

SEATTLE PUBLIC UTILITIES
SEPA ENVIRONMENTAL CHECKLIST

This SEPA environmental review of Seattle Public Utilities' Central Waterfront (Basins 70, 71, 72) Combined Sewer Overflow Reduction 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:

Central Waterfront Combined Sewer Overflow (CSO) Reduction Project (Basins 70, 71, and 72)

2. Name of applicant:

Seattle Public Utilities

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

Ross Hathaway, Project Manager
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4. Date checklist prepared:

April 27, 2015

5. Agency requesting checklist:

Seattle Public Utilities (SPU)

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

Construction of the Basin 70, 71, 72 CSO reduction project is expected to begin in 2017, to be completed in 2020, and require 244 working days. The Basin 70, 71, 72 CSO reduction project must be constructed by December 31, 2020 to comply with the City's wastewater consent decree (Civil Action No. 2:13-cv-678, entered in U.S. District Court on July 3, 2013).

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

This project would modify the existing combined sewage collection system to reduce the number of overflows from Basins 70, 71, and 72, located toward the south end of Seattle's Central Waterfront. SPU is coordinating the design of these sewer system modifications with the City of Seattle Department of Transportation (SDOT) and, if possible, will construct the project as part of the same construction contract for the City's proposed Alaskan Way, Promenade, and Overlook Walk Project (AWPOWP), to avoid impacting the same area twice.

Additional sewer system modifications are needed to reduce the number of combined sewage overflows from Basin 69, located toward the north end of Seattle’s Central Waterfront. These additional improvements will be addressed in a future project with a separate environmental review. If possible, SPU will coordinate construction of the Basin 69 sewer system modifications with construction of the proposed Elliott Bay Seawall Phase 2 project to avoid impacting that area twice. The Basin 69 CSO reduction facilities must be constructed by December 31, 2025 to comply with the City’s wastewater consent decree.

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

On March 14, 2013, SDOT issued a SEPA Final Environmental Impact Statement (FEIS) for the Elliott Bay Seawall Project, which is currently under construction in the vicinity of SPU’s proposed Central Waterfront CSO Reduction Project. On December 16, 2013, SDOT issued a Final Supplemental Environmental Impact Statement (FSEIS) that analyzed impacts related to design refinements and adjustments to the construction sequencing and approach. Both documents are found at <http://www.waterfrontseattle.org/about-the-project>.

SPU’s proposed project lies within the area analyzed by the FEIS and FSEIS. Because the environments of the projects overlap, the Elliott Bay Seawall Project FEIS and FSEIS and all of their supporting Discipline Reports, in their entirety and as corrected and amended, are incorporated by reference into this SEPA environmental review for SPU’s proposed Central Waterfront Reduction Project (per WAC 197-11-635 and 754).

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.

SDOT is the lead department for the proposed AWPOWP, which is currently undergoing a separate SEPA environmental review and will require numerous governmental approvals prior to construction. Because the proposed AWPOWP and SPU’s proposed Central Waterfront CSO Reduction Project (Basins 70, 71, and 72) would be constructed in the same general area, SDOT and SPU are closely coordinating project design, permitting, and construction.

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

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

- City of Seattle, SDOT, Major Utility Permit (type 51, major projects)
- City of Seattle, Department of Planning and Development (DPD), Shoreline Substantial Development Permit
- City of Seattle, SPU, Environmentally Critical Areas compliance
- Washington State Department of Ecology (Ecology), NPDES Construction Stormwater General Permit

If the proposed project is constructed concurrent with the SDOT managed AWPOWP construction contract, approvals and permits likely would be obtained for the combined construction contract rather than each individual project.

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.

The City of Seattle’s wastewater collection system includes separate, partially separated, and combined sewer areas. In separate sewer areas, stormwater runoff flows to a storm drainage system, while sanitary sewage and industrial wastewaters are conveyed through sewers to regional wastewater treatment facilities owned and operated by King County. In the partially separated areas of the City, storm drain separation projects were built during the 1960s and 1970s to divert street runoff to the storm drainage system while allowing rooftop and other private property drainage to continue flowing into sewers.

In the combined sewer areas of the City, sewage, industrial wastewater, and stormwater are conveyed in combined sewers to King County’s combined sewer system and wastewater treatment facilities. During storm events, the quantity of stormwater runoff flowing into the wastewater collection system sometimes exceeds capacities of the partially separated and combined sewer systems. When this happens, the wastewater collection system overflows at outfall structures designed for this purpose. There are currently 86 outfalls in the City of Seattle where combined sewer overflows (CSOs) can occur.

To comply with State and Federal requirements for combined sewer systems, SPU must limit CSOs to not more than one per year per outfall [WAC 173-245-020(22)]. This requirement is reiterated in (a) SPU’s National Pollutant Discharge Elimination System (NPDES) permit (Permit No. WA0031682, issued on October 27, 2010 and modified on September 13, 2012) and (b) the City’s wastewater consent decree.

Outfalls 70, 71, and 72 allow excess combined sewage from Basins 70, 71, and 72 to overflow into Elliott Bay. During periods of intense or prolonged rain, sewage and stormwater runoff fill the combined sewers in these basins to a depth that exceeds the height of one or more of the overflow structures located in on-land maintenance hole structures. The excess combined sewage then flows by gravity out the associated outfall.

To limit overflows from Outfalls 70, 71, and 72, the proposed Central Waterfront CSO Reduction Project includes these elements:

- Install approximately 2,000 lineal feet of new 24 to 36 inch diameter manifolded pipeline and associated fittings and other appurtenances, such as maintenance holes, connecting Basins 70, 71, and 72 along the Central Waterfront;
- Remove the Columbia Street overflow structure (Overflow Structure 71B);
- Remove the combined sewer system connection to Outfall 70;
- Seal overflow structures and abandon-in-place and fill pipes leading exclusively to Outfalls 70 (University Street) and 72 (Washington Street); and
- Install backflow preventers and/or pumps on private property as needed to prevent sewer backups caused by the resulting elevated hydraulic grade line.

