

SEATTLE PUBLIC UTILITIES
SEPA ENVIRONMENTAL CHECKLIST

This SEPA environmental review of Seattle Public Utilities' Northwest 120th Street and 9th Avenue Northwest Outfall and Drainage Improvements Project has been conducted in accord with the Washington State Environmental Policy Act (SEPA) (RCW 43.21C), State SEPA regulations [Washington Administrative Code (WAC) Chapter 197-11], and the City of Seattle SEPA ordinance [Seattle Municipal Code (SMC) Chapter 25.05].

A. BACKGROUND

1. Name of proposed project:

Northwest 120th Street and 9th Avenue Northwest Outfall and Drainage Improvements Project

2. Name of applicant:

Seattle Public Utilities (SPU)

3. Address and phone number of applicant and contact person:

Arnel Valmonte, Project Manager
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4. Date checklist prepared:

February 4, 2016

5. Agency requesting checklist:

Seattle Public Utilities (SPU)

6. Proposed timing or schedule (including phasing, if applicable):

Construction is anticipated to require approximately 70 working days and is expected to begin in mid-2016 and be completed by the end of 2016.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

SPU currently has no plans for future additions or expansions related to the proposed project.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Brown and Caldwell. 2013 (February 8). Technical Memorandum: Engineering and Support Services for the Broadview Sewer and Drainage Improvements Project, Northwest 120th Street and 9th Avenue Northwest Outfall and Drainage Improvements (Project Number 142370-104).

Seattle Public Utilities, Geotechnical Engineering. 2015 (September). Final Geotechnical Report NW 120th Street Drainage Improvements, Seattle, Washington.

Troost, K.G., D.B. Booth, A.P. Wisher, and S.A. Shimel. 2005. Geologic map of Seattle. U.S. Geological Survey Open File Report 2005-1252. <http://pubs.usgs.gov/of/2005/1252/of2005-1252.pdf>

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

SPU is not aware of any pending applications for government approvals of other proposals that directly affect the property covered by this proposal.

10. List any government approvals or permits that will be needed for your proposal, if known.

Implementation of this project may require some or all of the following permits and approvals:

- Seattle Department of Transportation (SDOT), Street Improvement Permit
- SDOT, Street Use Permit (type 31, construction use)
- City of Seattle, Seattle Department of Construction and Inspection (SDCI): Variance from the City of Seattle noise ordinance, if construction outside of authorized hours is necessary (see Section B.7.b of the checklist).
- Hydraulic Project Approval, Washington State Department of Fish and Wildlife

11. Give a brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.

SPU maintains an informal ditch and culvert stormwater drainage network along Northwest 120th Street and 9th Ave Northwest in the Broadview neighborhood of the City of Seattle (Attachments A and B). When it rains, open ditches in this area capture stormwater that flows from adjacent roadways and properties. The ditches and associated culverts then convey the stormwater to a 160 foot long stormwater outfall pipe owned by SPU that daylight and then descends on the surface of a steep slope, eventually discharging immediately adjacent to Molendorph Creek in the right-of-way for Northwest 120th Street. Because there's never been a formally designed stormwater conveyance system in this neighborhood, some roadways and private properties in the project area experience localized flooding.

SPU's ditch and culvert system junctions with an 8 inch diameter culvert under 9th Avenue Northwest about 160 feet north of the intersection with Northwest 120th Street. At this culvert junction location, stormwater is collected from a sub-drainage area of approximately 5.5 to 6 acres. Stormwater from this sub-drainage area arises from both public and private property and includes street runoff from portions of the north-south streets from 6th Avenue

Northwest to 9th Avenue Northwest as well as a portion of Northwest 122nd Street. That culvert drains to a private drainage system extending from the west side of 9th Avenue Northwest to an outfall pipe that discharges to the headwaters of Molendorph Creek approximately 25 feet north of SPU's outfall. SPU has received localized flooding complaints from residents served by this private system

In 2006, the box structure at the upper end of SPU's outfall pipe overflowed, allowing water to rush into the ravine where it eroded the steep slope. In addition, joint connections along the outfall pipe were observed to be leaking at that time. In 2011, these pipe joint connections failed and discharged stormwater, again eroding the steep slope and further undermining the stability of the outfall pipe. SPU subsequently implemented a temporary fix that connects segments of the outfall pipe so that stormwater currently discharges near its pre-failure location. However, portions of this temporary pipe are suspended above the ground and are at risk of failure if the steep slope moves or if pipe joints deteriorate.

SPU has identified a project that would replace the temporary outfall pipe and resolve the localized flooding issues by installing approximately 580 linear feet of new 18 inch diameter pipe between 4 and 10 feet below the ground surface (bgs) in the rights-of-way for Northwest 120th Street and 9th Avenue Northwest. This new pipe would intercept and convey stormwater from the sub-drainage basin described above, which currently flows to the 8 inch diameter culvert under 9th Avenue Northwest that drains to the private drainage system. Because that culvert would no longer be needed, this project would decommission and abandon the culvert in-place by filling it with controlled density fill.

The new pipe would require installation of five new catch basins (Types 240A, B, and C) and connecting pipe on 9th Avenue Northwest. Three new maintenance hole structures (Type 204B) would be installed along the length of the new pipe to facilitate future cleaning and inspection. The outlet of the new pipe would be equipped with a diffuser tee and splash pad to minimize erosion. Buried portions of the new pipe would be installed using conventional open trench techniques.

The above-grade portion of SPU's existing outfall pipe would be removed and the buried portion filled with controlled density fill and abandoned in place. The steep slope associated with the outfall section of the new pipe would be revegetated with native trees and shrubs and then hydroseeded with an erosion control seed mixture. All demolished asphalt roadway pavement would be restored as directed by SDOT.

In addition, the project would reshape and vegetate approximately 180 linear feet of the existing ditch on the north side of Northwest 120th Street between 7th Avenue Northwest and the alley to the east of 7th Avenue Northwest. The bottom of this ditch is currently lined with asphalt, which would be removed during the reshaping activity and not replaced.

- 12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.**

These drainage system improvements would be located in the City of Seattle's Broadview neighborhood, in the street rights-of way for Northwest 120th Street and 9th Avenue Northwest (Attachments A and B). There is no specific address for this project. The project is located in the northwest and northeast quarters of Section 25, Township 26 North, Range 3 East.

