



2021-2027 Capital Investment Program Plan

Sewer

The Sewer Utility owns and operates 516 miles of sewer trunk and collector lines, 127 miles of side sewer laterals within public rights-of-way, 14,000 maintenance holes, and 46 pump and flush stations throughout its service area. All sewage is conveyed to King County trunklines or pump stations, which in turn convey it to the South Treatment Plant in Renton. The Sewer Utility serves all of Bellevue as well as adjacent communities of Beaux Arts, Clyde Hill, Hunts Point, Medina, Yarrow Point, and an area in unincorporated King County.

Capital improvements for the Sewer Utility are generally based on the 2014 Wastewater System Plan and are informed by ongoing asset management analyses and other emerging system operational needs. The Plan provides a guide for orderly system expansion to undeveloped areas and to those areas served by septic systems, and recommends improvements which increase or maintain system reliability, efficiency, and level of service. The Sewer Utility's capital improvements are consistent with the Plan's recommendations.

As part of the Wastewater System Plan's development, the sewer system was analyzed to identify potential capacity problems. Other capital investment projects reflect the increasing need for infrastructure renewal and replacement in order to maintain a high level of service and reliability as the sewer system ages, and capacity projects are necessary to meet anticipated population growth.

The 2021-2027 CIP Plan recognizes that significant investments are needed to maintain aging systems and replace components that are reaching the end of their useful life.

2021-2027 Adopted CIP: Healthy and Sustainable Environment - Sewer

Funded CIP Projects

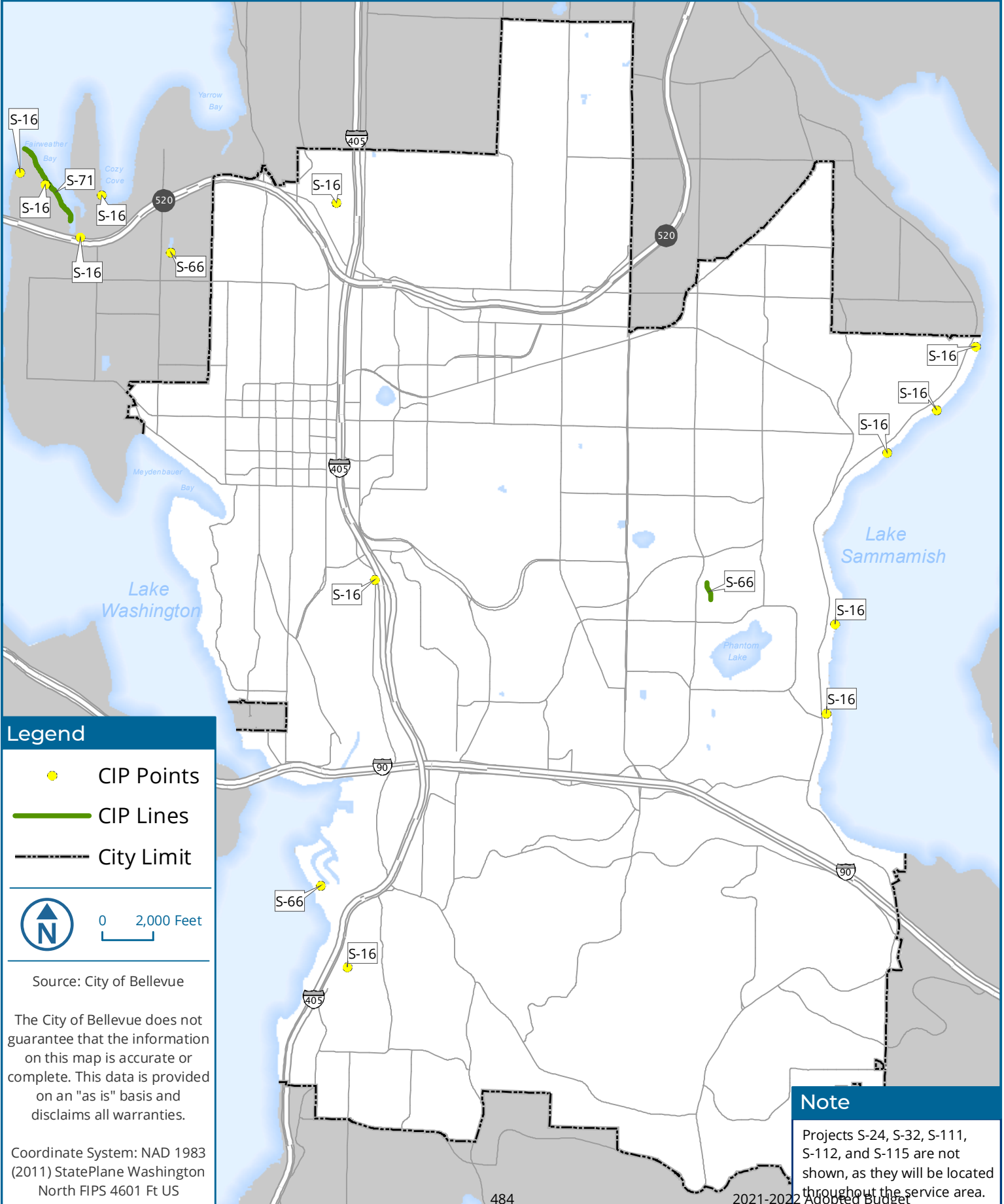
CIP Plan Number	Project Title	\$ in 000s	
		2021-2027 Project Cost	Total Estimated Cost
S-16	Sewage Pump Station Improvements	\$ 15,300	\$ 32,126
S-24	Sewer System Pipeline Major Repairs	25,710	51,256
S-32	Minor (Small) Sewer Capital Improvement Projects	60	3,899
S-58	Lake Washington Sewer Lake Line Assessment Program	250	2,325
S-59	Add on-site Power at Sewer Pump Station (Carry Forward)	-	303
S-60	Wilburton Sewer Capacity Upgrade	20	10,721
S-61	Midlakes Pump Station Capacity Improvements	50	8,483
S-66	Sewer System Pipeline Replacement	5,720	18,071
S-67	I&I Investigations and Flow Monitoring	-	1,272
S-68	Sewer Force Main Condition Assessment (Carry Forward)	-	779
S-69	Meydenbauer Bay Park Sewer Line Replacement (Carry Forward)	-	4,780
S-71	Lakeline Sewer Replacement	-	419
S-108	Advanced Metering Infrastructure (AMI) Implementation (Sewer)	-	6,927
S-111	Operations and Maintenance Land Acquisition - Sewer	5,333	8,000
S-112	Sewer Planning Program	730	730
S-115	SCADA Upgrades - Sewer	4,860	4,860
		\$ 58,033	\$ 154,950

