Orange Park Wastewater Plant

Orange Park, FL

Project Summary:

The town of Orange Park, Florida was challenged to meet the 2012 Florida TMDL of 7 mg/L total nitrogen in the effluent discharge (22,000 pounds N annually). To meet the deadline the Town decided on a three phase upgrade plan and selected the process of biological dosing to improve effluent quality during the process improvements and as an alternative solution to the problem of improving process Nitrogen removal.

The first phase was designed to bring the plant into compliance at a daily flow rate of 1.45 MGD by converting two of the contact stabilization (CS) basins into extended air basins and one CS basin into a 4-Stage Bardenpho BNR process. The second and third phases (future) would consist of further improvements to allow the WWTP to maintain compliance at the full permitted throughput of 2.5 MGD.

The comprehensive collection system dosing program began in 2007 and since then the plant has gone from discharging an average of 171 pounds per day of nitrogen down to just 71 pounds per day of nitrogen, a reduction of nearly 60%. With the introduction of biological dosing the average effluent nitrogen concentration was 10 mg/L compared to the 24mg/L before biological dosing was initiated.

Present Conditions:

In addition to improving the nitrogen removal of the process, the dosing has reduced the influent and effluent CBOD by 52% and 36% respectively. Further, due to the lower oxygen requirements of the bacteria, the plant is saving $60,000 a year in digester aeration energy by introducing this blend of facultative heterotrophic spore forming bacteria.

Collaboration of Legacy Civil Engineers and the Orange Park WWTP resulted in optimization for the plant with the introduction of biological dosing. The result a drastic improvement in effluent water quality and a reduction in effluent total nitrogen to within the plant's interim permitted limit and very close to the 2012 TMDL using the existing infrastructure at the WWTP.

Project Profile

Summary at a Glance

Project Installed: March 2008

Plant Size: 2.5 MGD

Service Objectives:

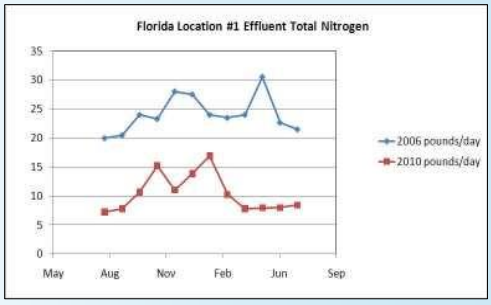
- Reduce Influent Loading
- Reduce Influent Pollutant Load
- Reduce Sludge Production
- Control Fats, Oils, and Grease (FOG)

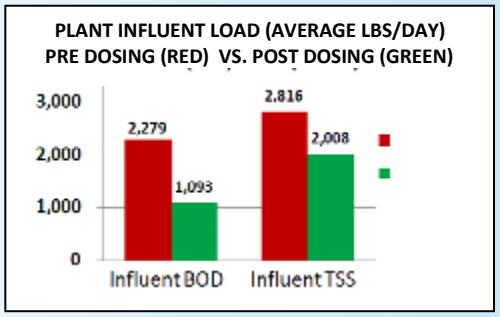
Performance Summary:

- 52% Reduction Influent CBOD
- 29% Reduction Influent TSS
- 36% Reduction Effluent CBOD
- 58% Reduction Effluent Total Nitrogen

Financial Payback: $60,000

- Energy Savings





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