

H. Clay “Junk” Whaley, Sr. Water Plant

Client

H. Clay “Junk” Whaley, Sr.
Memorial Water Plant

Project

THM & HAA Reduction
Bicarbonate Regeneration

Location

City of St. Cloud, FL

Commission Date

May 2008



Figure 1: MIEX® System at H. Clay “Junk” Whaley, Sr. Memorial Water Plant in St. Cloud, Florida

“The plant includes many technological advancements that will provide both reliability and a high-quality product.”

Todd Swingle, P.E., St.
Cloud Environmental
Utilities Director.

Project Summary

The City of St. Cloud, Florida provides water for over 39,500 customers in the greater St. Cloud region. For years the City was required to issue Disinfection By-Product (DBP) violation notices to its customers because its water exceeded the US EPA regulations. Additionally, the water’s color and odor levels routinely exceeded the treatment targets.

To address these issues, the City hired Jones Edmunds & Associates to seek out a cost-effective and environmentally friendly solution. After evaluating several options, Jones Edmunds recommended moving forward with the installation of a 9-MGD MIEX® Treatment System, the first system of its kind to incorporate the option of bicarbonate resin regeneration.

Challenge

The City of St. Cloud sources its water from the Floridan Aquifer, which is renowned for

high levels of dissolved organic carbon (DOC) and hydrogen sulfide.

In order to maintain minimum residual levels in its distribution system, the City had to use significant levels of disinfectant dosing (chlorine demand of 15-18 mg/L). The high chlorine level reacted with the already present DOC to form Trihalomethanes (THMs) and Haloacetic Acids (HAAs) in excess of the Maximum Contaminant Levels (MCLs) necessary for EPA compliance. As a result the City was required to send out notices to its customers on a quarterly basis until the issue was resolved.

In addition to high DBPs, the City also struggled with color and odor levels that consistently exceeded the MCLs, resulting in poor quality water and customer complaints.

Solution

Jones Edmunds began evaluating several

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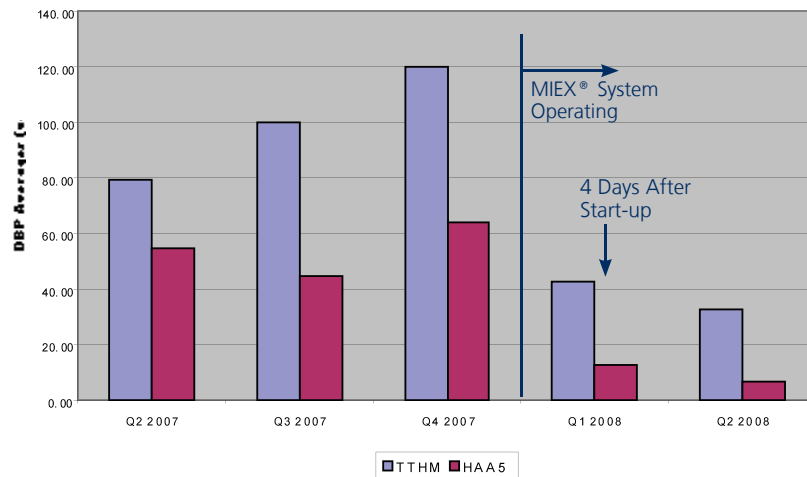
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Figure 2: City of St. Cloud Distribution System DBP Levels



technologies including nanofiltration and reverse osmosis in 2004. However, the customer was interested in an option that offered lower waste production.

The MIEX® Process was piloted, resulting in significantly lower waste production while still achieving necessary DOC and color removal. To minimize the environmental impact even further, bicarbonate resin regeneration (regeneration using baking soda) was evaluated alongside sodium chloride regeneration, resulting in equivalent treatment performance.

Project Outcomes

After completing its evaluation process, Jones Edmunds recommended MIEX® Treatment for DOC and color removal followed by pH adjustment and deep-bubble aeration for sulfide removal.

Wharton-Smith was selected for the construction of the new treatment plant. The 9-MGD MIEX® Treatment System was

commissioned late May 2008 and is the first MIEX® System to incorporate both sodium chloride and sodium bicarbonate resin regeneration.

In addition to DOC and color removal, the MIEX® System was capable of eliminating enough hydrogen sulfide from the source water that the aeration system is not being used at present.

Within three days of coming online on March 27, 2008, the new plant lowered THMs and HAAs below the MCLs and provided EPA-compliant water.

The following treatment benefits have been achieved since start-up.

Parameter	After MIEX
Chlorine Demand Reduction	90%
DOC Removal	61%
Odor Removal	98%
Treated Sulfide Level	0.3 mg/L
Treated Color Level	<5 color pts