2021-2027 Adopted CIP: Healthy and Sustainable Environment - Sewer

Combined, Completed Projects

CIP Plan Number	Project Title	\$ in 000s Total Estimated Cost
NONE	Total Combined, Completed Projects	-

2021-2027 Sewer CIP Projects



Legend

- CIP Points
- CIP Lines
- City Limit



0 2,000 Feet

Source: City of Bellevue

The City of Bellevue does not guarantee that the information on this map is accurate or complete. This data is provided on an "as is" basis and disclaims all warranties.

Coordinate System: NAD 1983 (2011) StatePlane Washington North FIPS 4601 Ft US

Note

Projects S-24, S-32, S-111, S-112, and S-115 are not shown, as they will be located throughout the service area.

S-16 Sewer Pump Station Improvements

Category: **High Quality Built & Natural Env** Status: **Ongoing**
 Department: **Utilities** Location: **Sewer Service Area**

Programmed Expenditures

Programmed Expenditures	Appropriated To Date	FY 2021 Budget	FY 2022 Budget	FY 2023 Budget	FY 2024 Budget	FY 2025 Budget	FY 2026 Budget	FY 2027 Budget
32,126,155	16,826,155	5,260,000	2,010,000	600,000	1,800,000	3,340,000	1,230,000	1,060,000

Description and Scope

This ongoing program funds rehabilitation of the 36 pump and 10 flush stations in Bellevue's wastewater system. Stations are prioritized based on the risk and consequence of failure, maintenance and operations experience, pump station age, and coordination with other projects. Stations scheduled for work in 2015-21 include: Lake Heights, Wilburton, Cedar Terrace, Lake Hills #17, Cozy Cove, Parkers, Evergreen East, Evergreen West, Fairweather, Hunt's Point, Lake Hills #6, and Lake Hills #7. Historically this program funded rehabilitation of one station per year. Two stations/year are planned beyond 2017 since the electrical and mechanical equipment in them will have reached their 25-30 year useful life. Analysis of 25 stations is currently underway to improve the forecast needs for schedule and cost, and could result in reprioritization of scheduled stations.

Rationale

Sewer infrastructure rehabilitation and replacement is based on asset criticality and business risk, per industry best practices. In the short term, this program reduces the likelihood of catastrophic system failures, damage claims, and sharp rate increases to react to failures rather than proactively managing the system. In the long term, timely replacement or repair of wastewater facilities keeps customer rates as low as practical by managing the system at the lowest life-cycle cost, while maintaining service levels and meeting regulatory requirements.