B. ENVIRONMENTAL ELEMENTS

1. Earth

- a. General description of the site:** [Check the applicable boxes]

Flat Rolling Hilly Steep Slopes Mountainous
 Other:

- b. What is the steepest slope on the site (approximate percent slope)?**

The project area is generally flat along 9th Avenue Northwest. The paved portion of Northwest 120th Street descends gently to the west and ends at the top of a steep slope; The unopened portion of the Northwest 120th Street right-of-way continues down the steep slope, descending to and ending at Molendorph Creek.

- c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.**

The general geologic condition of the Puget Sound region is a result of glacial and non-glacial activity that occurred over the course of millions of years. Review of the geologic map covering the project location (Troost et al. 2005, available at <http://pubs.usgs.gov/of/2005/1252/>) indicates the project area is underlain by Vashon glacial till and advance outwash. Advance outwash consists of well sorted sand and gravel that was transported by meltwater channels emanating from the toe of the advancing glacier and subsequently overridden by the glacier. In a typical glacial depositional sequence, advance outwash coarsens upwards to glacial till. Glacial till is a mix of poorly sorted silt, sand, and sub-rounded to well-rounded gravels and cobbles that are transported by the glacier and deposited under the ice resulting in a very dense to over consolidated deposit. Geotechnical investigations in this area generally agree with the mapped geology. These explorations indicate the presence of glacial till. The deepest geotechnical boring conducted for this project encountered Lawton clay beneath the glacial till.

Soils are dominated by Alderwood gravelly sandy loam and Kitsap silt loam. However, urban development in this area over the last 100 years has resulted in a predominance of disturbed native soils/sediments, cut slopes, and large placements of fill material. Except for some areas of steep slopes, most of the project location and immediately surrounding area have been completely developed and disturbed in this way.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe:

Portions of the project are located in or near Steep Slope, Potential Slide, and Known Slide areas—Environmentally Critical Areas as identified and mapped by SDCI.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate the source of fill.

Work on the public drainage system would require excavation of approximately 600 cubic yards of soil or material and backfilling with approximately 600 cubic yards of native soil, pipe bedding (aggregate), pipe, and other fill material. At this time, about 400 cubic yards of spoil are expected to be exported from the project area. Imported fill materials would be obtained from a commercial purveyor of such materials, licensed and permitted by the State of Washington. Exported excavated soil materials would be either reused on other projects or disposed of in an SPU-approved upland disposal location per construction contract requirements.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe:

Erosion and sedimentation could occur as a result of this project due to open trenching, ditch reshaping, and disturbance of the steep slope above Molendorph Creek.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

The public drainage system improvements would demolish approximately 720 square yards of currently existing impervious surface and replace it with the same area of impervious surface (asphalt). There would be no new impervious surfaces. No currently pervious surfaces would be replaced with new impervious surfaces.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

No filling would take place in watercourses or wetlands and best management practices (BMPs) would be used to protect the existing stormwater drainage system and to minimize off-site runoff. BMPs identified in the City of Seattle’s Stormwater Code and Manual (Title 22, Subtitle VIII of the SMC and Directors' Rules DPD 21-2015/SPU DWW 200) would be used to manage stormwater runoff, construction disturbance, and erosion as needed during construction. Also, all work would be required to be performed with an SPU-approved construction stormwater and erosion control plan (CSECP), while also meeting NPDES stormwater permit requirements.

2. Air

- a. What types of emissions to the air would result from the proposal [e.g., dust, automobile, odors, industrial wood smoke, greenhouse gases (GHG)] during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.**

Construction equipment would include hand-held power tools, gasoline and diesel-powered compressors and generators, and gasoline and diesel-powered vehicles. Due to the combustion of gasoline and diesel fuels, these tools would generate greenhouse gas emissions (GHG) such as oxides of nitrogen and oxides of carbon, as well as particulate matter and smoke, uncombusted hydrocarbons, hydrogen sulfide, and water vapor. Other emissions during construction may include dust. These effects are expected to be localized, temporary, and minimized. The completed project is not expected to generate odors.

The project would produce GHGs in three ways: embodied energy in materials to be installed on the project; energy expended through construction activity (especially as described above); and energy expended during regular operation, maintenance, and monitoring activities throughout the anticipated 100 year lifespan of the installed project.

Total GHG emissions for the project are estimated to be 338 metric tons of carbon dioxide emission (MTCO_{2e}). The GHG emissions calculations are shown in Attachment C and summarized in the table below. One metric ton is equivalent to 2,205 pounds.

The project would demolish and remove existing asphalt surfaces as well as install new asphalt surfaces. The estimated volume of new asphalt is approximately 60 cubic yards, which is estimated to embody 162 MTCO_{2e}. Embodied energy in other materials (such as aggregate bedding, pipe material, catch basins, nursery stock, and so forth) used in this project has not been estimated as part of this SEPA environmental review due to the difficulty and inaccuracy of calculating those estimates. Also, the carbon offset achieved by the planted nursery stock over time has not been estimated, for similar reasons.

The project would generate GHG emissions during the construction period through the operation of diesel- and gasoline-powered equipment, and in the transportation of materials, equipment, and workers to and from the site. The estimates provided are based on assumptions for typical numbers of vehicle operations to execute the work; see Attachment C for more information. Construction activities would generate an estimated 170.7 MTCO_{2e}.

The project would also generate GHG emissions through the operation, maintenance, and monitoring of the project. The estimated emissions are based on an assumed life expectancy of 100 years. The estimated average annual GHG emissions generated from operations, maintenance, and monitoring is 5.3 MTCO_{2e}.

Summary of Greenhouse Gas (GHG) Emissions

Activity/Emission Type	GHG Emissions (pounds of CO ₂ e) ¹	GHS Emissions (metric tons of CO ₂ e) ¹
Buildings	not applicable	not applicable
Paving	357,210	162
Construction Activities (Diesel)	335,114.1	152
Construction Activities (Gasoline)	41,310	18.7
Long-term Maintenance (Diesel)	11,682	5.3
Long-term Maintenance (Gasoline)	not applicable	not applicable
Total GHG Emissions	745,316.1	338

¹Note: 1 metric ton = 2,204.6 pounds of CO₂e. 1,000 pounds = 0.45 metric tons of CO₂e

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No off-site sources of emissions or odors are known. The neighborhood is fully developed as single family residential.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

During construction, impacts to air quality would be reduced and controlled through implementation of federal, state, and local emission control criteria and City of Seattle construction practices. These would include requiring contractors to use best management practices for construction methods, proper vehicle maintenance, and minimizing vehicle and equipment idling.

3. Water

a. Surface:

(1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If so, describe type and provide names. If appropriate, state what stream or river it flows into.

