

# Progress Report 2014

Seattle Public Utilities (SPU) protects Seattle's waterways by keeping raw sewage and polluted stormwater out of our creeks and lakes, the Duwamish River, and Puget Sound. It is SPU's mission to protect public health and the environment.

## 2014 Accomplishments and Highlights

- Completed the Draft Plan to Protect Seattle's Waterways (the Plan), and submitted the draft for regulatory and public review. We also held a public meeting on the Plan and a public hearing for the draft environmental impact statement (EIS).
- Conducted outreach and issued Final EIS to document how the Plan could affect people and the environment.
- Continued implementation of the City's Green Stormwater Infrastructure (GSI) program, which uses natural drainage solutions like rain gardens and cisterns to reduce polluted runoff.
- Participated in joint planning activities with King County to coordinate projects being planned by both agencies.
- Made sewer system improvements in several neighborhoods to reduce combined sewer overflows, and began final construction activities of new underground storage tanks in the Genesee and Sand Point neighborhoods.

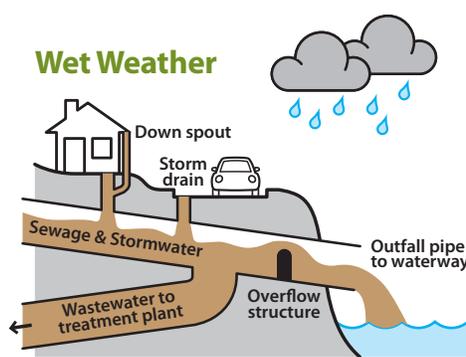
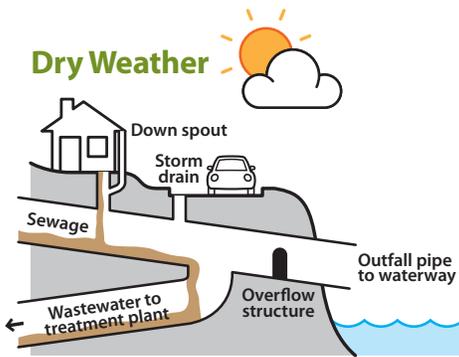
## Combined Sewer Overflow Quick Facts

- Seattle Public Utilities and King County both manage combined sewer outfalls in Seattle.
- Seattle Public Utilities manages 86 outfalls; King County manages 38.
- SPU sealed and removed from service one outfall, reducing the number of outfalls to 86.
- 406 overflows sent more than 116 million gallons into local waterways in 2014 at Seattle Public Utilities managed outfalls.



# Overview

## Why does sewage overflow into local waterways?



About two-thirds of Seattle’s sewage flows together with stormwater in one pipeline – a combined system. During dry weather there are no sewage overflows, but when it rains the stormwater takes up too much space, causing a combined sewer overflow into the nearest waterway. The system was designed to overflow to avoid sewer backups into people’s homes and businesses. But those overflows must now be significantly reduced to meet water quality standards. SPU manages 86 sewage outfalls, and 34 of those do not currently meet requirements.

## How does SPU address Combined Sewer Overflows?

SPU uses a three-pronged approach:



### 1. Fix it First - Sewer System Improvements

These are relatively simple improvements to the existing system that provide more capacity for storage or make the system operate more effectively. These solutions can be much more cost-effective than building new facilities. Some examples include raising overflow weirs and replacing mechanical parts that regulate gates.