Design and construction are being closely coordinated with SDOT's Elliott Bay Seawall Project and AWPOWP. SPU's project would be constructed using open trench techniques. When SPU's project is complete, CSOs could not occur through Outfalls 70 or 72 and would be limited to no more than one per year through Outfall 71.

- 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.**

The proposed Central Waterfront CSO Reduction Project would be constructed in improved public street rights-of-way along Alaskan Way between Pike Street and South King Street in the Central Business and Pioneer Square districts of the City of Seattle (zip code 98104). There is no street address for this project. The project location is in the northeast quarter of Section 6, Township 24N, Range 4E; the southeast quarter of Section 31, Township 25N, Range 4E; and within the Duwamish-Green Water Resource Inventory Area (WRIA 9).

B. ENVIRONMENTAL ELEMENTS

1. Earth

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

Flat Rolling Hilly Steep Slopes Mountainous other:

Additional information on geology and soils is found in the Geology and Soils Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

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

The project area is flat, with grades less than 2 percent.

- 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.**

Urban development in this area over the last 125 years has resulted in a predominance of disturbed native soils/sediments, cut slopes, and large placements of fill material. The entire project location and immediately surrounding area have been completely developed and disturbed in this way. Additional information on geology and soils is found in the Geology and Soils Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

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

Unstable soils and surfaces occur primarily in two contexts within the generally affected geographic area of downtown Seattle. The first context includes nearby steep slopes and

landslide-prone areas, where a combination of previously constructed cuts, shallow ground water, and glacial sediments deposited in layers with variable permeability increases the risk of landslides. The second context includes areas of fill or alluvial soils where loose, less cohesive soil materials below the water table may lead to the potential for soil liquefaction during earthquakes. Areas where these conditions may exist have been mapped by DPD as environmentally critical areas (ECA). No steep slopes have been mapped specifically within SPU's proposed project area, but the area is located in a mapped liquefaction zone. Additional information on seismic issues and slope stability is found in the Geology and Soils Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

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.

Construction of SPU's proposed project would require excavation of approximately 13,000 cubic yards of soil and backfilling with approximately 11,000 cubic yards of pipe bedding, aggregate, and other fill material. Open trenches would be shored. All exported excavated material would be disposed of at a City-approved upland location or used as fill material (if suitable) at sites approved for filling and grading. Imported bedding aggregate and clean fill would be obtained from a supplier licensed by the State of Washington to purvey such materials.

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

No significant erosion is anticipated during or as a result of SPU's proposed work. A City-approved temporary erosion and sedimentation control plan would be prepared and implemented as part of the construction contract. SPU anticipates that its completed project would be completely covered by concrete and asphalt.

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

The project location is currently covered with impervious surfaces. Surfaces disturbed by the proposed CSO reduction project would be replaced with the same area or less of impervious surface (hot mix asphalt and concrete), to be determined during final design of the AWPOWP.

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

A City-approved temporary erosion and sedimentation control plan would be prepared and implemented during construction. Best Management Practices (BMPs) as identified in the City of Seattle's Stormwater Code SMC 22.800–22.808, Directors' Rules 2009-004 and 16-2009, and Volume 2 Construction Stormwater Control Technical Requirements Manual would be used to manage stormwater runoff, construction disturbance, and erosion as needed during construction. The construction contractor would be responsible for obtaining coverage and complying with Ecology's NPDES construction stormwater general permit. The general permit requirements include the following measures during construction: preparation and implementation of a City-approved

stormwater pollution prevention plan for all construction activity, water quality monitoring, and record-keeping and reporting protocols.

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.**

Mobile and stationary equipment would be used to construct and maintain the proposed sewer system modifications, thus generating emissions due to the combustion of gasoline and diesel fuels (such as oxides of nitrogen, carbon monoxide, particulate matter and smoke, uncombusted hydrocarbons, hydrogen sulfide, carbon dioxide, and water vapor). Emissions during construction would also include normal amounts of dust from grading activities and exhaust (carbon monoxide, sulfur, and particulates) from construction equipment and are expected to be minimal, localized, and temporary. The completed project may periodically generate odors typical of a sewage collection system.

The project would produce GHGs in three ways: embodied in materials to be installed on the project; through construction activity (especially as described above); and within regular operation, maintenance, and monitoring activities throughout the anticipated 100 year lifespan of the sewer system improvements. Total GHG emissions for the project are estimated to be about 611.8 metric tons of carbon dioxide emission (MTCO_{2e}). The GHG emission calculations are shown in Appendix E. One metric ton is equal to 2,205 pounds. Because pavement demolition and restoration would be part of the larger AWPOWP, GHG emissions associated with pavement demolition and restoration are not included in the GHG emission calculations for SPU's proposed work. Also, the embodied energy in other materials (such as aggregate bedding and ductile iron pipe) used in this project has not been estimated for purposes of this SEPA environmental review due to the difficulty and inaccuracy of calculating those estimates.

This project would generate GHG emissions during the estimated 12 month (244 total working days) construction period through the operation of diesel- and gasoline-powered equipment and to transport materials, equipment, and workers to and from the site. Because project construction methods were not completely known at the time this checklist was prepared, the estimates provided here are based on daily vehicle operation times for the estimated project duration (244 working days); actual times may be less. Construction activities would generate an estimated 609.2 MTCO_{2e}.

