Saves Major Tortilla Processing Plant Over $30,000 Per Year In Surcharges

BACKGROUND

A tortilla processing plant in the Mid-Atlantic area of the US was being fined from the local POTW for violating their discharge permit on TSS and pH. The plant makes specialty organic chips for private labels – yellow and blue corn chips. The operation is 5 days per week at 24 hours per day. The wash down water from the plant would come back to their wastewater treatment plant. The wastewater treatment plant is a continuous operation that consists of a SWECO solids separator followed by a holding tank for neutralizing the alkaline pH and then to the sanitary sewer. The bulk solids separated by the SWECO unit would go to a belt press for water separation. The fines for violating their permit ran from $2,000 to $4,000 per month. Discharge limits were 2000 mg/l TSS and a pH range of 6.0 – 9.0. In addition, the company had just lost one its largest clients. This incident, the state of the economy and the fines began to put a financial burden on the company. They turned to SEL for a solution.

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SOLUTION

Our objectives were to lower the amount of TSS before discharging from the plant and maintaining a consistent pH in the guidelines of the permit before discharging the water from the plant. Flow rates coming into the wastewater treatment plant would vary from 15 to 30 gallons per minute. The tank used for neutralizing the alkaline pH would serve as our equalization tank. An air sparge was used to agitate the tank to provide a more uniform mixture and mixing with the acid for a target pH range of 7.5 to 8.5. In addition the overflow line from this tank was slightly raised to allow more contact time. To tackle the BOD and TSS issue we engineered a tank and chemical feed system to settle out the solids and concentrate for the belt press. After jar screening multiple polymers, our SELfloc 1951 cationic polymer was chosen to assist in settling of the TSS. The SELfloc 1951 was injected into the overflow line leaving the equalization tank and is paced off of flow. This water was routed to a 10,000 gallon tank for TSS settling .

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SOLUTION

A sight glass was installed on the side of the tank to determine TSS (sludge) height and an overflow line was installed on the tank to allow the supernatant to flow into the sanitary sewer fully treated. Lastly, we had to handle the settled TSS (sludge). A conical tank was installed behind the settling tank to serve as a sludge thickener to prevent blinding of the filter cloth on the belt press. When the sludge reaches a certain depth in the settling tank, it is pumped over to the sludge holding tank and thickened. An overflow line was installed on the thickening tank for the supernatant to flow back into the solids-settling tank. The SELfloc 1951 is also used as a dewatering/thickening agent for this sludge prior to pumping over to the belt press. This product allows for a dryer cake resulting in significantly lower hauling costs.

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RESULTS

Before starting the program with SEL, the plant's TSS discharge average was 4,000 mg/l and the pH varied anywhere from 3.0 – 12.5. After the modifications to the treatment system, the TSS has been lowered to <500 mg/l with the pH staying at 7.5 – 8.5. Factoring in the use cost of the SELfloc 1951 and sludge hauling cost, the tortilla processor will save approximately $30,000 per year. Contact SEL for your custom solution at **919-751-1001 or** **CustomerService@selaboratories.com**.

TSS <500 mg/l

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