



# INSTALLATION PROFILE

## InstoMix

### *In-Line Flash Chemical Mixer*

## **GREENVILLE, ILLINOIS**

### **THE CITY OF GREENVILLE, IL WTP**

The City of Greenville treats water from Governor Bond Lake to produce drinking water. This water can be difficult to treat successfully due to wide swings in the levels of turbidity, temperature, high levels of organics and manganese. In addition, over the years the Illinois Environmental Protection Agency has tightened its requirements on the drinking water quality, in particular trihalomethane concentrations, such that the plant can no longer pre-chlorinate the Governor Bond Lake water.

A plant upgrade in 1992 to add capacity and softening consisted of two (2) new solids contact clarifiers each having a design flow of 1,050 gpm. The upgrade also included a simple head tank for non-mechanical mixing.

The treatment process basically consists of potassium permanganate fed upstream from the head tank, alum and cationic polymer fed into the head tank in the original design, and lime slurry fed into the clarifiers to maintain a pH of about 10.4. Clarifier effluent pH is adjusted to about 8.5 with carbon dioxide prior to filtration.

After several years of operation, the City felt that they could improve the mixing of the alum and cationic polymer with a Walker Process **InstoMix**. In 1998 they installed a 12" diameter InstoMix unit upstream of the head tank in the raw water line. **The alum and cationic polymer injection points were re-located to the InstoMix unit, and this has reduced the plant's alum and cationic polymer consumption by 35-40%.**



#### Contact:

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## **CLAYTON COUNTY WATER AUTHORITY**

### **Freeman Road Water Treatment Plant**

#### **JONESBORO, GEORGIA**

#### **CONSULTING ENGINEER:**

ROBERT & COMPANY

Clayton County, Georgia is a rapidly growing area located just southeast of Atlanta. The Authority had two existing water treatment plants and hired Robert and Company consulting engineers to design the new 10 million gallons of water per day (MGD) Freeman Road water treatment plant to help meet the increasing demand for water in the area. The Edgar Blalock, Jr. and J. W. Smith reservoirs serve as the raw water sources for the Freeman Road plant.

Raw water turbidity from these sources is typically 2-25 NTU.

The Freeman Road plant includes a head tank and four (4) 51'-6" Solids Contact Clarifiers, the latter having a design flow of 2.5 MGD each.

A Walker Process InstoMix unit with a 3 HP mixer is installed in the 36" diameter raw water line upstream of the head tank. The unit has four chemical feed manifolds designed for the injection of lime/chlorine, alum, powdered activated carbon and polymer but only alum at 20-30 mg/l is injected into the unit. The lime/chlorine is injected downstream of the unit.

Clarifier effluent turbidity is typically 0.1 NTU, which is obtained **without** the use of polymer.



The Authority has compared the Freeman Road plant to its two existing plants and found that it uses less chemicals and power to operate. In addition, a streaming current monitor is installed downstream of the InstoMix unit and the plant personnel have observed that operating the mixer has a marked effect, as the streaming current monitor trends negative when the mixer is shut off. This indicates that the alum is not being adequately dispersed into the raw water when the mixer is shut off.

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