



*Pictured from left to right: Candace Scholz, P.E., Strand Associates, Inc., Eric Bjork, Romeoville Public Works Director, Matt Congoran, Romeoville Water Department, Carl Groth, Romeoville Water Superintendent, Chris Ulm, P.E., Strand Associates, Inc., Mike Doretti, Romeoville Water Department, Shaun Farrell, Metropolitan Industries, Inc., Keith Girup, Metropolitan Industries, Inc.*

## UV Treatment Saves Well In Village

*In 2008, when the IEPA issued the Village of Romeoville, Ill., a Source Water Non-Compliance Advisory (NCA) requesting action to eliminate the bacteriological concerns associated with the well, the Village wanted to stay in compliance with the best solution for this issue.*

*A preliminary UV treatment system was designed and completed in order to work with IEPA to push for the state's first permanent application of UV treatment for groundwater.*



**Unique UV Treatment Saves Well In Village**

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# UV Treatment Saves Well In Village

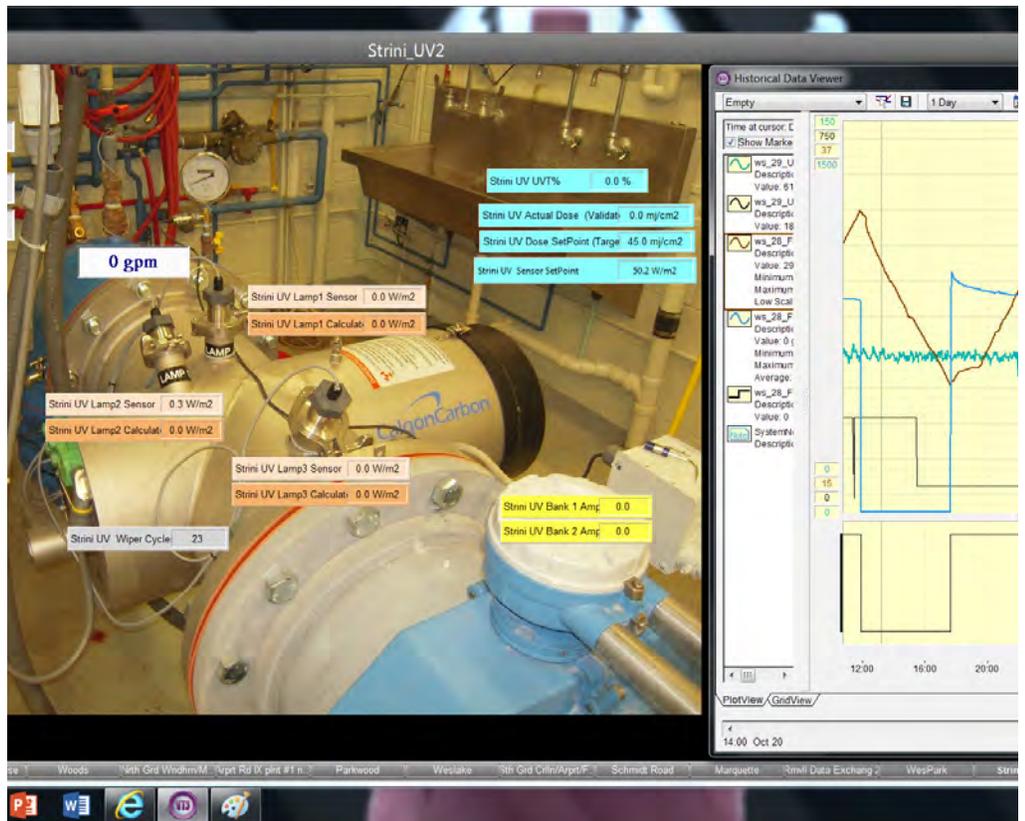
Right: Screenshot from the SCADA system shows real time function of the well with remote access.

Below: Existing well discharge line was modified to accommodate the new 12" UV unit.

