LOTT Clean Water Alliance

Lacey • Olympia • Tumwater • Thurston County

WATER REUSE SUMMARY PLAN
for the
Budd Inlet Treatment Plant
Reclaimed Water Facility

January 29, 2024

The purpose of this Water Reuse Summary Plan is to identify and describe characteristics of the distribution system and application sites for Class A Reclaimed Water distributed from the LOTT Clean Water Alliance's (LOTT) Budd Inlet Reclaimed Water Plant during 2023. This report is required by NPDES Permit No. WA0037061 and is being submitted to the State Departments of Health and Ecology. The Permit specifies that this Plan contain, but not be limited to, the following:

1. Description of the reuse distribution system.
2. Identification and current list of all water purveyors, uses, users, and location of reuse sites.
3. Evaluation of reuse sites, estimated volume of reclaimed water use at reuse sites, means of application and, for irrigation or surface percolation uses, the application rates, water balance, expected agronomic uptake, potential to impact groundwater or surface water at the site, background water quality and hydrogeological information necessary to evaluate potential water quality impacts.
4. Description of any additional treatment provided to the reclaimed water and any additional distribution system.

Consistent with Permit requirements, this report will be updated annually by January 31 of each year, covering the previous calendar year.

Reclaimed Water Distribution System

LOTT's initial Budd Inlet Reclaimed Water Plant reclaimed water distribution pipeline, completed in 2002, consisted of a 12-inch ductile iron pipe extending from the Budd Inlet Treatment Plant through downtown Olympia to Heritage Park, and a four-inch ductile iron pipeline that extended under the pedestrian walkway bridge over Capitol Lake to the Capitol Lake Pump Station. In 2009, LOTT began a project to create a new reclaimed water pipeline extension along Deschutes Parkway to Tumwater. This was the first step to completing a pipeline that will provide a corridor to distribute reclaimed water to Tumwater and West Olympia for beneficial uses within the communities, and to eventually carry reclaimed water to LOTT's proposed recharge basins on Henderson Boulevard, Rixie Road, and further south. The project consisted of four separate phases, with the first phase involving converting 9,220 feet of existing 20-inch HDPE sanitary sewer force main running southward along Deschutes Parkway to a reclaimed water pipeline. This phase was completed in the summer of 2009. The second phase, installing 1,800 feet of new eight-inch HDPE reclaimed water pipeline westward up Lakeridge Drive, was

completed in the fall of 2009, in conjunction with a City of Olympia potable water pipeline installation project in the same area. The Lakeridge Drive section will eventually enable LOTT to convey reclaimed water to commercial, industrial, and institutional customers in the west Olympia area, and the Mottman Road area of Tumwater. The third phase, referred to as the Heritage/Marathon Park Reclaimed Water Modification project, included replacing 1,230 feet of the original four-inch ductile iron reclaimed water pipeline spanning the pedestrian walkway bridge over Capitol Lake with 12-inch ductile iron pipe to increase the distribution system's carrying capacity. This project was complete in April 2010. The fourth phase, the Tumwater Reclaimed Water Pipeline Project, involved installation of 5,340 feet of new 18-inch HPDE and ductile iron reclaimed water pipeline along Capitol Boulevard from Tumwater Falls Park to a short-term end point in the Tumwater Valley Municipal Golf Course. This phase was also completed in April 2010. The most recent phase to this project was the construction of a 1.0 million gallon pre-stressed concrete reservoir. This phase of the project was substantially completed in December 2015.

LOTT's initial reclaimed water pipeline, installed in 2002, was done in conjunction with LOTT's Southern Connection Pipeline Project, the primary purpose of which was to install a new wastewater force main. The alignment allowed the reclaimed water line to be adjacent to several potential reclaimed water application sites in the Downtown Olympia and Capitol Campus areas. Pipeline details were reviewed and approved by the Departments of Ecology and Health prior to construction.

Most of the construction of the initial reclaimed water pipeline occurred through established areas of downtown Olympia. Existing infrastructure limited the minimum separation between the reclaimed water pipeline and both the potable water line and wastewater force main. Ecology's *Criteria for Sewage Works Design* sets the minimum separation distances between the reclaimed water line and potable water lines at 10 feet horizontal and 18 inches vertical (the reclaimed water line must be below the potable water line). The minimum separation between the reclaimed water line and a sanitary line (wastewater force main) is specified at 10 feet horizontal and 12 inches vertical (the reclaimed water line must be above the sanitary line) as set forth by Ecology's *Water Reclamation and Reuse Standards*. Since it was not reasonably possible to meet both of these separation requirements along the force main/pipeline alignment, LOTT configured the force main/pipeline alignment to provide the maximum separation for potable water lines while creating as much separation between the reclaimed water pipeline and the sanitary force main as possible. The separation of the sanitary force main and the reclaimed water pipeline is 3 feet horizontal and 1 foot vertical from the bottom of each pipe (in this case the crowns of the two pipes are at the same elevation).