### 2. Keep Stormwater Out - Natural Drainage Systems

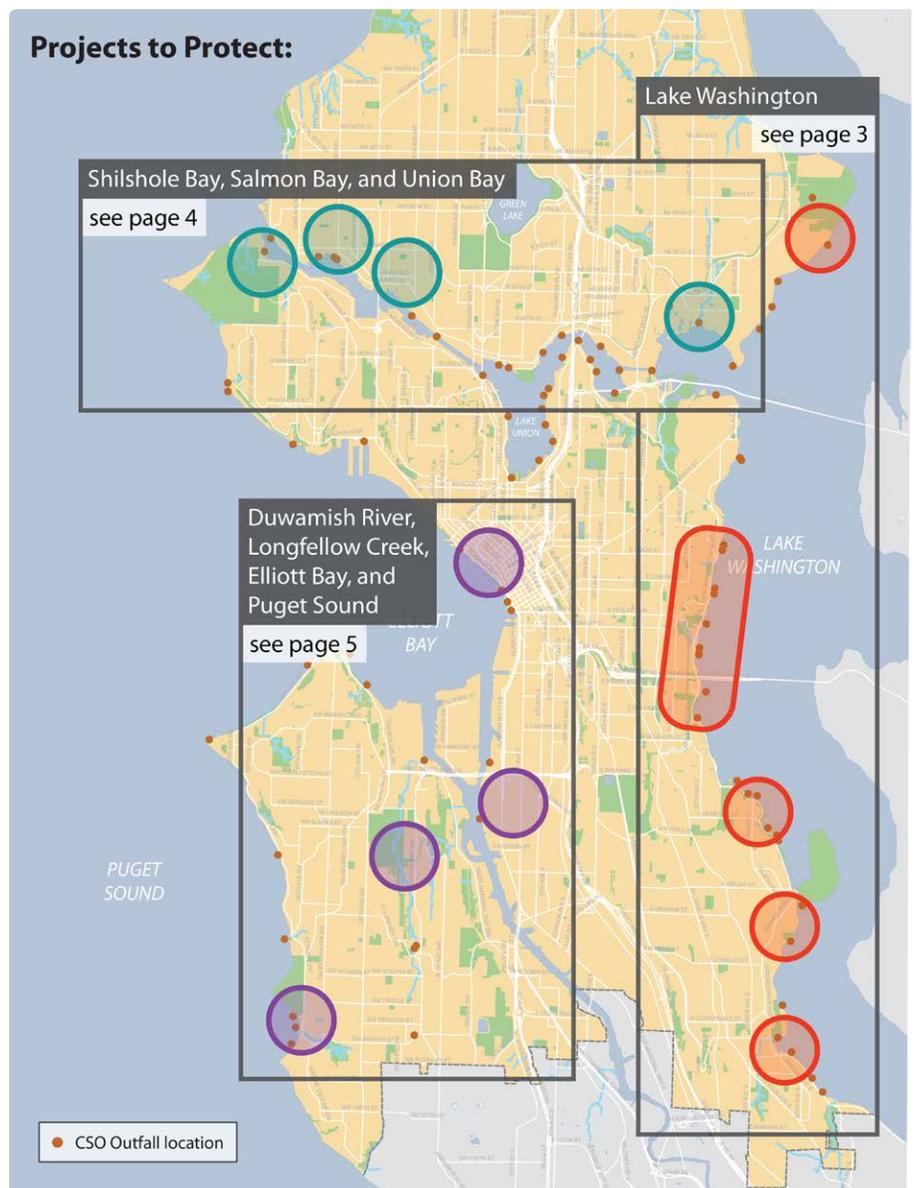
Natural drainage, also called green stormwater infrastructure (GSI), consists of a variety of practices that keep stormwater out of the sewer system by using natural processes to slow, filter, and absorb stormwater.



### 3. Store What’s Left - Underground Storage

If the first two types of solutions don’t solve the problem, then additional underground storage facilities would need to be built. Underground storage can include tanks, pipes, or tunnels.