**Featuring:  
Village of Romeoville, IL**

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## City of Romeoville, Illinois

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A 10-month long process of regular collaboration with IEPA took place in order to gain the support of the IEPA for a multiple-barrier approach to well treatment using a UV dose of 40 mJ/cm<sup>2</sup> to achieve 4-log inactivation (99.99 percent) of bacteria.

Facing expensive and environmentally unfriendly options to address the occasional discovery of bacteria found in one of its groundwater wells, the Village looked to develop a solution and resolve this issue, resulting in three possible solutions.

In order to avoid more extreme measures and save the existing well, a team, comprised of ongoing partners with the Village of Romeoville, Strand Associates and Metropolitan Industries were chosen to develop a plan to effectively overcome the problems at the Village's Well 3. Their collaborative efforts (along with Calgon-Carbon Corporation) resulted in a solution that ultimately became

the first permanent and permitted ultraviolet (UV) treatment system for inactivating bacteria in groundwater in Illinois.

The shallow well at the Village's Lake Strini facility had recorded some minor bacteria issues leading up to February 2008. Although susceptible to iron reducing bacteria, which can easily be eliminated with chlorine, the presence of such bacteria served as an indication of the potential for other bacteriological activity in the well.

The State of Illinois Environmental Protection Agency (IEPA) typically recognizes the well casing and proper installation as a primary barrier to bacterial contamination. After review of the existing well, it was determined that the condition of the well may not be suitable for consideration as a primary barrier. Since contamination in the well was detected, it is a state requirement that a primary barrier be re-established or abandonment of the



well would have to take place.

The UV system design adds a primary barrier to protect the public drinking water supply without any chemical addition. In the event that the well was abandoned, the Village would have had to resort to drilling a new deep well, with well treatment at a great financial hardship to the Village.

After reviewing the existing data, the bacterial issue in the well was linked to periods when the well was idle, such as during low water demand or system maintenance. Also having concerns that future well inactivity could result in the same conditions recurring, UV treatment was found to be the most environmentally conscious and cost-effective solution.

After the IEPA reviewed this recommendation, the Village received preliminary approval to operate a pilot test to prove the reliability of UV to act as a primary barrier for this well system. The project team had to obtain a final approval from the IEPA for the use of UV in this new application, while also providing the necessary supporting documents, including

the specific dosing requirements, which IEPA subsequently has adopted as standards to be applied to future innovative and beneficial UV applications of this type in Illinois.

Once approved, the team finalized the design by integrating UV treatment into the existing well house located on the Village's Lake Strini (Well 3) property. The design was submitted to IEPA in May 2012 for an IEPA construction permit. Being a new application for UV technology, IEPA and Strand communicated extensively regarding the installation, operation and maintenance of the UV equipment. IEPA approved the construction permit in September 2012.

At this time, taking on the role of both equipment supplier and project manager, Metropolitan Industries proceeded with the installation of the UV unit and other required modifications to the existing well house. Working together with the owner, engineer, sub-contractors and equipment manufacturer, the UV unit was successfully installed in the existing well. After demonstrating flawless operation of these

improvements for more than four months of pilot testing, the system was put into service and is fully operational as of July 2014.

As of the end of 2014 all sets of monthly results continue to validate the operation of the UV system in properly treating the bacteriologically contaminated well.

While the project took longer than originally expected, with minimal additional costs than originally anticipated, the Village was very happy with the outcome.

Metropolitan shares the engineering profession's goal to advance its public perception by meeting the public's expectation to develop cost-effective, green solutions with the public's best interest in mind. Through collaborative efforts, suppliers, engineers and government agencies should proactively pursue and continue to implement "best-fit" and "green" treatment solutions. Helping to minimize Village costs while protecting the public drinking water supply, this project has provided the best results for all parties involved.