The project would also generate GHG emissions during operation, maintenance, and monitoring. 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 2.6 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	NA	NA
Paving	NA	NA
Embodied	NA	NA
Construction Activities (Diesel)	1,005,183	455.9
Construction Activities (Gasoline)	337,964	153.3
Long-term Maintenance (Diesel)	5,841	2.6
Long-term Maintenance (Gasoline)	NA	NA
Total GHG Emissions	1,348,988	611.8

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.**

There are no known off-site sources of emissions that may affect this proposal. Additional information on the affected environment for air is found in the Air Quality Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

- 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 standard federal, state, and local emission control criteria and City of Seattle construction practices. These would include requiring contractors to use best available control technologies, 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.**

The project location is paved. Elliott Bay is more than 100 feet west of the project location, west of the Elliott Bay Seawall. Additional information on the affected environment for water is found in the Water Resources Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

- (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.**

Elliott Bay is more than 100 feet west of the project location, west of the Elliott Bay Seawall. SPU's proposed project would be conducted within 200 feet of Elliott Bay.

- (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 material would be placed in or removed from surface water or wetlands. Elliott Bay is more than 100 feet west of the project location.

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

SPU's proposed project would not require surface water withdrawals or diversions.

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

No portion of SPU's proposed project lies within the 100-year floodplain.

- (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.**

SPU's proposed project involves outfalls that occasionally discharge combined sewage and stormwater to Elliott Bay. CSOs are a source of water pollution that can result in temporary increases in bacterial counts, odors, aesthetic degradation of shorelines, adverse effects on sediment quality, and increased public health concerns in areas where there is potential for public contact. However, SPU's proposed project would reduce the number and volume of those CSOs and thereby reduce the potential for adverse effects.

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.**

No groundwater would be withdrawn, discharged, or surcharged as a result of SPU's completed project. During construction, groundwater may need to be collected from excavation areas. Any collected water would be treated before being discharged to a receiving water or the local stormwater collection and conveyance system. If necessary because of groundwater quality, and if approved by King County Department of Natural Resources and Parks (DNRP), collected groundwater may be discharged to the combined sewer system. The volumes, quality, and ultimate disposition of collected groundwater are not known at this time.

- (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.**

SPU's proposed project would not discharge any waste material to groundwater.

c. Water Runoff (including stormwater):

- (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.**

Current sources of stormwater runoff from the SPU project site include upstream streets, sidewalks, driveways, and impervious areas from privately and publicly owned rooftops and paved areas. That stormwater is currently collected by inlets and catchbasins and then directed into the City's separated stormwater conveyance system. Once SPU's proposed project is complete, stormwater runoff from the project area would continue to be directed into the City's separated stormwater conveyance system. Additional information on that collection and conveyance network is found in the Water Resources Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

SPU's completed project would alter the conveyance and disposal of stormwater from Basins 70, 71, and 72 by altering CSO overflow diversion structure elevations, sealing and abandoning two of the three existing CSO outfalls, and reducing the frequency and volume of CSO discharges to Elliott Bay.

Stormwater runoff may need to be managed during construction of SPU's proposed project to prevent sediment from entering and leaving the construction site. Any precipitation falling on the construction site would be contained on-site and either allowed to infiltrate or collected and then treated before being discharged to a receiving water or a local stormwater collection system. If necessary because of water quality, and if approved by King County DNRP, collected stormwater runoff may be discharged to the combined sewer system. Barriers such as sand bags would be used to prevent runoff from entering construction zones. Once construction is complete, temporary erosion control measures would be removed.

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

During construction of SPU's proposed project, it is possible that erosion from construction sites could enter surface waters via the separated storm drain. However, a City-approved stormwater pollution prevention plan using appropriate BMPs would be 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.**

Stormwater runoff from the project location is currently directed into existing stormwater collection and combined sewer systems. Additional information on the City's stormwater/sewage collection and conveyance networks is found in the Water Resources Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS. The completed project would be re-covered with concrete and asphalt, and is not expected to create a need to manage additional stormwater runoff beyond currently existing conditions.

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

A fundamental goal of SPU's proposed project is to reduce the number of CSOs in the combined sewer basins affected by this project. Typical construction methods are anticipated and no adverse impacts to surface waters or groundwater are expected. BMPs, as identified in the City of Seattle's Stormwater Code SMC 22.800–22.808, Directors' Rules 2009-004 and 16-2009, and Volume 2 Construction Stormwater Technical Requirements Manual, would be used to control erosion and sedimentation during construction. The construction contractor would obtain coverage under Ecology's NPDES construction stormwater general permit. The general permit requirements include the following measures during construction: preparation and implementation of a City-approved stormwater pollution prevention plan for all construction activity, water quality monitoring, and record keeping and reporting protocols.

SPU's completed project would convey combined sewage and stormwater as part of an existing combined sewer system. CSOs are a source of water pollution that can result in temporary increases in bacterial counts, odors, aesthetic degradation of shorelines, adverse effects on sediment quality, and increased public health concerns in areas where there is potential for public contact. However, SPU's proposed project would reduce the number and volume of those CSOs and thereby reduce the potential for adverse effects.

4. Plants

a. Types of vegetation found on the site:

<input checked="" type="checkbox"/> Deciduous trees:	<input type="checkbox"/> alder	<input checked="" type="checkbox"/> maple	<input type="checkbox"/> aspen	<input type="checkbox"/> other: linden, honey locust, sweetgum	
<input type="checkbox"/> Evergreen trees:	<input type="checkbox"/> fir	<input 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:					

Additional information on existing vegetation is found in the Fish, Wildlife, and Vegetation Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

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

Street trees are present in the improved street right-of-way in the project area for SPU's proposed project, but construction would not remove any vegetation.

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

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.

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

No landscaping is proposed because there would be no removal or alteration of vegetation.

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

Many species of noxious and invasive species are found within the City of Seattle. However, the project area for SPU's proposed project is entirely paved and does not support habitat for noxious or invasive plant species.