## Current Improvement Projects

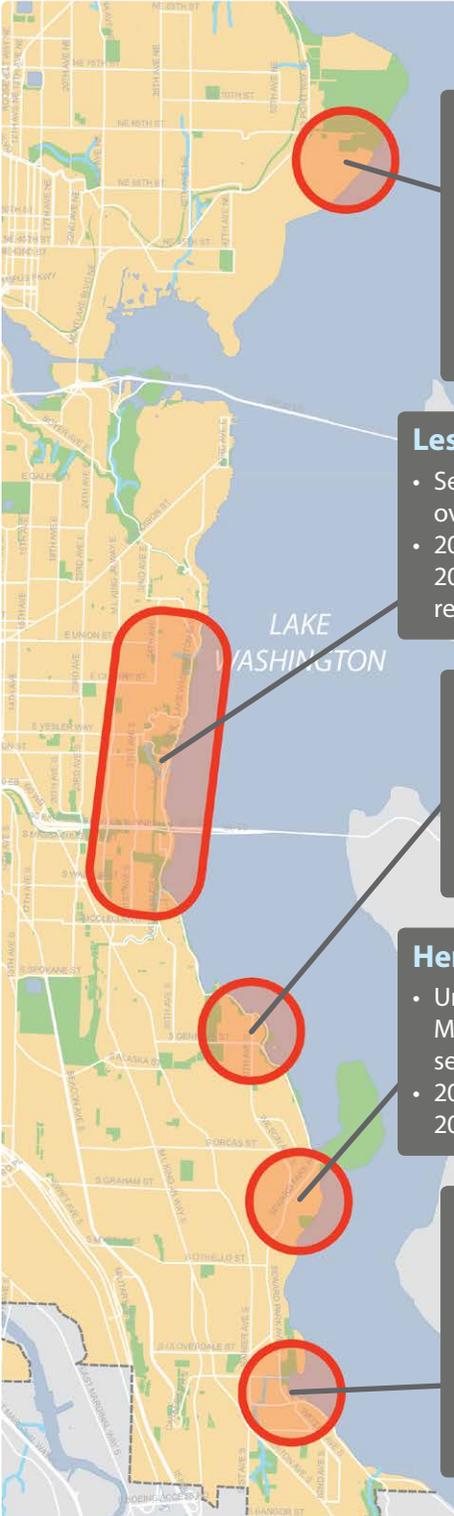


Location of Combined Sewer Overflow Outfalls Managed by Seattle Public Utilities. SPU manages 86 sewage outfalls, 36 of which are uncontrolled and overflow more than once per year on average.



# Projects to Protect Lake Washington

Several projects to protect Lake Washington will be completed before similar projects happen along other waterways. Lake Washington was prioritized first because it includes many swimming beaches and the potential for people to be exposed to sewage during overflows is greater. Additional projects to protect Lake Washington will be built after 2015.



## Windermere

*Investment: \$50 million*

- Underground tank at perimeter of Magnuson Park and 3,000 foot pipeline to Sand Point Way. Tank will manage up to 2.1 million gallons of sewage and stormwater per storm.
- Improvements to the existing sewer system included new monitoring sensors and control devices that regulate and store overflows.
- 2014: Completed major construction activities on the tank and pipeline.  
2015: Complete facility start up and begin post-construction monitoring.



## Leschi

*Investment: \$7 million*

- Sewer system improvements, including pipe replacements and rehabilitations, overflow weir raising, and abandoning outfalls.
- 2014: Identified and compared alternatives and developed preliminary designs.  
2015: Finalize the design and begin construction of pipe replacement and rehabilitation.



## Genesee

*Investment: \$40 million*

- Two underground storage tanks along Lake Washington Boulevard at 49th Avenue South and 53rd Avenue South. Tanks will manage up to 600,000 gallons of sewage and stormwater per storm.
- 2014: Completed major construction activities.  
2015: Complete facility start up and begin post-construction monitoring.



## Henderson North

*Investment: \$66 million*

- Underground storage tank in Seward Park and conveyance improvements near Martha Washington Park. Facilities will manage more than 2.6 million gallons of sewage and stormwater per storm.
- 2014: Completed design of facilities and obtained permits.  
2015: Begin construction, including excavation and shoring.



## Henderson South

*Investment: \$3.5 million*

- System capacity improvement to the sewage pump station near Pritchard Island Beach (PS9) and a new diversion sewer pipeline in 52nd Avenue South, connecting to King County's Henderson Pump Station.
- Pipeline construction coordinated with Mapes Creek Restoration Project in the same area of Rainier Beach.
- 2014: Finished construction of pipeline in 52nd Avenue South.  
2015: Construction at PS9.



# Projects to Protect Shilshole Bay, Salmon Bay, Ship Canal, and Union Bay

Projects along the Ship Canal between Puget Sound and Lake Washington will mostly happen after 2015. But a few projects are already underway. Natural drainage projects are being constructed in Ballard to add system capacity by diverting stormwater to rain gardens. Sewer System Improvements were studied and found to be cost-effective in Union Bay and Magnolia.