Deviation from Ecology's standards for separation distances between the reclaimed water line and the sanitary force main was mitigated by the following design and maintenance criteria:

1. All future construction along the alignment of the reclaimed water pipeline will be monitored by LOTT. Monitoring will include coordinating with the City of Olympia's construction review panel and onsite inspection during construction. The purpose of this construction inspection will be to verify that the integrity of potable water, reclaimed water, and wastewater piping is not degraded during subsequent construction activities.
2. The reclaimed water pipeline and sanitary force main were constructed out of ductile iron. Ductile iron has been shown to be tough and very difficult to damage. Seismic conditions were taken into account by the use of EBAA Flex-Tend Flexible Expansion Joints and the use of joint restraints along the entire length of the pipeline. The operating pressure of the

reclaimed water line will be between 45 and 65 psi, and would therefore be at least 20 psi greater than the sanitary force main. This pressure difference will be maintained year-round.

3. Combination air valves were installed and will be maintained along the reclaimed water pipeline to vent accumulated air under system pressure, and to provide air exhaust during initial fill or to prevent a vacuum during draining of the system.
4. A chlorine residual is maintained throughout the reclaimed water distribution pipeline. Maintaining a chlorine residual via sodium hypochlorite addition downstream of the distribution pumping system (at the Budd Inlet Treatment Plant) continues the disinfection process throughout the pipeline and minimizes bacterial growth.
5. To assure chlorine residual is maintained throughout the southern portion of the distribution pipeline, reclaimed water is used year-round at the Tumwater storage tank. This helps ensure that the reclaimed water supply does not stagnate and deplete the dissolved oxygen and chlorine residual in the reclaimed water during minimum demand periods.
6. Flow balancing tests will be performed if leaks in the reclaimed water pipeline are suspected at any time after construction.
7. The fiber optic line included in the Southern Connection Pipeline Project for remote operation of the Capitol Lake Pump Station was installed within close proximity to the reclaimed water pipeline. The fiber optic pipe will serve as an indicator as to activity and disruptions around the reclaimed water line. If the fiber optic line is broken, the LOTT Treatment Plant staff will know immediately via loss of communication with and control of the Capitol Lake Pump Station.
8. All reclaimed water piping in the Budd Inlet Treatment Plant and the reclaimed water distribution pipeline has been color-coded purple in accordance with Washington State Department of Ecology and Department of Health standards (Pantone 253 or 512) using polyethylene encasement, paint, or plastic tracer tape.

In addition to the original main distribution pipeline, an existing 8-inch ductile iron pipeline that traverses most of the Budd Inlet Treatment Plant property to the north is used to distribute reclaimed water throughout the Treatment Plant site. This pipeline reduces down to 6-inch ductile iron approximately 100 feet from connecting to the City of Olympia reclaimed water distribution system currently serving the Port of Olympia.

A reclaimed water "filling station" is installed near the Reclaimed Water Facility inside the Budd Inlet Treatment Plant. The State of Washington Department of Enterprise Services, Facilities & Leasing (formerly Department of General Administration, Division of Capitol Facilities) hauled 2,525 gallons of Class A Reclaimed Water from this station in 2005 for use in pressure washing stairs and buildings at the Capitol Campus. It is anticipated that other uses serviced by this station will include irrigation of street trees, dust control, street cleaning, and/or other uses as identified. In 2023 the filling station inside the LOTT Budd Inlet Treatment Plant was utilized for several projects: Miscellaneous Mechanical Improvement projects (i.e. screen wash water and cooling water pump system) and inspections of LOTT gravity mains within the city limits of Olympia. An estimated total of **3.4** million gallons of reclaimed water was used for these projects.

The City of Olympia and/or individual users are responsible for installing reclaimed water distribution systems to take water off the main LOTT pipeline. Pursuant to the Interlocal Agreement for Emergency Repair Response Services and Service Connections between LOTT and Olympia dated June 14, 2005, any reclaimed water service connections installed by the City shall be in accordance with the Olympia Municipal Code and Part 6.4 of the Reclaimed Water Supply Agreement between LOTT and the City of Olympia, dated June 8, 2005. The agreement also states that LOTT will refer all emergency repair service responses associated with the LOTT southern reclaimed water pipeline to the City of Olympia. LOTT agreed to reimburse Olympia for costs under the emergency circumstances for labor and materials associated with emergency repair service responses.

