

# CIP Summary Sheets



## High Priority Capital Improvement Projects

Surface Water capital project utility needs were prioritized within this planning process. Capital project summary sheets for the high priority capital projects listed below are provided in this appendix. A location map is shown on the page that follows.

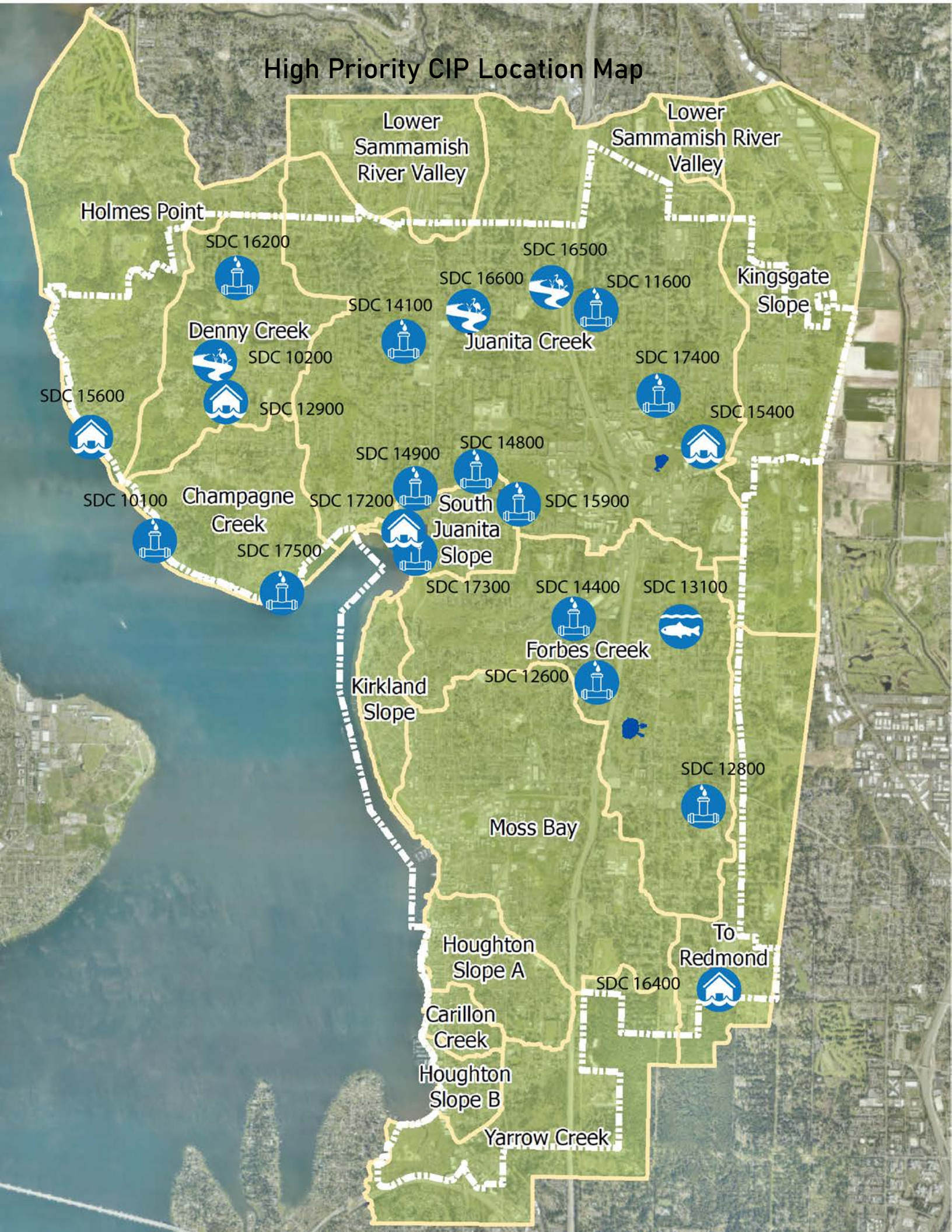
Project Number <sup>1</sup>	Description	Utility Goal	Total Cost <sup>2</sup>
SDC 10100*	Holmes Point Pipe Replacement at Champagne Creek Basin	Infrastructure	\$1,323,750
SDC 10200	Juanita Drive at Denny Creek Culvert Replacement	Habitat	\$3,436,000
SDC 11600*	NE 140th Street Pipe Replacement	Infrastructure	\$977,357
SDC 12600	Spinney Homestead Retrofit	Water Quality	\$5,400,000
SDC 12800*	NE 85th Street/122nd Avenue NE Stormwater Improvements	Infrastructure	\$739,000
SDC 12900*	NE Juanita Drive Storm Failure Near 86th Avenue NE	Flooding	\$632,500
SDC 13100	NE 107th Pl Retention Pond Retrofit	Water Quality	\$1,187,000
SDC 14100*	Storm Line Rehabilitation on NE 136th Street	Infrastructure	\$2,392,066
SDC 14400	116th Avenue Storm Facility	Infrastructure	\$3,558,000
SDC 14800	105th Pl NE Pipe Replacement	Infrastructure	\$430,000
SDC 14900*	NE 119th Court Storm System Improvement	Infrastructure	\$499,125
SDC 15400	Stream Restoration at 128th Lane NE	Flooding	\$919,000
SDC 15600*	Holmes Point Drive NE Pipe Installation	Flooding	\$1,861,639
SDC 15900*	108th Avenue NE Pipe Installation	Infrastructure	\$1,092,023
SDC 16200	NE 141st St Flow Control Conveyance System	Infrastructure	\$671,000
SDC 16400*	Silver Spurs Storm System Upgrade	Flooding	\$1,751,200
SDC 16500	NE 141st St Culvert Replacement	Habitat	\$3,396,000
SDC 16600	Woodinville-Juanita Drive and Juanita Creek Culvert Replacement	Habitat	\$9,282,000
SDC 17200	98th Ave NE and NE Juanita Drive	Flooding	\$90,000
SDC 17300	NE 116th St and 99th Pl NE Pipe Replacement	Infrastructure	\$939,000
SDC 17400	NE 132nd St Pipe Replacement (Kingsgate)	Infrastructure	\$1,382,000
SDC 17500	NE Juanita Dr Pipe Replacement (Finn Hill)	Infrastructure	\$742,000
<b>Total Cost</b>			<b>\$42,720,660</b>

<sup>1</sup>Projects identified by an asterisk (\*) are on the draft 6-year CIP, however the final list may have different projects.

<sup>2</sup>Total Cost is in 2022 dollars except for projects on the draft 6-year CIP, which have been adjusted for the year they are anticipated to be implemented.



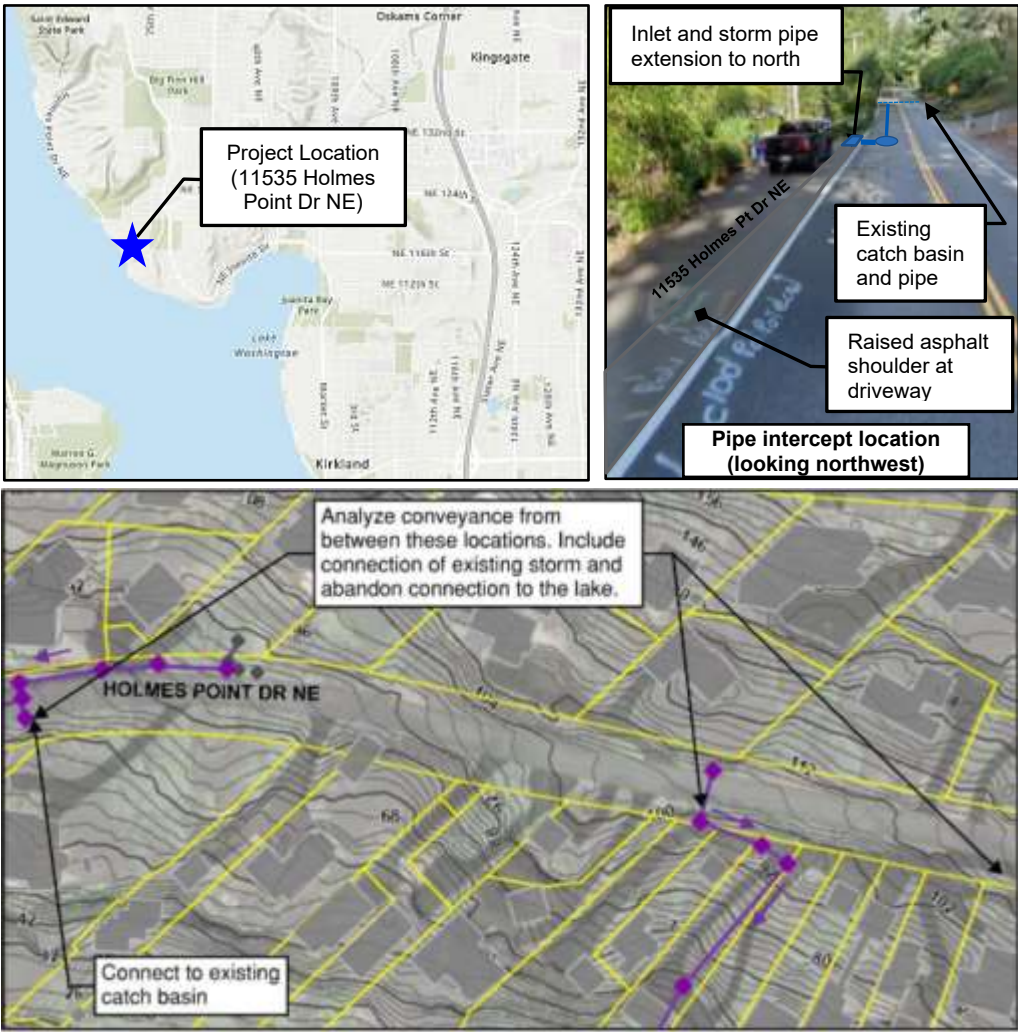
# High Priority CIP Location Map





Project Number SDC 10100

Holmes Point Drive NE Pipe Ext.  
at Champagne Creek (Finn Hill)  
SW Goal: Flood Reduction



DEPARTMENT
Public Works/Surface Water
OBJECTIVE
Resolve flooding along west side of Holmes Point Drive NE
WATERSHED
Champagne Creek
COST OPINION
Design and Const. \$1,059,000 (2022 dollars)
CONSIDERATIONS
Steep slopes Environmental permits (shoreline) Street Classification/Access Impact to residences Coordination with other utilities (gas, water, sewer)

