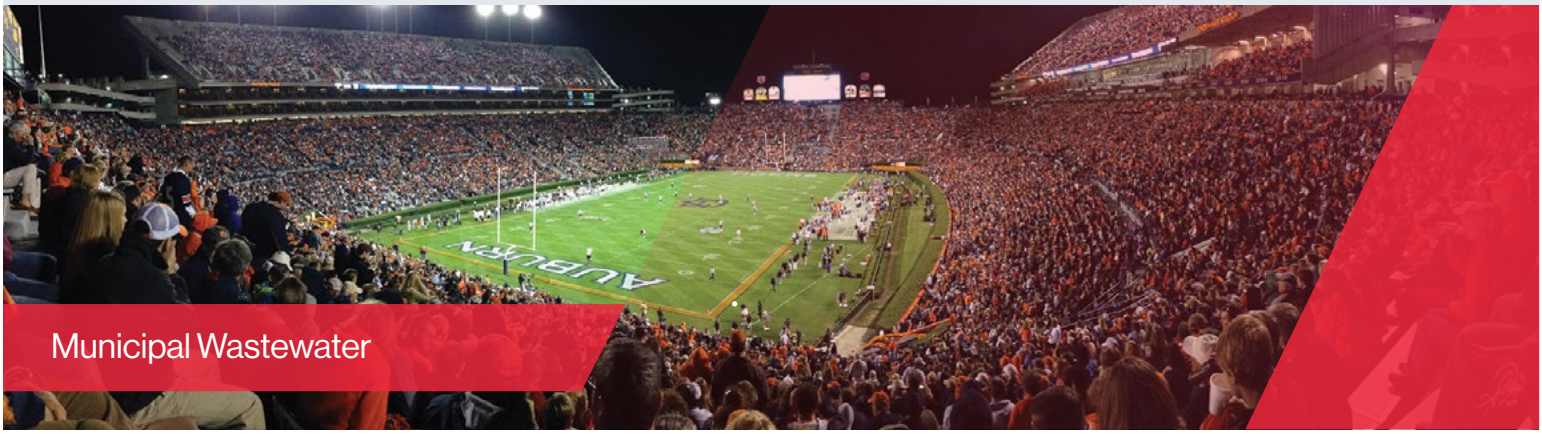
TROJAN UV

TROJAN technologies

CASE **STUDIES**



Municipal Wastewater

Photo courtesy of Scott Fillmer.

Wastewater Treatment – **CITY OF AUBURN**, Alabama
(H.C. MORGAN WATER POLLUTION CONTROL FACILITY)

Trojan Technologies UV Solutions: Treating Wastewater with UV

PROJECT BACKGROUND

The City of Auburn is a thriving community of approximately 56,900 residents. It is a college town and is the home of Auburn University, which has an enrollment of just over 25,000. The City has been marked in recent years by rapid growth.

Auburn sits near the divide between the Chattahoochee and Tallapoosa River watersheds. It is also divided into two sewer service basins, the Northside basin and the H.C. Morgan (or Southside) basin. The City has two treatment facilities – the Northside Water Pollution Control Facility (WPCF), which has a permitted capacity of two million gallons per day (315 m^3/h), and the H.C. Morgan WPCF, which has a permitted capacity of 11.25 million gallons per day (1,772 m^3/h). The Plants were originally constructed in 1985 and were the first privatized plants in Alabama. The City owns these plants and currently has operations contracts with Veolia Water North America.

In April 2008, the United States Environmental Protection Agency (EPA) and the Alabama Department of Environmental Management (ADEM) finalized a Total Maximum Daily Load (TMDL) for the Saughatchee Creek Watershed, into which effluent from the

Northside WPCF discharges. The TMDL established a Total Phosphorus (TP) waste load allocation of 0.25 mg/l for the Northside WPCF - which required a 90% reduction in TP for the facility.

Subsequently, the City hired CH2M Hill to evaluate options for compliance with the TMDL. The following two options were considered: (1) upgrading the Northside WPCF to be able to meet the TP discharge requirements, and (2) ceasing discharge at the Northside WPCF, utilizing a recently constructed transfer sewer system to pump everything to the H.C. Morgan WPCF and upgrading the H.C. Morgan WPCF to handle the additional flow. After extensive analysis, the second option was selected.

The H.C. Morgan WPCF is an activated sludge/extended aeration plant, utilizing both mechanical and biological treatment. It treats the majority of the sanitary wastewater for the City, and discharges to Parkerson Mill Creek. The site is approximately 40 acres and is located in an urban setting.

