

# CASE STUDY

## MICRODYN *iSep*<sup>™</sup> 500 UF

### River Water Filtration



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#### Project Goal

Treating river water and withstanding peak turbidity events without compromising performance or effluent quality.

#### Feed

- River water

#### Membranes

- MICRODYN *iSep*<sup>™</sup> 500-PVDF UF modules

#### Parameters Measured

- Effluent Turbidity: <0.1 NTU
- Operating flux: 51-68 l/mh (30-40 gfd)

#### Objective

Rivers and surface waters provide a convenient and reliable water source for both municipal and industrial uses. A challenge with rivers in particular is the seasonal changes in water quality and turbidity spikes due to storm related events. Rainfall can easily spike river turbidities well above 300 NTU, posing a problem for any type of treatment technology.

#### Materials & Methods

*iSep* modules were used in two separate case studies treating river water. The first study was performed on water from a river located in Midwestern U.S. This river water, which experiences high seasonal variability seeing turbidity spikes as high as 200 NTU, was treated for RO pretreatment for boiler make-up.

The second study treated water from a river located in Southeastern U.S for drinking water. This river contains high organic and colloidal clay loads and experiences turbidity spikes as high as 100 NTU. On rivers with high organic loading, the *iSep* modules may be used in conjunction with an enhanced coagulation process that improves both filterability and permeate quality. In this case, 5 ppm alum was injected directly into the UF feed without the use of inline mixers or mixing tanks and the membrane's flux was maintained without the use of air scouring.

#### Results

Operating flux and effluent turbidity measurements revealed that the *iSep* modules performed consistently at a flux of 59.5 l/mh (35 gfd) and delivered water below 0.1 NTU, despite the river's spikes in turbidity (Figures 1A and 1B).

#### Conclusion

MICRODYN *iSep*<sup>™</sup> 500-PVDF ultrafiltration modules provide an ideal solution for providing high quality effluent on any river water source. The innovative low-fouling design is able to withstand peak turbidity events without compromising performance (i.e. permeate flux) or effluent quality. The ability to withstand peak solids loading helps minimize costs for plant owners as the need for implementing system redundancy is eliminated.



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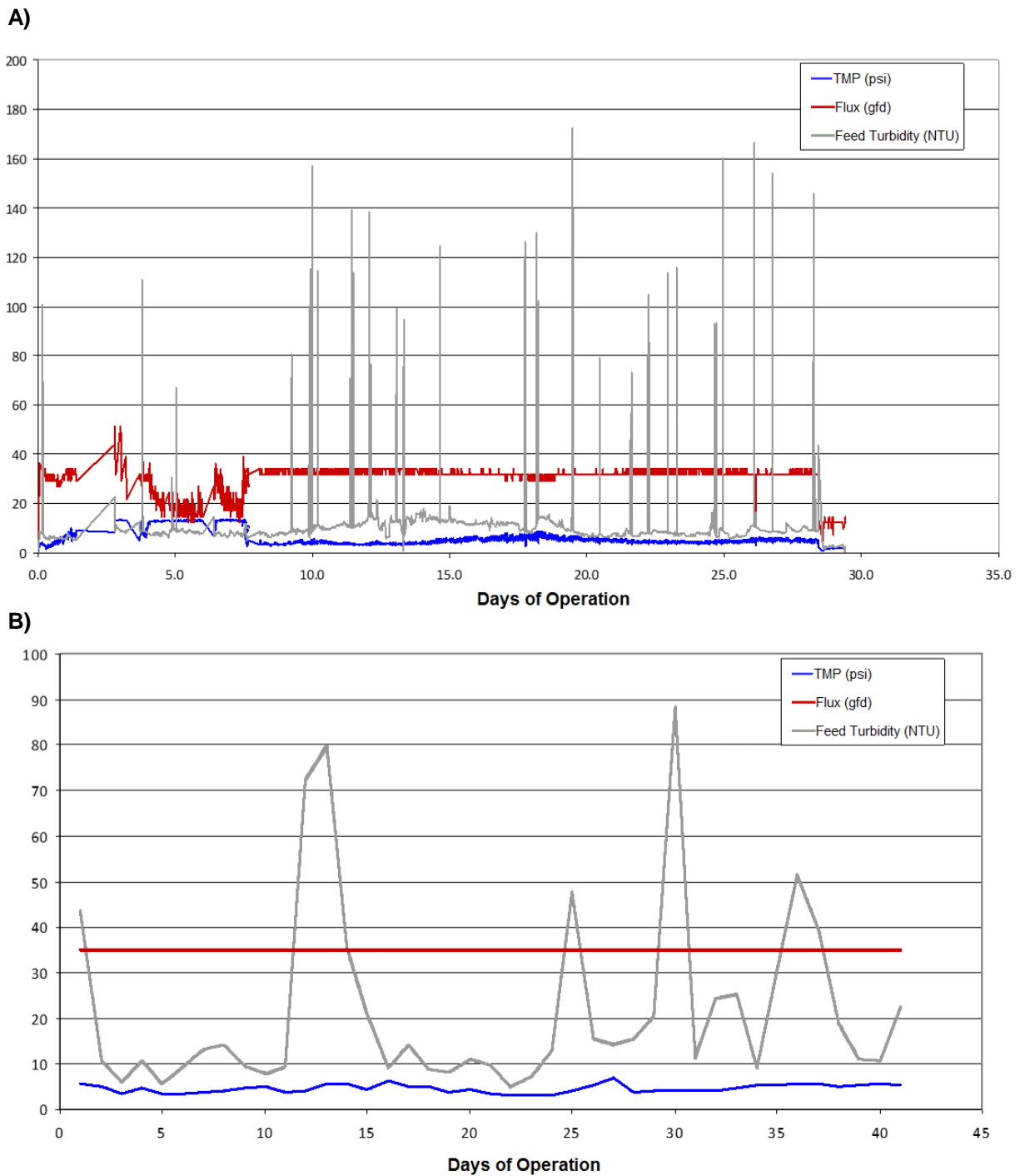
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**Figure 1.** The transmembrane pressure (TMP), flux and feed turbidity data for **A) RO pretreatment for boiler make-up pilot study** and **B) drinking water pilot study**.



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