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:

Birds: Hawk Heron Eagle Songbirds other: pigeon, crow, seagull

Mammals: Deer Bear Elk Beaver other: possum; rat

Fish: Bass Salmon Trout Herring Shellfish other: rockfish; ratfish

Additional information on existing fauna is found in the Fish, Wildlife, and Vegetation Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

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

SPU's proposed project is more than 100 feet east of Puget Sound. Endangered Species Act listed species for Puget Sound (PS) are Chinook salmon (*Oncorhynchus tshawytscha*, Threatened PS), steelhead (*O. mykiss*, Threatened PS), bull trout (*Salvelinus confluentus*, Threatened PS), bocaccio (*Sebastes paucispinis*, Endangered PS), canary rockfish (*Sebastes pinniger*, Threatened, PS), yelloweye rockfish (*Sebastes ruberrimus*, Threatened, PS), and Orca whale (*Orcinus orca*, Endangered PS). Because the project is not proposing any "in water" work, the project is expected to have no adverse effect on any fish or shellfish species.

The Washington Department of Fish and Wildlife Habitat and Species website (<http://wdfw.wa.gov/conservation/phs/>) indicates Puget Sound includes Priority anadromous fish presence and Priority resident fish presence, including those fish species mentioned above. The project site 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. There are no known eagle or heron nests in the vicinity of SPU's proposed project.

The location of SPU's proposed project has been previously disturbed by grading and filling activities and is completely paved. There is no habitat for threatened or endangered animals.

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

The Puget Sound region is known to be an important migratory route for many animal species. Portions of the Seattle downtown waterfront area may be part of migratory corridors for bald eagles and other bird species traveling to and from foraging areas in Puget Sound or Lake Washington. Bull trout, steelhead, and Chinook, chum, pink, and coho salmon use the Puget Sound nearshore. The Puget Sound region is also within the Pacific Flyway—a flight corridor for migrating waterfowl, migratory songbirds, and other birds. The Pacific Flyway extends from Alaska to Mexico and South America.

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

There are no proposed measures to preserve or enhance wildlife because SPU's proposed project is anticipated to have no adverse effects to animals. In addition, SPU's proposed project would reduce the number and volumes of existing CSOs and thereby reduce the impacts of discharging sewage and stormwater into the environment.

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

Many species of invasive animal species are found within King County and the City of Seattle, including nutria (*Myocastor coypus*), rat (*Rattus spp.*), pigeon (*Columba livia*), New Zealand Mud Snail (*Potamopyrgus antipodarum*), and Asian gypsy moth (*Lymantria dispar*). However, the project area for SPU's proposed project is entirely paved and does not support habitat for noxious or invasive animal species.

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.

SPU's completed project would not require any supplementary energy to operate because it would rely on gravity-driven flow. However, SPU currently uses minor amounts of electricity to monitor flows in this part of its existing combined sewer system and would continue to do so in its completed project.

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

SPU's completed project would be buried and would not affect the potential use of solar energy by 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:**

During construction of SPU's proposed project, small amounts of materials present may 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. Also, contaminated soils, sediments, or groundwater could 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.

SPU's completed project would convey combined sewage and stormwater flows as part of an existing combined sewage collection system. The completed project would not create any new exposure to environmental health hazards and would reduce the number and volume of CSO discharges.

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

Existing environmental data indicate that, in general, soil and groundwater contamination is present throughout the urban waterfront area of downtown Seattle. Historical and current uses in the project area for SPU's proposed project include industrial, commercial, and residential activity. Previous industrial uses in this area include metal works, foundries and plating operations, machine shops, warehouses, and fueling facilities. In the downtown area, commonly encountered contaminants include metals, solvents, and petroleum products. Also, the project area is underlain by fill that was placed in the early 1900s, which covered and incorporated timber and debris that previously had been used in the construction of piers, wharves, and trestles. Common contaminants in this old fill include petroleum constituents and metals. In addition, some of the buried piles and timbers were treated with creosote, which likely has leached into adjoining soil and groundwater. Lubricating oil and fuels associated with railroad operations may also be encountered in the fill soils in this location. Additional information on historical land uses and contaminated materials is found in the Contaminated Materials Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

- (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 hazardous chemicals or conditions that might affect project development, design, or construction. There are no underground hazardous liquid transmission or distribution pipelines located within the project area and in the vicinity. However, the project location is known to have natural gas transmission and distribution lines.

(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.

Construction of SPU's proposed project would require use and storage of relatively small amounts of materials such as gasoline and diesel fuels, hydraulic fluids, oils, lubricants, solvents, paints, and other chemical products. No toxic or hazardous chemicals would be stored, used, or produced at any time during the operating life of the project.

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

Possible fire or medic services could be required during maintenance of SPU's completed project, as well as possibly during its construction. 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. During project construction, security services are typically provided by the Seattle Police Department and the construction contractor.

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

Because contaminated materials encountered during construction would be removed and properly disposed, construction of SPU's proposed project would result in beneficial effects related to contaminated soils and groundwater. Potential environmental impacts would be avoided during construction by using practices defined specifically to avoid adverse impacts related to contaminated materials.

Prior to any excavation and demolition work, hazardous materials surveys would be conducted to confirm presence of hazardous material with follow-up sampling (if needed) to identify equipment, materials, and structures that require special handling or disposal. Contamination would be avoided where possible and would minimize handling and disposal activities to the extent feasible where contaminated material cannot be avoided. Contaminated materials would be contained and disposed in accord with State and federal regulations.

