

WATER & WASTEWATER UTILITY SOLUTIONS

CASE STUDY

5-Year 100 Percent Compliance Record Earns Award for Delaware Plant

Founded in 1631, Lewes, Del., was the earliest development in the first state to ratify the U.S. Constitution. As such, the Atlantic Ocean beach community of approximately 3,000 residents refers to itself as “The First Town in the First State.”

On August 1, 2012, the town achieved another first: the Lewes Board of Public Works became the first state municipality to earn the Delaware Department of Natural Resources and Environmental Control’s (DNREC) Clean Water Partnership Award for as long as anyone can remember. The award recognized the performance of the Howard H. Seymour Water Reclamation Plant in Lewes, which is operated by Severn Trent Services through a public-private partnership.

The Clean Partnership Award had been discontinued for a time and was recently revived. But winning the award is especially rare because of its demanding criteria. It recognizes facilities that for five consecutive years have reported no non-compliances in the monthly discharge monitoring reports required under their National Pollutant Discharge Elimination System permit.



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Correcting elevated discharge levels

The award is all the more notable because of the U.S. Environmental Protection Agency's (USEPA) investigation into elevated wastewater discharge levels at the Seymour plant a few years ago. The EPA issued two administrative orders outlining alleged items of noncompliance and suggested remedial steps.

In 2005, the Lewes board made the decision to upgrade the Seymour plant in response to the USEPA issues and to the increased loadings experienced during the tourist season. Completed in 2008, the upgraded plant's operations were led by plant manager Walter Baumer, since retired, and assistant plant manager Lori Brown, who now serves as the plant's manager.

The expanded Seymour plant's capacity doubled from 0.75 mgd to 1.5 mgd and features a membrane bioreactor process (MBR) — the first of its kind in Delaware. The MBR combines GE Zenon ultrafiltration membranes with biological treatment, which is followed by Trojan ultraviolet light treatment for disinfection. The result is extremely high quality effluent that exceeds the stringent standards required for discharge into the Lewes Rehoboth Canal. Effluent concentrations of biochemical oxygen demand and total suspended solids average less than 1 mg/L, and fecal coliform concentrations are less than 1 CFU/100mL. These concentrations compare to the facility's permitted levels for suspended solids and biochemical oxygen demand of about 16 mg/l.

Protecting the environment

"Our plant's improved performance not only helps protect Delaware's Inland Bays but saved money by enabling us to avoid construction of a more costly means of effluent discharge," said Chris Morss, vice president of business development for Severn Trent Services. The DNREC had issued a total maximum daily load for nitrogen and phosphorus for Rehoboth Bay, Indian River Bay and Little Assawoman Bay that required the systematic elimination of all point sources from

inland waterways. These three interconnected bodies of water comprise a shallow coastal lagoon system behind a narrow barrier island separating the mainland from the ocean. The DNREC's concern was that while the majority of the Seymour plant's discharges enters the Delaware River and flows to the Atlantic, some of the discharges could back up and go into Rehoboth Bay. The DNREC's new guidelines would have meant a switch from liquid discharge of the plant's effluent to spray irrigation, ocean outfall or deep well injection.

Plant personnel conducted a dye study and found that only three percent of its effluent flow makes it back into the bay. With such a small flow entering the bay, and considering the high quality of the effluent from the upgraded treatment plant, the state allowed the plant to continue its liquid discharge, saving millions of dollars.

Teamwork and dedication make the difference

Plant manager Brown cited the dedication of the plant's operations, maintenance and lab personnel for much of the plant's successful operation. "The Seymour plant and 32 lift stations are operated and maintained by a staff of just four people. When flooding or even a hurricane has threatened the plant's operation, we've spent the night when necessary in order to address any issues that may arise. We try to go above and beyond, even with our monthly discharge monitoring reports. They are due at the end of the month, and we typically deliver them by the end of the second week."

Glenn F. Davis of the DNREC underscored the magnitude of the Lewes board receiving the Clean Water Partnership Award. "This award is especially significant when it is understood that every month there are 160 opportunities for the treatment plant to be out of compliance; that is just under 2,000 per year. During the five years covered by this award, that equates to approximately 9,600 opportunities, and the Lewes board had 'zero violations'. This is quite an achievement."

Severn Trent Services

Suite 300, 580 Virginia Drive
Fort Washington, PA 19034
United States

T: +1 800 868 6201

E: info@STservices.com

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