

REPORT

A QUARTERLY BRIEFING FOR WATER & WASTEWATER TREATMENT PROFESSIONALS • JUNE 2013 – VOLUME 4, No.2

Little Egg Harbor Municipal Utilities Authority (MUA):

On-Site Chlorine Generation Solves Problems for MUA

By making a fresh, dilute hypochlorite solution only as needed, Authority eliminates numerous maintenance and reliability issues.

Little Egg Harbor Township was formed in 1740 and became part of Ocean County, New Jersey, in 1891. Today the township has a population of approximately 23,000 with over 9,300 water customers and a water system capacity for treatment and delivery that is 5.4 million gallons per day (MGD).

The Authority's drinking water comes from eight (8) main wells located at five (5) well sites. The annual total water demand for 2012 was approximately half a billion gallons.

Maintenance Issues

With approximately 92 miles of water distribution mains, it's highly important that the Authority maintains a minimum of 0.5 mg/L free chlorine residual throughout its system. When Little Egg Harbor MUA experienced chronic problems due to sodium hypochlorite (NaOCl) used at one of its well sites, it switched its chlorination method to calcium hypochlorite, with excellent results.

"Sodium hypochlorite was stored more than 150 feet from our point of injection," Michael DiFrancia, Superintendent and Licensed Operator of the Little Egg Harbor Municipal

Utility Authority. "Due to the large amount of chlorine we were injecting and the distance it had to travel prior to injection, the poly line would become so brittle from the bleach that the intense back pressures kept cracking the line or creating pin-holes."

In addition, DiFrancia says sodium hypochlorite stored at the site would lose its strength over time. "Each time the tank was refilled with a full strength of sodium hypochlorite and mixed with the weakened batch, we were having to adjust our pumps constantly."

Consistency Issues

The fluctuation in NaOCl solution strength also caused problems with the system's feed pumps, which would often become air-bound, resulting in inconsistent dosing and/or failure.

"We had a lot of issues with the



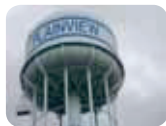
Loading Constant Chlor® cal hypo briquettes into the hopper of Little Egg Harbor MUA's Arch Constant Chlor™ MC4-50. The unit is designed to supply up to 50 lbs of AvCl/day.

degassing of the sodium hypochlorite," DiFrancia says. "Although our chlorine pumps were outfitted with degassers, we still had to work on them, just about every other day.

The degassers would actually fail and had to be replaced about once a month because the bleach was eating them up."

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On-Site Chlorine Generation Solves Problems for Little Egg Harbor MUA

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New Chlorination System

In 2008, the Authority switched from using commercial NaOCl at the well site to using Constant Chlor Plus Calcium Hypochlorite Briquettes for Municipal and Industrial Water Treatment Applications (*) and a patented Constant Chlor™ spray technology feed system.

The calcium hypochlorite briquettes contain a minimum of 65 percent available chlorine (AvCl) by weight. The chlorinator incorporates three primary components: a briquette hopper, a manifold spray section and a discharge tank. The briquettes are scooped into the chlorinator's hopper. The spray manifold utilizes supply water to dissolve the highly soluble briquettes and prepare a fresh, relatively diluted chlorinating solution of less than 2 percent. The solution falls into the unit's discharge tank and is then pumped on demand to the injection point through the chemical metering pump.

Problems "Cured"

"Switching from commercial bleach to Constant Chlor® cured our problems with leaks, excessive pump maintenance and inconsistency in chlorine solution strength and eliminated bulk deliveries of bleach and the potential for spills at the site."

"It also has a small skid footprint with an easy plug and play design. The system was installed and started up in less than an hour. Because of its relatively low solution strength," DiFrancia says, "we don't have problems with the calcium hypo chlorite corroding the metering pumps or cracking the poly lines due to how the Constant Chlor reduces the corrosive potential when compared to the bleach which has a higher PH. Plus, we can actually pump to the injection point using a larger pump. Unlike when we used commercial bleach, the Arch cal hypo system also achieves a very consistent solution strength, so we don't have to adjust the feed pump much at all."

