

the whole

Reclaimed water facility a beacon of productivity

Known for its view of the Olympic Mountains to the northwest, Olympia, Wash., is home to the LOTT Clean Water Alliance, which owns and operates wastewater and reclaimed water facilities throughout the Lacey-Olympia-Tumwater, Wash., area.

The LOTT Alliance aims to preserve and protect public health, the environment and water resources by providing wastewater management services for the urbanized area of north Thurston County. Its government partners—Lacey, Olympia, Tumwater and Thurston County (LOTT)—all provide wastewater facilities, including a central treatment plant, major interceptor sewer lines, pump stations and reclaimed water plants.

Maximizing capacity at the Budd Inlet Treatment Plant (BITP) is a key LOTT priority. To help accomplish this, LOTT works with the three city water utilities to plan conservation projects that cost-effectively reduce wastewater flows. Since the utilities started working together on the flow reduction program in 1997, program efforts have resulted in water conservation of more than 850,000 gal per day (gpd).

The Reclaimed Water Plant (BIRWP) was the first increment of reclaimed water production implemented under the LOTT Alliance's Wastewater Resource Management Plan. Built in 2003, it was brought online for reliable production of Class A (CLA) Reclaimed Water in 2005.

"LOTT's reclaimed water is based on the premise that increments of reclaimed water production will be brought online little by little over time as more treatment capacity is needed," said Laurie Pierce, operations and facilities director. "The increments will be added to the central Budd Inlet BIRWP and three satellite plants.

"LOTT produces the reclaimed water, but it is purveyed by LOTT's partner water utilities," Pierce continued. "Currently, there are three customers using reclaimed water from the Budd Inlet plant: the City of Olympia, the Port of Olympia and the Washington State Department of General Administration. We also put reclaimed water to use at the Budd Inlet Treatment Plant for processes, cleaning, irrigation, toilet flushing and a decorative fountain."

LOTT built a 3-mile purple pipeline running through downtown Olympia and south to Tumwater to accommodate additional users in the future and carry water to a future recharge site in Tumwater.

From Feed to Flow

The plant consists of three reclaimed water feed pumps feeding secondarily treated BITP effluent to the head of the BIRWP.

There, the flow runs through a static mixer

dispersing polymer and hypochlorite into the flow stream prior to entering Parkson Dynasand filters.

"These filters are continuously backwashing, using air to turn over the sand beds and keep them free from blinding," Pierce said. "The reclaimed water that is produced then flows through the chlorine contact chambers to ensure sufficient contact time to meet our permit limit of 0.5 mg/L at the point of delivery (the end of the pipe)."

The water then flows into a 100,000-gal clear well, from which the three CLA distribution pumps supply it to the city and to the BITP.

"Another important permit limit met with Parkson sand filters is 2.0-ntu turbidity," Pierce continued. "Because the Budd Inlet Treatment Plant has extremely low-effluent total inorganic nitrogen and biochemical oxygen demand limits, the feed water to the BIRWP is already exceptional quality."

The plant, she noted, is fairly low maintenance. The instrumentation to assure CLA standards seems to be the largest time/labor demand on the operations staff.

Securing the Future

Additional challenges include ensuring proper ability to respond to changing CLA demand.

"There are three trains of two sand filters each," Pierce said. "Each pair of filters can produce up to 0.5 mgd. In order to meet peak demand, the operators must run at least two pairs of sand filters at all times. Most of the time, we do not need this much water, so some is recycled back into various plant processes."

Taking the filters on and offline creates issues with turbidity for short periods; therefore, it is much easier to just keep two trains running at all times, Pierce explained.

Changes are ahead, she noted.

"With the addition of the Tumwater Golf Course to our list of 'customers' in the near future, we will need to add a larger storage component to our system to be able to meet their peak demand of 500,000 to 600,000 gpd, which is typically used over an 8-hour period from 10 p.m. to 6 a.m. That project is expected to be completed by irrigation season, 2013.

"The storage facility will help to resolve the current challenges described here. The BIRWP was built to be expanded to 5-mgd capacity, and that is LOTT's ultimate plan for this facility." **WWD**

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PLANTPROFILE

NAME:

Budd Inlet Water Reclamation Plant

LOCATION

Olympia, Wash.

PLANT SIZE:

1 mgd

INFRASTRUCTURE:

Reclaimed water feed pumps, static mixer, sand filters, chlorine contact chambers, 100,000-gal clear well, CLA distribution pumps



The BIRWP was built for reliable production of Class A Reclaimed Water.



The reclaimed water is used in a variety of ways, such as for this decorative fountain.



Depiction of the reclaimed water filter