In a cost-share arrangement with the City of Olympia, the Port of Olympia installed a six-inch Class 900 purple PVC reclaimed water pipeline in 2004 to serve as the distribution line for the Port's peninsula properties. The City later assumed ownership of the pipeline. The pipeline crosses Market Street and runs along the east side of Marine Drive for approximately 4,000 feet to the north end of the peninsula. In 2012, the City of Olympia assumed ownership of additional reclaimed water distribution pipeline constructed in the East Bay Redevelopment area. The new pipeline is routed east down Olympia Avenue NE, turning north up the west side of Marine Drive NE, and currently supplies reclaimed water to the East Bay Public Plaza and Hands On Children's Museum. The new pipeline connects to existing reclaimed water pipelines north of the Budd Inlet Treatment Plant, and south of the plant at Adams Street NE and Olympia Avenue NE.

LOTT's combined NPDES and Reclaimed Water Permit, issued on February 16, 2018, contains an average monthly final effluent discharge limit of 26 mg/L for total ammonia during the winter months of November through March. The Permit also contains reclaimed water limitations that include an average monthly total nitrate limit of 10 mg/L. Based on the seasonal ammonia final effluent limits, LOTT is able to transition into a less-intensive biological nutrient removal mode during the winter months, and still achieve the reclaimed water total nitrate limitation. In addition, LOTT typically ceases delivery of reclaimed water to the City of Olympia's irrigation users south of Olympia Avenue SE during the winter months. At the end of the irrigation season, purveyance of reclaimed water through the southern pipeline ceases, and the City closes and locks its customer's supply meters. Before the addition of the Tumwater Storage tank, the procedure to put the system online was as follows: Prior to the irrigation season resuming in April, the southern pipeline is flushed into the sanitary sewer wet well at the Capital Lake pump station, a consistent chlorine residual is established, and all permit parameters checked and confirmed before notifying the City of Olympia that Class A reclaimed water is available for delivery. This procedure remains in effect as long as uses of reclaimed water south of Olympia Avenue NE are limited to seasonal irrigation. With the addition of the Tumwater Tank, that has water uses year-round, this procedure is no longer necessary.

Identification of All Reclaimed Water Purveyors, Uses, Users, and Location of Use Sites

LOTT uses reclaimed water at its own sites – the Budd Inlet Treatment Plant, the Capitol Lake Pump Station, the Regional Services Center, the WET Science Center, and the East Bay Public Plaza – consistent with the terms of the Reclaimed Water Conditions included in LOTT's combined NPDES and Reclaimed Water Permit.

The City of Olympia purveys the reclaimed water to its customers through its Water Utility. That responsibility has been assumed under terms of a series of agreements, including:

- General Interlocal Agreement for Reclaimed Water Distribution and Use
- Reclaimed Water Distribution Agreement No. 1-updated March, 2016 (Appendix A)
- Reclaimed Water Supply Agreement

Other reclaimed water users are required to conform to the State's *Water Reclamation and Reuse Standards* as a condition of their End User Agreements with the City of Olympia Reclaimed water users are also required to conform to the City of Olympia's cross-connection control plan as part of their End User Agreements. The City of Olympia will retain responsibility for inspection, compliance, and testing of cross-connection control measures in their jurisdiction. In accordance with Department of Ecology Reclaimed Water Facilities Manual (Purple Book) LOTT designed a Cross-Connection Control Program in 2019 to address the responsibility to eliminate actual or potential physical connections between any source of lower quality liquid, solid or gas that could contaminate the reclaimed water supply. LOTT and its partners will work in unification to manage and enforce the program upon final adoption.
Users were identified by reviewing water records and via discussions with potential customers, City of Olympia staff, and LOTT Alliance staff. All current and expected users are located in close proximity to the Budd Inlet Treatment Plant. In addition to showing the pipeline alignment, Figure 1 also provides a visual display of expected users and use sites. Table 1 below summarizes current sites and uses during 2023. Table 2 summarizes anticipated uses at additional sites in the future.

