A scenic view of a river at sunset or sunrise. The sky is filled with dramatic, dark clouds, with a bright glow of light breaking through near the horizon. The sun's reflection is visible on the water's surface. On the left bank, there are trees with autumn foliage in shades of yellow and orange. A green rectangular text box is centered over the image.

Case Study  
*iSep*<sup>™</sup> 500 UF  
High Turbidity River  
Water Filtration

# Case Study: Industrial High Turbidity River Water Filtration

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



## PROBLEM

Rainfall can spike turbidity in rivers, a problem for many treatment technologies



## SITE

Rivers located in the Midwest and Southeast Regions of the USA



## OUTCOME

Innovative, low-fouling UF solution withstands peak turbidity events

## OBJECTIVE

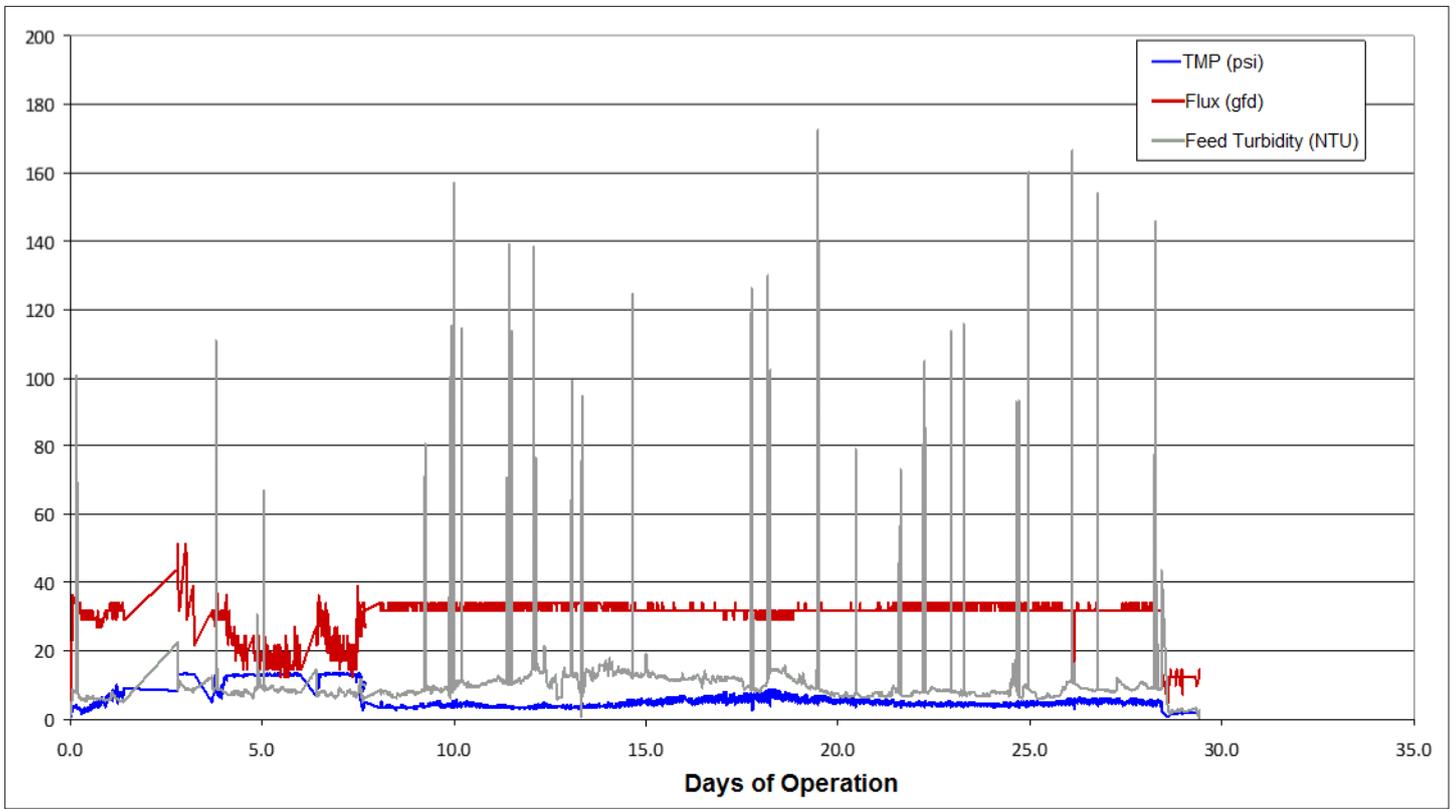
Rivers and surface waters provide a convenient and reliable water source for both municipal and industrial uses. A challenge with rivers in particular is the seasonal changes in water quality and turbidity spikes due to storm related events. Rainfall can easily spike river turbidities well above 300 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 water sent through RO

pretreatment for boiler make-up.

