

## Los Bajos Wastewater Treatment Plant, Trinidad

Our client retained Engineering and Technology Associates Inc. (ETA) to undertake an Optimization Study for the existing Los Bajos Wastewater Treatment Plant (WWTP)

The intention of the study was to provide a clear understanding of the performance of the existing water treatment facility, determine the deficiencies causing reduced capacity of the facility and outline the upgrades required to increase the capacity of the facility.

The Los Bajos WWTP is in south west Trinidad and treats produced water from three Petrotrin sites: Los Bajos, Bernstein and Barrackpore. The rated capacity of the Los Bajos WWTP is 3,980 m<sup>3</sup>/day.

As part of the Optimization Study we undertook a process and hydraulic evaluation of all treatment processes conveying systems. We identified the shortcomings that resulted in the facility being able to operate at a maximum capacity of 2,830 m<sup>3</sup>/day, well below its rated capacity.



The first task of our assignment was to make recommendations for process and hydraulic upgrades to restore the full plant capacity. We identified the following:

- Replacement of existing corrugated plate interceptor (oil water separator) with a hydrocyclone type oil water separator. Unlike plate pack style separators, the hydrocyclone does not rely on the force of gravity for separation. The centrifugal force generated inside the vortex of the oil water separator is in the order of 1,000 times the force of gravity. With such force even emulsified oil droplets can be separated.
- Replacing all the piping and valving for the conveying systems: Dissolved Air Flotation Feed Pumps, Cooling Tower Feed Pumps, Bioreactor Feed Pumps and Reverse Osmosis Feed Pumps

The second part of the assignment was to investigate and make recommendations to expand the plant capacity to 5,600 m<sup>3</sup>/day. The following recommendations were made:

- Adding additional pumping capacity for the Dissolved Air Flotation Feed Pumps
- Adding an additional Dissolved Air Flotation Unit
- Adding additional pumping capacity for the Colling Tower Feed Pumps
- Adding additional pumping capacity for the Bioreactor Feed Pumps



- Adding two more Bioreactors for a total of six units
- Modifications to the settling ponds flow path
- Incorporation of a disc filter to reduce the Total Suspended Solids in the bioreactor's effluent
- Adding additional pumping capacity for the Reverse Osmosis Feed Pumps