Table 1
Summary of Reclaimed Water Users, Use Sites, and Uses for 2023

Users	Uses Sites	Uses
LOTT Clean Water Alliance	Budd Inlet Treatment Plant	Irrigation, Pump Seals, Cleaning, Process Control, Fill Station
	Capitol Lake Pump Station	Irrigation, Cleaning, Odor and Grease Control Systems Make-Up Water
	Regional Services Center & WET Science Center	Toilet/urinal flushing, green roof irrigation, reclaimed water feature (includes fountain and pond), demonstration wetland, and landscaping irrigation
	East Bay Public Plaza	Reclaimed water feature, toilet/urinal flushing, landscaping irrigation

Table 1 (continued)
Summary of Reclaimed Water Users, Use Sites, and Uses for 2023

Washington State Department of Enterprise Services	Marathon Park & Deschutes Parkway Heritage Park	Irrigation Irrigation
Port of Olympia	Port Peninsula	Irrigation
City of Olympia	Percival Landing Area	Irrigation
Hands On Children's Museum	East Bay Redevelopment	Toilet/urinal flushing
City of Tumwater	Tumwater Valley Golf Course T Street Park	Irrigation Irrigation

Table 2
Summary of Anticipated Additional Reclaimed Water Users, Use Sites, and Uses for 2023

Users	Uses Sites	Uses
Port of Olympia	Port Peninsula	Equipment and boat washing, toilet/urinal flushing, filling a recreational impoundment (pond), heating & cooling administration building
City of Tumwater	Tumwater Falls Park, Tumwater Historical Park, Pioneer Park	Irrigation, toilet/urinal flushing
Washington State Department of Enterprise Services	Capitol Campus, West and East	Irrigation, water feature (fountain), toilet/urinal flushing
City of Olympia	Areas of the City via tanker truck	Irrigation of street trees

Class A Reclaimed Water can provide a non-potable water supply to meet most of the water demands at these sites.

Evaluation of Reclaimed Water Use Sites, Volumes, and Application Methods

During 2023, reclaimed water produced at the Budd Inlet Treatment Plant was purveyed to irrigation use sites located at Marathon and Heritage Parks, and the northern portion of Deschutes Parkway, which are adjacent to Capitol Lake, as well as the Port of Olympia and the City of Olympia's Percival Landing. An evaluation of these sites is summarized in Table 3.

Concerns regarding potential surface water and groundwater impacts from irrigation are addressed by identifying the soil type, estimating the hydraulic conductivity, and managing the application method and rate. Water balance and agronomic rate information are not readily available (or applicable) for these urban sites, and therefore were not included in this evaluation. Water balance and agronomic rate information is typically associated with agricultural irrigation site evaluation, as opposed to "landscape" irrigation in this context. Landscape irrigation in urban areas is far less intensive than agricultural irrigation and may require a different level of evaluation to assess risks. This plan addresses concerns for excessive watering and flooding by managing the timing and rate of application to the landscaped areas.

An evaluation of each site and its estimated reclaimed water use is included in the following sections of this Plan. The information presented is an update from the approved engineering report, *LOTT Reclaimed Water Technology Assessment* (Brown and Caldwell, March 2000), and includes information from the *Summary of Planning Level Cost Estimates Related to Reclaimed Water Distribution in Downtown Area* (Economic and Engineering Services, May 2004).

The evaluation for each site includes:

- Site description (location, landscape position, context)
- Type of use (landscape irrigation, equipment maintenance, toilet flushing)
- Estimated water use (gallons per day)

Additionally, for landscape uses, the evaluation includes:

- Area (acres)
- Vegetation cover (trees, shrubs, turf)
- Soil type (fill or native soil name)
- Timing of application (months)
- Application method (manual, automated sprinkler)
- Application rate (inches/wk.)
- Potential for groundwater impact (high to none)

Table 3
Summary Evaluation of Irrigation Use Sites, Volumes, and Application Methods for 2023

Site	Area	Land Cover	Timing of Irrigation	Application Method	Application Rate	Soil Type	Potential for Groundwater Impacts
Marathon Park	1.72 ac	Turf, native plants	May – Oct	Automatic sprinkler	1" / week	Fill	None
Heritage Park	21 ac	Turf, trees, sustain new hydro-seeded landscaping	May – Oct	Automatic sprinkler & drip irrigation	1" / week	Fill	None
Deschutes Parkway	1.72 ac	Native trees, shrubs	May – Oct	Automatic sprinkler	1" / week	Fill	None
Port of Olympia	6 ac	Shrubs, perennials, small trees, turf	May – Oct	Automatic sprinkler	1" / week	Fill	None
Percival Landing Park	3.4 ac	Turf, shrubs, annuals, perennials	May – Oct	Automatic sprinkler & drip irrigation	1" / week	Fill	None
East Bay Public Plaza	0.72 ac	Trees, shrubs, annuals, perennials	May – Oct	Automatic sprinkler & drip irrigation	1" / week	Fill	None
Hands On Children's Museum	2.88 ac	Trees, shrubs, annuals, perennials	May – Oct	Automatic sprinkler & drip irrigation	1" / week	Fill	None
Tumwater Valley Golf Course	170 ac	Turf, trees, shrubs, annuals, perennials	May – Dec	Automatic sprinkler & drip irrigation	1" / week	Native	Very Low
Tumwater T Street Park	1 ac.	Trees, shrubs, annuals, perennials	May – Oct	Automatic sprinkler & drip irrigation	1" / week	Native	Very Low

