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Sewage plant turns muck into moolah

Plant removes phosphorus, produces commercial fertilizer

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A sewage plant in the tiny city of Durham was already honored as the nation's best-operated and maintained wastewater treatment plant, by the Environmental Protection Agency back in 2005.

JAIME VALDEZ / PAMPLIN MEDIA GROUP
Ahren Britton co-invented technology that recovers phosphorus and other nutrients from wastewater and recycles them into commercial fertilizer.

Now the Washington County plant is the first in the world to use a cutting-edge technology that recovers phosphorus from wastewater and recycles it into sellable fertilizer.

"You now have indispensably the best-operated and the best-functioning sewage treatment plant in North America," said Robert F. Kennedy Jr., a prominent environmental lawyer who attended the facility's June 10 unveiling.

Wastewater treatment companies struggle to remove phosphorus before releasing treated sewage into waterways, because it fosters algae blooms that cut oxygen levels and harm aquatic life. Phosphorus from sewage sludge is often incinerated or dumped in landfills.

With the new $2.5 million Pearl recovery facility in Durham, a city sandwiched between Tigard and Tualatin, the phosphorus will be turned into a slow-release pellet fertilizer sold to gardeners and nurseries around the country. It's the first fullscale commercial operation in the world to use technology developed by Ostara Nutrient Recovery Technologies Inc. of Vancouver, B.C.

The Durham Advanced Wastewater Treatment Facility is operated by Clean Water Services, the Washington County sewage agency that serves 500,000 urban residents. The plant cleans more than 20 million gallons a day of wastewater that flows into the Tualatin River.

Many hope the Durham project will inspire wastewater treatment facilities around the country to follow in its path.

An EPA-commissioned study in 2004 estimated that the global supply of mined raw phosphorus ore – the most common way of acquiring the essential fertilizer ingredient – will be depleted in less than 250 years.

That's one of many reasons why the new facility should be heralded, said Kennedy, who has sued many sewage plants, and also happens to sit on the Ostara board.

It's costly to remove phosphorus from wastewater, but Clean Water Services hopes the new energy-efficient filtering technology will save money and decrease the need to mine for phosphate. As waste pours into a reactor, a series of biological and chemical reactions transform it into fertilizer.

The facility is expected to remove more than 90 percent of phosphorus and 20 percent of ammonia from wastewater that flows into the Tualatin River near the Durham plant. The process will create 500 tons of Crystal Green-brand fertilizer a year.

Clean Water Services signed a 15-year contract with Ostara and will share revenue from Crystal Green fertilizer sales. The sewage authority expects to gain a return on its initial investment in five years.

The technology has come a long way in 10 years, when it first began as a master's project by co-inventor Ahren Britton. The first prototype he created was about the size of a cappuccino maker, much different than the hulking and chugging metal machines churning out fertilizer in Durham.

Phillip Abrary and Ted Jones founded Ostara in 2005 to license the technology, making Britton, now the chief technology officer, their first employee.

"I got more than I thought of out of my master's," Britton joked at the Pearl facility's grand opening. "It's been a really fun ride."

Before beginning operation of the filtering system in May, the Durham facility was like any other wastewater treatment plant in how it struggled with handling phosphorus, ammonia and magnesium buildups in the treatment process. These chemicals clog and coat pipes and valves and reduce water-flow capacity, costing the facility money.

But now that has all changed. The water is flowing smoother, and money will be saved on maintenance and treatment costs, said Bill Gaffi, general manager for Clean Water Services.

"This technology will save our ratepayers money by extracting nutrients which would otherwise clog our pipes and reduce our plant's treatment capacity," he said.

On top of that, the new technology has given the plant, Clean Water Services, and Washington County something else – even greater credibility in the burgeoning sustainability-minded business world.