City Of York And Ostara Open Commercial Nutrient Recovery Facility

YORK WASTEWATER TREATMENT PLANT | YORK, PENNSYLVANIA

BACKGROUND

Many wastewater treatment plants across the country are required to remove nutrients such as nitrogen and phosphorus from wastewater streams. In moderation these nutrients are essential to all life forms, but excess quantities can lead to algae blooms and other forms of water pollution. The Chesapeake Bay Foundation states that excess nutrients are one of the most serious problems facing the Bay. Strict government regulations have been enacted to reduce the amount of nutrients that wastewater treatment plants discharge.

Traditional nutrient removal treatment methods are expensive and can be prone to reliability challenges. They also create environmental impacts (e.g. increased energy consumption) and do not secure the most sustainable management of these vital resources.

Ostara and the City of York (Pennsylvania) are turning the conventional paradigm around by creating value from waste. Through a novel public/private partnership, these two organizations are recovering nutrients from the York Wastewater Treatment Plant's wastewater streams and transforming them into an environmentally-friendly, slow-release commercial fertilizer.

The York Wastewater Treatment Plant (York WWTP) is designed to treat a maximum flow of 26 million gallons per day (MGD). The treated effluent is released into Codorus Creek, ultimately draining into the environmentally sensitive Chesapeake Bay.

CHALLENGE

On October 1, 2011, new regulations will come into effect in Pennsylvania to aid in the protection of waterways like Codorus Creek, limiting phosphorus concentrations in wastewater effluent to 0.8 milligrams per liter. With looming enforcement of these tight regulations, the City of York explored processes to cost-effectively reduce the amount of phosphorus leaving the plant.

Traditional approaches such as BNR (a process which uses microbes to break down organic materials in solid waste) cause maintenance problems due to the formation of struvite and can be difficult to operate consistently.

Stuvite (magnesium ammonium phosphate) is a concrete-like substance which coats pipes and valves, reducing flow capacity, increasing plant inefficiency and requiring costly maintenance procedures. Like plaque in arteries, it builds along pipe and valve walls during the BNR process. Traditional solutions, such as chemical dosing, are expensive, with an estimated cost of over $400,000 annually. To operate more efficiently, the York WWTP initiated a study of Ostara's Pearl® nutrient recovery process with the following objectives:

- Reduce sidestream nutrient loads;
- Reduce potential for struvite scale;
- Enhance beneficial reuse of wastewater treatment for plant nutrients; and,
- Meet 0.8 mg/L phosphorus effluent limit cost effectively.

SOLUTION

The York WWTP and Ostara Nutrient Recovery Technologies Inc. successfully completed a pilot project in March and April 2008, which established that centrate processed by Ostara's Pearl nutrient recovery process experienced significant reductions in the concentrations of phosphorus and nitrogen. The results were respective 93% and 15% reductions.

Based on these results, the City of York contracted Ostara in a unique public/private partnership (service fee agreement), whereby Ostara designed, built and financed the facility for a monthly fee, which is lower than what the City was spending on traditional nutrient removal methods. Because the agreement does not require the City to make any capital investments, its financial risk is greatly reduced. Ostara constructed two Pearl 500 reactors in a previously vacant building leased by the York WWTP, and will provide the service of removing nutrients to an agreed-upon performance specification. Ostara guarantees the purchase and removal of the byproduct fertilizer, which is marketed as Crystal Green®. The two organizations will share Crystal Green revenues. Any maintenance issues will be handled by Ostara.

This partnership will help the York WWTP efficiently meet its nutrient limits, reduce operational costs and optimize the plant's efficiency. It shifts excess nutrients from a problem to a valuable product.

"Being able to use an environmentally-responsible form of phosphorus is important to both us and our customers in the Chesapeake Bay watershed."

— Matt Holloway, Quantico Creek Sod Farms, January 2011

BENEFITS

Through implementation of the Pearl nutrient recovery process at the York WWTP, key benefits will be delivered to the both the City of York and the wider environment by:

- Alleviating struvite buildup and costly maintenance problems within the plant;
- Decreasing centrate nutrient load returned for treatment (improving efficiency and reliability);
- Minimizing the use of metal salts for chemical phosphorus removal (lessening the costs of chemical purchase and solids disposal);
- Reducing phosphorus content of biosolids (providing a new avenue to remove phosphorus from the system);
- Reducing the potential for nutrient pollution in Codorus Creek and the environmentally-sensitive Chesapeake Bay watershed; and,
- Producing hundreds of tons of Crystal Green per year – generating revenue, enabling mineral phosphate reserves to be conserved and helping mitigate greenhouse gas emissions.

Ostara's nutrient recovery facility at the York WWTP officially opened on September 16, 2010 with local officials, Pennsylvania Governor Edward G. Rendell and Ostara board member, environmental advocate and attorney Robert F. Kennedy, Jr. attending.

Audubon International

Audubon International has embraced Ostara as a partner to deliver innovative solutions that work towards conserving our resources and protecting our natural environment, helping to make our communities more sustainable.

Through valuable partnerships, like the one developed with the City of York to build the nutrient recovery facility at the York WWTP, environmental principles are being turned into action.

ABOUT THE CITY OF YORK

The dedicated staff of the York City Wastewater Treatment Plant will safeguard the environment and public health by maintaining the highest level of treatment at the lowest attainable cost to our customers. This stewardship will be accomplished through sound fiscal management, the use of advanced technology, staff education and training, and the application of "Best Business Practices" of the industry.

ABOUT OSTARA

Vancouver-based Ostara helps protect precious water resources by changing the way cities around the world manage excess nutrients in wastewater streams. The company's technology recovers phosphorus and nitrogen at municipal and industrial wastewater treatment plants and transforms them into a high-value, eco-friendly fertilizer, Crystal Green®.

OSTARA

OSTARA NUTRIENT RECOVERY TECHNOLOGIES INC.
690 - 1199 West Pender St. Vancouver BC V6E 2R1 | **T** 604 408 6697 | **F** 604 408 4442
E info@ostara.com | **Ostara.com**