Table 4
Summary Evaluation of Anticipated Additional Irrigation Use Sites, Volumes, and Application Methods

Site	Area	Land Cover	Timing of Irrigation	Application Method	Application Rate	Soil Type	Potential for Groundwater Impacts
Tumwater Falls Park	16 acres	Turf, shrubs, annuals, perennials	May – Oct	Automatic sprinkler	1" / week	Native	Very low
Tumwater Historical Park	15 acres	Turf, shrubs, annuals, perennials	May – Oct	Automatic sprinkler	1" / week	Native	Very low
Pioneer Park	50 acres	Turf, shrubs, annuals, perennials	May – Oct	Automatic sprinkler	1" / week	Native	Very low
Areas throughout the City of Olympia	varies	Street trees	May – Oct	Hose via tanker truck	No more than 5 gallons per tree per week at any one site	Various	None
Capitol Campus	30 acres	Turf, shrubs, annuals, perennials	May – Oct	Automatic sprinkler	1" / week	Native	Very low

Description of 2023 Use Sites

1. Budd Inlet Treatment Plant

LOTT's Budd Inlet Treatment Plant is located between downtown Olympia and the Port of Olympia peninsula at the southern end of Budd Inlet in Puget Sound. The site is approximately ten feet above mean sea level and is relatively flat and level. The site landscaping consists of ornamental shrubs, small trees, and ground cover. The plant site is underlain by fill materials over recent alluvium. Fill materials generally consist of a mixture of clay loam, silt loam, and silty clay loam (soil classification-Hoogdal and Xerorthents). Based on soil surveys in the area, the vertical hydraulic conductivity of the site is estimated at 0.6 to 2 inch/hr. and the groundwater levels range from approximately 2 to 5 feet below the ground surface.

During 2023, the Budd Inlet Treatment Plant consumed a substantial quantity of reclaimed water on-site for pump seal water, cleaning, process control, and limited irrigation. Irrigation needs are seasonal, while the water needed for the other uses is generally constant throughout the year. LOTT's Regional Services Center, located at the south end of the Budd Inlet Treatment Plant, was completed in June 2010, and includes the WET Science Center. The complex utilizes reclaimed water for toilet/urinal flushing, and rooftop garden irrigation. The WET Science Center provides opportunities to engage the public in the mission of LOTT, the need for water conservation, the benefits of reclaimed water, the science of wastewater treatment, and other important water quality issues. The building uses an estimated 30,000 gallons of reclaimed water annually. The Budd Inlet Treatment Plant used an average of **.59** million gallons per day of reclaimed water in 2023, which includes an average of 280 gallons per minute year-round usage for pump seal water, cleaning, process control, and seasonal irrigation. Reclaimed water used for the Regional Services and WET Center's landscape irrigation, wrap-around outside water feature and fountain, and adjacent demonstration wetland is also included in this total. The addition of the 1.0 MG Reclaimed Water Storage Reservoir has eliminated the need for flushing reclaimed water through the southern distribution pipeline into the Capitol Lake Pump Station wet well to maintain the chlorine residual during the irrigation season. This has saved as much as 16,500,000 gallons annually.

Construction of the East Bay Public Plaza, located between the Hands On Children's Museum and the LOTT WET Science Center, was completed in June 2012. The public plaza is designed as an inviting and open public space. It features an interactive reclaimed water feature, designed to mimic a natural stream, beginning at a waterfall and "ending" by disappearing near East Bay. It is fed partly by engineered reclaimed water seeps and springs, mimicking the way groundwater feeds many local streams. The water is continuously recirculated. Stream water flows from the headwaters, through the stream bed and into a holding tank where it is pumped through a filter, then adjusted for pH and chlorine before it is returned to the headwaters. As an interactive water feature, visitors can wade in the entire length of the reclaimed water stream. Construction of this stream was authorized by a Water Recreation Special Use Pool Permit from the Washington State Department of Health, and operation is authorized under an annually renewable Pool Operating Permit from Thurston County Environmental Health. The Plaza also includes interpretive elements that teach about the interconnectedness of our water resources. Reclaimed water is also used for landscaping irrigation and toilet flushing at the Plaza's public restroom facilities. The East Bay Public Plaza used a total of **2,745,901** gallons of reclaimed water in 2023.