This project would install a stormwater outfall pipe near Molendorph Creek, which is a tributary to Pipers Creek. Pipers Creek is a Puget Sound tributary. The outfall of that pipe and the associated dissipation tee and splash pad would be located immediately above the ordinary high water mark of Molendorph Creek.

(2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If so, please describe, and attach available plans.

The project would require work within 200 feet of Molendorph Creek.

(3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands, and indicate the area of the site that would be affected. Indicate the source of fill material.

No fill or dredge material would be placed in or removed from surface waters or wetlands.

(4) Will the proposal require surface water withdrawals or diversions? If so, give general description, purpose, and approximate quantities if known.

Land use in the project drainage basin is residential. SPU maintains an informal ditch and culvert stormwater drainage network along Northwest 120th Street and 9th Ave Northwest in this area. When it rains, open ditches in this area capture stormwater that flows from adjacent roadways and properties. The ditches and associated culverts then convey stormwater to an SPU-owned outfall pipe that descends on the surface of a steep slope, eventually discharging immediately adjacent to Molendorph Creek at the west end of Northwest 120th Street. Some stormwater on 9th Avenue Northwest is also captured and directed to a second outfall pipe on 9th Avenue Northwest approximately 180 feet north of Northwest 120th Street. That second pipe is privately owned and discharges to Molendorph Creek approximately 25 feet north of SPU’s outfall.

(5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

According to the Federal Emergency Management Agency’s National Flood Insurance Program Flood Insurance Rate Map Number 53033C0330 F (revised, May 16, 1995), no part of the project is in or near a 100-year floodplain or floodway.

(6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

Sources of stormwater runoff include upstream neighborhood streets, sidewalks, driveways and impervious areas from privately owned rooftops and paved areas. Contaminants found in residential stormwater runoff would continue to be delivered to Molendorph Creek. Contaminants commonly found in urban stormwater include metals (including copper, zinc, and lead, for example), herbicides and pesticides, and microbes (including pathogens such as *Giardia*, *Cryptosporidium*, *Campylobacter*, *Vibrio*, *Salmonella*, *Escherichia*, and *Pseudomonas*). Primary sources of such contamination are residential activity (including lawn and garden care), vehicles, pollution from the air, and animal feces.

b. Ground:

(1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

Previous geotechnical investigations (May 2015) noted that depth to groundwater in this area ranges from about 21 to 27.5 feet bgs and the depth to perched groundwater ranges from about 2.5 to 7.5 feet bgs. Project construction is not anticipated to require dewatering of excavations. However, if dewatering is required, standard collection and pumping methods would be used. The completed project would not withdraw, discharge, or surcharge groundwater. However, the completed project is anticipated to reduce localized flooding, which has the potential to permanently reduce the amount of stormwater infiltrating to groundwater tables. The volume or magnitude of that reduction is not known.

- (2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: domestic sewage; industrial, containing the following chemicals...; agricultural, etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

The project would not produce or discharge waste materials to groundwater.

c. Water Runoff (including storm water):

- (1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

The right-of-way consists mostly of impervious surfaces, including asphalt road with limited curb and gutter, ditches, and driveway aprons. Adjacent private parcels consist mostly of impervious surfaces (i.e., roofs, driveways, patios), with pervious areas covered by lawn, landscaping, and occasional trees. Currently, stormwater runoff from impervious surfaces is collected via ditches and culverts and directed to two outfall pipes that discharge to Molendorph Creek, as described in Section A.11.

The project would prepare and implement a CSECP plan. BMPs identified in the City of Seattle's Stormwater Code and Manual (Title 22, Subtitle VIII of the SMC and Directors' Rules DPD 21-2015/SPU DWW 200) would be used to manage stormwater runoff, construction disturbance, and erosion as needed during construction.

The completed project would be re-covered with asphalt, but would not create a need to manage additional stormwater runoff beyond currently existing conditions. Stormwater would follow current (pre-construction) pathways. The current volume, timing, and duration of these stormwater flows are not known.

- (2) Could waste materials enter ground or surface waters? If so, generally describe.**

During construction, it is possible that erosion from the construction site could enter surface waters. However, a CSECP plan using appropriate BMPs would be developed and implemented to avoid or minimize this risk.

- (3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.**

Most of the completed project would be re-covered with asphalt and would not create a need to manage additional stormwater runoff beyond currently existing conditions. Generally, post-construction, stormwater would follow current (pre-construction) pathways. However, as described in Section A.11, a second pipe collects stormwater on 9th Avenue Northwest approximately 180 feet north of Northwest 120th Street and discharges to Molendorph Creek on private property approximately 25 feet north of SPU's outfall. Construction of this project would redirect flows that would otherwise go to this second outfall to SPU's outfall. Also,

during more intense rain events, stormwater not captured by the ditch and culvert system along 9th Avenue Northwest currently flows onto private property where it either infiltrates or flows overland to Molendorph Creek. The proposed project would effectively capture such flows and deliver that stormwater directly to Molendorph Creek. Specific volume and timing of those flows are not known. Because the outfalls are so close, and because the outlet of the new outfall pipe would be fitted with a dissipation tee and splash pad, these changes in flow pattern are not expected to adversely affect Molendorph Creek.

d. Proposed measures to reduce or control surface, ground, runoff water, and drainage impacts:

Typical construction methods are anticipated and no adverse impacts to surface or ground waters are expected. BMPs identified in the City of Seattle’s Stormwater Code and Manual (Title 22, Subtitle VIII of the SMC and Directors' Rules DPD 21-2015/SPU DWW 200) would be used to manage stormwater runoff, construction disturbance, and erosion as needed during construction. The project would develop and implement a CSECP.

4. Plants

a. Types of vegetation found on the site: [check the applicable boxes]

<input checked="" type="checkbox"/> Deciduous trees:	<input type="checkbox"/> Alder	<input checked="" type="checkbox"/> Maple	<input type="checkbox"/> Aspen	<input type="checkbox"/> Other:
<input checked="" type="checkbox"/> Evergreen trees:	<input checked="" type="checkbox"/> Fir	<input checked="" type="checkbox"/> Cedar	<input type="checkbox"/> Pine	<input type="checkbox"/> Other:
<input checked="" type="checkbox"/> Shrubs				
<input checked="" type="checkbox"/> Grass				
<input type="checkbox"/> Pasture				
<input type="checkbox"/> Crop or grain				
<input type="checkbox"/> Orchards, vineyards, or other permanent crops				
<input type="checkbox"/> Wet soil plants:	<input type="checkbox"/> Cattail	<input type="checkbox"/> Buttercup	<input type="checkbox"/> Bulrush	<input type="checkbox"/> Skunk cabbage
<input type="checkbox"/> Other:				
<input type="checkbox"/> Water plants:	<input type="checkbox"/> water lily	<input type="checkbox"/> eelgrass	<input type="checkbox"/> milfoil	<input type="checkbox"/> Other:
<input type="checkbox"/> Other types of vegetation:				

b. What kind and amount of vegetation will be removed or altered?

