

**SPU -
DRAINAGE AND
WASTEWATER**

Overview

Seattle Public Utilities (SPU) is responsible for maintaining the network of sewer and drainage systems throughout the City of Seattle. The system includes approximately:

- 448 miles of sanitary sewers
- 460 miles of storm drains
- 968 miles of combined sewers
- 68 pump stations
- 90 permitted combined sewer overflow outfalls
- 342 storm drain outfalls
- 130 stormwater quality treatment facilities
- 145 flow control facilities
- 38 combined sewer overflow control detention tanks/pipes

The Drainage and Wastewater CIP is the vehicle for maintaining, upgrading, and expanding this infrastructure, as well as constructing projects that protect, conserve, and enhance the city and region's environmental resources. Planned spending in the Drainage and Wastewater (DWF) CIP is approximately \$576 million over the next six years.

Historically, the Drainage and Wastewater CIP has been funded primarily by revenue bonds serviced by ratepayers. However, DWF financial policies adopted in 2003 gradually increased cash contributions from the Utility to fund the CIP. By 2007, 25% of total CIP costs were funded by a cash contribution, with the remaining capital needs being debt financed. Overhead costs for the CIP are budgeted in the SPU operating fund and are reimbursed as CIP expenditures are incurred. In late 2010 DWF rates were passed by Council for the two-year period of 2011 and 2012. The next rate proposal will be presented in mid-2012 for 2013 and beyond.

2012-2017 CIP

The proposed Drainage and Wastewater CIP addresses the challenge of managing large priority projects while still accomplishing Mayoral and Council priorities and complying with U.S. Environmental Protection Agency and Washington State Department of Ecology National Pollutant Discharge Elimination System (NPDES) permits - all within the financial limitations of the fund.

The City of Seattle's most recent NPDES permit for stormwater, granted by the State government in 2007, introduced more prescriptive requirements to help to protect local waterways and Puget Sound from damaging pollutants and excessive runoff. This increasing regulatory emphasis on protecting and improving water quality has resulted in the need for the City of Seattle to make substantial investments in detention, treatment and green stormwater infrastructure over the next 15 years. Detention is the storage of stormwater during a rainfall event, and can be accomplished through detention ponds or underground tanks or through infiltration into the ground. Detention can be added to the drainage system to offset the impacts of larger storms that can overwhelm the conveyance capacity of the system and result in backups of sewage, localized flooding and releases of untreated sewage. Treatment is the removal of pollutants and can be accomplished through infiltration or the use of technology such as specialized media filters. Green stormwater infrastructure is the use of environmentally friendly and less capital intensive solutions to help reduce overflows by allowing stormwater to infiltrate slowly into the ground and cutting the volume of stormwater entering the system. Green stormwater infrastructure includes specific treatments that rely on specialized soils and plants that provide flow control and/or water quality benefits. The use of green stormwater infrastructure is required through Seattle's NPDES permit and Stormwater Code.

SPU – Drainage and Wastewater

CIP funding is also needed to maintain and improve the existing drainage systems so that residents experience less flooding and fewer sewage backups. Sewer backups are prohibited and considered by regulators to be a violation of the City's federal permits. Prudent investment in capital projects and maintenance moves SPU closer to meeting this standard, and this performance level benefits ratepayers by avoiding costly fines and damages.

The Combined Sewer Overflow (CSO) Reduction Program constitutes one of the major investments and challenges for the Drainage and Wastewater Fund in upcoming years. During heavy rains, the combination of stormwater (about 90 percent of the volume) and sewage may exceed the capacity of the drainage system and overflow into local waterways, causing a combined sewer overflow. Annual overflows have been reduced from roughly 30 billion gallons per year in 1970 to less than 100 million gallons per year typically today. However SPU is still not meeting regulatory mandates limiting overflows to one overflow per outfall location per year. Implementation of the CSO Reduction Program is a state and federal regulatory requirement, and SPU expects to spend approximately \$160-\$170 million over the next five years (2011-2015) on CSO reduction projects. The projects will include a combination of underground storage tanks, green stormwater infrastructure, system retrofits, and the development of a long-range plan for CSO projects to be constructed from 2016-2025. One of the biggest challenges for the program is siting wastewater facilities in a dense urban environment. SPU is addressing that challenge through an early and active community/stakeholder involvement process on each of its projects. Another challenge revolves around SPU's relationship with King County and maintaining an active partnership to operate the wastewater system and plan for potential joint CSO reduction projects.

