

## RECORDED BENEFITS

- Improved system stability achieving year-round compliance
- Increased effluent BOD removal by 3% from 94% to 97%
- Increased effluent COD removal by 7% from 65% to 72%
- Increased effluent TSS removal by 7% from 32% to 39%

## Bioaugmentation Wastewater Treatment for Integrated Pulp and Paper Mill

### Praestol™ BA300 Bioaugmentation Aid

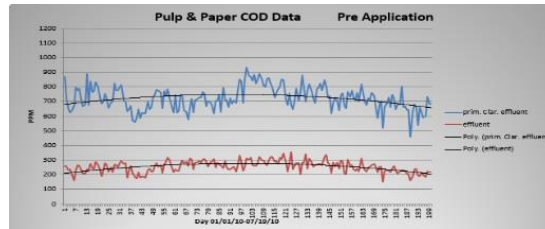
#### Customer Challenge

An integrated Kraft Pulp and Paper Mill in North America was looking to remove chemical oxygen demand (COD), biochemical oxygen demand (BOD) and total suspended solids (TSS). The mill was operating 32 mgpd (121,133 m3/day) activated sludge system and was required to comply with a national pollutant discharge elimination system (NPDES) permit.

Seasonal permit limits required increased effluent removal performance and stability. Increased influent loading resulted in effluent non-compliance and high operational costs. Primary clarifier effluent BOD increased 4-17% during this non-conforming period.

#### Recommended Solution

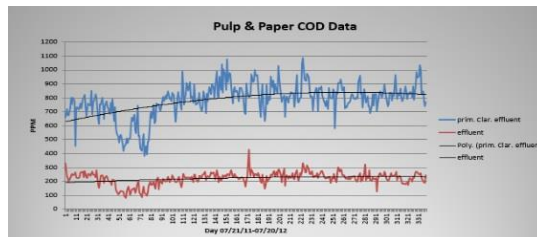
A systematic and continued bioaugmentation program was initiated to feed proprietary blends of bacteria to the aeration basins. Daily operational and analytical data was collected to assess performance.



#### Results Achieved

Selective bioaugmentation has allowed for consistent lowering of effluent COD and BOD values versus historical levels achieved. Furthermore, the improved performance occurred and was maintained during periods of higher influent COD and BOD loading.

Prior to implementing the bioaugmentation program, the effluent COD removal trends mirrored the primary clarifier effluent trends. Post treatment trends revealed effluent COD performance was stable and consistently lower even during higher primary clarifier effluent values. Improvements in the percent removal of COD, BOD and TSS parameters were consistently realized.



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