Project Description

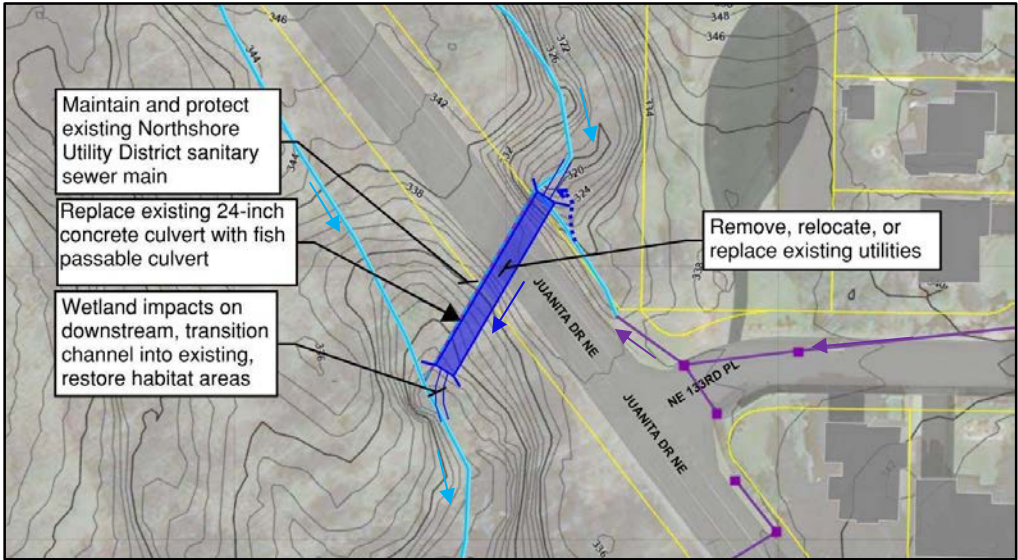
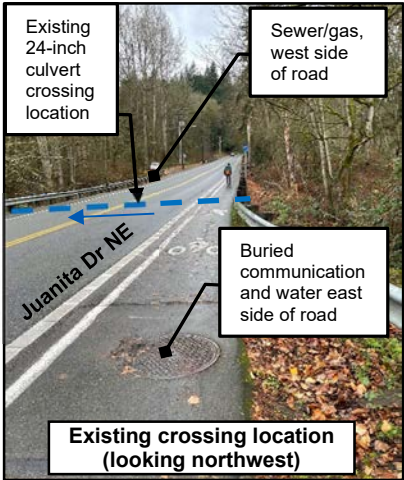
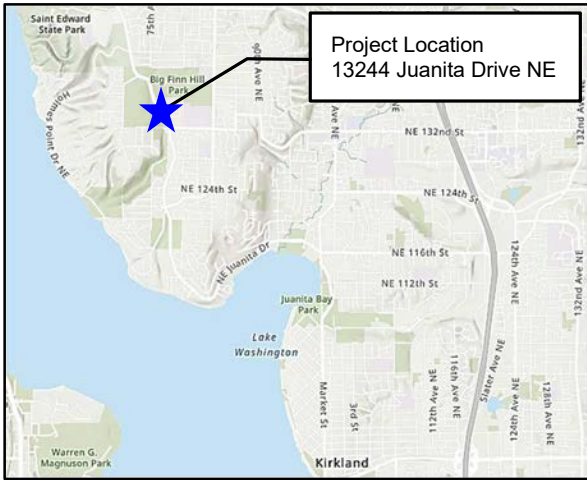
This project will reroute stormwater from a system that outfalls to Lake Washington through an 8-inch diameter piped system to the west through 11553 Holmes Point Drive NE. A new pipe and catch basin system will intercept an existing 12-inch diameter concrete pipe near 11561 Holmes Pt Dr NE and convey flow to the northwest along Holmes Pt Drive before tying into an existing basin about 550 feet away. Raised asphalt shoulders and berming may be added to direct sheetflow away from driveways and into the catch basins.

Project Rationale

Flooding has been identified at 11553 Holmes Point Drive NE and neighboring properties due to sheet flow from Holmes Point Drive NE onto private driveways. Additionally, roadway runoff is conveyed through 11552 Holmes Point Drive NE in an undersized existing 8-inch diameter outfall pipe which has no easement for replacement or maintenance access.

Anticipated Elements

Key elements of this project include the coordination and relocation of existing utilities that are in conflict including gas, sewer and water. Public engagement will be critical to the success of this project due to the driveway access and construction impact during the pipe installation. Additionally, the adjacent steep slopes on the lake side of Holmes Point Drive NE should be considered during the design of the storm system improvements.



DEPARTMENT	Public Works/Surface Water
OBJECTIVE	Replace existing fish barrier culvert with a fish passable culvert
WATERSHED	Denny Creek
COST OPINION	Phase 1 Preliminary Design \$196,000 (2022 dollars) Final Design and Const. \$3,240,000 (2022 dollars)
CONSIDERATIONS	Streams/Creeks/Water Body Environmental Permits Easement or property acquisition required Impact to residences Technical Difficulty/Multiple Disciplines or Alternatives Coordination with other utilities (gas, water, sewer, electric, communications) Coordination with other agencies (King County Parks)

Project Description

This projects replaces a 138-foot long, 24-inch diameter concrete culvert crossing Juanita Drive NE near NE 133<sup>rd</sup> Place with a fish passable culvert. The culvert outlets to a designated wetland in King County’s Big Finn Hill Park. Impacted areas of stream corridor will be replaced with habitat and stream enhancements.

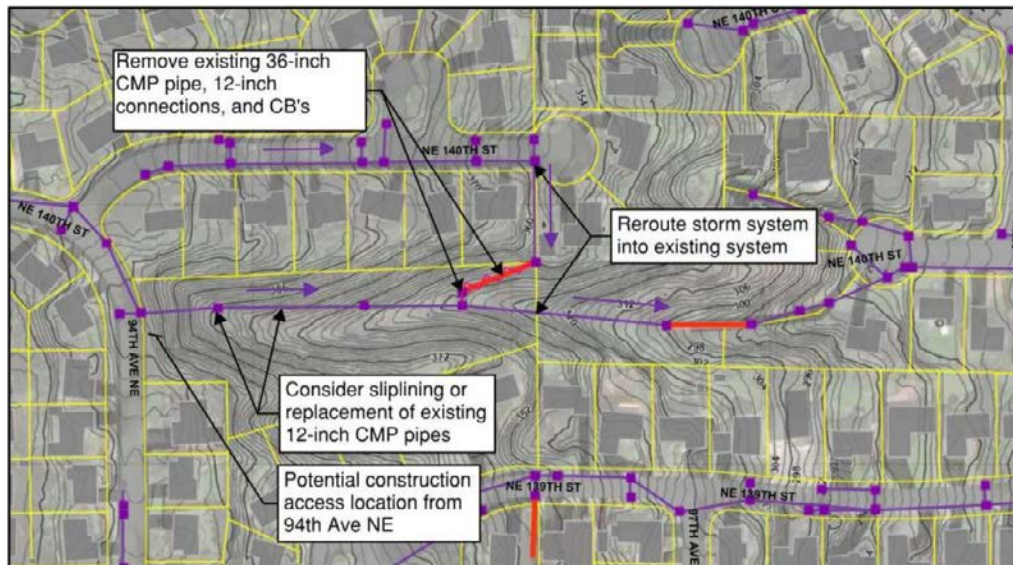
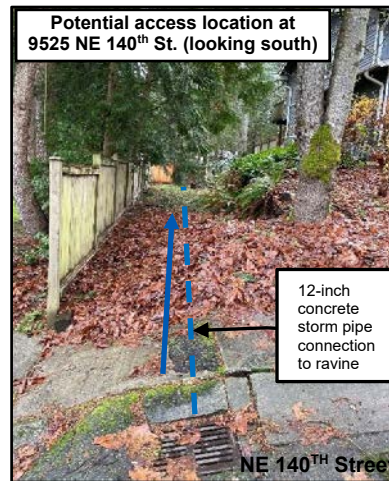
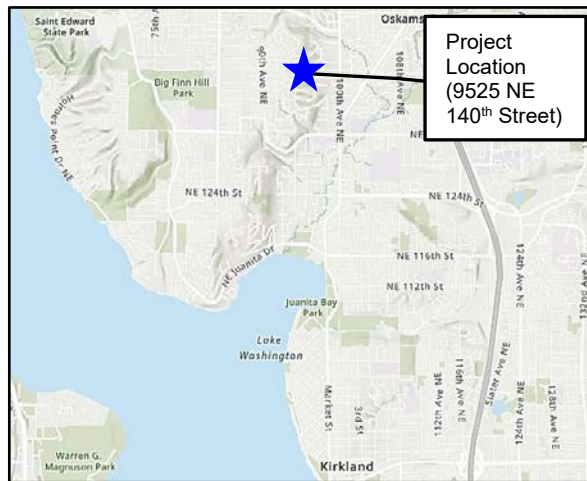
Project Rationale

This existing culvert is a fish barrier on Denny Creek, a fish-bearing stream, with no downstream barriers. When replaced, a moderate amount of habitat would be made accessible to migratory, anadromous fish upstream. This culvert was identified as a high priority in the culvert assessment conducted in the 2014 Surface Water Master Plan.

Anticipated Elements

Key elements of this project include the coordination with King County Parks and relocation of existing utilities. Utility and traffic impacts are anticipated during the construction of the culvert replacement. Environmental permits a SEPA checklist, as well as WDFW, HPA, and Army Corps permits may be required. Due to the public interest, coordination with the public will be crucial for the success of this project.



**DEPARTMENT**

Public Works/Surface Water

**OBJECTIVE**

Reroute and replacement of aging storm system

**WATERSHED**

Juanita Creek

**COST OPINION**

Phase 1 Preliminary Design

\$33,000 (2022 dollars)

Final Design and Const.

\$575,000 (2022 dollars)

**CONSIDERATIONS**

Soil Conditions

Steep Slopes

Easement or Property

Acquisition Required

Project Access

Impact to Residences

Special Equipment Required

Technical Difficulty/Multiple Alternatives

## Project Description

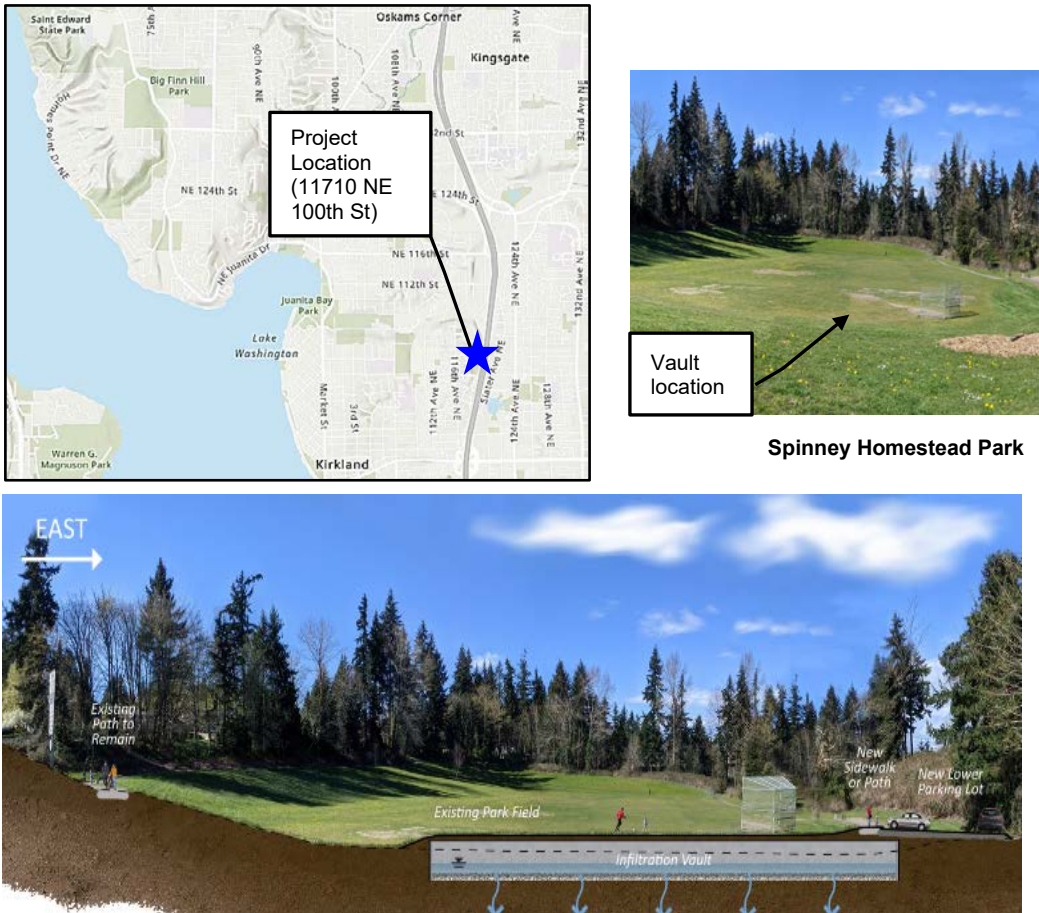
This project consists of the abandonment of a failing detention pipe and reroute and connecting to existing stormwater system. The existing detention pipe is located on steep slopes within a city-owned parcel and behind private residential properties. Evaluation of the condition of upstream pipes and function of the existing detention system should be considered during the design phase.