CSOs spill a mixture of raw sewage and stormwater into local waterways at 92 outfalls throughout the City of Seattle. Although expensive, improving the system to prevent overflows is important. These spills violate water quality standards, raise public health concerns, and contaminate sediment and habitat for endangered species. State and federal law require SPU to achieve control of CSOs by 2025 through a Long Term Control Plan to be completed by 2015. SPU must also achieve significant permit milestones for the control of CSOs to Lake Washington by December 30, 2015. Most recently, the U.S. Department of Justice on behalf of the U.S. Environmental Protection Agency and Washington Department of Ecology issued a draft consent decree describing measures U.S. Justice will require of SPU to remedy violations of the Clean Water Act. The proposed consent decree includes, among other significant requirements, completion of a Long Term Control Plan by 2015 and control of all CSOs by 2025. Continuing investments in CSO control will enable SPU to meet current permit requirements including preparation of a Long Term Control Plan, accomplish required milestones to control CSOs into Lake Washington and achieve compliance with the 2025 goal.

The Drainage and Wastewater CIP must also ensure that basic service level programs such as flooding and system capacity are not stripped of funding as regulatory requirements continue to grow. The separated drainage and wastewater system is at capacity during storm events at various locations across the City. The impacts range from very serious (basement sewer back-ups) to nuisance (limited street or yard flooding). SPU is moving forward to address the highest priority locations with capital improvements using available funding and staff resources. These highest priority projects include the Madison Valley Long Term Solution, North 107th Street and Midvale Avenue North Drainage, South Park Stormwater Pump Station, and Broadview Sewer and Stormwater Improvements projects.

- Over the past several decades, there have been a number of instances of flooding and sewer back-ups in Madison Valley during times of heavy rainfall. Storm events that hit the city and the Madison Valley neighborhood in 2004 and 2006 were especially severe, causing some residents to have up to five feet of water in their basements and flooding in their backyards. The Madison

2012 - 2017 Proposed Capital Improvement Program

SPU – Drainage and Wastewater

Valley Long Term Solution project will provide stormwater flood control facilities to greatly reduce the potential for flooding in the Madison Valley area, especially in the vicinity of 30th Ave East and East John Street, and in the area of 29th Avenue East and East Madison Street. Work includes construction of a large stormwater pipe in the northwest section of the Madison Valley basin, a new stormwater storage facility in Washington Park, and an expanded stormwater retention area at 30th Avenue East and East John Street.

- The South Park Pump Station project will construct a pump station and water quality facility in South Park. The pump station will allow the existing storm drain trunk to meet the level of service adopted in the 2004 Comprehensive Drainage Plan. In turn, this allows for future projects to expand the collection system to address flooding complaints. The water quality facility will treat most stormwater flows from the basin, reducing pollutant loading to the Duwamish River. The project's engineering design is complicated by the tidal flows present in the Duwamish.
- The Broadview neighborhood has experienced capacity-related backups and overflows. The Broadview Sewer and Stormwater Improvements project will test non-traditional solutions to these longstanding issues, with a goal of reducing sewer backups and stormwater flooding in the Broadview basin.
- The North 107th Street and Midvale Avenue North Drainage project includes the design and construction of a three million gallon stormwater detention pond on a 1.8-acre commercial site near North 107th Street and Midvale Ave North. Nearby businesses and homes have started to experience flooding at the five-year storm level. The stormwater facility will provide a 25-year 24-hour storm level of service for nearby businesses and residences.