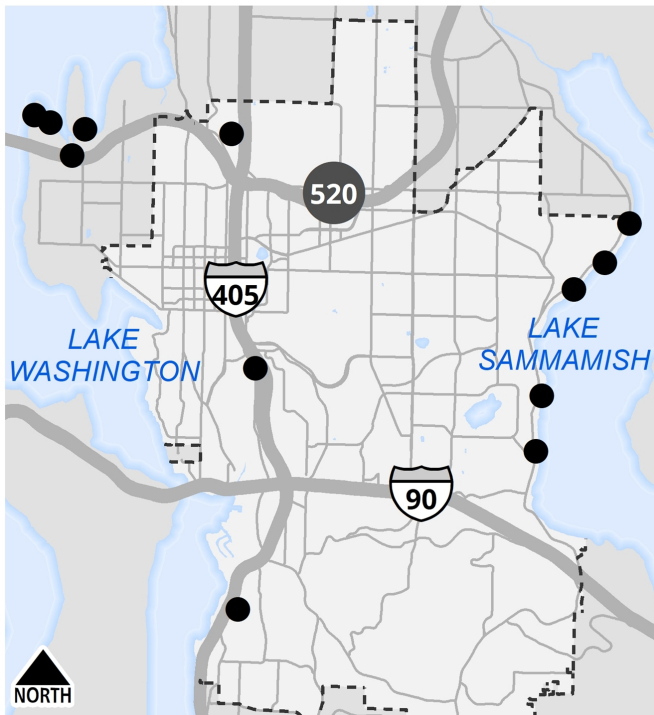
Environmental Impacts

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map

Schedule of Activities



Project Activities	From - To	Amount
Project Costs	Ongoing	32,126,155

Total Budgetary Cost Estimate: 32,126,155

Means of Financing

Funding Source	Amount
Utility Rates/Fees	32,126,155

Total Programmed Funding: 32,126,155
Future Funding Requirements: 0

Comments

S-24 Sewer System Pipeline Repairs and Replacement

Category: **High Quality Built & Natural Env** Status: **Ongoing**
 Department: **Utilities** Location: **Sewer Service Area**

Programmed Expenditures

Programmed Expenditures	Appropriated To Date	FY 2021 Budget	FY 2022 Budget	FY 2023 Budget	FY 2024 Budget	FY 2025 Budget	FY 2026 Budget	FY 2027 Budget
51,255,785	25,545,785	2,720,000	3,310,000	3,480,000	3,310,000	3,180,000	4,540,000	5,170,000

Description and Scope

This program funds major repairs to sewer pipes where there is a cost-effective solution to extend the pipe's service life. Most defects are identified from the Utility's infrastructure condition assessment (video) program. Pipes are prioritized for repair based on risk of failure (likelihood and consequence), failure history, and to coordinate with other construction such as planned street overlays, which reduces restoration costs.

Rationale

Sewer infrastructure rehabilitation and replacement is based on asset criticality and business risk, per industry best practices. In the short term, this program reduces the likelihood of catastrophic system failures, damage claims, and sharp rate increases to react to failures rather than proactively managing the system. In the long term, timely replacement or repair of wastewater facilities keeps customer rates as low as practical by managing the system at the lowest life-cycle cost, while maintaining service levels and meeting regulatory requirements.

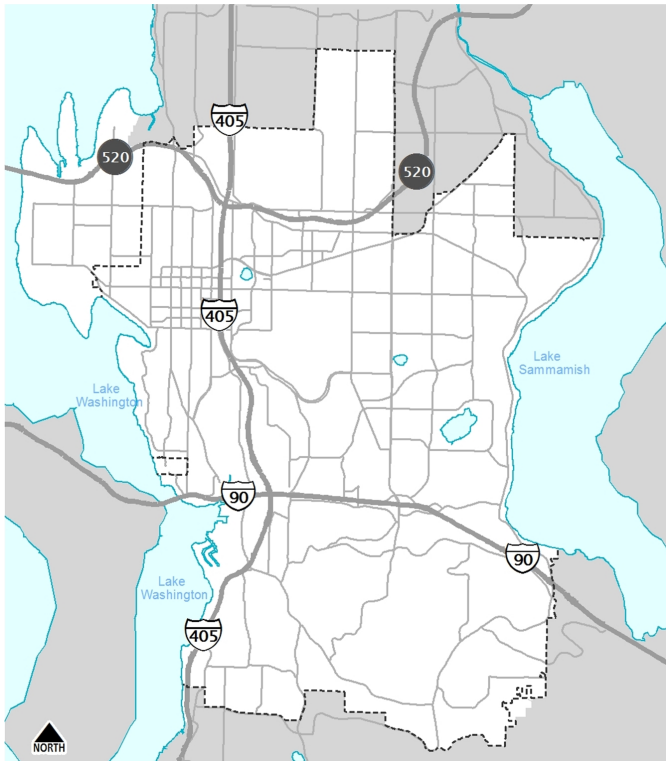
Environmental Impacts

This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map



Schedule of Activities

Project Activities	From - To	Amount
Project Costs	Ongoing	51,255,785
Total Budgetary Cost Estimate:		51,255,785
Means of Financing		
Funding Source	Amount	
Utility Rates/Fees	51,255,785	
Total Programmed Funding:		51,255,785
Future Funding Requirements:		0

Comments

S-32 Minor (Small) Sewer Capital Improvements and Projects

Category: **High Quality Built & Natural Env** Status: **Ongoing**
 Department: **Utilities** Location: **Sewer Service Area**

Programmed Expenditures

Programmed Expenditures	Appropriated To Date	FY 2021 Budget	FY 2022 Budget	FY 2023 Budget	FY 2024 Budget	FY 2025 Budget	FY 2026 Budget	FY 2027 Budget
3,898,530	3,838,530	40,000	-	-	-	-	-	20,000

Description and Scope

This ongoing program pays for minor improvements to Bellevue's sewer system to resolve deficiencies, improve efficiencies, or resolve maintenance problems, often in conjunction with other programs such as the Transportation overlay program. The program also investigates the feasibility of possible sewer extensions. Projects are prioritized based on criteria including public safety/property damage, maintenance frequency, operator safety, environmental risk, reliability and efficiency gains, coordination with other city projects or development activity, and level of service impact.

Rationale

Sewer infrastructure rehabilitation and replacement is based on asset criticality and business risk, per industry best practices. In the short term, this program reduces the likelihood of catastrophic system failures, damage claims, and sharp rate increases to react to failures rather than proactively managing the system. In the long term, timely replacement or repair of wastewater facilities keeps customer rates as low as practical by managing the system at the lowest life-cycle cost, while maintaining service levels and meeting regulatory requirements.