## Project Rationale

An existing 36-inch diameter corrugated metal detention pipe on a steep slope is exposed and failing due to the erosion of surrounding soils.

## Anticipated Elements

A key consideration for this project is the location of the existing detention pipe and corresponding project work on steep slopes and behind residential properties. This project may include a geotechnical assessment and coordination with property owners and may require easement acquisition for the access, placement, and maintenance of a new detention system. Project location may also include more difficult construction and maintenance access since the project site may need to be accessed down steep slopes or behind private properties.



DEPARTMENT
Public Works/Surface Water
OBJECTIVE
Provide stormwater retrofit by treating and infiltrating stormwater runoff under Spinney Homestead park in an infiltration facility.
WATERSHED
Forbes Creek
COST OPINION
Phase 1 Final Design \$704,000 (2022 dollars)
Phase 2 Construction \$4,800,000 (2022 dollars)
CONSIDERATIONS
Soil Conditions
Project Access
Impact to Residences
Coordination with other departments
Technical Difficulty/Multiple Alternatives

### Project Description

This project improves water quality in Forbes Creek and Lake Washington through stormwater quality treatment and an infiltration vault at Spinney Homestead Park. Stormwater will be treated to the Enhanced level, which will reduce total suspended solids, oil, dissolved metals (copper, zinc), and total phosphorous. Infiltration will reduce stormwater flows to Forbes Creek.

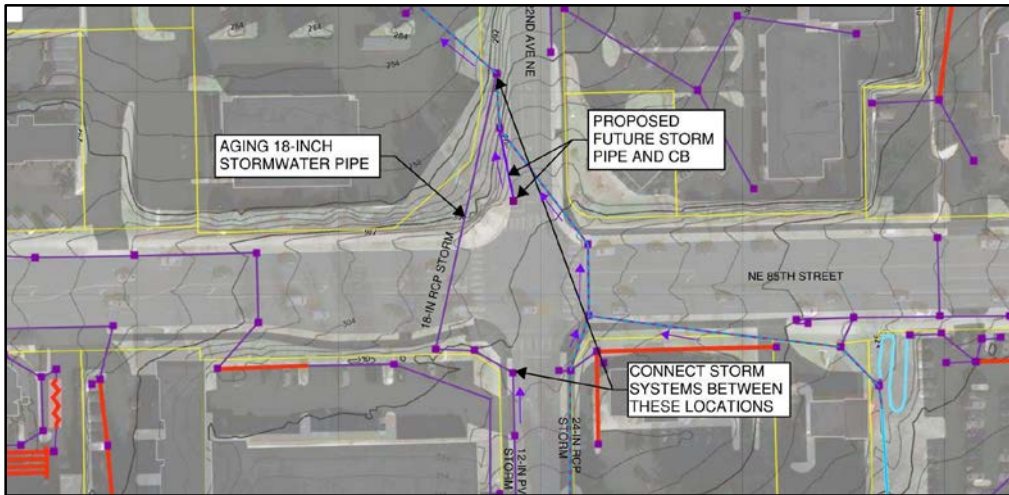
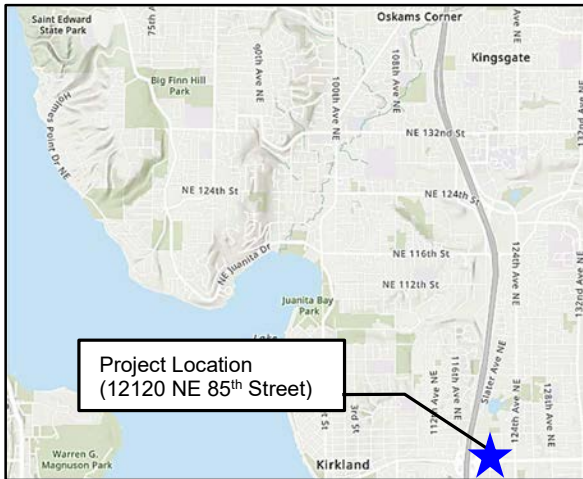
### Project Rationale

The surrounding neighborhood development is not likely to be developed with short plats that will require improved stormwater management within current design requirements. In addition, one facility to manage stormwater regionally will reduce maintenance cost and time. This project was also identified due to high flows and pollutant loading in Forbes Creek.

### Anticipated Elements

Key elements of this project include coordinating with the Kirkland Parks Department, the Highlands Neighborhood Association, and other community members. Due to the public interest, coordination with the public will be crucial for the success of this project. Park use impacts are anticipated during the construction of this project. Permits will need to be acquired for the land disturbing activity.





<b>DEPARTMENT</b>
Public Works/Surface Water
<b>OBJECTIVE</b>
Replace existing storm pipes with new pipe
<b>WATERSHED</b>
Forbes Creek
<b>COST OPINION</b>
<u>Design and Const.</u> \$739,000 (2022 dollars)
<b>CONSIDERATIONS</b>
Street Classifications/Access
Coordination Required with Business Owners
Impact to Residence/Businesses
Technical Difficulty in Temporary Traffic Control
Coordination with Other Utilities
Schedule (Coordinate with Future NE 85 <sup>th</sup> Street Widening Project)

## Project Description

This project consists of decommissioning an aging 18-inch conveyance stormwater pipe running under NE 85<sup>th</sup> St and replacement with a new pipe at the intersection of NE 85<sup>th</sup> St and 122<sup>nd</sup> Ave NE. Proposed changes associated with the replacement may include abandoning existing catch basins and pipes and connecting the proposed pipe to the upstream stormwater systems on the the south side of NE 85<sup>th</sup> St via an existing catch basin on the corner of NE 85<sup>th</sup> St and 122<sup>nd</sup> Ave NE.

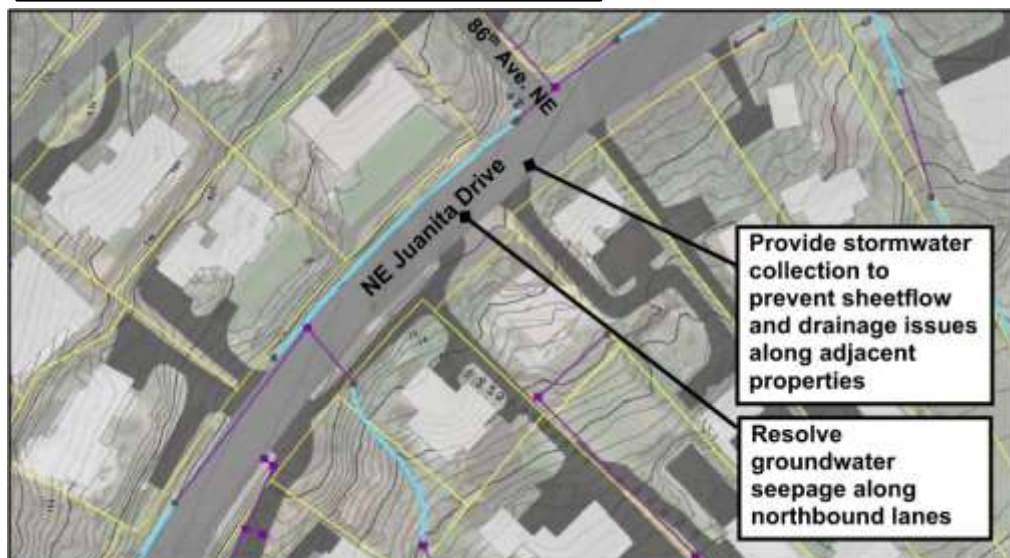
## Project Rationale

The existing 18-inch stormwater pipe running south to north across NE 85<sup>th</sup> St is an aging pipe in poor coordination. This project will support the future widening of NE 85<sup>th</sup> Street for the I-405 interchange project.

## Anticipated Elements

This project is to take place within a busy intersection and may require higher levels of traffic control. Additionally, this intersection is likely the location of multiple utility crossings which are unknown at this time and will require coordination with existing utilities in the area. This project may also include the coordination with private business redevelopment projects taking place on the north side of the project area.



**DEPARTMENT**

Public Works/Surface Water

**OBJECTIVE**

Resolve flooding and hazardous ice accumulation on residential driveways and roadway shoulder.

**WATERSHED**

Champagne Creek

**COST OPINION**

Final Design and Const.  
\$550,000 (2022 dollars)

**CONSIDERATIONS**

High Groundwater  
Steep Slopes  
Impact to Residents/Businesses  
Coordination with Other Utilities  
Geotechnical Investigations  
Impact to Arterial Roadway Safety

## Project Description

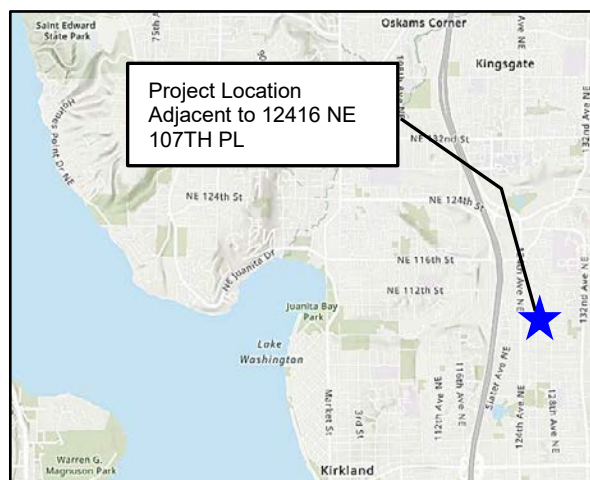
This project provides stormwater collection and conveyance along NE Juanita Drive to eliminate seepage. Possible solutions include: ditch dredging and grading improvements to an existing ditch on the southbound lanes, asphalt berms for flow redirection, and pavement drainage improvements to reduce groundwater seepage. Other alternatives may be considered.

## Project Rationale

Flat grades in the ditch along the southbound shoulder of NE Juanita Drive promote groundwater flows through the roadway base course which have led to cracking and seepage issues on the northbound lanes. In combination with the flat grades, groundwater and sheetflow exacerbate local drainage problems at the driveways of 8541, 8545, 8547, 8549, and 8551 NE Juanita Drive which contribute to freezing hazards during the winter months. Additionally, the southeast side of NE Juanita Drive lacks a stormwater collection system to convey runoff from NE Juanita Drive.

## Anticipated Elements

Key elements of this project include the installation of a stormwater collection system, pavement drainage, and conveyance improvements. The potential stormwater collection system is within the City right-of-way, so additional easement acquisition is not anticipated. The Kirkland GIS map also shows the project extent to be within a landslide deposit area with high liquefaction potential. Additional basic elements may include but are not limited to: geotechnical engineering, traffic control, permitting, and public outreach.



## DEPARTMENT

Public Works/Surface Water

## OBJECTIVE

Retrofit existing detention pond to improve detention and add water quality

## WATERSHED

Forbes Creek

## COST OPINION

## Design and Const.

\$1,187,000 (2019 dollars)

## CONSIDERATIONS

- Easement or property acquisition required
- Impact to residences
- Technical Difficulty/Multiple Disciplines or Alternatives
- Coordination with other utilities (Seattle City Light, etc.)
- Coordination with other agencies

## Project Description

This project improves water quality in Forbes Creek and Lake Washington through water quality treatment and limited flow control at an underperforming detention pond in the North Rose Hill subbasin. Stormwater will be treated via bioretention soil media mix, and flow control will be provided as space allows. This facility proposes to treat stormwater from 16.2 acres of contributing area, with a secondary design consideration to provide flow control flow, through attenuation, to maximum extent feasible without impacts to bioretention facility.