In August 2014, LOTT sent a written notification to Ecology, requesting to discharge Class A Reclaimed Water with the Budd Inlet Treatment Plant's final effluent to facilitate operating the Budd Inlet Reclaimed Water Plant at or near full production during a 90-day test period. It was determined that when the new Reclaimed Water Storage Tank came online in 2015 and the Tumwater Valley Golf Course began using reclaimed water for irrigation at a demand rate of up to 540,000 gallons per day, there would be a need to operate the Budd Inlet Reclaimed Water Plant at full capacity for extended periods of time. Since there were no current reclaimed water demands to simulate this level of production, LOTT was looking for ways to test reclaimed water plant production without having to discharge excess reclaimed water to the headworks of the Budd Inlet Treatment Plant. Ecology was open to this suggestion as long as the resulting chlorine residual in the final effluent did not exceed 0.05 mg/L. Preliminary testing of different blending ratios of reclaimed water and final effluent revealed that this would be possible. However, hydraulic issues with the reclaimed water distribution system with the Budd Inlet Treatment Plant cause this testing to be discontinued shortly after the testing began. The decision was later made to perform full-production testing after the Reclaimed Water Storage came online in Spring 2015.

2. **Capitol Lake Pump Station**

LOTT's Capitol Lake Pump Station is located near the southwest shore of Capitol Lake on Deschutes Parkway, and is the midpoint of the reclaimed water distribution pipeline. It was upgraded in 1999/2000 to increase flow capacity. Reclaimed water is used for cleaning of the pump station and wet wells. Annual usage has been reduced and is estimated at less than a hundred gallons per day.

3. **Marathon Park, Heritage Park, and Deschutes Parkway**

Marathon Park is adjacent to the southwest end of Capitol Lake along Deschutes Parkway. It is 2.1 acres in size and is vegetated with grass and native plants. Approximately 1.72 acres of the park are currently irrigated during the summer months. There are also approximately 1.72 acres of irrigated landscape along Deschutes Parkway on the west side of the lake, which are tied into the Marathon Park sprinkler system. Heritage Park is located on the northeast side and north end of Capitol Lake and consists of 18 acres of turf and about 2.7 acres of trees and shrubs. Due to the sites' close proximity to Capitol Lake and Budd Inlet, reclaimed water application rates were less than or equal to the lesser of the nutrient demand or the water demand of the vegetation irrigated (agronomic rates). Application at higher rates could leach nutrients to the surrounding water.

No tests were conducted to determine the soil permeability/hydraulic conductivity at these locations. However, based on soil maps of the area, a vertical hydraulic conductivity of 0.6 to 2 inch/hr. may be used for preliminary planning purposes. Due to the sites' close proximity to Capitol Lake and Budd Inlet, groundwater was assumed to be at approximately the same depth as at the LOTT Budd Inlet Treatment Plant site (2 to 5 feet below the surface).

Reclaimed water was used for irrigation at Marathon Park, Heritage Park and Deschutes Parkway during the 2023 season, with a total of **,995,558** gallons being applied at these sites.

4. Port of Olympia

The Port of Olympia's main office is located at 915 Washington Street N.E., on the Port-owned peninsula that extends north between East Bay and West Bay portions of southern Budd Inlet. The south end of the Port's property includes the area directly across the street from the north end of LOTT's Budd Inlet Treatment Plant, and the park area and walking trail along the border of East Bay. The Port's marine terminal serves as a transfer point for shipping through Puget Sound. Shipping activities have increased in recent years, and three tenants, Weyerhaeuser Company, Pacific Lumber and Shipping, and Holbrook Lumber have established log receiving and shipping operations at the Port.

Soil studies show that the drainage characteristics and groundwater levels of the Port site are similar to those of the Budd Inlet Treatment Plant site.

In 2010, installation of a dedicated water truck filling station was completed, enabling the Port of Olympia to utilize reclaimed water for dust control during dry days throughout the year. This installation was shutdown indefinitely in June 2011, so that the adjacent area could be utilized for storing soil from the Port of Olympia's Cascade Pole Cleanup site.