The right-of-way consists mostly of impervious surfaces, including asphalt road with shoulders and limited curb and gutter, ditches, and driveway aprons. The remaining area is planted with lawn and/or ornamental landscape plantings. Adjacent private parcels consist mostly of impervious surfaces (i.e., roofs, driveways, patios), with pervious areas covered by lawn, landscaping, and trees. Publicly and privately planted street trees are located sporadically in the right-of-way landscape, with few areas of species continuity.

Most of the project would be located on paved surface in the street right-of-way outside of street tree canopy drip-lines and would disturb no vegetation. However, construction would reshape and vegetate approximately 180 linear feet of the existing ditch on the north side of Northwest 120th Street between 7th Avenue Northwest and the alley to the east of 7th Avenue Northwest. The bottom of the ditch is currently asphalted. Work

would include eliminating grass and weeds vegetating the bottom and sides of the ditch, reshaping the ditch and stabilizing it with compostable geotextile materials, and hydroseeding the ditch with a grass seed mixture. The ditch would not be re-lined with asphalt.

c. List threatened or endangered species known to be on or near the site.

According to a review of the Washington Department of Natural Resources (WDNR) Natural Heritage Program’s document called “Sections that Contain Natural Heritage Features, Current as of July 24, 2015” (accessed at www.dnr.wa.gov), there are no documented occurrences of sensitive, threatened, or endangered plant species in this Section. No federally-listed endangered or threatened plant species or State-listed sensitive plant species are known to occur within the municipal limits of the City of Seattle. The project location has been intensively disturbed by development and redevelopment over the last 100 years. The project area has been extensively excavated, filled, paved, or occupied by street and other built structures. There is no habitat for threatened or endangered plants.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

The project would limit plant removal, pruning, and other disturbance to that required for project construction and would be guided by an SPU-approved Tree, Vegetation, and Soil Protection Plan. Construction limits would be clearly and physically delineated by protective construction fencing to prevent unauthorized trespass and collateral damage to nearby vegetation. No trees or shrubs would be removed by this project. To enhance stability of the slope above Molendorph Creek and to improve riparian habitat conditions, the project would install more than 150 native trees, shrubs, and ferns within the unopened right-of-way for Northwest 120th Street.

e. List all noxious weeds and invasive species known to be on or near the site.

Portions of the project area are known to have or be close to Himalayan blackberry (*Rubus armeniacus*), English ivy (*Hedera helix*), and English holly (*Ilex aquifolium*).

5. Animals

a. List any birds and other animals that have been observed on or near the site or are known to be on or near the site: [check the applicable boxes]

Birds:	<input checked="" type="checkbox"/> Hawk	<input checked="" type="checkbox"/> Heron	<input checked="" type="checkbox"/> Eagle	<input checked="" type="checkbox"/> Songbirds
	<input checked="" type="checkbox"/> Other: crow, pigeon			
<hr/>				
Mammals:	<input type="checkbox"/> Deer	<input type="checkbox"/> Bear	<input type="checkbox"/> Elk	<input type="checkbox"/> Beaver
	<input checked="" type="checkbox"/> Other: possum, raccoon, squirrel			
<hr/>				
Fish:	<input type="checkbox"/> Bass	<input type="checkbox"/> Salmon	<input type="checkbox"/> Trout	<input type="checkbox"/> Herring
	<input type="checkbox"/> Shellfish	<input type="checkbox"/> Other:		

b. List any threatened or endangered species known to be on or near the site:

No such species are known to be present on or near the project site, based on a check of the Washington Department of Fish and Wildlife's "Priority Habitat Species on the Web" database on January 20, 2016. That database maps the steep slopes associated with Molendorph Creek as a 'Biodiversity Areas and Corridor.' Also, the project location is known to be (but not mapped as being) within the habitat of bald eagle (*Haliaeetus leucocephalus*) and great blue heron (*Ardea herodias*)—priority species in Washington.

c. Is the site part of a migration route? If so, explain.

Seattle is located within the migratory route of many birds and other animal species and is part of the Pacific Flyway, a major north-south route of travel for migratory birds in the Americas extending from Alaska to Patagonia. Puget Sound is more than 2,000 feet to the west and is an important water migration route for many animal species.

d. Proposed measures to preserve or enhance wildlife, if any:

The project is not proposing measures to preserve or enhance wildlife because there are no anticipated impacts to animals. However, to enhance stability of the slope above Molendorph Creek and to improve riparian habitat conditions, the project would install more than 150 native trees, shrubs, and ferns within the unopened right-of-way for Northwest 120th Street.

e. List any invasive animal species known to be on or near the site.

No such species are known to be present on or near the project site.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

The main improvements of the completed project would not require any energy to operate.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

The proposed project does not involve building structures or planting vegetation that would block access to the sun for adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

There are no conservation features or proposed measures to reduce or control energy impacts because there would be no such impacts.

7. Environmental Health

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste that could occur as a result of this proposal? If so, describe:**

Small amounts of materials likely to be present during construction include gasoline and diesel fuels, hydraulic fluids, oils, lubricants, solvents, paints, and other chemical products. A spill of one of these chemicals could potentially occur during construction as a result of either equipment failure or worker error. Though unlikely, contaminated soils, sediments, or groundwater could also be exposed during excavation. If disturbed, contaminated substances could expose construction workers and potentially other individuals in the vicinity through blowing dust, stormwater runoff, or vapors.

- (1) Describe any known or possible contamination at the site from present or past uses.**

No portions of the project location are known to have had industrial or commercial land uses that may have resulted in contamination of soil materials.

- (2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.**

There are no known hazardous chemicals or conditions that might affect project development and design.

- (3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.**

No toxic or hazardous chemicals would be stored, used, or produced during the project's construction, or at any time during the operating life of the project.

- (4) Describe special emergency services that might be required.**

No special emergency services would be required during construction or operation of the project. Possible fire or medic services could be required during project construction, as well as possibly during maintenance of the completed project. However, the completed project would not demand higher levels of special emergency services than already exist at the project location. Typical emergency services required for medical emergencies are provided by the Seattle Fire Department. Typical security services are provided by the Seattle Police Department (and SPU's contractor during project construction).