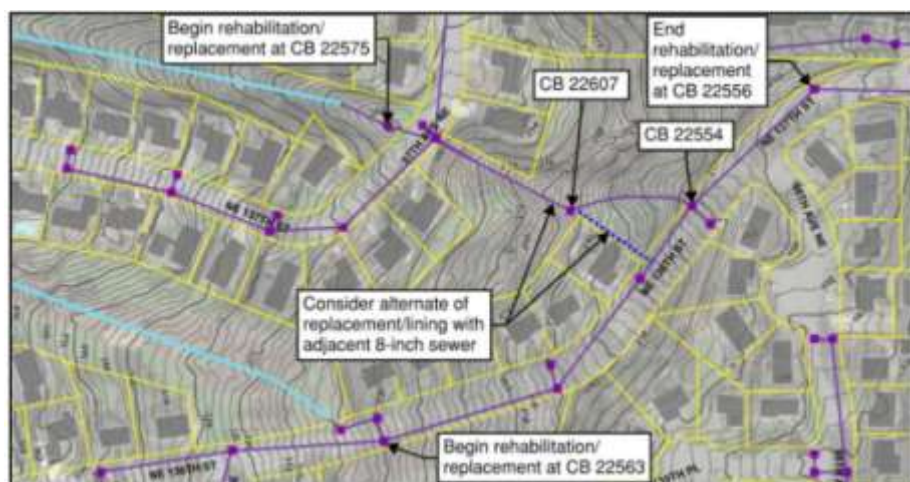
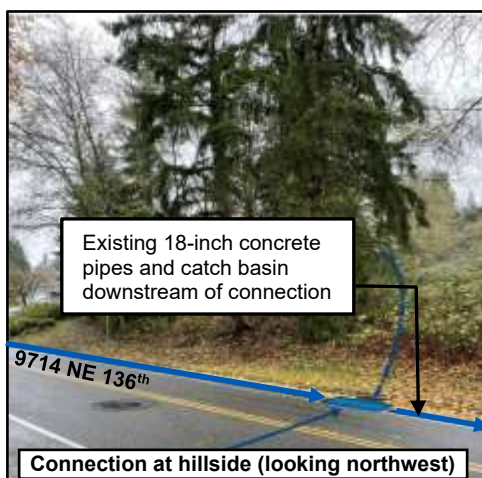
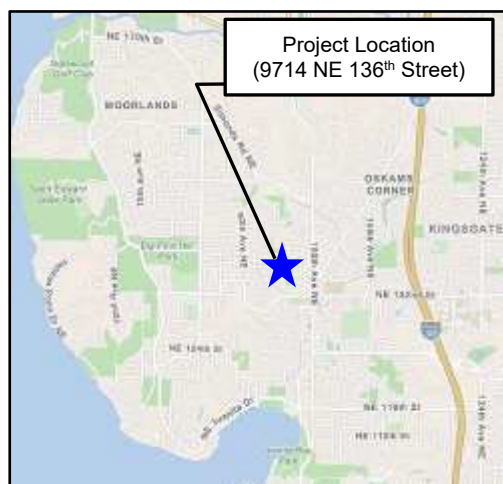
## Project Rationale

This project was identified through retrofit planning in the North Rose Hill sub-basin of Forbes Creek. This sub-basin was selected due to high contribution of flow per acre. This pond was identified because it does not currently perform as designed and could be retrofitted for improvements to water quality (there is currently none) and will slow the stormwater flow directed to the facility through installation of bioretention soil media and plants.

## Anticipated Elements

Key elements of this project include the coordination with Seattle City Light, Kirkland Parks Department, and outreach to neighboring homes and utilities.



**DEPARTMENT**

Public Works

**OBJECTIVE**

Replace failing pipe on steep side slope and road

**WATERSHED**

Juanita Creek

**COST OPINION**Design and Const.

\$1,628,000 (2022 dollars)

**CONSIDERATIONS**

Steep slopes

Street classifications/access

Streams/Creeks/Waterbody

Geotechnical Review & Coordination

Coordination with other utilities

## Project Description

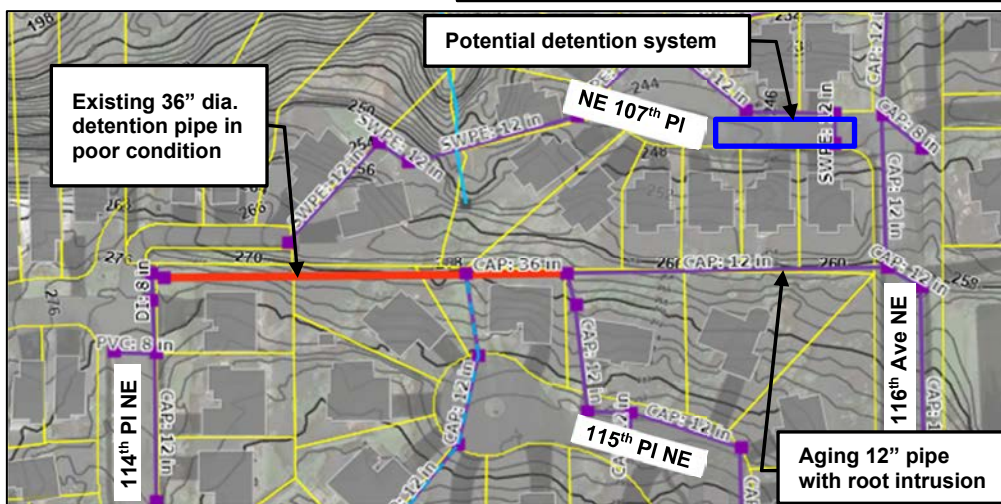
This project will rehabilitate or replace an existing stormwater collection system that drains from 97<sup>th</sup> Avenue NE down to NE 136<sup>th</sup> Street through a City of Kirkland owned greenbelt. The existing 12-inch corrugated aluminum pipe will require evaluation for rehabilitation or replacement from the Type 2 catch basin (22575) in the greenbelt on the west side of 97<sup>th</sup> Ave NE, to the Type 2 catch basin (22607) in the greenbelt on the eastside of 97<sup>th</sup> Ave NE. The 12-inch corrugated aluminum pipe between catch basin 22607 and the Type 2 catch basin (22554) at NE 136<sup>th</sup> St should be evaluated for rehabilitation or replacement due to maintenance access. Additionally, 12 and 18-inch diameter pipes down the NE 136<sup>th</sup> Street and Type 2 catch basins will be rehabilitated or replaced from catch basin 22563 to catch basin 22556.

## Project Rationale

Pipe failure and root issues have been documented along the steep side slope from 97<sup>th</sup> Ave NE down to NE 136<sup>th</sup> St and aging pipe conditions for the storm pipe and basin system down NE 136<sup>th</sup> Street warrant rehabilitation or replacement.

## Anticipated Elements

Key elements of this project include steep slopes, traffic control, and coordination with other utilities (gas, water, sewer, buried communication and electric). Root issues have been identified in the greenbelt between 97<sup>th</sup> Ave NE and NE 136<sup>th</sup> Ave, and there is a grade drop of 90-feet between the two roads. Further, the project area has been identified as having moderate to severe landslide susceptibility. NE 136<sup>th</sup> St connects 90<sup>th</sup> Ave NE and 100<sup>th</sup> Ave NE and would require additional coordination for an alternate route for detour during construction. In addition, there is an existing 8-inch sewer main owned by Northshore Utility District that parallels the 12-inch line down the slope that should be considered for cost sharing for replacement or lining.



DEPARTMENT
Public Works/Surface Water
OBJECTIVE
Repair/replacement of failing infrastructure
WATERSHED
Highlands
COST OPINION
<u>Phase 1 Preliminary Design</u>
\$158,000 (2022 dollars)
<u>Final Design and Const.</u>
\$3,400,000 (2022 dollars)
CONSIDERATIONS
Steep Slopes
Easement or Property
Acquisition Required
Impact to
Residents/Businesses
Special Equipment Required
Coordination with Other
Utilities
Technical difficulty
Flooding
Safety

## Project Description

Alleviate flooding associated with an aging detention pipe and root intrusion limiting capacity of the downstream pipes. The existing detention system, flow control structure and conveyance should be analyzed for retrofit or replacement. Evaluate rerouting the storm system out backyards and into the right of way. Either option will need to provide adequate maintenance access.

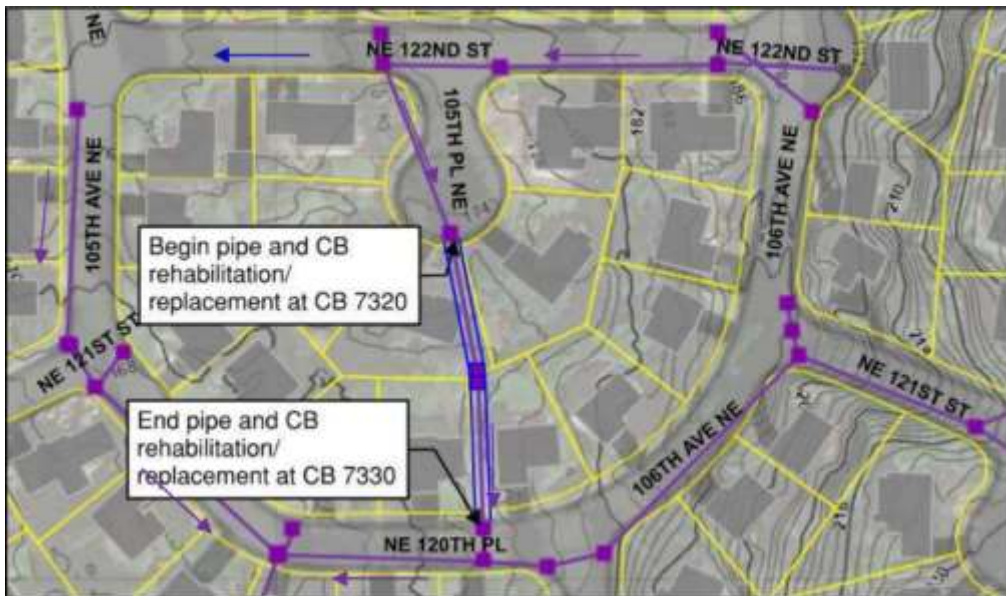
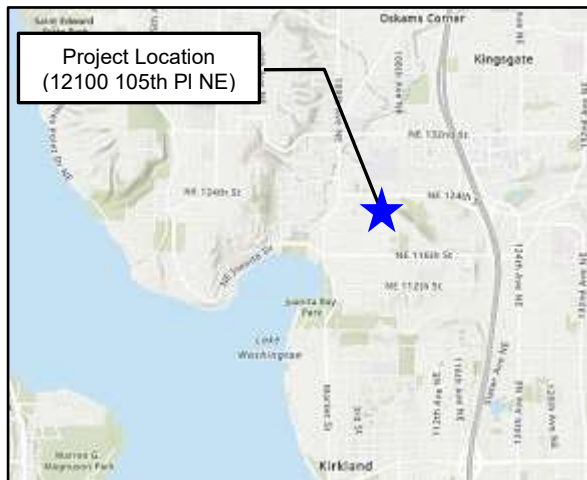
## Project Rationale

Roots have intruded a 12-inch diameter pipe that conveys outflow from an existing 36-inch diameter corrugated metal detention pipe that is aging. At several locations downstream of the flow control manhole, the pipe is root bound and full of offsets. These systems are located on a steep slope in the backyards of residential properties on 115<sup>th</sup> Place NE. The adjacent detention tank is aging and does not drain during heavy rain. During storm events, the system has clogged and surcharges, running down the public trail and into adjacent yards.

## Anticipated Elements

Key elements of this project include easements or property acquisition for pipe repair or replacement. Due to the existing detention and downstream pipe location, access is anticipated to be limited. Additionally, if reroute of storm system is considered, construction of a potential detention may impact residential access and require coordination with affected utilities. A preliminary design phase to determine retrofit feasibility versus replacement as preferred option is recommended.