THE TROJANUV SOLUTION

As part of the H.C. Morgan WPCF plant upgrade in 2012, the City decided to convert from chlorine treatment to treatment with ultraviolet light (UV). The City had been treating with gaseous chlorine and dechlorinating with sulfur dioxide, so the conversion to UV allowed them to benefit not only from UV's ease of use, but also from the long-term savings in operation and maintenance costs.

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CASE STUDIES

The City, along with CH2M Hill, evaluated UV treatment manufacturers and product offerings, and, ultimately, selected the TrojanUVSigna™ for the H.C. Morgan Water Pollution Control Facility. The TrojanUVSigna was chosen for its exclusive benefits, including:

- Suitability for seasonal operation
- Lowest number of UV lamps required and ease of operation and maintenance
- Low total installed capital cost and long-term operating cost
- System design features and Trojan's overall experience and support
- Simple retrofit installation into the existing chlorine contact chamber
- Simplicity of operation and maintenance

The TrojanUVSigna installation in Auburn was brought on-line in October 2012, just in time for college football season and the resulting population swell to the City. The system was designed with two 22-lamp banks (expandable to 29) to treat a peak capacity of 34.20 MGD. The TrojanUVSigna incorporates the latest innovative features, including the TrojanUV Solo Lamp™ technology, advanced control capabilities, ActiClean™ automatic sleeve cleaning, and an Automatic Raising Mechanism which has simplified maintenance and operation for plant operators. Since start-up, the system at Auburn has consistently performed under the regulated treatment limit and the site has enjoyed minimal maintenance during the first year of operation.

When converting from chlorine to UV, existing chlorine contact tanks are often used for a retrofit. This is the approach Auburn took; not only does it reduce construction costs, it also enables the surplus areas within old chlorine contact tanks to be used for water storage, bypass, and other purposes.

The TrojanUVSigna system is specifically designed for large-scale wastewater treatment applications, makes conversion to UV treatment easier, reduces total cost of ownership, and simplifies maintenance for the wastewater treatment plant operations staff.

The TrojanUV Solo Lamp Technology combines the best features of both medium - (MP) and low-pressure lamp technology (LPHO).

SOLO LAMP TECHNOLOGY

BENEFITS OF MP LAMPS

- Low lamp count and small footprint
- Dimmable from 100 to 30% power

BENEFITS OF LPHO LAMPS

- Low power consumption (1/3 the energy usage of MP lamps)
- Long lamp life (>15,000 hours)

"We have been in operation for a little over six months and the function of the TrojanUVSigna equipment has been outstanding. TrojanUV has been a pleasure to work with as far as customer support and service, and we look forward to working with them in the future."

Scott Milner, Project Manager
Veolia Water North America, Auburn, AL

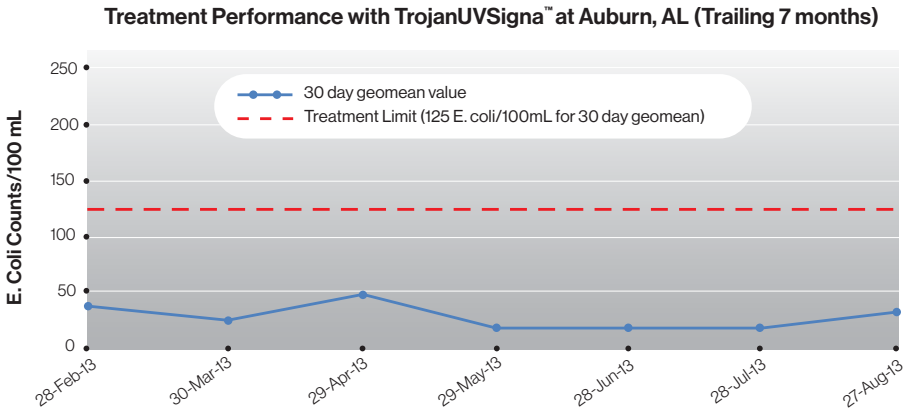

Figure 1. The performance of the TrojanUVSigna has consistently been below the regulatory limit for the plant.

SYSTEM DESIGN PARAMETERS

- PEAK DESIGN FLOW: 34.2 MGD (129,460 m^3/d)
- UV TRANSMITTANCE: > 65%
- TREATMENT LIMIT: 126 E.coli/100mL (30 day average)
- NUMBER OF UV UNITS: Two channels, two banks of 22 lamps (expandable to 29) in each channel
- AVERAGE SOLIDS CONCENTRATION: 30 mg/L TSS
- UPSTREAM TREATMENT: Biologically Treated Secondary Effluent, Unfiltered

To learn more about the brands and affiliates of Trojan Technologies, please visit www.trojantechnologies.com

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