The construction contractor would be required to develop and comply with City-approved temporary erosion and sedimentation control and fugitive dust control plans; obtain coverage under and comply with the NPDES construction stormwater general permit; develop and implement a City-approved spill prevention, control, and countermeasures plan that addresses handling and disposal of known and unanticipated contamination of soil and groundwater; and develop and comply with a City-approved hazardous materials spill prevention and management plan during construction. During construction, the contractor would use standard operating procedures (SOPs) and BMPs, as identified in the City of Seattle's Stormwater Code SMC 22.800-22.808, Directors' Rules 2009-004 and 16-2009, and Volume 2 Construction Stormwater Control Technical Requirements Manual, to reduce or control any possible environmental health hazards. Any soils contaminated 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.

As required by the Washington Department of Labor and Industries (WAC 296-843), the construction contractor would be required to prepare a City-approved health and safety plan prior to work commencing. The plan would address proper employee training, use of protective equipment, contingency planning, and secondary containment of hazardous materials. In work areas with known contamination in soil, sediment, and groundwater, workers would be required to be Hazardous Waste Operation and Emergency Response certified [40-hour HAZWOPER Certification (29 CFR and WAC 296-62 Part P)], which is required for individuals involved in cleanup of uncontrolled hazardous waste sites.

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 SPU's proposed 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.

In the vicinity of SPU's proposed project, noise levels would temporarily increase during construction activities. 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). 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; however, it is expected that most construction activity would occur between 7 a.m. and 6 p.m. on weekdays. After completion of the project, occasional noise from equipment used for maintenance and monitoring would occur periodically, but would be limited to the hours allowed by the City of Seattle's Noise Control Ordinance. Otherwise, SPU's completed project would not generate noise.

(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 under construction.

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 project area for SPU's proposed project is located in street right-of-way currently

used primarily for transportation and pedestrian purposes. Adjacent land uses include industrial, multi-family residential, office, retail/service, and other uses. More information on land uses of the adjacent properties is found in the Land Use, Shorelines, and Parks and Recreation Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS. SPU's proposed project would not affect current land uses on nearby or adjacent properties.

- 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 location of SPU's proposed project has not been used as working farmlands or working forest lands. Currently, there are no designated agricultural or forest lands in the City of Seattle.

- (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?**

SPU's proposed project would not be affected by normal business operations of surrounding working farm or forest land. There are no designated agricultural or forest lands in the City of Seattle.

- c. Describe any structures on the site.**

SPU's proposed project is located in street right-of-way, which does not contain structures. Adjacent properties are developed with a wide array of structures related to industrial, multi-family residential, office, retail/service, and other uses located there.

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

SPU's proposed project would include demolition, removal, or abandonment of portions of the existing stormwater and sewage collection and conveyance system, which is located underground in street rights-of-way. No buildings would be demolished.

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

SPU's proposed project is located in street rights-of-way. Zoning for parcels along Alaskan Way consists of a number of urban zones, including industrial, commercial and mixed use. More information on current zoning of adjacent parcels is found in the Land Use, Shorelines, and Parks and Recreation Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

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

SPU's proposed project is located in street rights-of-way. Comprehensive plan designations would be applicable to adjacent parcels. More information on current comprehensive plan designations is found in the Land Use, Shorelines, and Parks and Recreation Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

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

The current shoreline master program designation of the project area is Urban Harborfront.

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

SPU’s proposed project would be located in a liquefaction area, an environmentally critical area as identified and mapped by DPD.

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

No people would reside or work in SPU’s completed project.

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

No people would be displaced by SPU’s proposed project.

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

No mitigation measures are proposed because SPU’s proposed project would have no adverse impacts related to displacement.

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

SPU’s proposed project is consistent with current 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 or forest lands.

9. Housing

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

SPU’s 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.

SPU’s proposed project would not remove any housing units.

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

No such measures are proposed because SPU’s proposed project would have 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?**

SPU's proposed project does not include building structures. The project would construct three above-ground electrical control cabinets, each no more than six feet tall.

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

No views would be altered or obstructed by SPU's proposed project. The project would be located at or below existing street grades. Three above-grade electrical control cabinets would be less than six feet tall.

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

No measures are proposed to reduce or control aesthetic impacts because the completed project has limited above-ground presence.

11. Light and Glare

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

SPU's proposed project would be constructed during daylight hours. The completed project would not produce light or glare.

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

The completed project would not produce 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:**

Because neither SPU's completed project nor its construction would produce light or glare, no such measures are being proposed.

12. Recreation

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

The project area includes a variety of parks, recreation, and public access opportunities. More information on those resources is found in the Land Use, Shorelines, and Parks and Recreation Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

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

Project construction would temporarily displace pedestrians, joggers, and bicyclists from the travel lanes and sidewalks of the affected streets. SPU's completed project would be buried and not interfere with access or use of parks or locations described in Section B12.a, above, and would not permanently displace any existing recreational uses.

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

Construction of SPU's proposed project would require temporary lane closures and establishment of detours. Such closures and detours would comply with relevant policies administered by SDOT as part of its Street Use permitting process. There are numerous route alternatives for pedestrians, joggers, and bicyclists in the neighborhood. Because SPU's proposed project does not have any permanent recreational impacts, no measures to reduce or control recreational impacts are required.

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 listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe.

There are numerous built-environment resources that are older than 45 years and listed in or eligible for listing in national, state, or local preservation registers located near the project location. For example, the project area contains portions of two locally-designated historic districts: the Pioneer Square Preservation District and the Pike Place Market Historic District. Each of these also has a National Register district with slightly smaller boundaries. At the Pike Place Market, the project area includes a portion of the local district but none of the national historic district. In addition, there are 18 designated Seattle landmarks; eight of these are also listed in the National Register of Historic Places (NRHP). One property is listed in the NRHP but is not a local landmark. More information on those resources is found in the Cultural Resources Assessment Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

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's proposed project is located near numerous landmarks, features, or other evidence of Indian or historic use or occupation and material evidence, artifacts, and areas of cultural importance. More information on these resources is found in the Cultural Resources Assessment Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

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.