**DEPARTMENT**

Public Works/Surface Water

**OBJECTIVE**Resolve surcharging catch basin between 105<sup>th</sup> PI NE and NE 120<sup>th</sup> PI**WATERSHED**

South Juanita Slope

**COST OPINION**Design and Const.  
\$430,000 (2022 dollars)**CONSIDERATIONS**

Impact to residences  
Special Equipment Required  
Alternatives  
Coordination with other utilities (gas, water, sewer)  
Easement or Property Acquisition

## Project Description

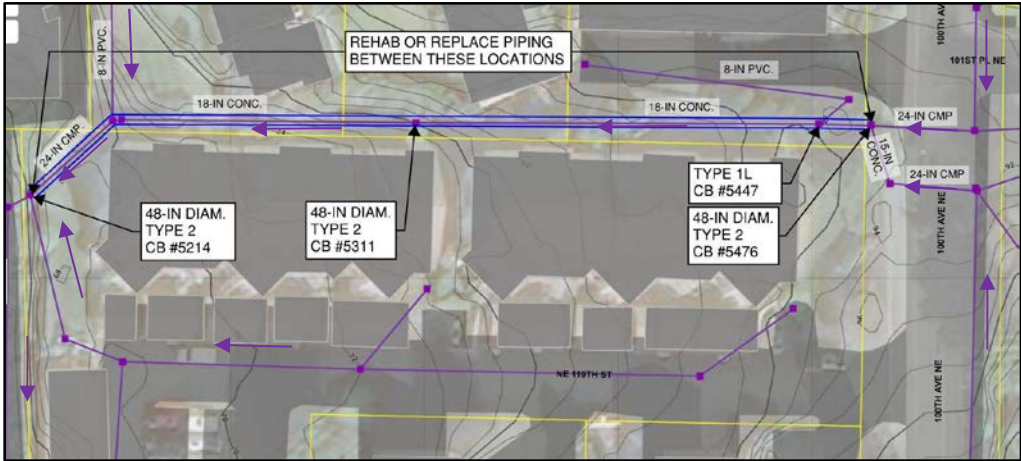
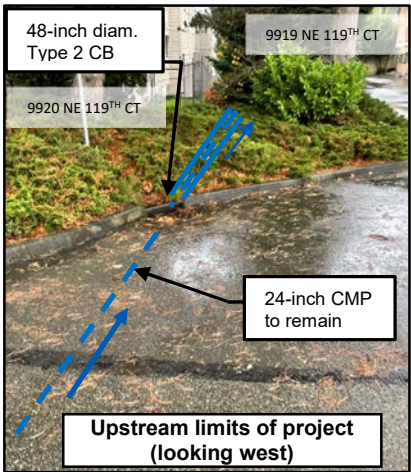
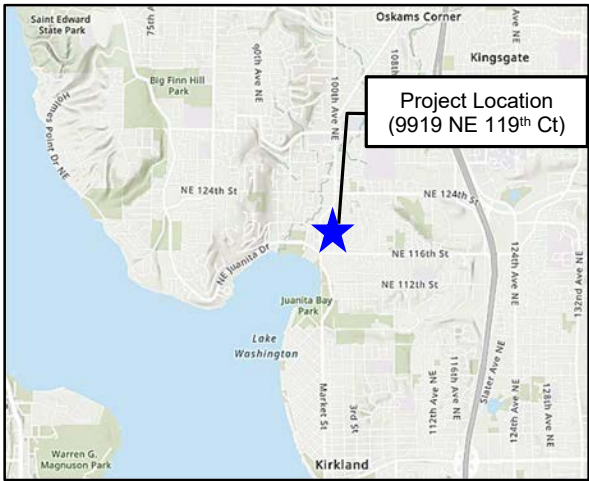
This project will repair or replace a stormwater collection and conveyance system through residential properties between 105<sup>th</sup> PI NE and NE 120<sup>th</sup> PI. The existing system receives flow from the storm system along 105<sup>th</sup> PI NE and NE 122<sup>nd</sup> St the north and outlets to the storm system along NE 120<sup>th</sup> PI to the south. Other alternative conveyance routes may be considered.

## Project Rationale

Residential homes between 105<sup>th</sup> PI NE and NE 120<sup>th</sup> PI have experienced flooding from surcharging of the existing storm system between the properties.

## Anticipated Elements

Project will require close coordination with residents and other utilities.



DEPARTMENT	Public Works/Surface Water
OBJECTIVE	Resolve flooding behind East Ridge Condos adjacent to NE 119 <sup>th</sup> Court
WATERSHED	South Juanita Slope
COST OPINION	Design and Construction \$376,000 (2022 dollars)
CONSIDERATIONS	Steep Slopes Easement or property access Street Classification/Access Impact to Residence/Businesses Technical Difficulty

Project Description

This project will evaluate rehabilitating or replacing pipes with root intrusion to reduce flooding behind East Ridge Condos, at the downstream system within Juanita Village Plaza, and along 98<sup>th</sup> Ave NE. A potential solution includes removing roots from the affected pipe segments and CIPP slip-lining the pipe system to prevent future root intrusion. Additionally, catch basins may require replacement or rehabilitation to repair structural deficiencies and provide maintenance access. Backwater and capacity analyses may be required for pipes from 100<sup>th</sup> Ave NE to 98<sup>th</sup> Ave NE.

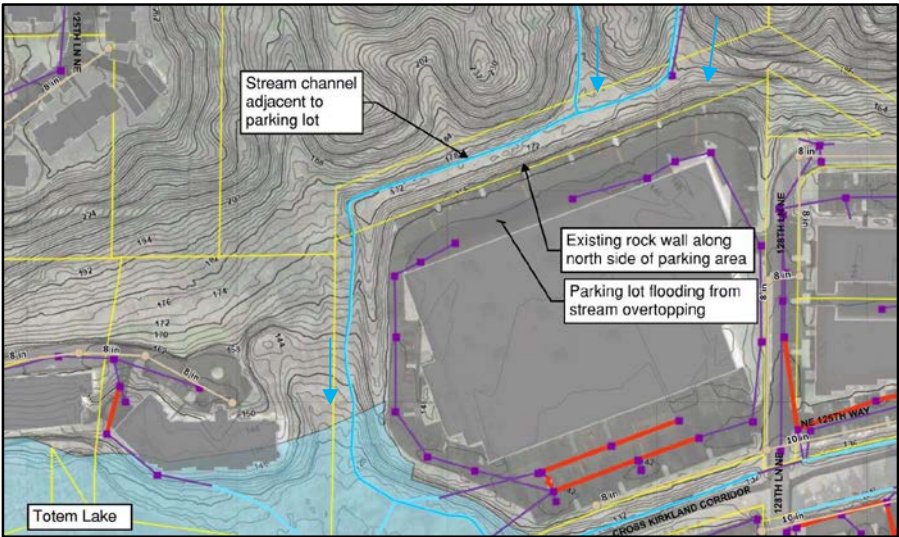
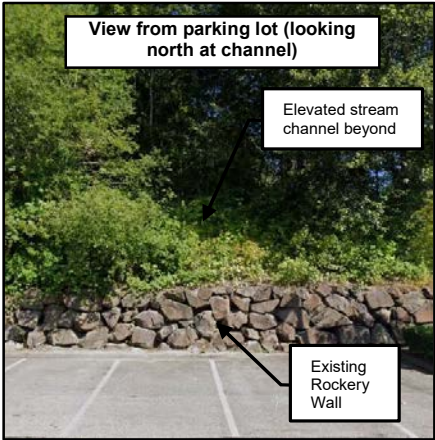
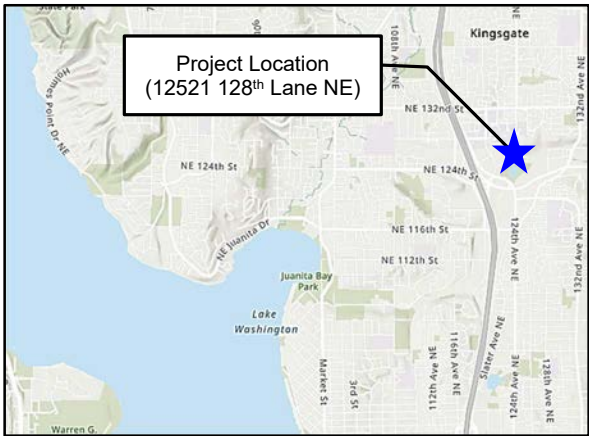
Project Rationale

Storms in September 2020 produced flooding behind the condos and led to surcharging of the existing storm system (CB #5311). Additionally, some of the corrugated metal pipe is beginning to show corrosion and the existing system has had root intrusion problems.

Anticipated Elements

Key elements of this project include easement access along the pipe alignment behind the East Ridge Condos. Construction access may be challenging due to steep slopes, existing vegetation, and limited space. Consider evaluating future capacity needs to 98<sup>th</sup> Ave NE based on hydraulic analysis and condition assessment. Traffic control and construction noise may impact residents/businesses.





DEPARTMENT
Public Works/Surface Water
OBJECTIVE
Reduce flooding to neighboring property
WATERSHED
Juanita Creek
COST OPINION
Phase 1 Preliminary Design
\$56,000 (2022 dollars)
Final Design and Const.
\$863,000 (2022 dollars)
CONSIDERATIONS
Steep slopes
Streams/Creeks/Water Body
Environmental Permits
Easement or Property Acquisition Required
Project Access
Impact to Businesses
Special Equipment Required
Multiple Disciplines or Alternatives

## Project Description

This project proposes several considerations to resolve flooding issues, including but not limited to, conveyance improvements and restoration of a stream channel, adjustments to the height of the existing berm along the stream or adding a wall to prevent overtopping, providing a maintenance access drive for O&M vehicles, upstream detention/retention, or creating a high flow bypass pipe.

## Project Rationale

Flooding is occurring in the northern parking lot at 12521 128<sup>th</sup> Lane NE due to overtopping of an elevated adjacent stream channel conveying flow from residential areas to the north and runoff from the adjacent forested hillside. The existing channel has narrowed over time (~1.5 ft) and is incised, decreasing the capacity. The stream is elevated above the adjacent parking lot with a rockery wall and berm. During larger storm events, the water overtops the berm and/or migrates through the rock wall, flooding the parking lot.

## Anticipated Elements

Key considerations for this project location include work on a stream and the need for environmental permits. This project will likely include coordination with property owners and may require easement acquisition for access to the project site. This project location may also be difficult to access for construction and maintenance as the project site is located behind private properties. Consider future Transportation Connection P27 when designing the project in order to facilitate a future crossing. Provide Transportation/Parks time during early design work to coordinate alignment work for the connection.

Project Number SDC 15600

Holmes Point Drive NE  
Pipe Installation (Finn Hill)  
SW Goal: Flood Reduction



DEPARTMENT
Public Works/Surface Water
OBJECTIVE
Resolve flooding along west side of Holmes Point Drive
WATERSHED
Holmes Point
COST OPINION
Design and Const. \$1,267,000 (2022 dollars)
CONSIDERATIONS
Easement or property acquisition required Impact to residences Coordination with other utilities (gas, water, sewer)

### Project Description

This project will provide stormwater collection and improve conveyance along Holmes Point Drive NE which currently has no city surface water collection system on the west side of the road. The improved conveyance system will be designed to meet current design standards. Runoff shall be intercepted from flowing west onto private property and conveyed to an outfall. The existing brick catch basins and pipes at the SW corner of NE 130<sup>th</sup> Place will be replaced with Type 2 basins and pipe connections for improved hydraulics of the system to the south.

### Project Rationale

Residential homes along the west side of Holmes Pt Dr NE have had flooding from surcharging of the existing storm system on the east side of the road which flows overland to the lake through private property. Small private inlets and trench drains that are connected to the undersized existing system contribute to the problem by providing a route for surcharge. To avoid flooding of properties, some residences have sump pumps on stand-by at the roadside inlets to convey flow to the lake during storm events.

### Anticipated Elements

Key elements of this project include the coordination and relocation of existing utilities, as required. Easement acquisition at 12959 Holmes Point Drive NE or rerouting storm to remain in right of way is imperative where the existing tie-ins appear to cut the property corner. Providing private driveway access, traffic control during construction and coordination with the public will be crucial for the success of this project.





