

# **Ultra-Low-Level Turbidity Meters for Determining Continuous Membrane Integrity**

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## **SUBMISSION TYPE**

30 minute presentation

6-12-page paper plus 30-minute presentation

3 foot wide x 4 foot high large format poster

## **KEYWORDS**

Indirect Potable Reuse, Direct Potable Reuse, Membrane Bioreactors, Membrane Integrity, Ultra-low-level turbidity

## **ABSTRACT**

Turbidity meters have been used for years to determine membrane integrity in membrane bioreactor facilities. It has been assumed that turbidity spikes in membrane bioreactor permeate corresponded to either membrane breaks or failures of permeate piping. There has been a concern about how accurately did turbidity readings reflect failures of membrane integrity and how quickly did these spikes respond to possible breaks in membrane integrity. It has become critical to find relatively cheap, effective, accurate and rapidly responding processes to demonstrate continuous membrane integrity especially as we approach more indirect and direct potable reuse.

Side by side plant comparisons in sites in California, Texas, Washington, and Nevada between traditional turbidity meters and new ultra-low, rapidly responding meters have shown promising results. These tests were used to determine the accuracy, efficiency, and rapid response of various type of turbidity meters during membrane bioreactor process operations. These studies also examined the efficiency of membrane bioreactors to remove bacteria, pathogens and viruses. This presentation will outline these results.

The study at the City of North Las Vegas (NV) was a side by side comparison of a more traditional turbidity meter (Hach 1720E) and the newer technology ultra-low-level turbidity meters (Hach TU5300). This study will demonstrate that the new turbidity meters respond quickly to environmental changes, are much more accurate, and demonstrate comparable results between process meters and laboratory turbidity meters. The results of this study will demonstrate that the new ultra-low-level turbidity meters are an accurate representative of membrane integrity which could be used to give continuous assurance of membrane bioreactor membrane integrity.

## **ABOUT THE AUTHORS**

**Main Author: Dave N. Commons** has over 30 years of wastewater operational experience and over 18+ years of water operational experience. He is an Applications Development Manager for Hach (Loveland, CO). He holds a Nevada Grade IV Wastewater Operator certification, a California Grade V Wastewater Operator certification, and a Grade I Georgia Wastewater certificate and previously held California Grade T5 Water Operator and Grade D5 Distribution Operator certifications. *Contact: [dcommons@hach.com](mailto:dcommons@hach.com)*

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