SDOT issued a SEPA FEIS on March 14, 2013 for the Elliott Bay Seawall Project, which is currently under construction near the location for SPU's proposed project. That FEIS was supported by a Cultural Resource Assessment prepared by SWCA Consultants and Mimi Sheridan. This document was previously incorporated by reference into this Environmental Checklist (see Section A8).

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 and sewage 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.

SPU's proposed project is located on improved public street rights-of-way that include Alaskan Way and its intersections with South King, Jackson, Main, Washington, Yesler, Columbia, Marion, Madison, Spring, Seneca, University, and Pike streets. Alaskan Way likely will be closed to all non-construction related vehicle and pedestrian traffic during concurrent construction of the SDOT-managed AWPOWP. Detours would be provided.

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?

Downtown Seattle is served by numerous Metro public transit routes, although no route uses Alaskan Way. The nearest transit stops (routes 16 and 66X) are more than 400 feet northeast of SPU's proposed project on 1st Avenue.

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

SPU's completed project would not create any new parking spaces. Construction would temporarily eliminate numerous on-street public parking spaces for the duration of the construction. 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 its Street Use permitting process.

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).

SPU's completed project would not require any new roads or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities.

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

The Seattle waterfront at Elliott Bay is used by ferries, cruise ships, and commercial vessels, as well as for other water-related recreation. Overall, the waterfront is an important center of commerce and recreation for the entire City and region. The project area includes the Washington State Ferries Colman Dock ferry terminal, numerous docks and piers, and is near a rail corridor.

- 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?**

Construction of SPU's proposed project is estimated to generate approximately 4,500 vehicle round-trips due to workers and materials being transported to and from the site during the total 244 working day construction period. Most of those trips would occur during business hours (between 7 a.m. and 6 p.m.) on weekdays (Mondays through Fridays). SPU's completed project would generate an estimated 110 vehicle round trips as part of maintenance and monitoring over the constructed project's 100 year lifespan.

- 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.**

Neither SPU's proposed project nor this construction would not interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets.

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

The construction-related transportation impacts of SPU's proposed project would be addressed by the AWPOWP, which is a larger project. The exact measures to reduce or control those transportation impacts are not known at this time.

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.**

SPU's proposed project is not expected to create an increased need for public services. Project construction would be required at all times to accommodate emergency access for buildings accessed via the affected streets. Emergency access would comply with relevant policies administered by SDOT as part of its Street Use permitting process.

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

During construction, the project would be required at all times to accommodate emergency access for structures accessed via affected streets. Otherwise, no mitigation is being proposed because SPU's proposed project would have no adverse impacts on public services.

16. Utilities

a. Check utilities available at the site, if any:

- None
 electricity natural gas water refuse service telecommunications
 sanitary sewer septic system other: steam

An extensive network of utilities is located in the project area. More information on public utilities is found in the Public Services and Utilities Discipline Report for the Elliott Bay Seawall Project FEIS and FSEIS.

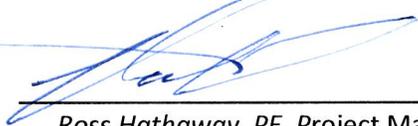
b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

SPU's proposed project is a combined sewer collection system upgrade project that would reduce CSOs in waterfront Seattle CSO basins 70, 71, and 72. The project would not install any new utilities, but would comply with all federal, state, and local utility-offset standards and criteria. At this time, project construction is expected to require that an unknown number of existing side sewer laterals be temporarily disconnected and/or relocated. All disconnected side sewers would be reconnected as the sewer system improvements are completed. Water services and fire hydrants are not expected to be impacted. SPU would ensure its proposed project is incorporated into the overall AWPOWP's utility planning and coordination activities for construction scheduling and sequencing in order to reduce risk, cost, and impacts associated with utility relocations.

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: _____



Ross Hathaway, PE, Project Manager

Date: _____

2015-04-27

Appendix A: Location of the Central Waterfront CSO basins.