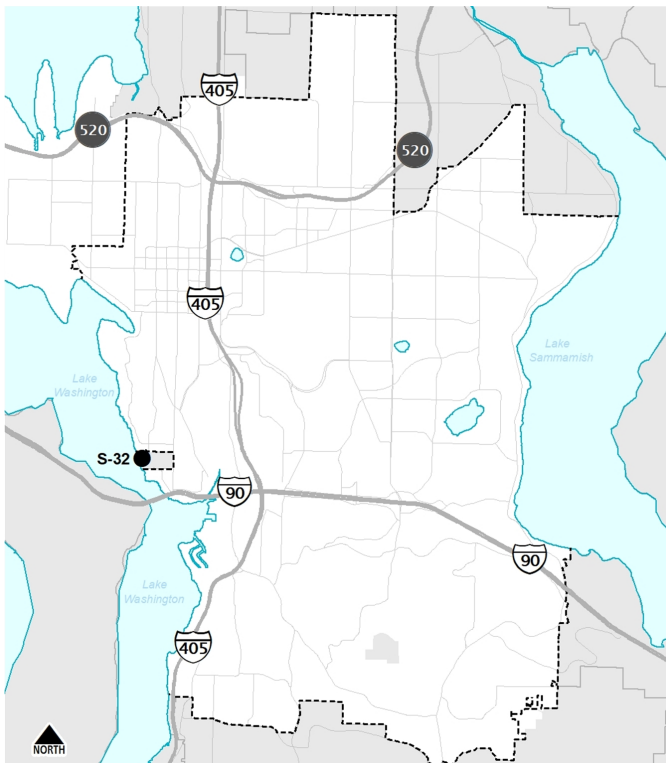
Environmental Impacts

This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map



Schedule of Activities

Project Activities	From - To	Amount
Project Costs	Ongoing	3,898,530

Total Budgetary Cost Estimate: 3,898,530

Means of Financing

Funding Source	Amount
Utility Rates/Fees	3,898,530

Total Programmed Funding: 3,898,530
Future Funding Requirements: 0

Comments

S-58 Lake Line Management Plan

Category: **High Quality Built & Natural Env** Status: **Ongoing**
 Department: **Utilities** Location: **Sewer Service Area**

Programmed Expenditures

Programmed Expenditures	Appropriated To Date	FY 2021 Budget	FY 2022 Budget	FY 2023 Budget	FY 2024 Budget	FY 2025 Budget	FY 2026 Budget	FY 2027 Budget
2,324,955	2,074,955	250,000	-	-	-	-	-	-

Description and Scope

This program is focused on assessing the 14.5 miles of sewer pipe along the Lake Washington shoreline; predicting its remaining life, and developing a strategy for its replacement. It includes condition assessment to collect pipe samples of asbestos cement and cast iron pipes in and analysis of viable alternatives for replacement of logical pipe reaches. Replacement of some of the sewer lake lines will likely be required just beyond this CIP Window. Replacement of the Meydenbauer Bay Park sewer lake line was formerly included in this project; it has been moved to its own project, S-69. Assessment of sewer lines along the Lake Sammamish shoreline is not included, since those pipes are newer and likely to last longer.

Rationale

Sewer infrastructure rehabilitation and replacement is based on asset criticality and business risk, per industry best practices. In the short term, this program reduces the likelihood of catastrophic system failures, damage claims, and sharp rate increases to react to failures rather than proactively managing the system. In the long term, timely replacement or repair of wastewater facilities keeps customer rates as low as practical by managing the system at the lowest life-cycle cost, while maintaining service levels and meeting regulatory requirements.

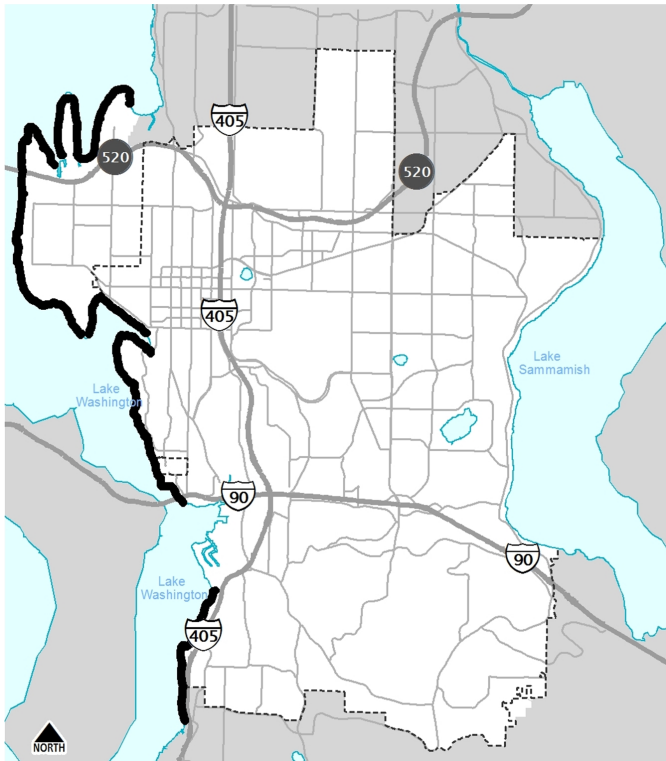
Environmental Impacts

This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map



Schedule of Activities

Project Activities	From - To	Amount
Project Costs	Ongoing	2,324,955

Total Budgetary Cost Estimate: 2,324,955

Means of Financing

Funding Source	Amount
Utility Rates/Fees	2,324,955

Total Programmed Funding: 2,324,955
Future Funding Requirements: 0

Comments

S-60 Wilburton Sewer Capacity

Category: **High Quality Built & Natural Env** Status: **Ongoing**
 Department: **Utilities** Location: **Water and Sewer Service Areas**