## Ballard (Salmon Bay)

**Investment: \$6 million**

- Natural drainage system in the Loyal Heights area of Ballard. Identified locations through soil testing, field investigations, and community input.
- Evaluated alternatives for a future storage facility and gathered input from community groups.
- 2014: Refined design of natural drainage projects based on community input.
- 2015: Begin construction of natural drainage system.



## Ballard, Fremont, and Wallingford

**Investment: \$420 million**

- 2014: Conducted analysis to better define project
- 2015: Acquire property, complete conceptual planning.
- 2015: Begin construction of natural drainage system.



## North Union Bay

**Investment: \$3 million**

- Existing sewer system improvements included a gate to optimize capacity.
- 2014: Conducted post-construction monitoring.
- 2015: Construct retrofit.



## Magnolia (Shilshole Bay)

**Investment: \$4 million**

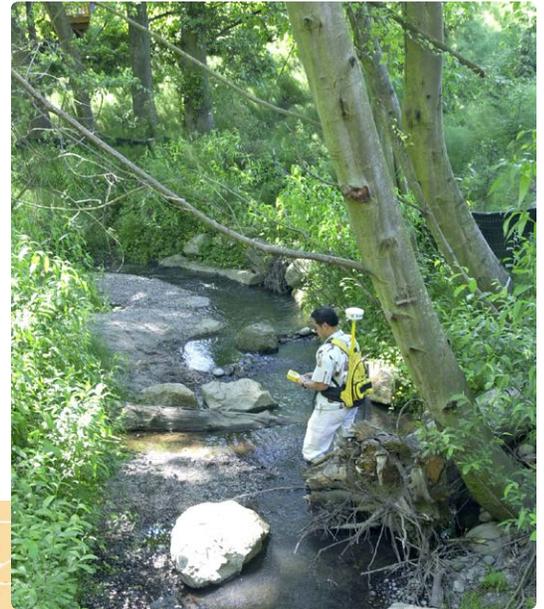
- Potential flow transfers to King County's system to reduce overflows to Shilshole Bay.
- 2014: Alternative modeling, development, and refinement.
- 2015: Continue alternative development and refinement.



The RainWise Program is an important component of SPU's green stormwater infrastructure program, providing rebates to property owners who disconnect roof drains and channel runoff to a rain garden or cistern on their property. RainWise is available to over 80,000 properties in CSO basins throughout Seattle.

# Projects to Protect the Duwamish River, Longfellow Creek, Elliott Bay, and Puget Sound

In southwest Seattle, sewer system improvements and natural drainage systems are underway to protect local waterways.



## West Seattle (Puget Sound)

*Investment: \$1 million*

- Extended an existing storm drain along Fauntleroy Way SW to collect additional road runoff and provide more capacity for sewage.
- This project has been completed.



## Central Waterfront (Elliott Bay)

*Investment: \$13 million*

- Improvements to system as part of Seawall Replacement Project, from Pier 57 to Colman Ferry Dock; construction expected in 2022.



## Duwamish River

*Investment: \$70,000*

- Existing sewer system improvements in two separate structures, all of which connect into the Diagonal Avenue storm line prior to overflowing in the Duwamish River.
- 2014: Completed construction of the sewer system improvements.
- 2015: Post-construction monitoring.



## Delridge (Longfellow Creek)

*Investment: \$12 million*

- Improvements to two existing storage tanks. Coordinating work with nearby Seattle Department of Transportation (SDOT) and Puget Sound Energy projects.
- Natural drainage system in Highland Park area along routes of current and future neighborhood greenways. Identified locations through soil testing, field investigations, and community input.
- 2014: Completed design and bidding of sewer system improvements. Completed design for natural drainage system project and refined design based on community input.
- 2015: Begin construction of sewer system improvements and natural drainage system project.





SPU developed the Plan to Protect Seattle’s Waterways to describe the projects that will be built to reduce combined sewer overflows between 2016 and 2030. Two different approaches were considered. One approach would have reduced combined sewer overflows only. The recommended approach will integrate combined sewer overflow projects with projects that address stormwater discharges that contain polluted runoff but not sewage; it’s known as an integrated plan. Some of the stormwater projects will happen before some smaller-volume combined sewer overflow projects if they provide a greater benefit to local waterways.