- (5) Proposed measures to reduce or control environmental health hazards, if any:**

The construction contractor would be required to develop and implement a spill control plan to control and manage spills during construction. During construction, the contractor would use standard operating procedures and BMPs identified in the City of Seattle's Stormwater Code and Manual (Title 22, Subtitle VIII of the SMC and

Directors' Rules DPD 21-2015/SPU DWW 200) to reduce or control any possible environmental health hazards. Soils contaminated by previous land uses or by spills during construction would be excavated and disposed of in a manner consistent with the level and type of contamination, in accordance with federal, state and local regulations, by qualified contractor(s) and/or City staff.

As required by the Washington Department of Labor and Industries (WAC 296-843), a Health and Safety Plan would be prepared by SPU or SPU's contractor prior to work commencing. The plan would address proper employee training, use of protective equipment, contingency planning, and secondary containment of hazardous materials.

b. Noise

(1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Noises that exist in the area would not affect the project.

(2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Noise levels in the vicinity of construction would temporarily increase during construction. Short-term noise from construction equipment would be limited to the allowable maximum levels of City of Seattle's Noise Control Ordinance [SMC Chapter 25.08.425—Construction and Equipment Operations]. Within the allowable maximum levels, SMC 25.08 permits noise from construction equipment between the hours of 7 a.m. and 7 p.m. weekdays, and 9 a.m. and 7 p.m. weekends and legal holidays; it is expected that the majority of construction would take place from 7 a.m. to 6 p.m. on weekdays. However, there may be a need for construction to implement a 7-day/week and 12+ hour/day work schedule. These longer days and/or work hours would be necessary to reduce the duration of work that severely negatively impacts local businesses, residences, or traffic mobility. The decision to allow longer days and/or hours would be based on minimizing such impacts to affected parties. The completed project would generate occasional and periodic noise from equipment used for operation, maintenance, and monitoring; those noises would be limited to the hours allowed by the City of Seattle's Noise Control Ordinance.

(3) Proposed measures to reduce or control noise impacts, if any:

Construction equipment would be muffled in accordance with the applicable laws. SMC Chapter 25.08 (which prescribes limits to noise and construction activities) would be enforced while the project is being constructed and during operations, except for emergencies.

A variance from the City of Seattle’s noise ordinance would be obtained from SDCI in the event construction is required to implement a 7-day/week and/or 12+ hour/day work schedule.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The proposed public drainage system improvements would be located in improved public rights-of-way used for vehicle and pedestrian travel and parking. Adjacent property uses are single-family residential (some of which may contain home-based occupations).

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or non-forest use?

The project site has not been used for agricultural purposes.

(1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how?

The proposed project would neither be affected by nor affect surrounding working farm or forest land normal business operations because there are no such operations in the project area.

c. Describe any structures on the site.

The proposed public drainage system improvements are located in improved public rights-of-way used for vehicle and pedestrian travel and parking. Adjacent property uses are primarily single-family residential (some of which may include space for home-based occupations). Utilities are located in the street rights-of-way.

d. Will any structures be demolished? If so, what?

As described in Section A.11, a temporary stormwater outfall pipe would be removed and replaced with a permanent stormwater outfall pipe. The project would not demolish any other above-ground structures.

e. What is the current zoning classification of the site?

Portions of the project location are zoned single family residential (SF 7200 and 9600).

f. What is the current comprehensive plan designation of the site?

The current comprehensive plan designation for the project area is single family residential.

g. If applicable, what is the current shoreline master program designation of the site?

The project area has no Shorelines of the State that are regulated under the City of Seattle's Shoreline Master Program.

h. Has any part of the site been classified as an "environmentally critical" area? If so, specify.

Portions of the project are located in or near Steep Slope, Potential Slide, and Known Slide areas—Environmentally Critical Areas as identified and mapped by SDCI.

i. Approximately how many people would reside or work in the completed project?

No people would reside or work in the completed project.

j. Approximately how many people would the completed project displace?

The project would not displace any people.

k. Proposed measures to avoid or reduce displacement impacts, if any:

There would be no displacement impacts.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The project would be compatible with existing and projected land uses and plans.

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

There are no nearby agricultural and forest lands of long-term commercial significance.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

The proposed project would not construct any housing units.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

The proposed project would not eliminate any housing units.

c. Proposed measures to reduce or control housing impacts, if any:

No measures are proposed because there would be no housing impacts.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas? What is the principal exterior building material(s) proposed?

No such structures are proposed or included in the project.

b. What views in the immediate vicinity would be altered or obstructed?

No views in the immediate vicinity would be altered or obstructed. Trees and shrubs planted on the steep slope associated with Molendorph Creek would not block any views from nearby residences of streets.

c. Proposed measures to reduce or control aesthetic impacts, if any:

No such measures are proposed because there would be no aesthetic impacts.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

The constructed project would not produce light or glare. No new street lights are proposed or required. During construction, if an emergency situation calls for after-dark work, the construction contractor may deploy portable lights that temporarily produce light and glare.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

The project would not create light or glare.

c. What existing off-site sources of light or glare may affect your proposal?

There are no existing off-site sources of light and glare that would affect the proposal.

d. Proposed measures to reduce or control light and glare impacts, if any:

No measures are needed to reduce or control light and glare impacts because no impacts would occur. If an emergency requires after-dark work during construction, portable lighting would be adjusted as feasible to minimize glare.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

There are no parks or other designated recreational opportunities in the immediate vicinity. However, the main improvements of the project are located in street rights-of-way used for informal recreational activities such as dog-walking, walking, jogging, and bicycling.

b. Would the proposed project displace any existing recreational uses? If so, describe.

The proposed project would not permanently displace any existing recreational uses. Access to the streets affected by project construction would be more challenging, but the project contractor would be required to maintain safe pedestrian and vehicle access at all times. Temporary closures or detours affecting vehicle and pedestrian routes/access may be required.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Temporary closures or detours affecting vehicle and pedestrian routes/access may be required. The project would attempt to make those closures and detours as brief as possible. Project notifications through Website updates, emails, and mailings would provide local residents with limited advance notice regarding temporary street and sidewalk closures and detours.

13. Historic and Cultural Preservation

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old and are listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

There are no places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site. To determine if National Register or State of Washington Heritage properties are located in or adjacent to the project area, the project location was checked against the following registers on January 20, 2015.