Programmed Expenditures

Programmed Expenditures	Appropriated To Date	FY 2021 Budget	FY 2022 Budget	FY 2023 Budget	FY 2024 Budget	FY 2025 Budget	FY 2026 Budget	FY 2027 Budget
10,720,599	10,700,599	-	20,000	-	-	-	-	-

Description and Scope

This project will replace approximately 2,000 feet of 12-inch diameter pipe with larger diameter pipe to provide sufficient capacity for anticipated upstream development.

Rationale

In the short term, utility capacity will be available without delaying development and redevelopment projects. In the long term, recovering the cost of projects from growth will reduce future rate increases to pay for utility system replacement.

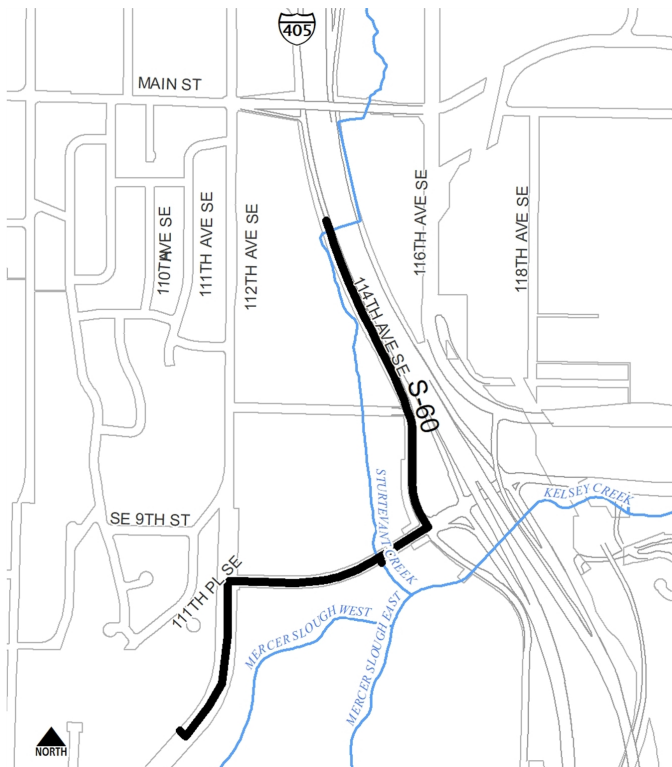
Environmental Impacts

This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map



Schedule of Activities

Project Activities	From - To	Amount
Project Costs	2017 - 2023	10,720,599

Total Budgetary Cost Estimate: 10,720,599

Means of Financing

Funding Source	Amount
Utility Rates/Fees	10,720,599

Total Programmed Funding: 10,720,599
Future Funding Requirements: 0

Comments

S-61 Midlakes Pump Station Capacity Improvements

Category: **High Quality Built & Natural Env** Status: **Ongoing**
 Department: **Utilities** Location: **Midlakes Pump Station Bel-Red Road**

Programmed Expenditures

Programmed Expenditures	Appropriated To Date	FY 2021 Budget	FY 2022 Budget	FY 2023 Budget	FY 2024 Budget	FY 2025 Budget	FY 2026 Budget	FY 2027 Budget
8,482,695	8,432,695	50,000	-	-	-	-	-	-

Description and Scope

This project will replace the existing Midlakes sewer pump station with a larger one, to provide capacity for planned growth in the BelRed Corridor through 2030.