The second study treated water for drinking water from a river located in Southeastern U.S. This river contains high organic and colloidal clay loads and experiences turbidity spikes as high as 100 NTU. On rivers with high organic loading, 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.



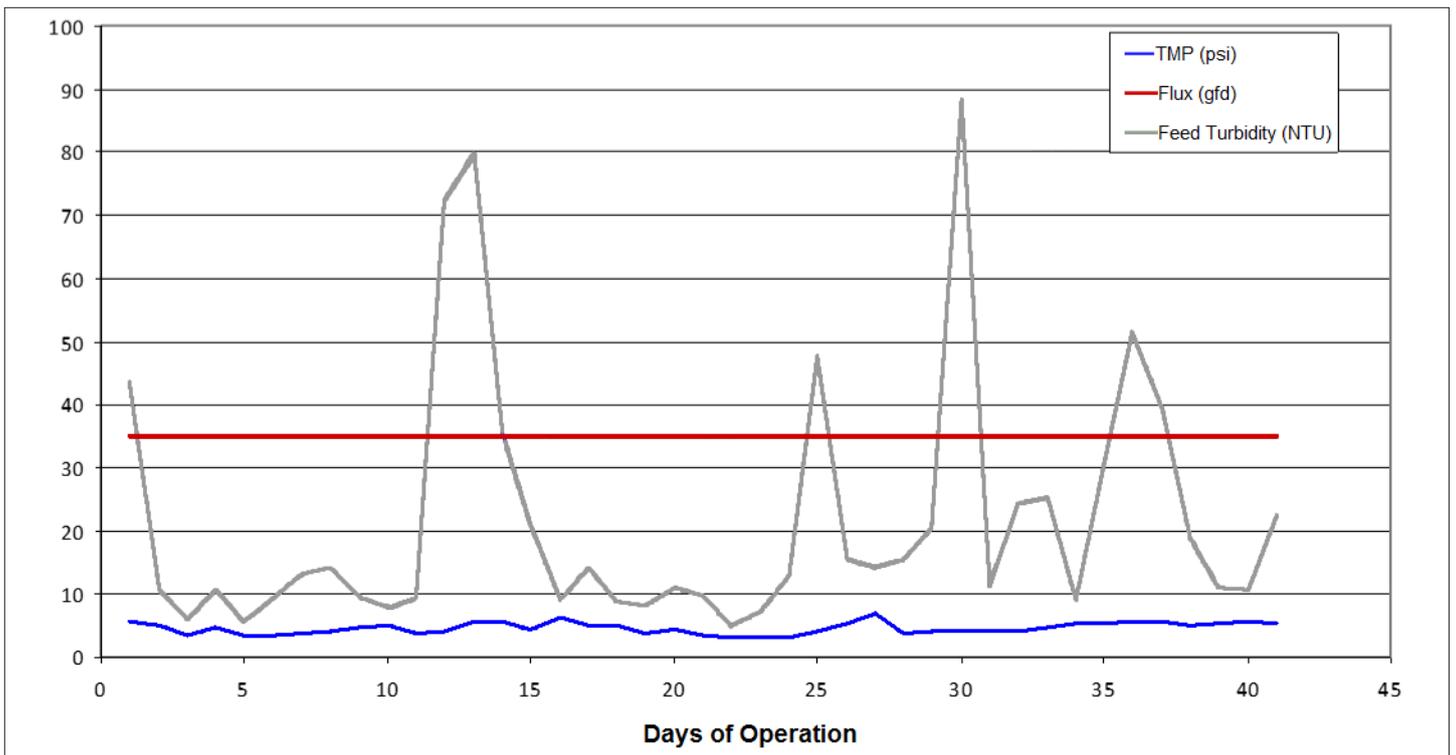
**Figure 1** The transmembrane pressure (TMP), flux and feed turbidity data for RO pretreatment for boiler make-up pilot study

**RESULTS**

Operating flux and effluent turbidity measurements revealed that the /Sep modules performed consistently at a flux of 59.5 l/mh (35 gfd) and delivered water below 0.1 NTU, despite the rivers' spikes in turbidity (Figures 1 & 2).

**CONCLUSION**

/Sep™ 500-PVDF ultrafiltration modules provide an ideal solution for providing high-quality effluent on any river water source. The innovative low-fouling design can 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.



**Figure 1** The transmembrane pressure (TMP), flux and feed turbidity data for drinking water pilot study