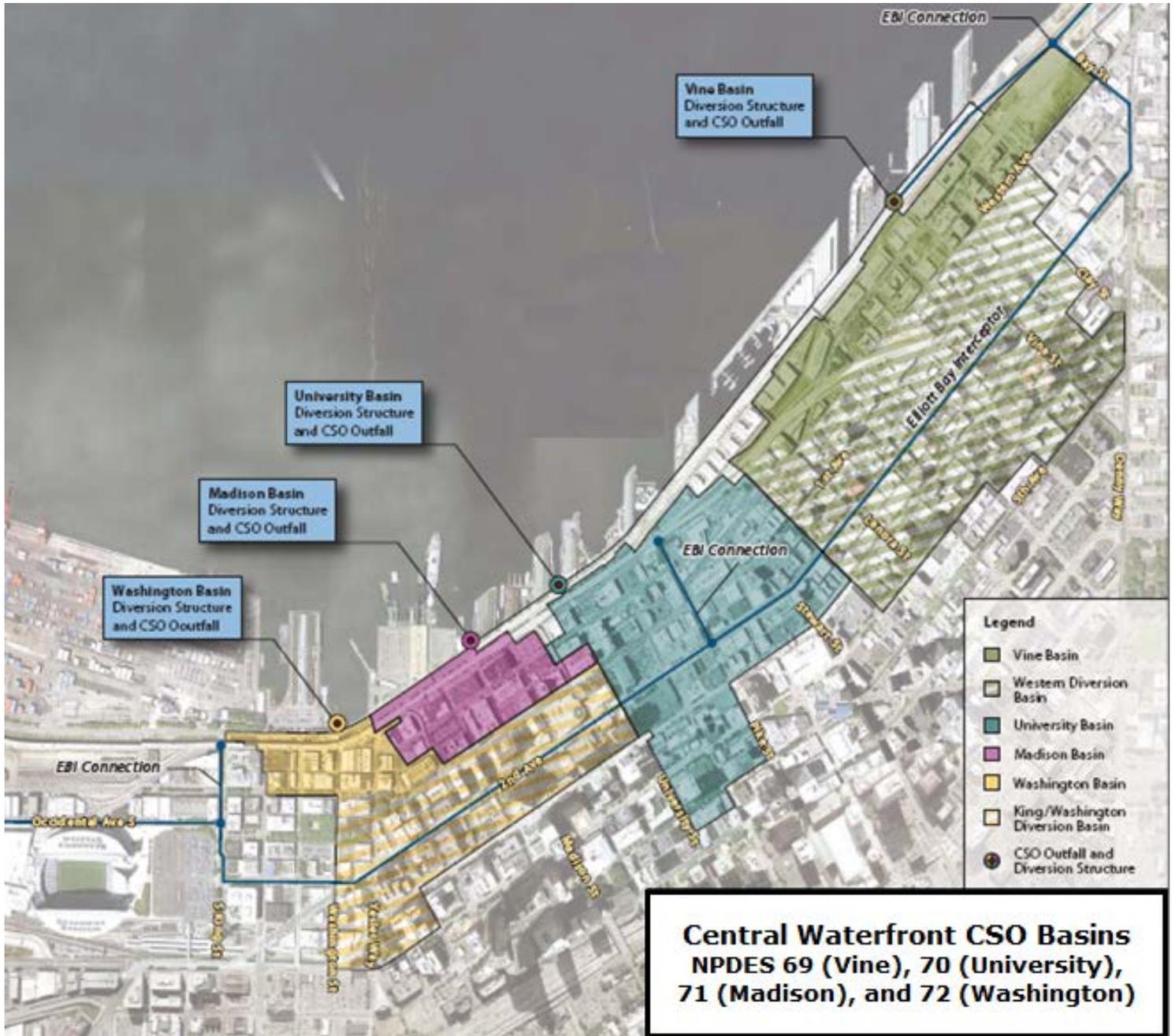
Appendix B: Vicinity map of the Central Waterfront (Basins 70, 71, 72) CSO Reduction Project.

Appendix C: Location map of the Central Waterfront (Basins 70, 71, 72) CSO Reduction Project.

Appendix D: Project area, Waterfront Seattle AWPOWP.

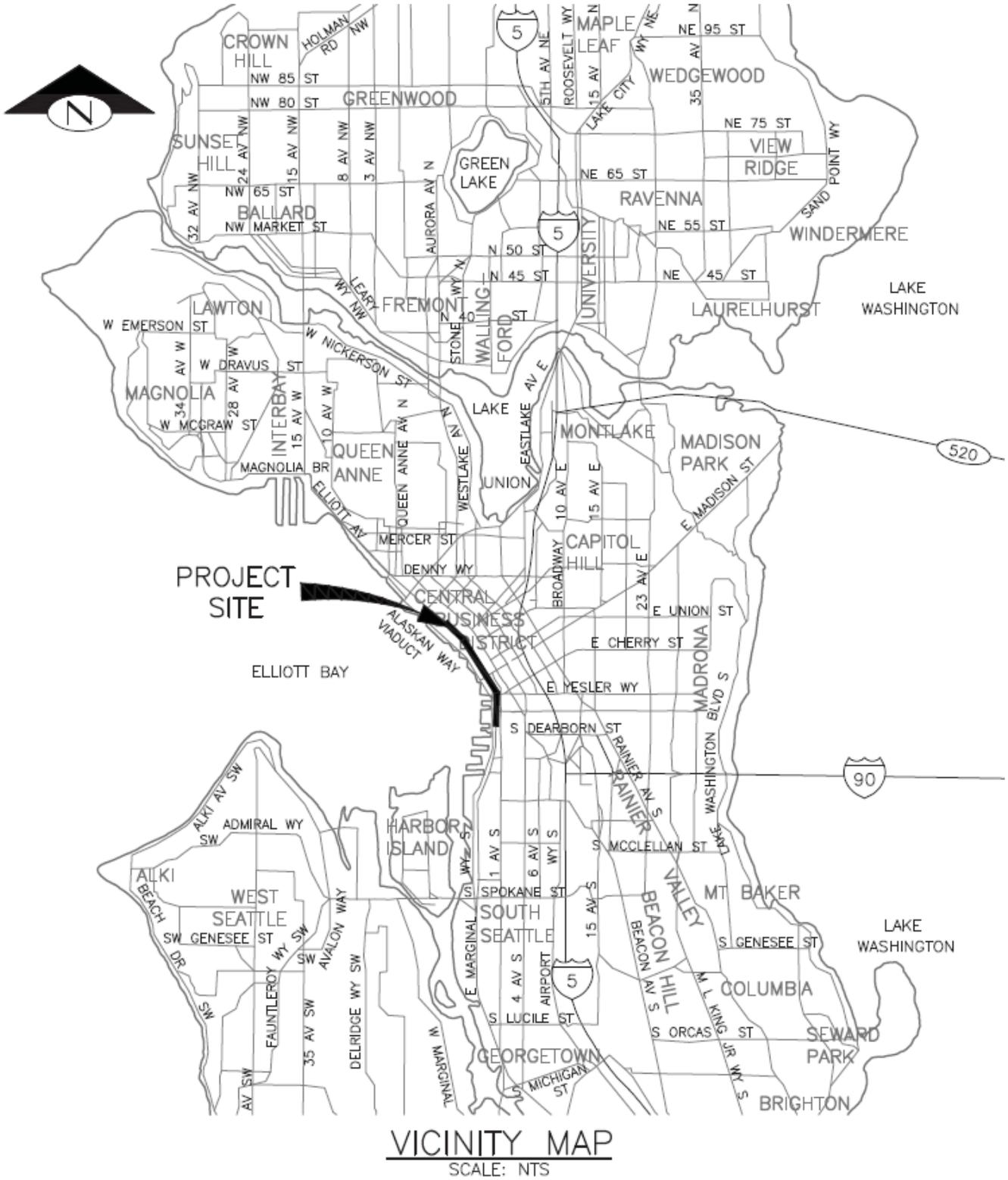
Appendix E: Greenhouse Gas Emissions Worksheet.