- City of Seattle Landmarks
http://www.cityofseattle.net/neighborhoods/preservation/landmarks_listing.htm
- Washington Heritage Register and National Register of Historic Places and WISAARD database <http://www.dahp.wa.gov/learn-and-research/find-a-historic-place>

While the WISAARD database indicates numerous historic properties reports have been submitted for various structures near the project location, none of these registers recorded any places or objects formally listed on, or proposed for, national, state, or local preservation registers on or adjacent to the project location. No architectural inventory is required for this project because no structures would be demolished or altered.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

SPU requested that staff from the King County Historical Preservation Program conduct a basic cultural resources review of the project area. Their review indicated there were no known cultural resources in the project area and that the project area has a High Probability of containing archaeological sites based on environmental and other factors. However, they determined the project area has a Low Probability of containing intact archaeological resources because: 1) it is on a glacial landform that has not been subject to natural sedimentary deposition, so archaeological materials should be close to the ground surface; and 2) it has probably been previously disturbed by logging and road construction, which would have removed, or at least heavily disturbed, near-surface archaeological materials.

- c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the Department of Archaeology and Historic Preservation, archaeological surveys, historic maps, GIS data, etc.**

See responses for Section B.13.a and B.13.b.

- d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.**

SPU's proposed project would not affect buildings or known cultural resources. Only portions of the City's existing stormwater conveyance system would be affected. None of those objects are considered to be of historic or cultural importance.

SPU's proposed project is located on previously disturbed and filled upland areas of the City of Seattle. The project's location on previously disturbed and filled ground reduces the project's chance of encountering contextually significant archaeological materials. Work crews would be trained to recognize archaeological materials should they be discovered. Should evidence of cultural artifacts or human remains, either historic or prehistoric, be encountered during excavation, work in that immediate area would be suspended and the find would be examined and documented by a professional archaeologist. Decisions regarding appropriate mitigation and further action would be made at that time.

14. Transportation

- a. Identify public streets and highways serving the site or affected geographic area, and describe proposed access to the existing street system. Show on site plans, if any.**

The project would occur within existing, improved street rights-of-way for Northwest 120th Street and 9th Avenue Northwest, both of which are residential streets. The nearest arterial is 3rd Avenue Northwest.

- b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?**

King County Metro route 28X serves the project location and travels on 3rd Avenue Northwest. The completed project would not affect routing of any bus routes or the status of any bus stops, which are more than 350 yards east of the project area.

- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?**

Because the proposed public drainage system improvements involve open trenching in the street right-of-way, construction would require temporary closures of parking as well as travel lanes on both Northwest 120th Street and 9th Avenue Northwest. Parking associated with street rights-of-way in the project location is currently on-street, free parking managed by SDOT. During construction, there may be no or restricted parking on one or both sides of Northwest 120th Street or 9th Avenue Northwest along the rolling construction zone. Project construction would temporarily eliminate up to

approximately 20 on-street public parking spaces adjacent to the rolling construction zone to accommodate contractor vehicles, mobilization, construction, and local and through access. There are ample on-street parking spots available elsewhere in the project vicinity along Northwest 120th Street and 9th Avenue Northwest and most adjacent residences have their own off-street parking. The specific timing and duration of parking and lane closures are not known at this time, but such closures would comply with relevant policies administered by SDOT as part of their Street Use permitting process. The completed project would neither eliminate any parking spaces nor create new spaces.

- d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).**

The project would restore all demolished and damaged street panels, curbs, and traffic aprons to pre-construction conditions or better. No new roads or streets would be constructed as part of the project.

- e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.**

The proposed project would not use or occur near water, rail, or air transportation.

- f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and non-passenger vehicles). What data or transportation models were used to make these estimates?**

Project construction would generate approximately 800 vehicle round-trips due to workers and materials being transported to and from the site during the estimated total 70 workday construction period. Most of those trips would occur during business hours (between 7 am and 6 pm) on weekdays (Mondays through Fridays) but trips may occur at other times including weekend days. The completed project would generate an estimated total of 120 vehicle round-trips related to the on-going routine operation, maintenance, and monitoring over the project's 100 year lifespan. The number of vehicular trips and peak volumes are not expected to change because of the completed project.

- g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.**

The proposal would not interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area.

- h. Proposed measures to reduce or control transportation impacts, if any:**

The following measures would be used to reduce or control transportation impacts:

- SPU and SDOT would require the construction contractor to submit a traffic control plan for approval and enforcement by SPU and SDOT.

- SPU would conduct public outreach before and during project construction to notify residents, local agencies, Metro, and other stakeholders of work progress and expected disruptions or changes in traffic flow.
- Access for emergency-response vehicles would be maintained at all times.
- Through access on Northwest 120th Street and 9th Avenue Northwest and vehicle access to private properties may not be available at all times during construction, but temporary closures would be minimized and detour routes would be properly and clearly signed.
- Alternative routes for pedestrians, bicyclists, and those with disabilities would be identified and clearly signed.

15. Public Services

- a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.**

The proposed project would not create increased need for public services.

- b. Proposed measures to reduce or control direct impacts on public services, if any.**

No mitigation is being proposed because there would be no impacts on public services.

16. Utilities

- a. Check utilities available at the site, if any:** [check the applicable boxes]

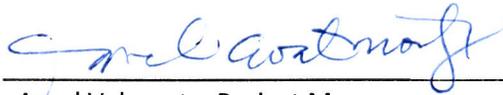
Electricity
 Natural gas
 Water
 Refuse service
 Telephone
 Sanitary sewer
 Septic system
 Other (fiber optic; cable TV)

- b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.**

The completed public drainage system improvements would increase the capacity of the local area's stormwater conveyance system and would be owned, operated, and maintained by SPU. During construction, this proposed project is not expected to interrupt, relocate, or reconstruct other utilities such as water and natural gas. However, inadvertent damage to underground utilities could occur during construction. While such incidents do not occur frequently, they could temporarily affect services to customers served by the affected utility while emergency repairs are made. In addition, some residents may need to place their curbside garbage and recycling containers in front of an adjacent neighbor's house on garbage pick-up days. No other interruptions to regular utility services are expected during construction.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 
Arnel Valmonte, Project Manager