In 2023, the Port of Olympia used a total of **4,729,017** gallons for irrigation of ornamental shrubs, small trees, perennial plants, and turf grass.

In 2013, the City of Olympia became aware that the Port of Olympia was utilizing reclaimed water inside their Cascade Pole Cleanup Project treatment plant for wash-down purposes via secure, dedicated hose bibs. However, Article 12, Section 1(i) of the "Washington State Water Reclamation and Reuse Standards" states that "Except as authorized by the Washington Departments of Health and Ecology, hose bibs on reclaimed water lines are prohibited." In addition, the City of Olympia Municipal Code (OMC) Chapter 10.140 reads that "No customer shall use or install any hose bibs or quick couplers on a reclaimed water system regardless of style, construction, or identifications." The OMC currently does not allow for any conditional uses of hose bibs for reclaimed water. Based on this, the Port of Olympia was notified by the City of Olympia to remove all reclaimed water hose bibs inside their treatment plant. This was completed shortly after the notification.

5. Percival Landing Area

Percival Landing is a City of Olympia park that wraps around the southern end of Budd Inlet, encompassing a total of 3.38 acres of boardwalk and planted area. One acre of turf grass, and perennial and annual plants are irrigated by the City of Olympia's Parks, Arts and Recreation Department at these sites. A total of **1,255,611** gallons of reclaimed water was used at Percival Landing during the 2023 irrigation season.

6. Hands On Children's Museum

The Hands On Children's Museum was completed in the fall of 2012, and is located directly across Jefferson Street from LOTT's WET Science Center. This new facility improves access to early learning for our children, attracts regional visitors to our communities, stimulates economic development, and provides an ideal location to view and appreciate the City of Olympia's waterfront. The Museum's proximity to LOTT's WET Science Center provides an exciting opportunity to coordinate learning opportunities surrounding water resources, assuring that age-appropriate experiences are offered. LOTT, the City of Olympia, and the Hands On Children's

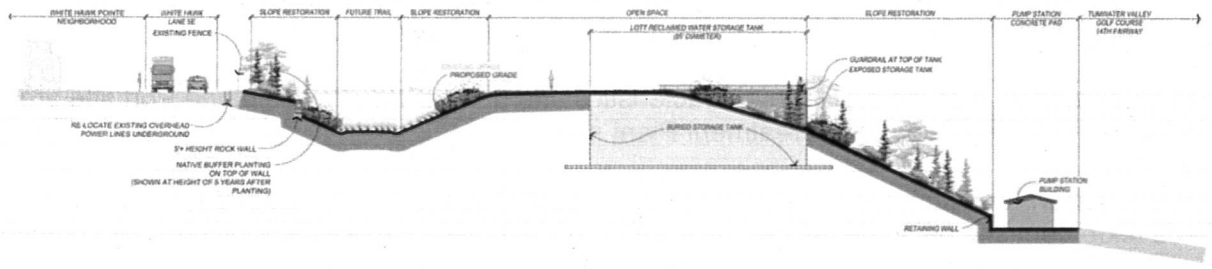
Museum entered into an Interlocal Cooperation Agreement in October 2011, providing for a demonstration project highlighting water conservation and using reclaimed water. A total of **544,617** gallons of reclaimed water was used at the Hands On Children's Museum in 2023 for toilet flushing and irrigation.

7. City of Tumwater – Tumwater Valley Municipal Golf Course

The City of Tumwater-owned Tumwater Valley Municipal Golf Course covers 170 acres, and uses a peak irrigation water demand of over 600,000 gallons per day. In order to facilitate this high usage reclaimed water demand, construction of additional distribution and storage infrastructure began in 2014. Construction was completed in the spring of 2015, and usage of reclaimed water for irrigation commenced in June 2015. An estimated total of **55,490,000** gallons were used for irrigation at the Tumwater Valley Municipal Golf Course in 2023.

8. City of Tumwater – T Street Park

The City of Tumwater uses reclaimed water to irrigate Tumwater's new T Street Park, located on the south edge of Tumwater Valley Golf Course. This park was created in conjunction with LOTT's Reclaimed Water Storage Project (see design drawing below). Irrigation of the associated landscaping commenced in Spring 2015.