CIP Revenue Sources

SPU's Drainage and Wastewater CIP is funded largely by drainage and wastewater ratepayers. SPU issues bonds, serviced by ratepayers, that cover approximately 75% of the CIP, with the remainder funded by cash. SPU also actively seeks grants and low interest loans. Recently awarded grants include three \$1 million grants from the Washington State Department of Ecology's 2011 Stormwater Retrofit Low Impact Development (SWRLID) Competitive Grants Program. These grants will help fund construction of the Venema Creek Natural Drainage System, Capitol Hill Water Quality, and South Park Pump Station projects.

In late 2010 DWF rates were passed by Council for the two-year period of 2011 and 2012. The next rate proposal will be presented in mid-2012 for 2013 and beyond.

Thematic Priorities and Project Selection

Many Drainage and Wastewater CIP projects are outlined in the Wastewater System Plan, Combined Sewer Overflow Reduction Plan, and the Comprehensive Drainage Plan. SPU staff consider three main criteria when prioritizing work: public health and safety (for example, safety from flooding during storm events, such as the Madison Valley Long Term Solution and the North 107th Street and Midvale North Drainage projects); environmental protection and regulatory compliance (such as investments to comply with the NPDES CSO Permit); and, Mayor and Council priorities (such as the Venema Natural Drainage System and Capitol Hill Water Quality Facility where green stormwater infrastructure will be used to reduce stormwater impacts while contributing to meeting sustainability goals).

2012 - 2017 Proposed Capital Improvement Program

SPU – Drainage and Wastewater

SPU’s capital planners identify candidate CIP projects through an awareness of ongoing planning processes (e.g., comprehensive plans, program plans), external projects and opportunities, and emergencies or other unexpected events that indicate specific investments are possibly recommended. SPU’s Asset Management system then provides rigorous analysis of projects, by using a business case process that establishes whether a problem or opportunity is timely and important, and that the proposed solution is superior to alternatives based on a triple bottom line analysis (economic, environmental and social) of life cycle costs and benefits – or is a “must do” project (e.g., required by regulation).

After candidate projects have been identified, SPU prioritizes projects for inclusion in the CIP based on the following set of criteria:

- **Regulatory Mandates, Legal Agreements:** The degree to which the project is driven by Federal, State, and Local laws, permit and regulatory requirements, and consent decrees; as well as by legal agreements with public and private parties. Examples of highly ranked projects in this category include the Windermere, South Genesee and South Henderson CSO projects.
- **External Drivers:** SPU’s responsiveness to, or engagement with, the projects of other Departments or Jurisdictions, and the specific mandates of the City Council and Mayor. Examples of highly ranked projects in this category include utility relocation and betterments associated with the Alaskan Way Viaduct and Mercer Corridor projects.
- **Infrastructure:** How a project addresses infrastructure conditions or vulnerabilities. Examples of highly ranked projects in this category include the Point Sewer Pipe Rehabilitation and Emergency Rehabilitation programs.
- **Level of Service:** The importance of this project in providing or improving services to customers. Examples of highly ranked projects in this category include the South Park Pump Station, Localized Flood Control program, Sanitary Sewer Overflow Capacity program, Point Sewer Pipe Rehabilitation, and Emergency Rehabilitation programs.
- **Other Factors:** Other important factors, such as whether a project has social or environmental benefits not otherwise captured; is already in progress or near completion; represents a limited time opportunity; has community visibility, or has outside funding. Examples of highly ranked projects in this category include the N. 107th & Midvale Drainage project (part of the Densmore Basin Drainage Improvements program) and the Long Term Control Plan.

Every project is rated against each criterion; criteria ratings are then considered in determining an overall project priority ranking, using expert judgment. Priority rankings for the CIP are determined by the leads for each Line of Business, with review by key internal stakeholders. The ranking scheme and criteria are the same for all Lines of Business, and are approved by the SPU Director and Asset Management Committee.