## What is the City’s Recommended Alternative?

The Recommended Alternative consists of the Integrated Plan stormwater projects combined with the Shared West Ship Canal Tunnel Option from the Long Term Control Plan. The CSO control projects will reduce overflow frequencies to meet regulatory requirements. The stormwater projects will reduce polluted runoff from portions of the City served by separate storm sewer systems that drain to sensitive water bodies. As a result, the Recommended Alternative will provide greater water quality benefits than those provided by the CSO control projects alone.

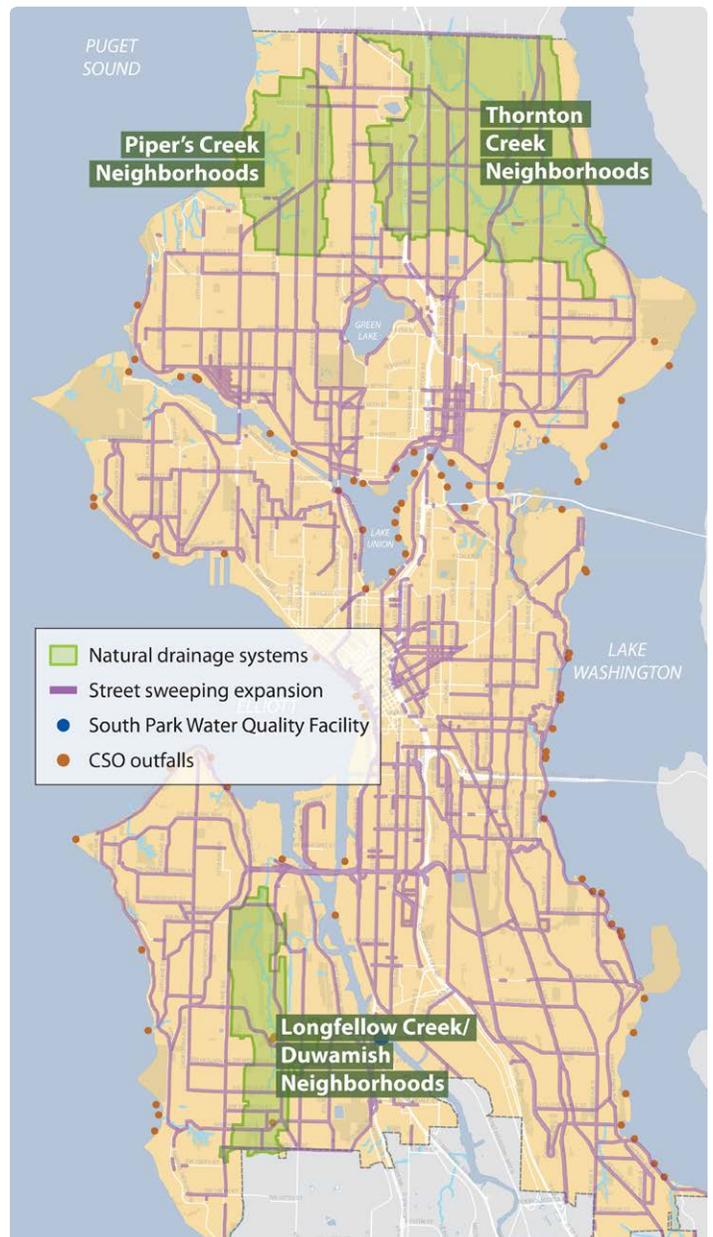
Under the Recommended Alternative, the City would implement and assess sewer system improvements in most CSO areas prior to the construction of the more expensive and disruptive storage projects. If the sewer system improvements work as expected, the storage projects will either not be needed or will be smaller than currently sized. The tunnel would provide the storage needed to address overflows from four of the largest CSO areas, two from the City and two from King County. It would eliminate the need for separate King County CSO projects near 3rd Avenue West and 11th Avenue Northwest.

# Sewage and Stormwater Pollution Reduction Alternative (also called the Integrated Plan Alternative)

This alternative would address both combined sewer overflows and stormwater pollution. In addition to selecting one of the sewage-overflow reduction options, SPU would also implement projects to reduce polluted stormwater discharges outside of the combined sewer system.

