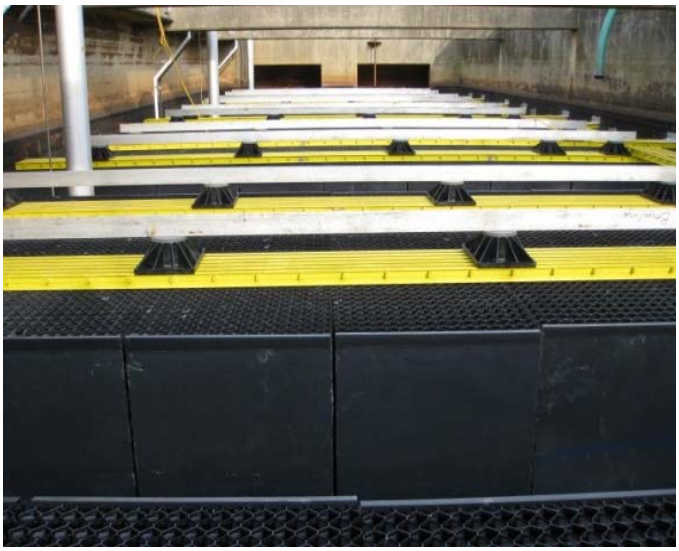
Meeting Stringent Discharge Levels with **AccuFAS** Coldwater, MI

Feeling the Squeeze

When the Coldwater Board of Public Utilities in Coldwater, Michigan abruptly received new ammonia permit limits in August of 2007, they hired consultants Fishbeck, Thompson, Carr, & Huber, Inc to help guide them to the best solution for their new problem. With a full-measure of influent waste variety consisting of residential, commercial, industrial and septage and a new seasonal permit limit of 2mg/L, Coldwater hoped for a budget friendly solution to consistently perform through peak flows and industrial shockloading. At the on-set, FTC&H eliminated the possibility of constructing additional tanks due to high groundwater levels at the site. Additionally, the consultants found that adding a fourth trickling filter would far-exceed cost expectations. Feeling the pressure and limited to solutions that would work within the existing footprint, the engineers focused on the IFAS process.



Small Space, Big Impact

Decades of applications of IFAS had shown that combining submerged fixed-film media with the conventional activated sludge process promised numerous advantages with minimal limitations to consider. A careful process evaluation showed that improving the current trickling filters' low BOD removal rates through additional TF's would require a larger aeration basin to increase MCRT and the inventory of ntrifiers as well as additional downstream clarifiers to handle increased loading that would accompany increase BOD removal.

At this point it became clear that the IFAS application demonstrated a right fit and the preferred way to achieve consistent results without increasing organic loads on the existing clarifiers.

Got Bugs?

The IFAS process integrates the use of fixed-film media within an activated sludge process in order to increase the surface area on which nitrifiers grow and perform. Gaining surface area for biofilm growth without impacting the footprint, the media addition to the aeration tank therefore yields increased productivity for nitrification. While evaluating media suppliers, FTC&H found that consideration also needed to be given to the type of aeration system used. With ever-increasing awareness of energy consumption and associated costs throughout the industry, careful discernment should be given to the aeration system, which consumes 40%-70% of energy in activated sludge plants. During the technology review, the engineers learned that Brentwood's

Industry

Municipal Waste- Water Treatment

3.2MGD – Average

8.0MGD - Peak

Engineering Challenges

Requirement change from "report only" to meeting seasonal ammonia limits of 2 mg/L from May to November

Limited tank expansion options

Budget challenges

Residential, Commercial, Industrial and Septage treatment

Keys to Success

Identify a cost-effective, energy efficient system

Make little to no alterations to the plant structures and layout

Limit loading on Secondary Clarifiers

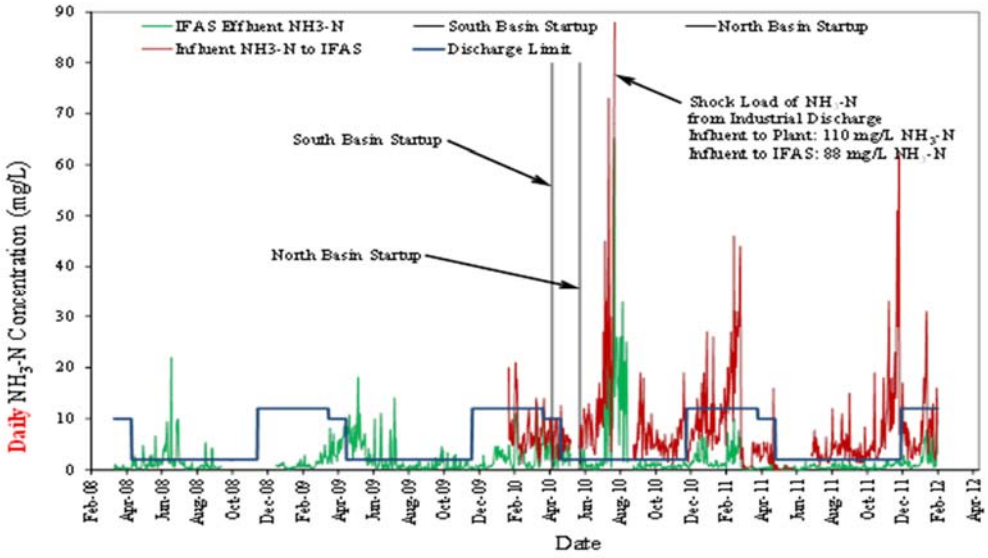
Results

Realized CAPEX of $.14 per gallon treated

Simple retro-fit solutions without expanding the plant

Increased sludge age and total inventory of nitrifiers without increasing solids loading on secondary clarifiers

Successfully met limits, even through industrial waste shockloads



AccuFAS system demonstrates compelling and compatible performance with fine bubble diffusers. Confident in the demonstrated efficiency, consistent performance, competitive CAPEX and OPEX costs, as well as the peace of mind of knowing the fixed media would not wash-out in hydraulic surge events, the customer selected AccuFAS by Brentwood.

Advantage – AccuFAS

When installation began in March 2010 in the two parallel aeration tanks, the retro-fit materials consisted of a Brentwood engineered system of diffusers, supports and anchors, and structured-sheet media – all of which were installed in a matter of days. The installation reached completion none too soon as the plant began to experience shockloads reporting excess ammonia concentrations of 110 mg/L to the plant and 88mg/L to IFAS from an upstream industrial plant. Despite this loading and briefly exceeding the technology performance limit, AccuFAS proved FTC&H made the right decision when the effluent data recorded in the above graph not only showed improved effluent concentrations from the previous year, but also consistently showed nitrification improvement during the first winter months as well as through the recently imposed stringent seasonal limits.

Use of IFAS systems existed for decades though the media technology continues to evolve. Compatible with various activated sludge processes, IFAS creates the opportunity to work within an existing footprint, leveraging the additional surface area provided by the media to create an environment that increases sludge age and the inventory of nitrifiers. In head to head evaluation against other IFAS-application considered media, Brentwood demonstrated at Coldwater through results that the AccuFAS system maximizes value to the customer by consistently achieving desired nitrification performance through energy efficient treatment.

The Benefits of AccuFAS

- Simple, engineered solution
- More bugs, more productivity
- Plug resistant
- Peace of mind without fear of washout
- Results
- Easy to install and service
- Efficient
- Competitively priced

Acknowledgements:

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