#### DEPARTMENT

Public Works/Surface Water

#### OBJECTIVE

Alleviate flooding due to disconnected storm piping

#### WATERSHED

South Juanita Creek

#### COST OPINION

Design and Const.  
\$883,000 (2022 dollars)

#### CONSIDERATIONS

Steep Slopes  
Tree impacts  
Impact to Residence  
Coordination with Other Utilities

## Project Description

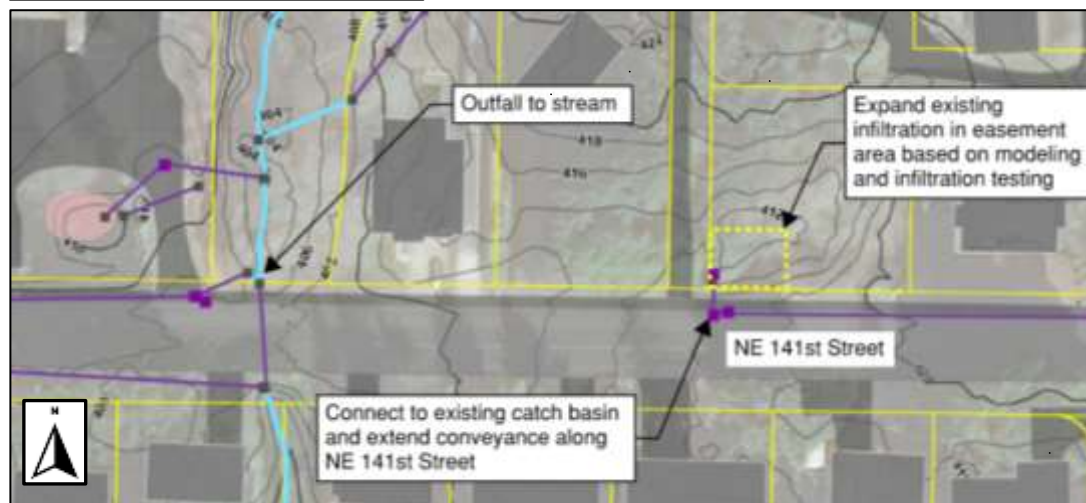
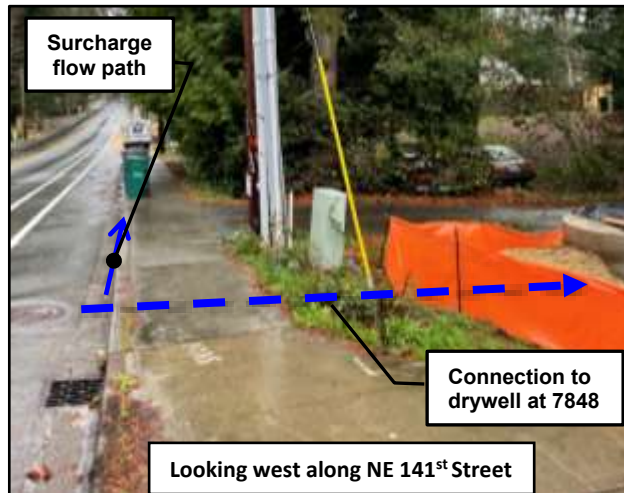
This project extends an existing disconnected storm system at 108<sup>th</sup> Avenue NE and NE 120<sup>th</sup> Street to an existing system approximately 800 feet to the northwest. The extension could consist of ditches, pipes and catch basins along NE 120<sup>th</sup> Street, connecting into a catch basin at NE 120<sup>th</sup> Place.

## Project Rationale

Approximately 2.5 acres of tributary areas collects at three catch basins near a sag in the road at 108<sup>th</sup> Ave NE. This system has no pipe connection downstream and overtops to a private residence 11855 108<sup>th</sup> Ave NE, flowing overland to the west which has led to flooding after a recent storm in September 2020.

## Anticipated Elements

This project may involve adding connections to existing pipes and ditches, installing a new storm pipe, and tree removals for pipe installations including on a steep slope at the west end of NE 120<sup>th</sup> Street. This project may also require design work and coordination with utilities. Project could partner with Northshore Utility District to provide sanitary sewer to residential properties with septic along NE 120<sup>th</sup> St. Infiltration at the existing system should also be considered.

**DEPARTMENT**

Public Works/Surface Water

**OBJECTIVE**

Extend dead-end storm system to outfall

**WATERSHED**

Juanita Creek

**COST OPINION**Design and Const.  
\$671,000 (2022 dollars)**CONSIDERATIONS**

Streams/Creek/Water Body

Environmental Permits

Easement or Property Acquisition Required  
Street AccessImpact to Residence/Businesses  
Coordination with Other Utilities

## Project Description

This project analyzes infiltration to the maximum extent feasible for stormwater management of approximately 5 acres of residential area utilizing an existing 30 feet by 40 feet easement at the parcel address 7848 NE 141<sup>st</sup> Street. The project may construct an overflow storm pipe extension approximately 225 feet west and outfall to the stream. An existing drywell has been installed as part of the development of 7848 NE 141<sup>st</sup> Street with potential, after testing, to expand infiltration. Other alternatives may be considered.

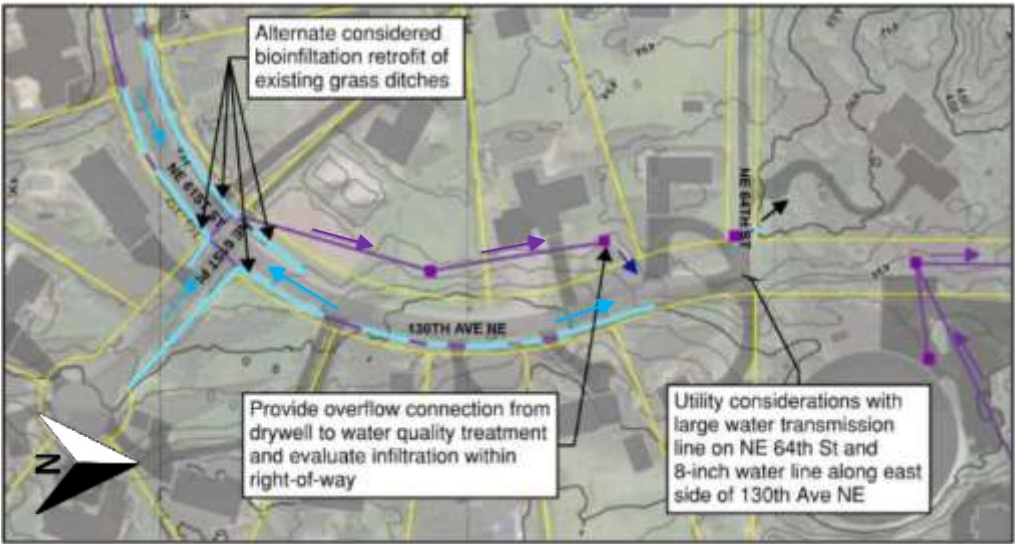
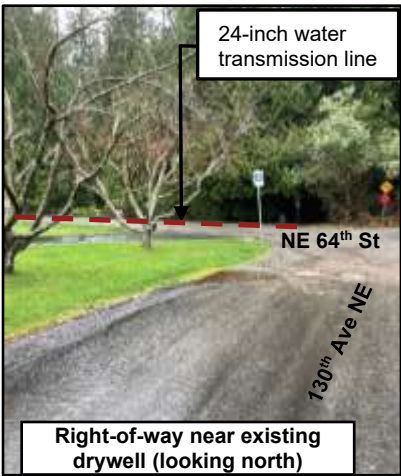
## Project Rationale

With recent development of 7830 NE 141<sup>st</sup> Street, a storm drainage system collecting runoff from residential homes along 80<sup>th</sup> Ave NE was cut off from the stream to the west. The stormwater system dead-ends into a catch basin at 7848 NE 141<sup>st</sup> Street, which would surcharge and flow overland along NE 141<sup>st</sup> Street. A recently installed drywell connection to the dead-end catch basin has alleviated frequent surcharging, however, additional infiltration testing should be performed to accommodate the contributing area to the maximum extent feasible and a pipe and catch basin connection added along NE 141<sup>st</sup> Street to the stream.

## Anticipated Elements

This project should consider a preliminary design phase including infiltration testing and hydrologic modeling to determine the need for additional infiltration and conveyance. If conveyance is added along NE 141<sup>st</sup> Street, critical elements to the project will include traffic control, utility relocation, and environmental permits associated with the creek outfall.





DEPARTMENT
Public Works/Surface Water
OBJECTIVE
Resolve flooding of existing drywell near 6139 130 <sup>th</sup> Ave NE
WATERSHED
To Bellevue
COST OPINION
Phase 1 Geotechnical and Preliminary Design
\$259,000 (2022 dollars)
Final Design and Const.
\$1,294,000 (2022 dollars)
CONSIDERATIONS
High Groundwater
Soil Conditions
Impact to Residence/Businesses
Special Equipment Required
Technical Difficulty/Multiple Disciplines or Alternative
Coordination with Other Utilities

Project Description

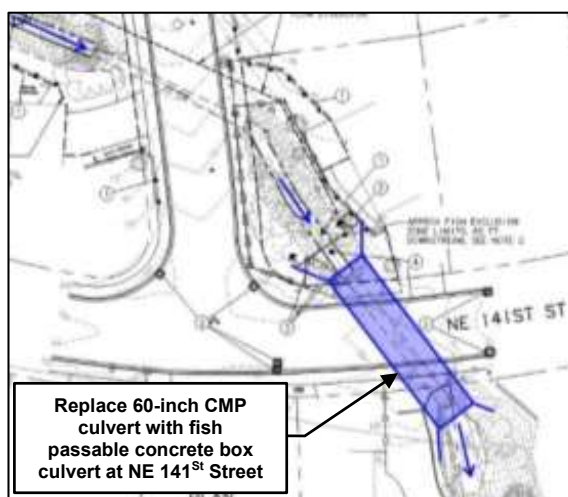
This project will evaluate installing an infiltration gallery with a treatment facility within the ROW to provide overflow and treatment for the existing system along 130<sup>th</sup> Ave NE. Construct an overflow storm pipe to connect the existing drywell to the proposed treatment system and infiltration gallery to the maximum extent feasible. Downstream connection to existing system has been determined to be infeasible at this time due to downstream drainage concerns. Other alternatives may be considered.

Project Rationale

Residential homes near 6139 130<sup>th</sup> Ave NE have experienced crawl space and driveway flooding from surcharging of an existing drywell that is undersized and has no overflow. Public and private stormwater flows to the existing storm system causing it to surcharge. The City estimates the drywell fills up during storms smaller than a 10-year event.

Anticipated Elements

Key elements of this project include coordination with utilities as there is a 24-inch water transmission line on NE 64<sup>th</sup> Street and an 8-inch water line along the east side of 130<sup>th</sup> Ave NE within the proposed project area. Providing private driveway access for properties near the proposed infiltration gallery and coordination with the public will be crucial for the success of this project. A preliminary geotechnical investigation is recommended to identify high groundwater levels and soil conditions to determine feasibility and sizing of the facility. Potential alternatives for this project is retrofit of the ditches in the sag at NE 130<sup>th</sup> Ave and NE 61<sup>st</sup> PI with bioinfiltration swales, UIC systems, or if downstream drainage concerns are alleviated, providing a downstream connection to the existing Type 2 and 18-inch storm system north of the project.

**DEPARTMENT**

Public Works/Surface Water

**OBJECTIVE**Improve habitat and resolve  
flooding issue in response to  
upstream WSDOT culvert**WATERSHED**

Juanita Creek

**COST OPINION**Phase 1 Preliminary Design

\$194,000 (2022 dollars)

Final Design and Const.