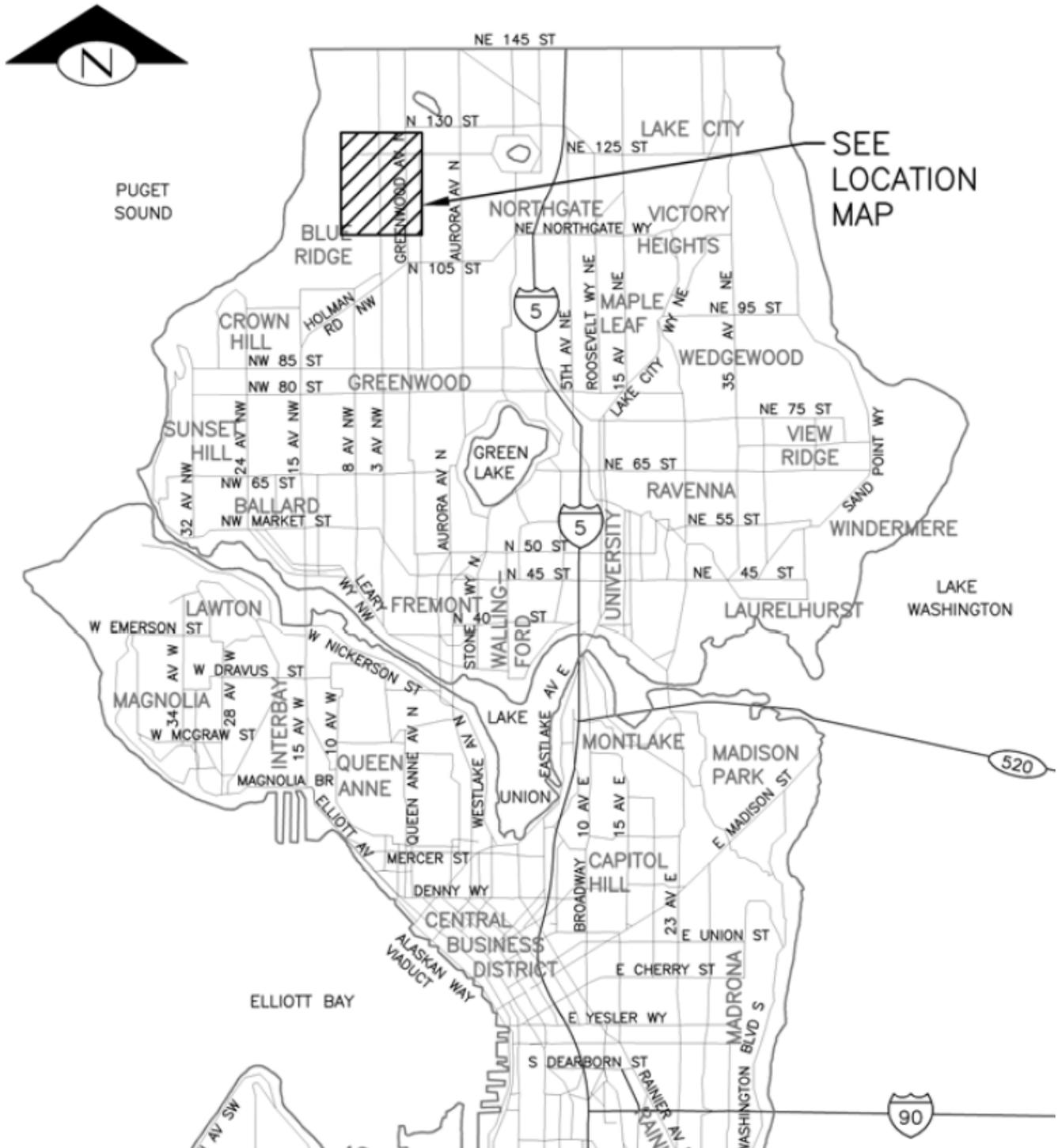
Date: 2/4/16

Attachment A: Vicinity Map

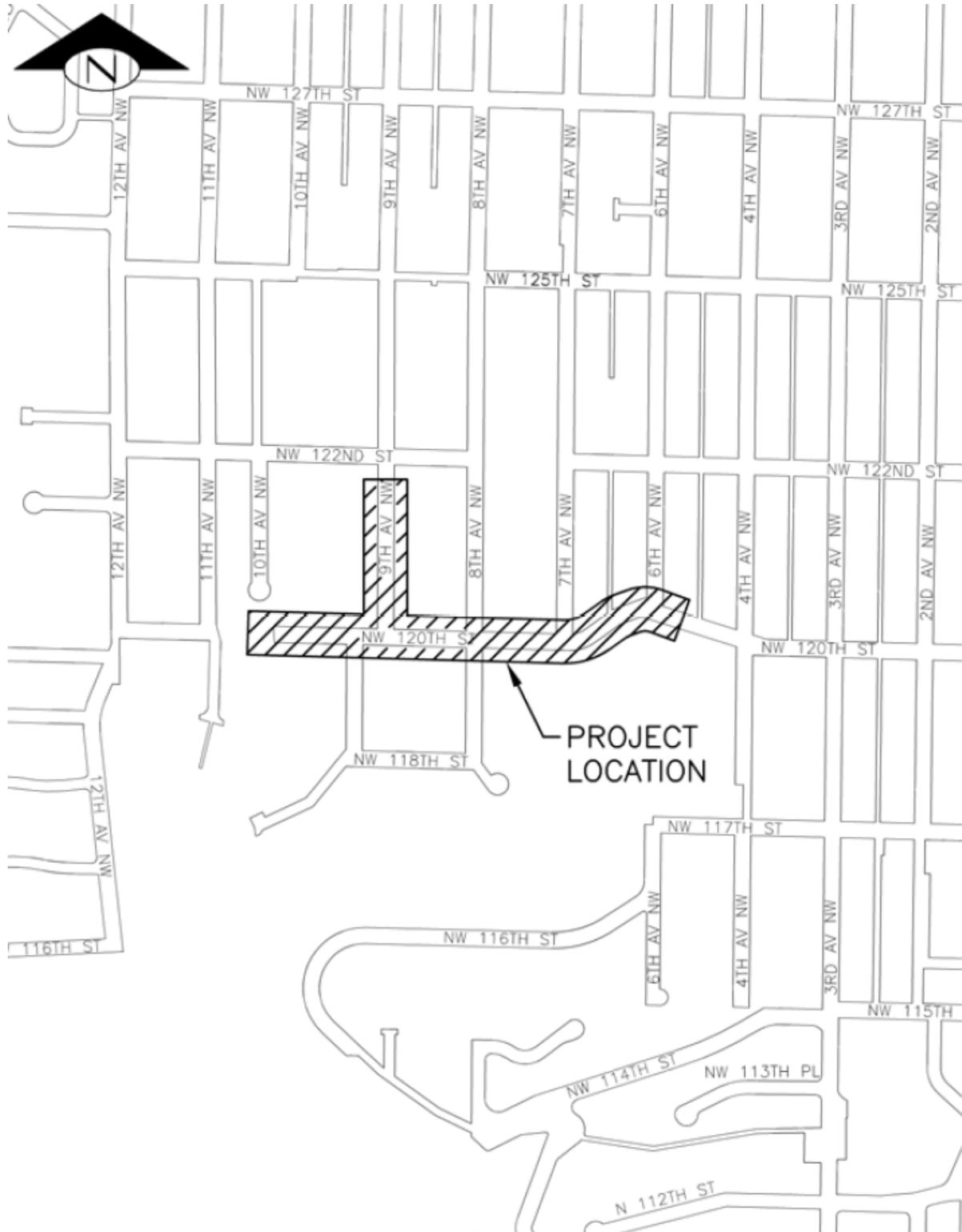
Attachment B: Site Map for Public Sewer System Improvements