Rationale

N/A

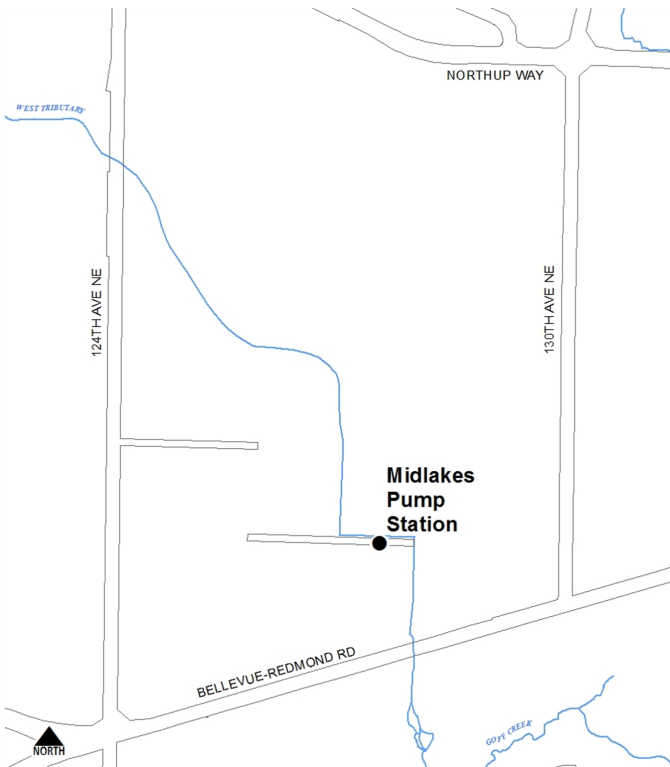
Environmental Impacts

This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map



Schedule of Activities

Project Activities	From - To	Amount
Project Costs	Ongoing	8,482,695

Total Budgetary Cost Estimate: 8,482,695

Means of Financing

Funding Source	Amount
Utility Rates/Fees	8,482,695

Total Programmed Funding: 8,482,695
Future Funding Requirements: 0

Comments

S-66 Sewer System Pipeline Replacement

Category: **High Quality Built & Natural Env** Status: **Ongoing**
 Department: **Utilities** Location: **Sewer Service Area**

Programmed Expenditures

Programmed Expenditures	Appropriated To Date	FY 2021 Budget	FY 2022 Budget	FY 2023 Budget	FY 2024 Budget	FY 2025 Budget	FY 2026 Budget	FY 2027 Budget
18,070,889	12,350,889	2,920,000	650,000	1,030,000	1,120,000	-	-	-

Description and Scope

This program replaces poor condition sewer pipe throughout the service area. The current budget is estimated to replace sewer pipe at a rate of 0.5 to 0.75 miles per year. Pipes are replaced when life cycle cost analysis indicates replacement is more economical than continuing to make point repairs. Replacement methods may include trenchless rehabilitation techniques such as cured-in-place pipe, and pipe bursting, and/or open trench replacement. This program compliments S-24, Sewer System Pipeline Repair, which repairs pipes to extend their service life. This program implements Bellevue's asset management program strategy to meet expected and required customer service levels at the lowest life cycle cost.

Rationale

Sewer infrastructure rehabilitation and replacement is based on asset criticality and business risk, per industry best practices. In the short term, this program reduces the likelihood of catastrophic system failures, damage claims, and sharp rate increases to react to failures rather than proactively managing the system. In the long term, timely replacement or repair of wastewater facilities keeps customer rates as low as practical by managing the system at the lowest life-cycle cost, while maintaining service levels and meeting regulatory requirements.

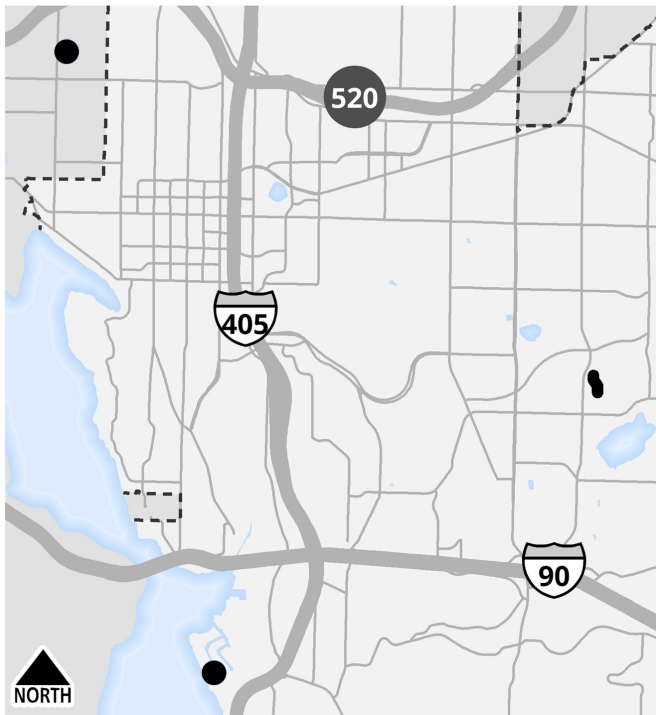
Environmental Impacts

This program will have no significant impact on operating revenues and/or expenditures.

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map



Schedule of Activities

Project Activities	From - To	Amount
Project Costs	Ongoing	18,070,889

Total Budgetary Cost Estimate: 18,070,889

Means of Financing

Funding Source	Amount
Utility Rates/Fees	18,070,889

Total Programmed Funding: 18,070,889
Future Funding Requirements: 0

Comments

S-111 Maintenance and Operations Facility Land Acquisition and

Category: **High Quality Built & Natural Env** Status: **Ongoing**
 Department: **Utilities** Location: **TBD**

Programmed Expenditures

Programmed Expenditures	Appropriated To Date	FY 2021 Budget	FY 2022 Budget	FY 2023 Budget	FY 2024 Budget	FY 2025 Budget	FY 2026 Budget	FY 2027 Budget
8,000,000	2,667,000	-	-	2,666,500	2,666,500	-	-	-

Description and Scope

Based on the alternatives analysis within the O&M Facilities Plan, property acquisition and site development is being recommended in the 2021-2027 CIP for the maintenance facility. While a specific site has not been determined, this proposal establishes a budget of \$16.0 million for property acquisition and development. The estimated cost of the land purchase for this CIP Project was funded by excess operating reserves which were allocated in the 2019-2020 biennium. The Design and Construction costs are being proposed as part of the 2021-2027 CIP Plan and will be funded as part of the annual transfer to CIP from Operations.