*UV technician makes final system adjustments to the control panel.*



*A 12 inch ultraviolet treatment unit was added to existing well piping and is housed within the Village of Romeoville's Lake Strini well-house.*

# The U.S. Government's Abandoned Mine Lands Funding Adds forty Miles of Water Line Extension

*The Office of Abandoned Mine Lands and Reclamation was created to manage the reclamation of lands and waters affected by mining prior to 1977.*

*Most of the residents and businesses in Preston County, West Virginia were affected by the poor water quality from the well water supply due to mining that took place prior to 1977.*



*Above: Interior of one of three booster systems delivered to West Virginia. Right: Interior of one of three pressure reducing valves (PRV) stations delivered to West Virginia. Below: Chemical room of housed booster stations.*

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Like many counties in the United States, Preston County recently received a grant from the Abandoned Mine Lands to extend municipal water services to residents and businesses in the County from a near by water treatment plant.

The first phase of the project included six prefabricated housed systems provided by Metropolitan Industries. Three pressure reducing valve systems and three booster systems were supplied to the county in an effort to service 300 new customers along the hilly and rugged terrain of



*Above: The exterior of one of three housed booster systems, delivered and installed in Preston County, W. Va. Durable, prefabricated concrete structures were chosen for this project and shipped complete to the job site.*

Preston County.

The elevation change from the highest point to the lowest point is 1,200 ft. With this in mind, accommodations were made to assure that the water pressure was distributed equally throughout the entire county.

The exterior of each housed system is concrete to provide the best durability and a quality installation for the longevity of the house, insulation and vandal resistance.

The equipment supplied helps keep the pump stations functioning as efficiently as possible to help lower energy consumption with variable speed pumps to save money as well.

The pumps are vertical multi-stage with low flow and high heads designed to operate across a wide range of speed. Touch screen control panels make the system easy to use.

The grant also helped fund a 40 mile waterline extension to the local public service district, requiring the addition of the new housed systems.

As part of a comprehensive water distribution project, Stantec Project Manager, Jeff Boyles describes the housed systems as an exciting design from a hydraulic engineering standpoint.

“Mike Tierney has always been quick to answer our questions and concerns,” Boyles said, “we are comfortable working with the Metropolitan team, they never fail to amaze me.”

The general contractors felt the prefabricated housed systems delivered were of a quality that could not be matched.

“We are pleased with the outcome of this project,” Boyles said, “the detail included in all six of the housed systems turned out great and we couldn’t be happier.”

All six of the housed systems we supplied to Preston County have been delivered and are presently in the start-up process.

Each housed system was prefabricated in our shop and shipped “ready to install” to the customer.

The West Virginia Office of Abandoned Mine Lands oversees and facilitates the resolving of public safety issues as mine fires and subsidence, hazardous highwalls, mining-impacted water supplies, open shafts and portals, and other dangers resulting from mining before 1977.

Preston County was fortunate to be granted funding for this project so that the residents and businesses can have the best quality water supplied to them.



## Water Booster Pumps Meet Beer

*Traveling over 2,100 miles from the West Coast to the Midwest can be a long haul. Now add barrels of beer to the mix. For years a California based brewery, recognized as one of the largest craft breweries in the nation, has been delivering its beer to the Midwest. When the company decided to expand due to growth in popularity, there was no question where the new facility would be located.*

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Once a former steel plant and recent TV set for productions like Chicago Fire, the 300,000 square foot facility on Chicago's South Side has been transformed into the largest craft brewery in Illinois after opening for operation in April. A facility so large, it has the ability to produce 500,000 barrels of beer per year. That's 450 bottles of beer per minute!

As a major ingredient in beer, water plays a big role in a brewing facility. So how exactly do water and beer meet? The answer is in the utility room of the brewery where pump systems use the technology and equipment needed to send pure water from the outside

*Above: The pump package includes three variable speed duplex booster pump systems.*

water supply to where it needs to go within the facility.

With the warm up throughout the country and the large beer demands the company expected in the summer months, accommodations were made to accelerate the design, production and installation process of the booster systems installed at the brewery. In collaboration with a local engineering firm, Metropolitan Industries of Romeoville, Ill., met the challenge and within a three-week period the two most critical systems that service the bottling plant were installed on time with a seamless startup.

The pump package, manufactured by Metropolitan, includes three variable speed duplex water pressure booster systems with the capability for the

water to be supplied by the other if needed. Two of the three booster systems service the facility's bottling plant and required stainless steel piping and fittings.

