass with **BYO-GON PX-109® .** The impact upon the environment at this, and larger scales, is enormous. Cutting wasted sludge by 45% prolongs the life expectancy of landfills while elevating the peak efficiency of wastewater facilities to consistently work well within design parameters. Improvement in effluent conditions returns a superior supernate to the rivers, streams and bayous of the surrounding areas without chemically supplementing or altering the natural workings of wastewater plants. Since has proven to stimulate aerobic and anaerobic biomasses, it has the most universal application possible. Given that bacterial digestion is increased, dissolved sulfides

in raw wastewater are consumed at a much greater rate leaving less to form gas under septic conditions. Average Hydrogen Sulfide levels experienced at the plant have fallen from 10 ppm to 2 ppm - a reduction of 80%; thereby saving concrete and metal structure from Hydrogen Sulfide damage at the plant. The result is a quantum leap in bettering the environment both for wastewater treatment plants and the communities they serve.

Cost Savings:

At the current rate of treatment and savings in hauling wasted sludge from the plant, the WCID will save $5294.05 annually including the cost of treatment. At this scale for a plant with 260K GPD flow, the proportioned savings are significant. Cost savings increase with the size of the treated facility and the amount of sludge being processed.

Total annual cost of sustained treatment in this application is $2505.95. Total annual savings in sludge hauling alone is $7800.00 leaving a total of $5294.05 in realigned dollars. Additional savings are realized in the reduction of polymers, utilities and man-hours use in processing sludge for removal. Total annual savings are projected in excess of $10,000.00.