Projects were selected based on how well they provide additional water-quality benefits compared to projects that address sewage-overflow reduction alone. SPU is recommending this alternative because it provides significantly higher water-quality benefits.

Projects in the Integrated Plan would protect the Duwamish Waterway, Longfellow Creek, Piper's Creek, Thornton Creek, Lake Union, and Union Bay.



A draft Plan, including a draft Environmental Impact Statement (EIS), was completed in May 2014. In 2015 the Plan was submitted for approval to the City Council, as well as state and federal regulators. The Plan will be implemented beginning in 2015.

Public and stakeholder input played an important role in the development of the plan and the environmental-review process. SPU will continue to engage the public, agency staff, tribal governments, and other interested stakeholders as the plan is finalized and as projects within the plan begin.

**SPU's Creeks, Drainage and Wastewater Advisory Committee** has provided valuable input to guide the development of projects and programs to protect Seattle's waterways. The Committee helped to shape public engagement strategies and outreach materials and gave staff feedback and analysis on projects, programs and plans.

During 2014, SPU project teams presented to the Committee on various topics including:

- the Integrated Plan Alternative
- the project to build an underground storage tank in Seward Park
- the proposed expansion of street sweeping for water quality
- SPU's Joint Operations and System Optimization Plan with King County
- SPU's Natural Drainage System program and projects

Learn more about the Committee's work and membership opportunities; contact Sheryl Shapiro, at [sheryl.shapiro@seattle.gov](mailto:sheryl.shapiro@seattle.gov) 206-615-1443 or visit [www.seattle.gov/cac](http://www.seattle.gov/cac)

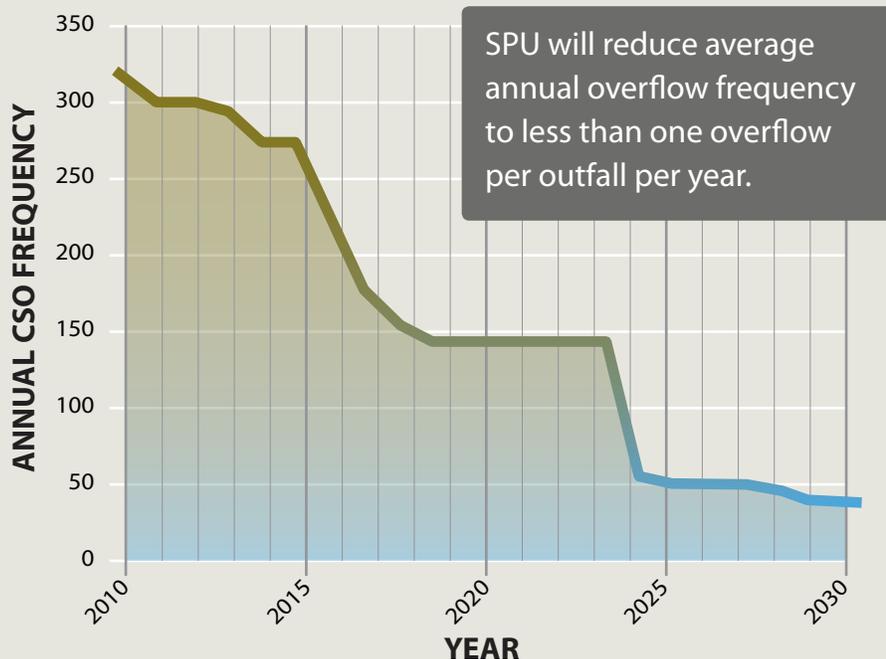
## Real-Time Combined Sewer Overflow Reports

King County and the City of Seattle provide real-time reports when combined sewer overflows happen. To view the map, go to [www.seattle.gov/CSO](http://www.seattle.gov/CSO). Click on "Real Time Reports of Raw Sewage Overflows".

Combined sewer overflows happen along shorelines in Seattle where pipes carry both sewage and stormwater during heavy rains. During the overflow, and for 48 hours afterward, people are at risk from exposure to bacteria in the water near the outfalls.

The web information is updated at least hourly, and in many cases every 10 minutes, to provide the fastest notification possible. Warning signs are also posted at each outfall.

## Predicted Volume Reductions



Find out more:

[www.seattle.gov/cso](http://www.seattle.gov/cso)

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