Decentralized wastewater treatment facility

Dynatec provided the membrane system for a demonstration plant situated directly adjacent to the Anaheim, CA City Hall.

The system is designed to pump wastewater from a local sewer line, treat the wastewater for reuse, and return the waste activated sludge and screenings to the sewer line.

The DynaLift™ out-of-basin membrane system was selected because:

- The high flux rates achieved by the DynaLift™ system allowed for a small footprint.
- High MLSS concentrations allows for smaller reactor tanks.
- The positive filtration achieved with MBR provides consistent high quality discharge.
- The out-of-basin design allows for better demonstration of the technology.

**Technology Benefits**

Membrane separation system uses long-lasting tubular ultrafiltration (UF) membranes
- Demonstrated high bacteria and virus removal
- Consistent high quality effluent for reuse
- Ability to reuse purified water
- Low operating costs
- Unattended operation

**Significant Savings**

- Small footprint saves building cost
- Water reuse provides water that is not available from the well
- Remote monitoring
- Easy maintenance

**Contaminants Removed**

- BOD5
- Ammonia
- Nitrate
- TSS
- Turbidity
- Total Coliform

**Services Provided**

- Systems Design
- Equipment and Installation
- Operator Training
- Maintenance Contract
- DBOOM
- Retrofit existing conventional treatment systems
The following table demonstrates the high quality achieved through the treatment system:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Influent Average (mg/L)</th>
<th>Purified Water Reuse (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD5</td>
<td>235</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Ammonia</td>
<td>30</td>
<td>&lt;0.8</td>
</tr>
<tr>
<td>Nitrate</td>
<td>Non Detect</td>
<td>&lt;10</td>
</tr>
<tr>
<td>TSS</td>
<td>61</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td>Non Detect</td>
<td>&lt;0.2</td>
</tr>
<tr>
<td>Total Coliform</td>
<td>Non Detect</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

The plant design is for two trains with the first train presently installed. The design flow of this plant is 75,000 gallons per day, and due to internal water uses, such as screen flushing, the net output of the final plant when fully installed will be 104,350 gallons per day. The recycled water is used for irrigation and toilet flushing within the requirements of California’s Title 22 Regulations.

Plant automation design allows for periodic operator attention only when equipment maintenance or chemical refilling is required.

Following treatment in the MBR, the effluent is further treated using ozone followed by UV for ozone destruction and chlorine addition at 1 mg/L to ensure no re-growth in the final effluent.

Due to the proximity of City Hall and the fact that the plant is in a highly populated area, a state-of-the-art odor control system was installed. With the standard Dynatec design odor control is not typically required. This is the first facility in California to use external MBR membranes, ozone and chlorination for water recycling. The use of decentralized wastewater treatment facilities is increasing and the City of Anaheim is in the forefront of this.