\$3,202,000 (2022 dollars)

**CONSIDERATIONS**

Steep Slopes

Streams/Creek/Water Body

Environmental Permits

Easement or Property

Acquisition Required

Coordination Required with  
Other AgenciesImpact to  
Residents/BusinessesCoordination with Other  
Utilities

## Project Description

This project recommends replacing an existing 60-inch CMP culvert with a fish passable box culvert at NE 141<sup>st</sup> St along Juanita Creek. Benefits of this project would include the reduction of potential flooding in the area, the improvement of creek habitat, and the ability to convey the 100-year storm event in this area.

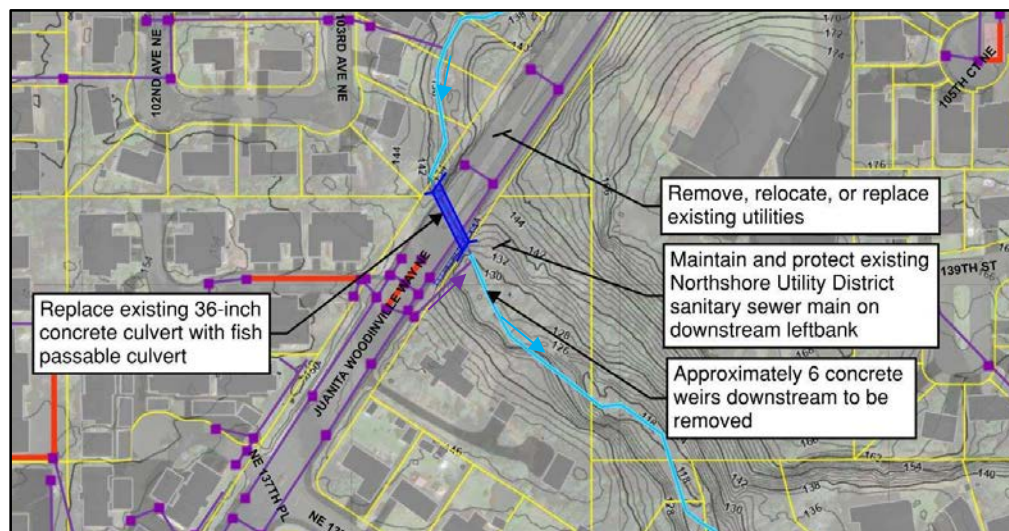
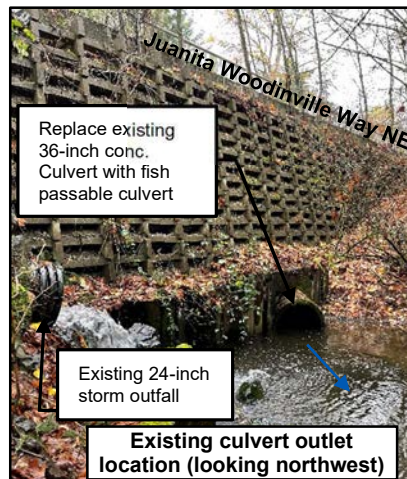
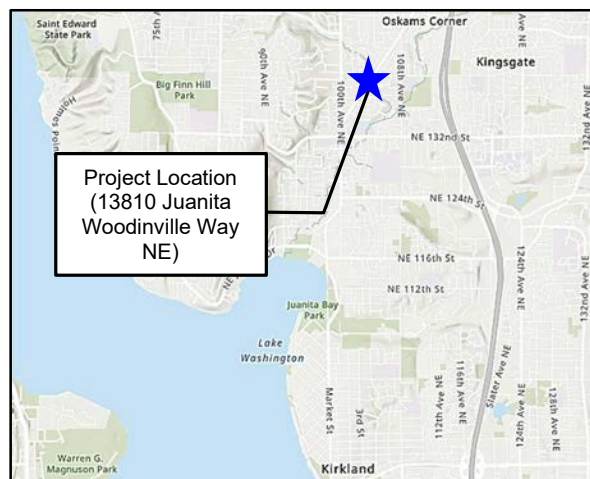
## Project Rationale

Due to the increase in size of a WSDOT culvert further upstream in Juanita Creek, hydrologic models predict the existing culvert will cause increased backwater during storm events and predicted flooding in the 100-year storm event. Additionally, WDFW identified the existing culvert as a partial fish barrier.

## Anticipated Elements

Key elements of this project include utility conflicts and easement acquisition. This project may require addressing the existing sanitary sewer crossing within the proposed culvert stream bed, relocating the existing gas, water, power, and communication lines within the project area, and coordinating connection between the proposed grading and the existing stormwater system outfalls. Kirkland GIS mapping shows existing easements on the upstream and downstream properties but easement acquisitions outside of those areas are anticipated. The Kirkland GIS map also shows moderate to high susceptibility of landslides as well as medium to high liquefaction potential within and surrounding the project area. Additional basic elements may include but are not limited to: geotechnical engineering, traffic control, permitting, and public outreach.



**DEPARTMENT**

Public Works/Surface Water

**OBJECTIVE**Replace existing 36-inch  
concrete culvert with fish  
passable culvert**WATERSHED**

Juanita Creek

**COST OPINION**Phase 1 Preliminary Design

\$515,000 (2022 dollars)

Final Design and Const.

\$8,777,000 (2022 dollars)

**CONSIDERATIONS**

Deep Excavation

Soil Conditions, Groundwater

Steep Slopes/Geotechnical

Streams/Creeks/Water Body

Environmental Permits

Easement or property  
acquisition required

Coordination required with  
other agencies (transit)

Impact to residences (Assume  
full road-closure during  
installation)

Coordination/relocation with  
other utilities (gas, water,  
sewer, communications)

## Project Description

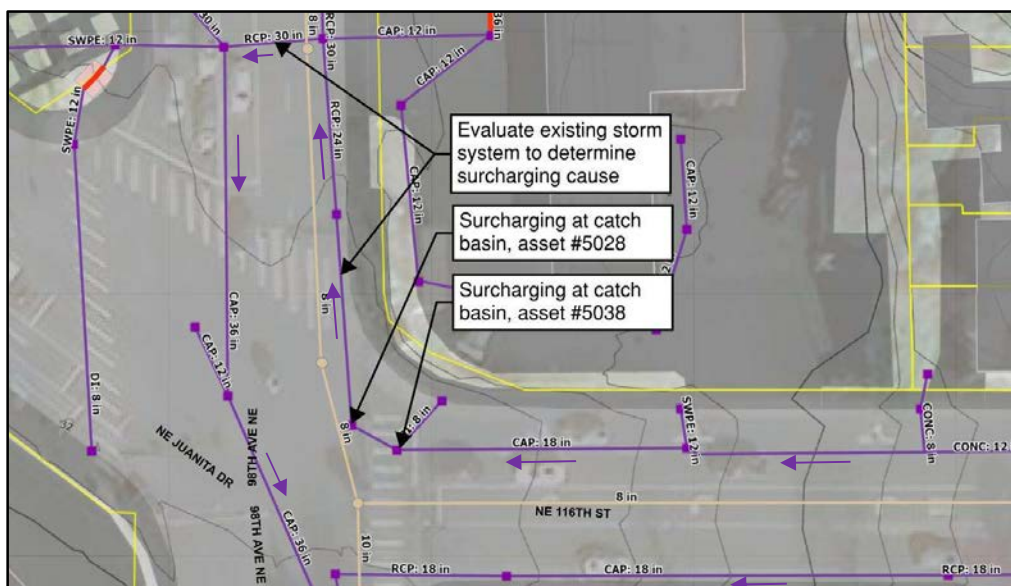
This project replaces an existing 36-inch culvert that has been deemed a partial fish barrier (WDFW ID 602254), with a fish passable culvert. Replacing the existing culvert may require removal and replacement of the existing sheetpiles, retaining walls, concrete barrier, and guardrail. Existing utilities to be removed, relocated or replaced while the existing Northshore Utility District sanitary sewer is to remain and be protected.

## Project Rationale

This culvert is a partial barrier on a significant, fish-bearing stream with no full barriers downstream. Fish can swim easily through the lower section of the pipe at most flows, but then need to pass through a short, low depth, high velocity area in the upper section. This culvert was identified as a high priority in the culvert assessment conducted in the 2014 Surface Water Master Plan.

## Anticipated Elements

Key elements of this project include traffic and transit impacts and coordination of detour routes. The crossing has steep slopes with embankment walls and a skewed culvert that will require easements on adjacent properties for access during construction. Indications of groundwater concerns and slope stability issues will require geotechnical investigations. Coordination with other agencies and utilities will be required to replace the roadway and alter or protect the existing utilities.



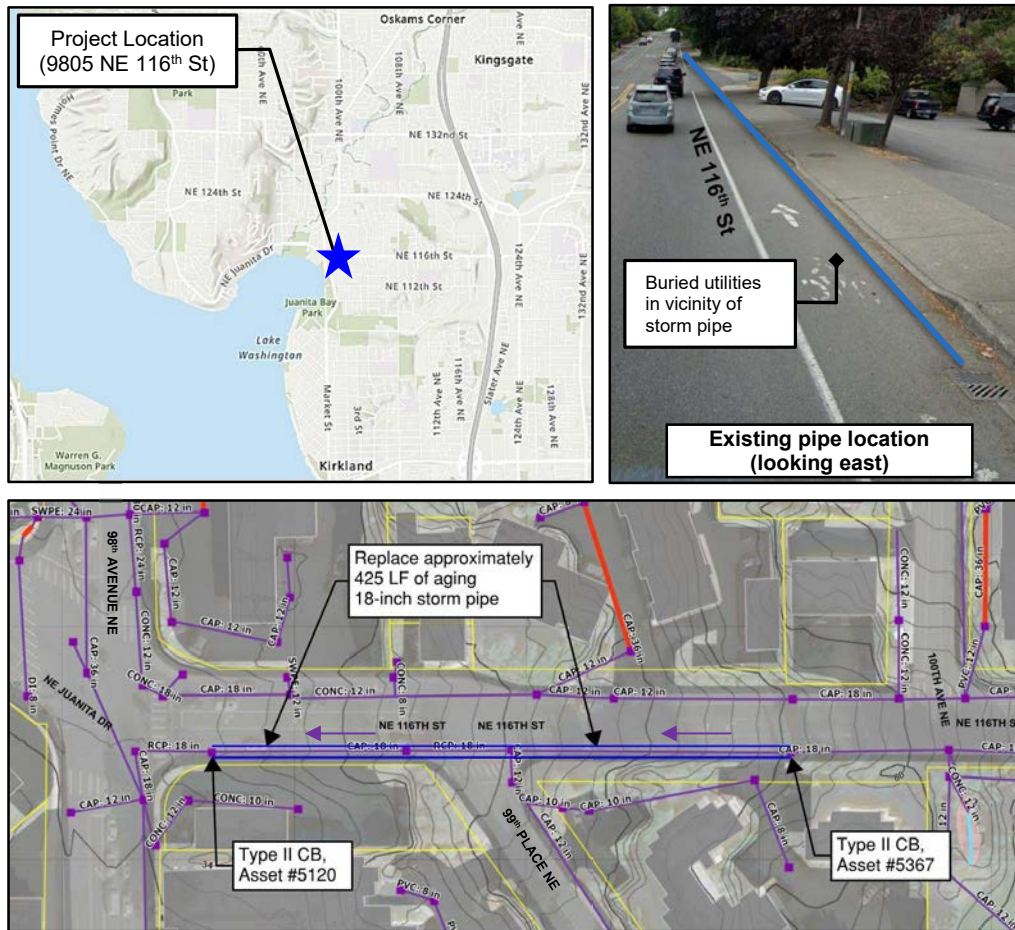
<b>DEPARTMENT</b>
Public Works/Surface Water and Transportation
<b>OBJECTIVE</b>
Reduce flooding at intersection during storm events
<b>WATERSHED</b>
South Juanita Slope
<b>COST OPINION</b>
<u>Flood Study Analysis</u> \$90,000 (2022 dollars)
<b>CONSIDERATIONS</b>
Coordination required with other agencies
Impact to Residences/Businesses
Coordination with other utilities (gas, water, sewer)

This project involves a study to assess the existing storm system capacity and backwater issues through modeling of the storm system at NE 116<sup>th</sup> Street and 98<sup>th</sup> Avenue NE. The project also includes an alternative analysis of solutions to the flooding and preliminary design of the preferred solution. Consider future build-out conditions during analysis of the proposed solution.

