NUVODA
MOB Process

CASE STUDY: ENHANCED CLARIFIER PERFORMANCE
WINONA, MINNESOTA

THE CHALLENGE:

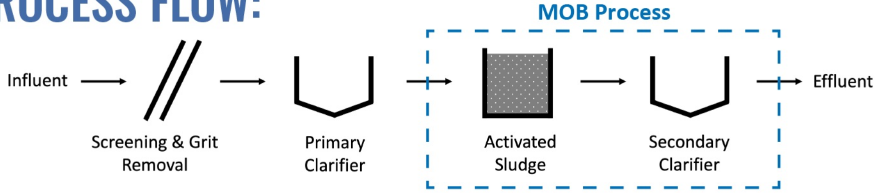
Located along the Mississippi River, the Winona WWTP is prone to high infiltration flows, leading to sustained high flow events, along with recurring filamentous outbreaks due to septicity.

The plant operates with two parallel aeration tanks followed by secondary clarifiers with Tow-Bro® suction headers. The secondary clarifiers were unable to adequately handle the poor settling and bulking sludge. The only relief - heavy chlorine dosage for weeks on end, costing the facility money and the stability of their biological process. The plant's poor clarifier capacity became a limitation of the plant's ability to meet its treatment needs. Hearing about the benefits of hydrocyclones, the plant performed a pilot test of the technology. After failing to validate any appreciable settling benefits during the hydrocyclones testing and with a stricter permit on the horizon, the staff found themselves in need of a solution that could stabilize their treatment, enhance sludge settleability, and reduce their high operational costs.

FACILITY OVERVIEW:

Process Configuration	Conventional Activated Sludge
Flows	▪ 4 MGD Average ▪ 15 MGD Peak
Effluent Targets	▪ < 1.0 mg/L NH_3 ▪ TN Monitoring
Project Goals	▪ Year-Round Nitrification ▪ Improved Settling

PROCESS FLOW:



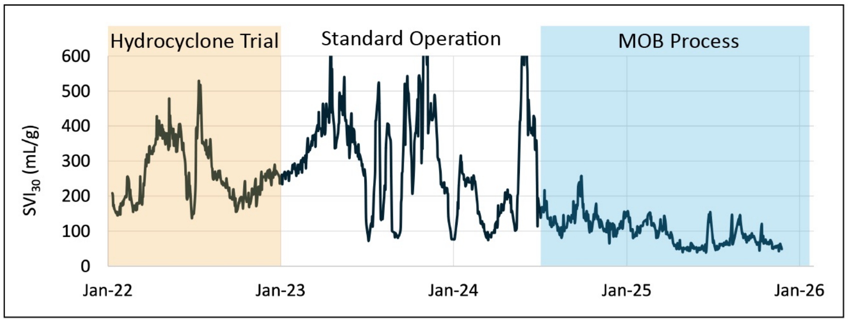
WHAT WAS ACHIEVED:

- Operated with 50% of clarifier capacity offline and maintained effluent quality
- Significantly improved SVI
- Stabilized Clarifier Performance
- Rapid Installation: Zero facility downtime to implement MOB Process

WHY THE MOB PROCESS WAS CHOSEN:

With the MOB Process installed, the Winona WWTP was able to 1) operate with 50% of their clarifier capacity offline, 2) reduce chlorine dosage – targeting only the filamentous bacteria in the floc while retaining the nitrifiers in the protected biofilm, and 3) significantly decrease SVI compared to their baseline and hydrocyclones operations. The SVI_{30} chart speaks for itself, and the operators could truly feel the difference of having a plant under control.

Clarifiers are designed to settle solids that form strong flocs and settle in a rapid, predictable way. The MOB BioKarrier media does just that. Produced from a renewable crop, the media is not only a substrate for biofilm growth but also an excellent settling aid. By itself, the media settles rapidly in water; however, when combined with dense biofilm growth, it provides greater settling benefits. In Winona, the SVI_{30} was stabilized and averaged less than 100 mL/g.



WHAT THE MOB PROCESS CAN DO FOR YOU:

- Increased Clarifier Capacity
- Stabilized Settling Performance
- High Loading Process Stability
- Full-Scale Demonstrations and Retrofits