DiFrancia and the Authority's Operations Chief, Vincent Johnson came up with a solution for preventing scaling problems that is now used by Arch at most of its new installations.

"Calcium carbonate produced as a byproduct from calcium hypochlorite, has the potential to clog the line when it's getting sucked out of the unit and going to the pump," DiFrancia says. "We installed a filter, similar to what is often



"Switching to Constant Chlor® cured our problems with leaks, excessive pump maintenance and inconsistency in chlorine solution strength."



Little Egg Harbor Municipal Utility Authority serves 9,300 water customers. Drinking water comes from eight (8) main wells located at five (5) well sites. A Constant Chlor™ cal hypo system provides chlorination at one of these site.

installed under kitchen sinks for the faucet that keeps the solution clear of calcium carbonate particles, which drop to the bottom of the filtration unit and are periodically cleaned out. It works very well."

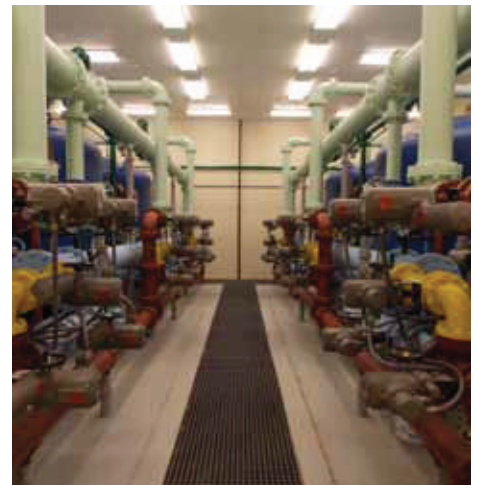
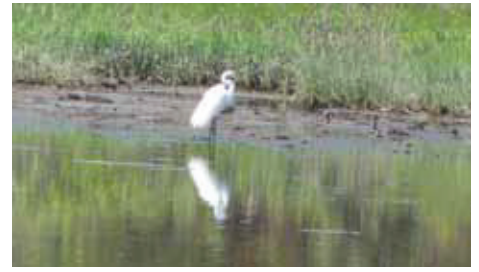
Recent System Upgrade

Last year the Authority upgraded the well site with the new constant Chlor™ MC4-50 calcium hypochlorite preparation and feed system. The new unit is designed to supply up to 50 pounds of AvCl/day and, like the Authority's original unit, the MC4-50 uses the patented spray technology to produce fresh liquid chlorine solution as needed.

"One thing we especially like about the new Constant Chlor™ unit," DiFrancia says, "is that Arch eliminated the internal float indicator that was used to turn the water on and off to make up the solution and replaced it with one located on the outside of the unit. They also upgraded the mixing technology for a more accurate solution strength. Not only has this helped with maintenance, we have found that it makes the new unit even more accurate than our first one."



Little Egg Harbor MUA's installation of a small filtration system (blue unit on wall, lower left) provides a solution for preventing scaling problems that is now used by Arch at most of its new installations.



With approximately 92 miles of water distribution mains, it's highly important that the Authority maintains a minimum of 0.5 mg/L free chlorine residual throughout its system.

SCADA Control

SCADA monitoring capabilities, low level alarms and many additional advanced features further enhance operation, maintenance and operational safety of the new Constant Chlor™ unit.

"Our SCADA controls everything," DiFrancia says. I can log into all the wells from my iPhone or iPad and I can start and stop the pumps and adjust the system. It works out great."

DiFrancia says as long as personnel stay on top of scheduled maintenance, which takes place once a month, there have been no major operational or maintenance issues with the Arch cal hypo feed system. "We basically just clean the unit out once a month, which takes approximately 30 minutes. Then we put it back on line and everything works great." ■