This intersection has flooding during intense storm events forcing closure of the intersection due to safety concerns. Catch basin asset 5028 and catch basin asset 5038 on the NE corner of the intersection have surcharged during recent events. The force from the surcharging at these catch basins has pushed the covers up and off their frames.

Key elements of this project include modeling of the contributing hydrology and system hydraulics to determine the source of the surcharging and subsequent alternative analysis of solutions. Depending on the preferred alternative, coordination with other agencies and utilities to replace the roadway and alter or protect existing utilities will likely be needed. Additionally, any alternative chosen is likely to impact surrounding businesses. If the project shifts curb lines, look at how to improve pedestrian safety and bike access as part of the project.





<b>DEPARTMENT</b>
Public Works/Surface Water
<b>OBJECTIVE</b>
Replace existing corrugated metal pipe
<b>WATERSHED</b>
South Juanita Slope
<b>COST OPINION</b>
<u>Design and Const.</u>
\$939,000 (2022 dollars)
<b>CONSIDERATIONS</b>
Impact to Residences/Businesses
Coordination with Other Utilities (Gas, Water, Sewer, Electric, Communications)

## Project Description

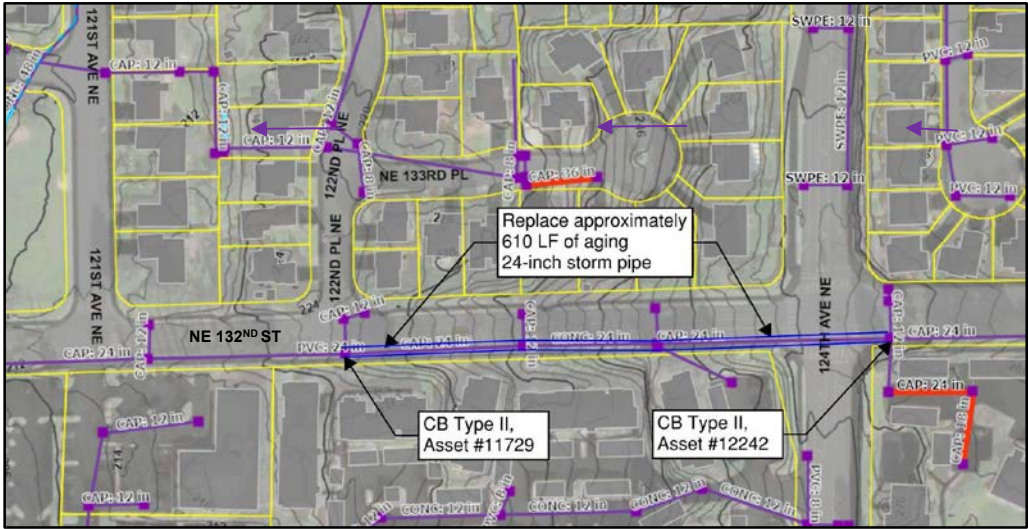
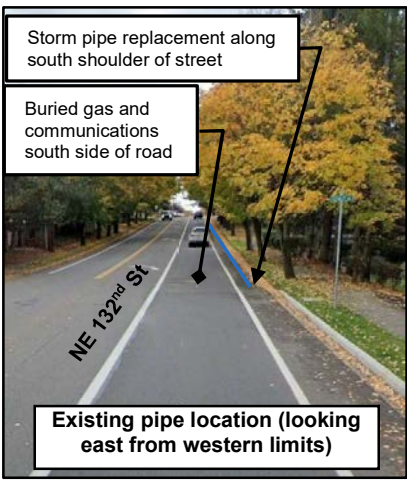
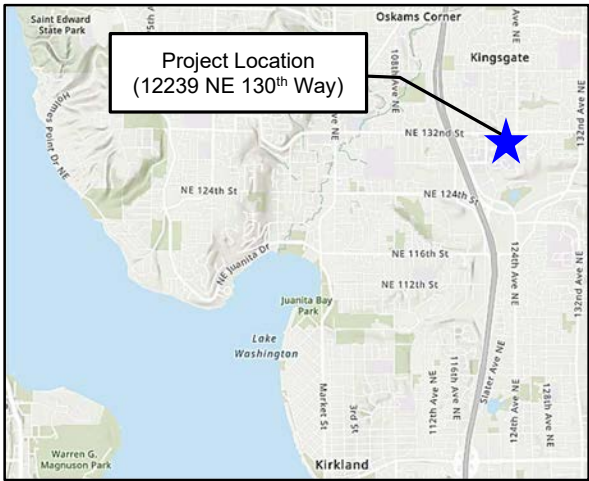
This projects involves the replacement of approximately 425 feet of aging 18-inch diameter pipe starting from the southeast corner of 98<sup>th</sup> Avenue NE and NE 116<sup>th</sup> Street and heading east along the south side of NE 116<sup>th</sup> Street from asset 5120 to 5367. This project is the first phase phase of replacement of this storm pipe, starting at the furthest west end of NE 116<sup>th</sup> St at 98<sup>th</sup> Ave NE and progressing through replacement to the east to I-405. Consider evaluating pipe capacity to ensure the storm pipe can convey storm events for future built out conditions.

## Project Rationale

The existing pipe is corroded and full of holes and roots. The system can not be maintained due to the corrosion, and attempting to clean the pipe with the vector will likely further damage the pipe. This project has been identified as having a high likelihood and consequence of failure within the Pipe Risk Analysis Tool. These pipes were identified as 1 extreme pipe and 1 high pipe.

## Anticipated Elements

Key elements of this project include the impacts to residences/businesses and relocation of existing utilities including but not limited to water, gas, buried communication, and electric. When repaving after project, repave half street or minimum full width of bike lane. Where ROW allows, look at the possibility of widening sidewalk.



DEPARTMENT
Public Works/Surface Water
OBJECTIVE
Replace aging corrugated metal pipe on NE 132 <sup>nd</sup> St
WATERSHED
Juanita Creek
COST OPINION
Design and Const. \$1,382,000 (2022 dollars)
CONSIDERATIONS
Impact to Residences/Businesses Coordination with Other Utilities

Project Description

This projects involves the replacement of approximately 610 feet of 24-inch diameter pipe starting from the southeast corner of 124th Avenue NE and NE 132nd Street and heading west along the south side of NE 132nd Street from asset 12242 to 11729.

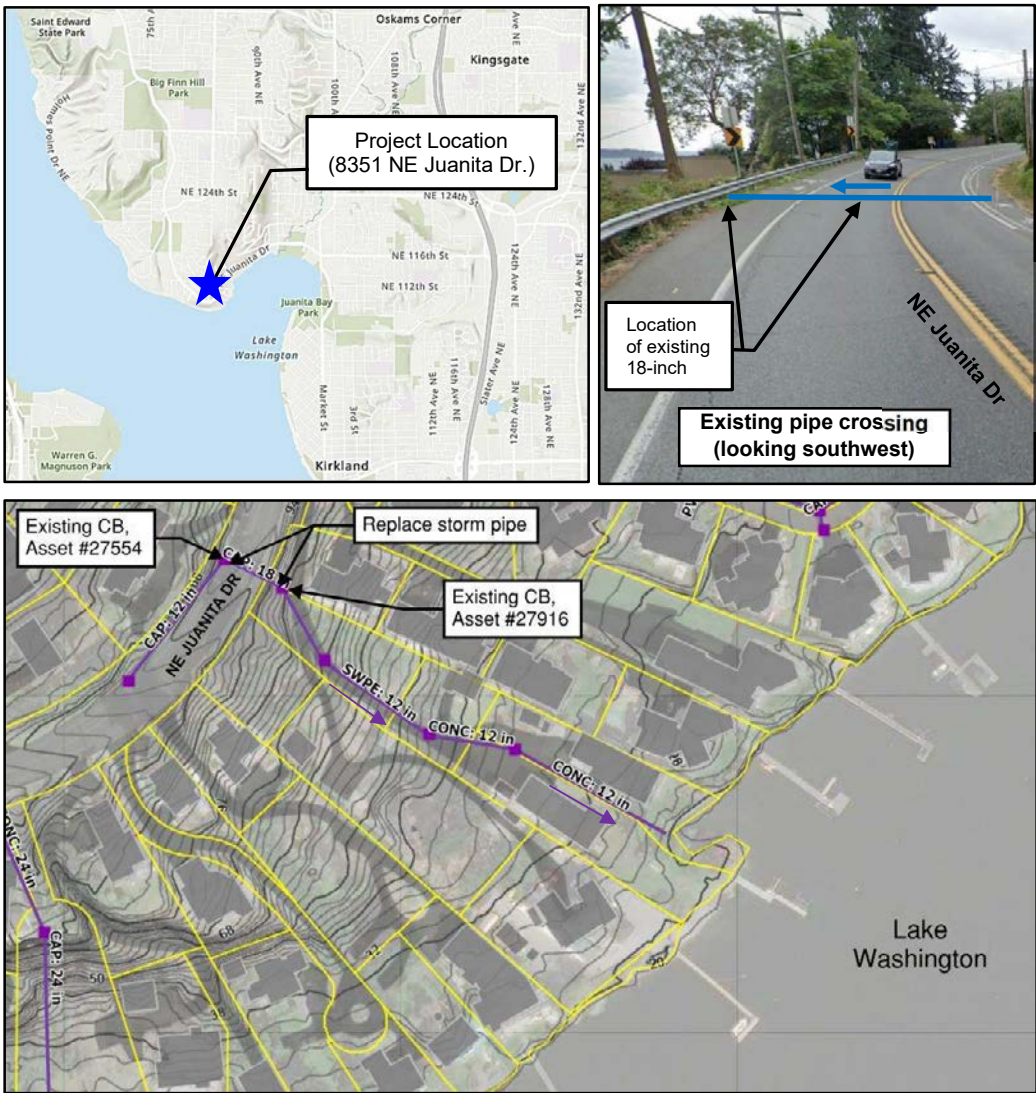
Project Rationale

This project was selected because high likelihood and consequence of failure within the Pipe Risk Analysis Tool. These pipes were identified as a 1 extreme risk pipe and 2 high risk pipes.

Anticipated Elements

Key elements of this project include the impacts to traffic and coordination with existing utilities including but not limited to water, gas, buried communication, and electric. A high pressure gas main and communications appear to be in close proximity to the existing storm pipe. Replace sidewalk which has been destroyed by street trees. Minimum repave width should be 5' wide bike lane, preferably half of the street.





DEPARTMENT
Public Works/Surface Water
OBJECTIVE
Replace existing storm pipes with new pipe
WATERSHED
Champagne Creek
COST OPINION
Design and Const. \$742,000 (2022 dollars)
CONSIDERATIONS
Deep Excavation
Steep Slopes
Easement Required
Street Classification/ Access
Coordination with Other Utilities
Impact to Residences

Project Description

This project proposes to replace an existing 18-inch storm pipe that is aged and in poor condition. This may involve addition of a drop structure at the top of a steep slope on the east side of NE Juanita Drive. Pipes will be replaced at slopes to maintain the capacity of the system while tying into the upstream and downstream structures.

Project Rationale

The existing 18-inch stormwater pipe running west to east across NE Juanita Drive is unable to be maintained due to broken joints, changes material in three locations, and a sharp vertical drop in the last 10-foot of the pipe section with no maintenance access.

Anticipated Elements

A key element of this project will be the coordination with adjacent private residents. The downstream pipe is on a steep slope, and the connection appears to be on a shared access drive to several private properties to the east. This project is located on an arterial which may require higher levels of traffic control. Additionally, recent utility markings show a natural gas main and water and gas service connections at the crossing location which will require coordination. Resulting project should be consistent with Juanita Drive Master Plan Study roadway section in the area.