Attachment C: Greenhouse Gas Emissions Worksheet

ATTACHMENT A: Vicinity Map



ATTACHMENT B: Site Map



**Northwest 120th Street and 9th Avenue Northwest Outfall and Drainage Improvements Project
SEPA Environmental Checklist**

ATTACHMENT C: Greenhouse Gas Emissions Worksheet

Section I: Buildings						
Type (Residential) or Principal Activity (Commercial)	# Units	Square Feet (in thousands of square feet)	Emissions Per Unit or Per Thousand Square Feet (MTCO ₂ e)			Lifespan Emissions (MTCO ₂ e)
			Embodied	Energy	Transportation	
Single-Family Home	0		98	672	792	0
Multi-Family Unit in Large Building	0		33	357	766	0
Multi-Family Unit in Small Building	0		54	681	766	0
Mobile Home	0		41	475	709	0
Education		0.0	39	646	361	0
Food Sales		0.0	39	1,541	282	0
Food Service		0.0	39	1,994	561	0
Health Care Inpatient		0.0	39	1,938	582	0
Health Care Outpatient		0.0	39	737	571	0
Lodging		0.0	39	777	117	0
Retail (Other than Mall)		0.0	39	577	247	0
Office		0.0	39	723	588	0
Public Assembly		0.0	39	733	150	0
Public Order and Safety		0.0	39	899	374	0
Religious Worship		0.0	39	339	129	0
Service		0.0	39	599	266	0
Warehouse and Storage		0.0	39	352	181	0
Other		0.0	39	1,278	257	0
Vacant		0.0	39	162	47	0
TOTAL Section I Buildings						0

Section II: Pavement						
						Emissions (MTCO ₂ e)
Pavement (sidewalk, asphalt patch)						
Concrete Pad (50 MTCO ₂ e/1,000 sq ft of pavement at a depth of 6 inches)		3,240 sq ft, 6 inches thick (60 cu yd)				162
TOTAL Section II Pavement						

Section III: Construction						
(See detailed calculations below)						Emissions (MTCO ₂ e)
TOTAL Section III Construction						170.7

Section IV: Operations and Maintenance						
(See detailed calculations below)						Emissions (MTCO ₂ e)
TOTAL Section IV Operations and Maintenance						5.3

TOTAL GREENHOUSE GAS (GHG) EMISSIONS FOR PROJECT (MTCO₂e)						338
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ATTACHMENT C: Greenhouse Gas Emissions Worksheet, continued

Section III Construction Details		
Construction: Diesel		
Equipment	Diesel (gallons)	Assumptions
Excavator	8,000	400 hours x 20 gallons/hour (345 hp engine)
Front end loader	2,800	400 hours x 7 gallons/hour (345 hp engine)
Vibratory / Static Roller	60	75 hours x 0.8 gallons/hour (185 hp engine)
Asphalt paver	450	100 hours x 4.5 gallons/hour (80 hp engine)
Asphalt truck (8 cubic yard/load)	64	8 round trips x 40 miles/round trip ÷ 5 mpg
Two flatbed trucks	600	20 round trips x 75 miles/round trip x 2 ÷ 5 mpg
One dump truck (prob. no pups due to limited work area) (10 cubic yard/load and backhauling)	600	50 round trips x 60 miles/round trip ÷ 5 mpg
Street sweeper	48	60 hours x 0.8 gallons/hour (185 hp engine)
Subtotal Diesel Gallons	12,622	
GHG Emissions in lbs CO₂e	335,114.1	26.55 lbs CO ₂ e per gallon of diesel
GHG Emissions in metric tons CO₂e	152	1,000 lbs = 0.45359237 metric tons

Construction: Gasoline		
Equipment	Gasoline (gallons)	Assumptions
Pick-up trucks or crew vans	1,400	70 workdays x 10 trucks x 1 round-trip/day x 40 miles/round-trip ÷ 20 mpg
Misc. hand equipment	300	50 workdays x 10 hours x 2 pieces of equipment x 0.3 gal/hour
Subtotal Gasoline Gallons	1,700	
GHG Emissions in lbs CO₂e	41,310	24.3 lbs CO ₂ e per gallon of gasoline
GHG Emissions in metric tons CO₂e	18.7	1,000 lbs = 0.45359237 metric tons

Construction Summary		
Activity	CO ₂ e in pounds	CO ₂ e in metric tons
Diesel	335,114.1	152
Gasoline	41,310	18.7
Total for Construction	376,424.1	170.7

Section IV Long-Term Operations and Maintenance Details		
Operations and Maintenance: Diesel		
Equipment	Diesel (gallons)	Assumptions
Maintenance Operation (truck)	400	100 events (once annually for 100 years) x 20 miles/round-trip x 1 round-trip/event ÷ 5 mpg
Vactor truck (pipe and catch basin cleaning)	40	20 events (once every 5 years for 100 years) x 1 round-trip/event x 10 miles/round-trip ÷ 5 mpg
Subtotal Diesel Gallons	440	
GHG Emissions in lbs CO₂e	11,682	26.55 lbs CO ₂ e per gallon of diesel
GHG Emissions in metric tons CO₂e	5.3	1,000 lbs = 0.45359237 metric tons

Attachment C: Greenhouse Gas Emissions Worksheet, continued

Operations and Maintenance: Gasoline		
Equipment	Gasoline (gallons)	Assumptions
Subtotal Gasoline Gallons		
GHG Emissions in lbs CO₂e	0	24.3 lbs CO ₂ e per gallon of gasoline
GHG Emissions in metric tons CO₂e	0	1,000 lbs = 0.45359237 metric tons

Operations and Maintenance Summary		
Activity	CO₂e in pounds	CO₂e in metric tons
Diesel	11,682	5.3
Gasoline	0	0
Total Operations and Maintenance	11,682	5.3