These two custom duplex booster pump systems are designed to provide 250 gallons per minute (gpm) with one at a discharge pressure of 110 pounds per square inch (psi) and the other at a discharge pressure of 80 psi when supplied with a minimum net suction pressure of 30 psi.

The third duplex booster pump system is for domestic use and will also service the taproom in the facility. It is an energy efficient variable speed prefabricated duplex pumping system designed to provide 90 gpm at a discharge pressure of 60 psi when

# Did You Know?

*Metropolitan Industries recently installed a Vacuum Condensate Unit to service a building on the campus of Northwestern University in Chicago, Ill. This system replaced an existing Vacuum condensate unit that was not functioning properly. The operation of the new system is what makes it different from the existing unit. A different design was established in order to assure longevity of the system. Vacuum condensate pumps are factory built and tested to maintain vacuum and remove condensate and non-condensable gases from a steam heating system. These units are complete assemblies which include vacuum producing pumps which pump through exhauster assemblies, condensate return pumps, tanks and controls. Units can be customized and engineered for almost all applications*

## **Features Include:**

- Simplex and Duplex standard units available
- Stainless steel pump(s) and tank as standard
- Newly designed so that condensate pumps are never put under vacuum.
- NEMA Rated control panels
- Custom units available for any application requirements
- Stainless Steel washdown units available (for food and pharmaceutical manufacturing applications)
- Factory tested to assure a leak-free unit and to check and set all mechanical switches.



supplied with a minimum net suction pressure of 30 psi. Each pump is cast iron stainless-fitted with cast iron casings.

In addition, each panel is equipped with a color touch screen operator interface, programmable controller with audible and visual alarms, and remote alarm contact. The controls in each system are designed to raise the set-point pressure at low flow periods, charge the tank and shut down the pumps until flow resumes.

Today, the Chicago location can bottle beer to the capacity of their California facility (15.5 million gallons a year), but plans for expansion of the Chicago facility are expected to triple the capacity by the end of the year when the brewery will be producing beer for various cities east of Denver.

Water is one of the main ingredients in beer, the pump system helping push the water through the brewery is just as important. Thanks to new technology, manufacturers and engineers now have solutions to help provide cool, clean water matching the rate needed by the beer process.

# Metropolitan Industries, Inc.

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### Residential

Residential-Commercial Plumbing Applications & Tankless Water Heaters Sump & Sewage  
4 CEUs (IEPA\*, ILDPH\*\*), 4 PDHs\*\*\*  
Thursday, February 12- 8:00 am - 12:00 pm  
Thursday, March 26- 8:00 am - 12:00 pm

### HVAC

Mechanical- Steam Basics  
3 PDHs\*\*\*  
Wednesday, June 17- 3:00 pm - 6:00 pm

Condensate Return Systems  
3 PDHs\*\*\*  
Wednesday, July 22- 3:00 pm - 6:00 pm

### Municipal

Infrastructure Improvements- ABCs of Pump System Improvements  
4 CEUs (IEPA\*), 4 PDHs\*\*\*  
Wednesday, April 8- 9:00 am - 2:00 pm  
Wednesday, June 3- 9:00 am - 2:00 pm

How To Get The Most From Your SCADA System:  
4 CEUs (IEPA\*), 4 PDHs\*\*\*  
Wednesday, February 11- 9:00 am - 2:00 pm  
Wednesday, May 6- 9:00 am - 2:00 pm

### Commercial

Self-Priming Pump Application/ Installation/ Operation/ Maintenance  
4 PDHs\*\*\*  
Wednesday, March 11- 3:00 pm - 7:00 pm  
Wednesday, May 20- 3:00 pm - 7:00 pm

Commercial Building Pressure Reducing Valves - Application / Operation / Maintenance / Repair  
4 PDHs\*\*\*  
Wednesday, February 18- 3:00 pm - 7:00 pm  
Wednesday, April 22 3:00 pm - 7:00 pm

\*Illinois Environmental Protection Agency  
\*\*Illinois Department of Public Health  
\*\*\*Professional Development Hours

**Where:** Metropolitan Industries, Inc  
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