Increasing the Aeration Efficiency at Three Cincinnati WWTPs

Dr. Allen Gelderloos,
Brown and Caldwell,
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Date: February 14; 2014
Time: 12:20 - 1:15 pm
Venue: Baldwin Hall 544

Abstract:
Aeration systems for biological wastewater treatment typically account for 40 to 60% of the total energy consumed at most wastewater treatment plants. There are a number of improvements that can significantly improve the efficiency and reduce operating costs of the aeration systems, including installation of: 1) higher efficiency blowers; 2) higher efficiency diffusers; and, 3) automatic control systems. The Metropolitan Sewer District of Greater Cincinnati (MSDGC) contracted with Brown and Caldwell for the design of upgrades to the aeration system at three of their WWTPs. MSDGC serves a population of approximately 800,000 and operates seven WWTPs with a combined daily average flow of 184 mgd.

The general scope and status of each project is presented in the table below.

<table>
<thead>
<tr>
<th>WWTP Name</th>
<th>Average Annual Flow, mgd</th>
<th>Aeration System Upgrades</th>
<th>Status of Aeration System Upgrade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mill Creek</td>
<td>100</td>
<td>1. New high-efficiency blowers 2. New aeration control system (New diffusers in 2010)</td>
<td>Construction initiated and scheduled completion in 2015</td>
</tr>
</tbody>
</table>
This presentation will provide information related to the selection of blowers, diffusers and automatic control systems and the actual or anticipated energy savings. It will also present key issues for consideration and lessons learned from these projects.

Bio:
Allen Gelderloos has 23 years of experience in wastewater facility planning and design. He has worked as a consultant for Brown and Caldwell for 3 years in Cincinnati and previously with Malcolm Pirnie in Detroit, Michigan. During this time, he has planned and designed major wastewater treatment plant upgrades in Cincinnati, Columbus, Detroit and a number of other municipalities in Ohio and Michigan. He received his bachelors in Civil Engineering from the University of Michigan and a Masters in Environmental Engineering from the University of Illinois.