Description of Anticipated Additional Use Sites

1. LOTT Clean Water Alliance

As mention previously in this summary, Phase 3 and 4 of LOTT's reclaimed water distribution/transmission pipeline project were completed in April 2010, enabling LOTT to supply reclaimed water to the City of Tumwater after other distribution infrastructure was installed. While the City of Tumwater uses reclaimed water at the Tumwater Valley Golf Course and T Street Park for irrigation, the pipeline extension will also serve future LOTT uses. Eventually, the pipeline will be extended further to supply reclaimed water to proposed LOTT groundwater recharge basins at Henderson Boulevard, and/or further south. The Reclaimed Water Storage Reservoir and booster pump station will help facilitate those future recharge uses.

2. Port of Olympia

Initially, when reclaimed water became available to the Port of Olympia for irrigation, several other uses were considered, including dust control using a water tanker truck, equipment wash rack and boat washing, filling a 0.33 acre stormwater pond during the summer months, and toilet/urinal flushing. To date, the only additional use that had been developed by the Port of Olympia was dust control. However, this use ceased in June 2011, when the adjacent area to the reclaimed water filling station was utilized for excavated soil storage.

For future uses, 3,600 gallons per day of reclaimed water would be needed to fill the pond, 450 gallons per day for equipment wash rack and boat washing, and 640 gallons per day for toilet/urinal flushing, for a total of an additional 4,690 gallons per day.

Soil studies show that the drainage characteristics and groundwater levels of the Port site are similar to that of the Budd Inlet Treatment Plant site.

A reclaimed water distribution system has been installed at the 14-acre East Bay Redevelopment site being developed by the Port of Olympia. Use sites will include both private and public areas. This system will serve the irrigation and other reclaimed water uses at the various parcels in the redevelopment area, which also includes the Hands On Children's Museum and LOTT's East Bay Public Plaza sites.

The Port of Olympia had proposed to utilize reclaimed water for water/water heat pump system for their new administration building project. The reclaimed water would travel from a cooling tower and circulate through a closed-loop system to a heat exchanger and return. The building project has been postponed indefinitely.

3. City of Tumwater – Tumwater Falls Park

The City of Tumwater anticipates utilizing reclaimed water to irrigate Tumwater Falls Park, located along the lower Deschutes River, once installation of the required distribution infrastructure is completed. The 16-acre site will use up to an estimated 149,475 gallons per day.

4. **City of Tumwater – Pioneer Park**

Pioneer Park consists of 50 acres of baseball, softball, and soccer fields, and a trail system landscaped with natural vegetation with access to Deschutes River. The City of Tumwater currently uses up to 89,012 gallons per day of potable water for irrigation, and wishes to replace this use with reclaimed water once the required distribution infrastructure is in place.

5. **City of Tumwater – Tumwater Historical Park**

The City of Tumwater also wishes to use reclaimed water to irrigate Tumwater Historical Park, located adjacent Tumwater Falls Park. The 15-acre park could require up to 46,210 gallons per day for irrigation.

6. **Capitol Campus, West and East**

The Capitol Campus represents 30 acres surrounding the State of Washington's legislative buildings. It is located at 14th Street and Capitol Way overlooking Capitol Lake and Heritage Park. Since delivering reclaimed water to the Capitol Campus will involve building additional storage, the campus will be included in the next phase of Olympia's reclaimed water program.

Reclaimed water can be used for irrigation of the Capitol Campus grounds. Landscaping at this site consists of turf grass, ornamental trees and shrubs, and perennial and annual plants. Turf and landscape watering is rotated among sections of the campus throughout the week. Reclaimed water may also be used in the buildings for toilet flushing. Separate reclaimed water pipes would need to be installed in the buildings as they are renovated. The Department of Transportation building's dual-plumbing is complete. Work on a second building is under way.

The area consists of soils made up of Indianola and Skipopa. Based on the soil characteristics, the vertical hydraulic conductivity is estimated to be 6 to 20 inches per hour. No tests were performed to determine the elevation of the groundwater table.

It is estimated that 144,290 gallons per day of reclaimed water could be used for irrigation of the Capitol Campus West and 104,643 gallons per day at Capital Campus East, for a total of 248,933 gallons per day.

7. **City of Olympia**

The City of Olympia's Parks Department is still considering using approximately 6,000 gallons of reclaimed water each week during the summer months from the "filling station" located at the Budd Inlet Treatment Plant. This water will be used to irrigate about 400 street trees located throughout the City, including downtown Olympia, and the Westside.

Also, a Reclaimed Water System Expansion Plan was developed by Skillings Connolly, Inc. for the City of Olympia in November 2011, to use as guidance for future expansion of their reclaimed water distribution system, allowing the City to distribute reclaimed water to new potential customers.