Programs included in this proposal are:

- W-111 Operations and Maintenance Land Acquisition - Water
- S-111 Operations and Maintenance Land Acquisition - Sewer

Rationale

The Utilities Operations and Maintenance Facilities Plan outlines strategic, 20-year investments to address vulnerabilities caused by inadequate, poorly positioned, and deteriorating facilities. Land acquisition and development of the Utilities North End Yard will start the Utility on the path to:

- Build capacity for yard functions and equipment storage on the north end of Bellevue,
- Build right-sized facilities capable of supporting today's operations and future growth, and
- Position facilities so crews can respond efficiently to routine work orders and emergencies

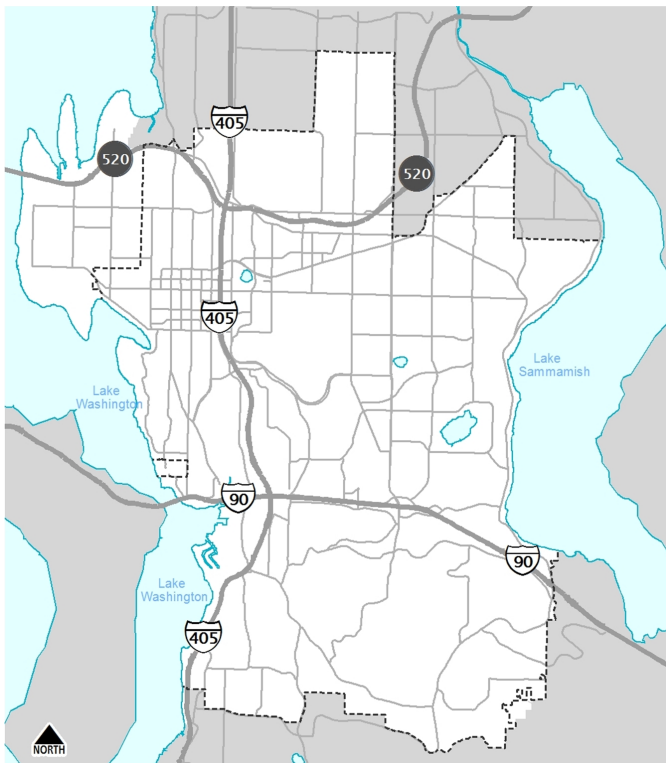
Environmental Impacts

TBD

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map



Schedule of Activities

Project Activities	From - To	Amount
Project Costs	Ongoing	8,000,000
Total Budgetary Cost Estimate:		8,000,000
Means of Financing		
Funding Source	Amount	
Utility Rates/Fees	8,000,000	
Total Programmed Funding:		8,000,000
Future Funding Requirements:		0

Comments

S-112 Sewer Planning Program

Category: **High Quality Built & Natural Env** Status: **New**
 Department: **Utilities** Location: **Various locations.**

Programmed Expenditures

Programmed Expenditures	Appropriated To Date	FY 2021 Budget	FY 2022 Budget	FY 2023 Budget	FY 2024 Budget	FY 2025 Budget	FY 2026 Budget	FY 2027 Budget
730,000	-	-	-	360,000	370,000	-	-	-

Description and Scope

This proposal funds replacement of sewer system components as they approach the end of their functional life or rehabilitates facilities to maximize their service life. This proposal is entirely supported by utility rates. It assumes 2.5% inflation per year, consistent with regional cost indices for public works engineering and construction.

Programs included in this proposal are:

- S-16 Sewer Pump Station Improvements
- S-24 Sewer System Pipeline Repairs and Replacement
- S-32 Minor (Small) Sewer Capital Improvements Projects
- S-58 Lake Line Management Plan
- S-67 Inflow and Infiltration Investigations and Flow Monitoring
- S-68 Sewer Force Main Condition Assessment
- S-112 Sewer Planning Program
- S-115 SCADA System Upgrade - Sewer

Bellevue’s wastewater system is comprised of over 650 miles of pipe and 46 pump and flush stations which reliably remove 11 million gallons of sewage every day (on average) from homes and businesses and convey it safely to King County’s regional system for treatment and disposal. System replacement value is estimated at \$1.4 Billion, or about \$9,600 for each of 145,000+ residential population served. Most of the system is more than halfway through its useful life. Ongoing inspection of pipe condition reveals that many pipes require significant repair or will soon need to be replaced. Failures and claims experience trends provide further evidence.

Utilities Financial Policies (adopted by Council) require appropriate capital investment for asset replacement. The Washington Depts. of Ecology and Health require sewer system operators to minimize overflows to surface water bodies. Repeated overflows can lead to enforcement action or state-mandated capital projects. (WAC 173 240 060) Bellevue’s NPDES Permit (Western Washington Phase II Municipal Stormwater Permit) requires Bellevue to reduce the discharge of pollutants to surface water to the maximum extent practicable.

