

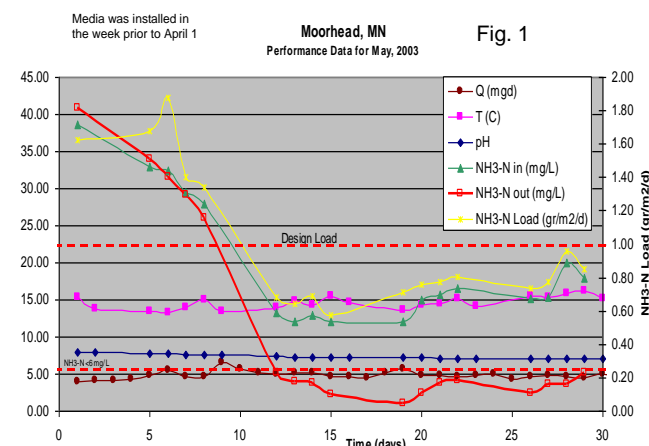
Wastewater Pollution Control Facility Moorhead, MN

Moorhead Wastewater Pollution Control Facility, located in Minnesota, is one of the oldest installations using moving bed biofilm reactor (MBBR) technology to clean the wastewater generated in their community, treating 6 million gallons of wastewater per day.

Through a comprehensive evaluation of technologies conducted in 2002, the Headworks Bio ActiveCell media, developed by the former Hydroxyl Services company recently acquired by Headworks, and the innovative design process proposed by the company's engineering team, were compared against other biological wastewater treatment processes including conventional methods. After piloting the comparative technologies and completing a five-month pilot program testing the effectiveness of ActiveCell biofilm media, the ActiveCell MBBR process was selected as the most efficient cost-effective upgrade solution for this large municipal wastewater treatment plant. (Fig. 1)

The full scale wastewater pollution control facility was engineered and designed by CDM, a worldwide engineering firm, retrofitting an existing aerated pond. The ActiveCell media portion of the plant was commissioned in March of 2003 by Hydroxyl Systems. The ActiveCell450 biofilm carriers are used for a separate-stage MBBR nitrification system designed to nitrify ammonia. They meet seasonal compliance standards of less than 4 mg/L NH_3 for effluent discharge to the Red River. The ActiveCell Separate-stage nitrification process at Moorhead WPCF has been featured in a number of Water Environment Federation Technical Exhibit and Conference technical papers over the past five years.

The separate-stage ActiveCell MBBR nitrification process uses free floating biofilm carriers that provide $402 \text{ m}^2/\text{m}^3$ of internally protected active surface area. It has provided many advantages to Moorhead WPCF including the ability to operate on a single-pass without the need of a post clarification process typically required in conventional treatment systems to provide and maintain a MLSS concentration for activated sludge processes.



The self regulating biofilm process exhibits controlled sloughing rates and requires minimal operator attention. The ActiveCell process is capable of providing high rate nitrification even during exceptionally cold water conditions at the Moorhead, MN location and meets the stringent seasonal discharge parameters during the early days of Spring. The ActiveCell process is expandable by simply adding additional biofilm carriers and increasing the air supply to the diffuser system.

"Since commencing operation six years ago, our MBBR has proven to require very minimal operator attention, effectively nitrifies even during the cold winters in Moorhead, and adapts well to fluctuations in loading."

-Andy Bradshaw, Utilities Engineer for the City of Moorhead