Central Waterfront Combined Sewer Overflow Reduction Project (Basins 70, 71, and 72)
SEPA Environmental Checklist



Appendix A: Location of the Central Waterfront CSO basins.

Central Waterfront Combined Sewer Overflow Reduction Project (Basins 70, 71, and 72)
SEPA Environmental Checklist



Appendix B: Vicinity map of the Central Waterfront CSO Reduction Project (Basins 70, 71, 72).

Central Waterfront Combined Sewer Overflow Reduction Project (Basins 70, 71, and 72)
SEPA Environmental Checklist



**APPENDIX D:
 Project Area
 Alaskan Way/ Promenade/
 Overlook Walk Project**

- Study Area
- Former Elevated Structure Footprint
- Tunnel Opening / Underground Structure
- Parcel Boundary
- Building Footprint
- Existing ROW



Source: King County, City of Seattle

**Central Waterfront Combined Sewer Overflow Reduction Project (Basins 70, 71, and 72)
SEPA Environmental Checklist**

Appendix E: Greenhouse Gas Emissions Worksheet.

Section I: Buildings						
			Emissions Per Unit or Per Thousand Square Feet (MTCO₂e)			
Type (Residential) or Principal Activity (Commercial)	# Units	Square Feet (in thousands of square feet)	Embodied	Energy	Transportation	Lifespan Emissions (MTCO₂e)
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 (MTCO₂e)
Pavement (sidewalk, asphalt patch)						NA
Concrete Pad (50 MTCO ₂ e/1,000 sq. ft. of pavement at a depth of 6 inches)						NA
TOTAL Section II Pavement						NA

Section III: Construction	
(See detailed calculations below)	Emissions (MTCO₂e)
TOTAL Section III Construction	609.2

Section IV: Operations and Maintenance	
(See detailed calculations below)	Emissions (MTCO₂e)
TOTAL Section IV Operations and Maintenance	2.6

TOTAL GREENHOUSE GAS (GHG) EMISSIONS FOR PROJECT (MTCO₂e)		611.8
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Central Waterfront Combined Sewer Overflow Reduction Project (Basins 70, 71, and 72)
SEPA Environmental Checklist

Appendix E: Greenhouse Gas Emissions Worksheet, continued.

Section III Construction Details		
Construction: Diesel		
Equipment	Diesel (gallons)	Assumptions
Hydraulic excavators	15,000	1,500 hours x 10 gallons/hour
Backhoe loaders	5,700	1,900 hours x 3 gallons/hour
Track-type tractors (e.g. D5 class)	5,700	1,900 hours x 3 gallons/hour
Crawler cranes	5,600	800 hours x 7 gallons/hour
Vibratory compactors	640	160 hours x 4 gallons/hour
Flatbed trucks	600	50 round trips x 60 miles/round trip ÷ 5 mpg
Dump trucks with pups (17 cubic yard/load; assume backhaul)	4,620	770 round trips x 30 miles/round trip ÷ 5 mpg
Subtotal Diesel Gallons	37,860	
GHG Emissions in lbs CO₂e	1,005,183	26.55 lbs CO ₂ e per gallon of diesel
GHG Emissions in metric tons CO₂e	455.9	1,000 lbs = 0.45359237 metric tons

Construction: Gasoline		
Equipment	Gasoline (gallons)	Assumptions
Pick-up trucks or crew vans	7,320	244 workdays x 15 trucks x 1 round-trip/day x 40 miles/round-trip ÷ 20 mpg
Misc. hand equipment	6,588	244 workdays x 6 hours x 15 pieces of equipment x 0.3 gal/hour
Subtotal Gasoline Gallons	13,908	
GHG Emissions in lbs CO₂e	337,964	24.3 lbs CO ₂ e per gallon of gasoline
GHG Emissions in metric tons CO₂e	153.3	1,000 lbs = 0.45359237 metric tons

Construction Summary		
Activity	CO₂e in pounds	CO₂e in metric tons
Diesel	1,005,183	455.9
Gasoline	337,964	153.3
Total for Construction	1,343,147	609.2

Section IV Long-Term Operations and Maintenance Details		
Operations and Maintenance: Diesel		
Equipment	Diesel (gallons)	Assumptions
Maintenance/Monitoring Operation (truck)	200	100 events (once annually for 100 years) x 10 miles/round-trip x 1 round-trip/event ÷ 5 mpg
Vactor truck (pipe and catch basin cleaning)	20	10 events (once every 10 years for 100 years) x 1 round-trip/event x 10 miles/round-trip ÷ 5 mpg
Subtotal Diesel Gallons	220	
GHG Emissions in lbs CO₂e	5,841	26.55 lbs CO ₂ e per gallon of diesel
GHG Emissions in metric tons CO₂e	2.6	1,000 lbs = 0.45359237 metric tons

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

Appendix E: Greenhouse Gas Emissions Worksheet, continued.

Operations and Maintenance Summary		
Activity	CO₂e in pounds	CO₂e in metric tons
Diesel	5,841	2.6
Gasoline	NA	NA
Total Operations and Maintenance	5,841	2.6