Rationale

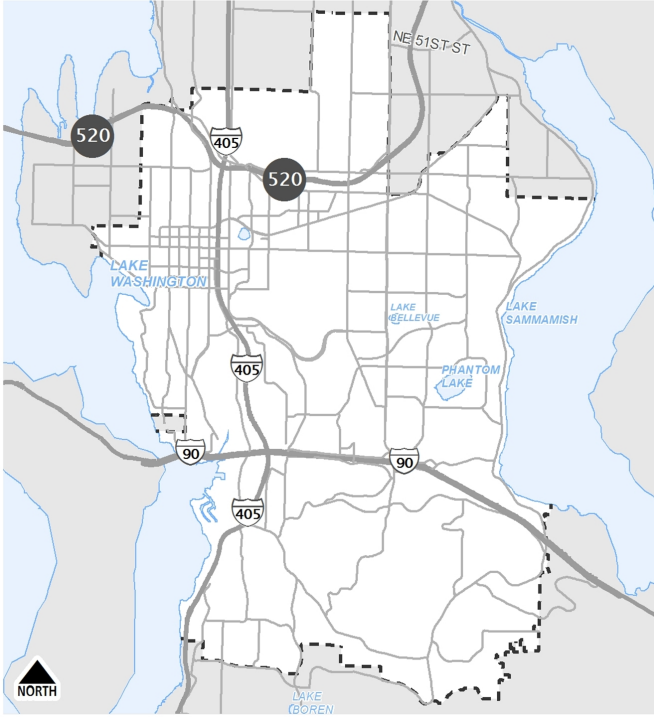
Environmental Impacts

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map

Schedule of Activities



Project Activities	From - To	Amount
Project Costs	2021 - 2024	730,000

Total Budgetary Cost Estimate: 730,000

Means of Financing

Funding Source	Amount
Utility Rates/Fees	730,000

Total Programmed Funding: 730,000
Future Funding Requirements: 0

Comments

S-115 SCADA System Upgrade - Sewer

Category: **High Quality Built & Natural Env** Status: **New**
 Department: **Utilities** Location: **Various locations.**

Programmed Expenditures

Programmed Expenditures	Appropriated To Date	FY 2021 Budget	FY 2022 Budget	FY 2023 Budget	FY 2024 Budget	FY 2025 Budget	FY 2026 Budget	FY 2027 Budget
4,860,000	-	1,500,000	210,000	1,000,000	-	1,200,000	950,000	-

Description and Scope

This proposal funds replacement of sewer system components as they approach the end of their functional life or rehabilitates facilities to maximize their service life. This proposal is entirely supported by utility rates. It assumes 2.5% inflation per year, consistent with regional cost indices for public works engineering and construction.

Programs included in this proposal are:

- S-16 Sewer Pump Station Improvements
- S-24 Sewer System Pipeline Repairs and Replacement
- S-32 Minor (Small) Sewer Capital Improvements Projects
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- S-67 Inflow and Infiltration Investigations and Flow Monitoring
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Utilities Financial Policies (adopted by Council) require appropriate capital investment for asset replacement. The Washington Depts. of Ecology and Health require sewer system operators to minimize overflows to surface water bodies. Repeated overflows can lead to enforcement action or state-mandated capital projects. (WAC 173 240 060) Bellevue's NPDES Permit (Western Washington Phase II Municipal Stormwater Permit) requires Bellevue to reduce the discharge of pollutants to surface water to the maximum extent practicable.

Rationale

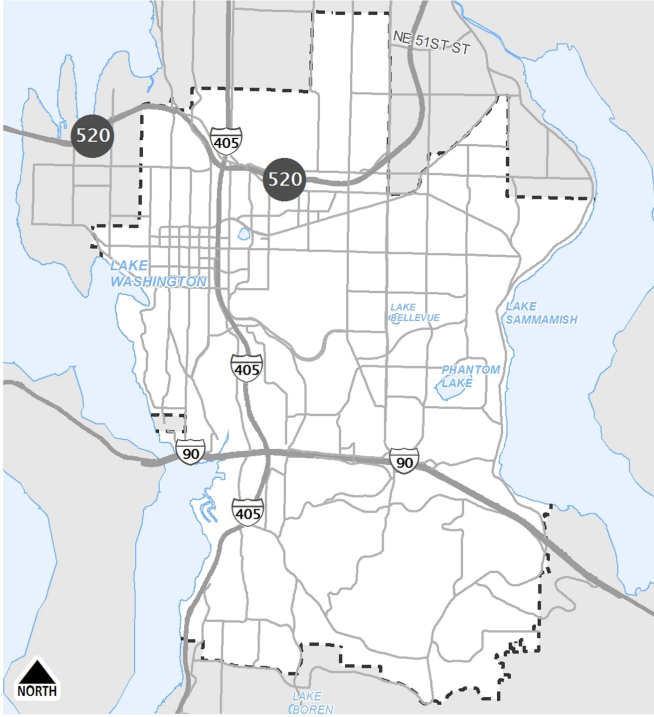
Environmental Impacts

Operating Budget Impacts

Estimated Annual M&O Costs: 0

Project Map

Schedule of Activities



Project Activities	From - To	Amount
Project Costs	2021 - 2026	4,860,000

Total Budgetary Cost Estimate: 4,860,000

Means of Financing

Funding Source	Amount
Utility Rates/Fees	4,860,000

Total Programmed Funding: 4,860,000
Future Funding Requirements: 0

Comments