Project priority rankings are used to clarify and document which projects are most important and why, to help determine which projects will be included, excluded or deferred from the CIP, and which projects should receive priority attention if a staff or financial resource constraint should arise. This process can also result in project scope changes, as more cost-effective approaches to meeting the business need are identified. In recent years, given financial constraints, SPU has made difficult choices to eliminate, defer and/or reduce projects in order to support the highest priority projects. Projects that were eliminated include Small Sewer Improvements, Bitter Lake/North 137th Stormwater, Taylor Creek Fish Habitat

2012 - 2017 Proposed Capital Improvement Program

SPU – Drainage and Wastewater

Improvements, and Fish Passage Program. Projects that were deferred include Sewer Full Line Replacements and Taylor Creek Culvert Replacement. A number of projects were also reduced, including Pump Station and Force Main Improvements, No-Dig and Pipe Maintenance Rehabilitation, Localized Flood Control, Operations Control Center, Operational Facility-Construction and Operational Facility-Other. Funding for some of these projects (Localized Flood Control in particular) has since been re-instated, as resources have become available.

CIP Expenditures by Major Categories

CIP Spending by Major Category
(Amounts are in thousands of dollars)

Drainage and Wastewater Fund	2012	2013	2014	2015	2016	2017	Total
PROTECTION OF BENEFICIAL USES	\$4,800	\$6,135	\$2,798	\$2,702	\$4,748	\$2,617	\$23,799
SEDIMENTS	\$5,595	\$2,102	\$1,457	\$1,207	\$1,205	\$1,205	\$12,772
COMBINED SEWER OVERFLOWS	\$26,888	\$53,217	\$29,496	\$35,961	\$37,248	\$21,397	\$204,207
REHABILITATION	\$12,623	\$14,388	\$13,965	\$14,681	\$15,045	\$15,341	\$86,042
FLOODNG, SEWER BACKUP and LANDSLIDES	\$24,186	\$26,294	\$19,210	\$18,283	\$18,678	\$24,622	\$131,275
SHARED COST PROJECTS	\$14,931	\$13,289	\$12,571	\$11,141	\$15,979	\$14,999	\$82,910
TECHNOLOGY	\$4,815	\$7,331	\$7,551	\$5,302	\$4,737	\$4,788	\$34,524
Total	\$93,838	\$122,756	\$87,048	\$89,277	\$97,640	\$84,969	\$575,528

Protection of Beneficial Uses: This program makes improvements to the City’s drainage system to reduce the harmful effects of stormwater runoff on creeks and receiving water bodies by improving water quality and protecting or enhancing creek habitat. The program includes projects to meet regulatory requirements. Funding in 2012 and 2013 will be focused on two cost effective stormwater projects: the Venema Creek Natural Drainage System project and the Capitol Hill Water Quality project. Both of these projects were cancelled in 2009 due to financial constraints, but have since been re-instated as resources became available. Capital funding is also included to support the Street Sweeping for Water Quality project, which was initiated in 2011 and will reduce the amount of pollution that flows from roadways through SPU infrastructure into local creeks, Lake Washington, and Puget Sound.

Decreases in the **Protection of Beneficial Uses BCL** in 2012, compared to amounts endorsed for 2012 in the 2011-2016 CIP, are primarily the result of the Venema Creek Natural Drainage System project. Schedule delays driven by community and design concerns, as well as additional work being done to address these issues, has shifted costs from 2011 and 2012 to 2013. The Capitol Hill Water Quality project also contributes to slight increases in both years.

Sediments: The City of Seattle is named as a potentially responsible party for the Duwamish River Superfund Site because of alleged contamination of sediments in the river from CSO and storm drain discharges. The City continues to work with the Washington State Department of Ecology, King County, and other potentially responsible parties on an assessment of contaminants and sources. The Sediments

