



## DETERMINATION OF NONSIGNIFICANCE

**TITLE OF PROPOSAL:** Fremont Siphon Replacement Project

**DESCRIPTION OF PROPOSAL:** The King County Wastewater Treatment Division proposes to replace its existing Fremont Siphon, which consists of two cast iron pipes (48-inch- and 60-inch-diameter) that convey up to 220 million gallons per day of wastewater to the West Point Treatment Plant. The siphon needs to be replaced because it is at the end of its service life. A new siphon would be microtunneled under the Lake Washington Ship Canal approximately 3,200 feet northwest of the existing siphon. The existing siphon would then be decommissioned. The proposal also includes construction of a new odor control facility and replacement of an existing City of Seattle-owned combined sewer overflow outfall, both on the north side of the Ship Canal. King County would acquire private property for the north tunnel shaft site and new odor control facility. Construction of the proposed project is expected to begin in the summer of 2014 and take approximately two years to complete.

**LOCATION OF PROPOSAL, INCLUDING STREET ADDRESS, IF ANY:** The north tunnel shaft and new odor control facility would be constructed at 215 Northwest 36<sup>th</sup> Street in the City of Seattle's Fremont neighborhood. The south tunnel shaft would be located at 322 West Ewing Street in the City of Seattle's Queen Anne neighborhood. Work would also take place in Fremont Canal Park and the Ship Canal near the north tunnel shaft site and in West Ewing Mini Park, which is adjacent to the south tunnel shaft site.

**SEPA Responsible Official:**

Pam Elardo, P.E.

**Position/Title:**

Director, King County Wastewater Treatment Division

**Address:**

201 South Jackson Street, MS KSC-NR-0501  
Seattle, WA 98104-3855

**Date:**

27 July 2012

**Signature:**

**Proponent and Lead Agency:**

King County Department of Natural Resources and Parks  
Wastewater Treatment Division

**Contact Person:**

Sue Meyer, Water Quality Planner  
King County Wastewater Treatment Division  
201 South Jackson Street, MS KSC-NR-0505  
Seattle, WA 98104  
phone: 206-684-1171; e-mail: sue.meyer@kingcounty.gov

**Issue Date:**

August 2, 2012

The State Environmental Policy Act (SEPA) lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

☒ This Determination of Nonsignificance (DNS) is issued under WAC 197-11-340 (2); the lead agency will not act on this proposal for 18 days from the issue date. **Comments must be submitted by August 20, 2012.** Submit comments to Wesley Sprague, Supervisor, Community Services and Environmental Planning, King County Wastewater Treatment Division, 201 South Jackson Street, MS KSC-NR-0505, Seattle, WA 98104-3855. Contact Sue Meyer, Water Quality Planner, at 206-684-1171 for information on how to submit comments electronically.

☒ The Director of King County Department of Natural Resources and Parks, consistent with King County Public Rule 7-4-1, Section 6.2.14 and RCW 43.21C.240, has determined that the environmental impacts identified in the SEPA environmental checklist for the Fremont Siphon Replacement Project will be adequately addressed by the development regulations and other applicable requirements of the City of Seattle and by all other applicable state and federal regulations referred to in the environmental checklist for the Fremont Siphon Replacement Project. Therefore, no administrative appeal of issuance of the DNS will be allowed for the Fremont Siphon Replacement Project. The rule may be viewed at <http://www.kingcounty.gov/operations/policies/rules/utilities/put741pr.aspx>, or contact Sue Meyer, Water Quality Planner, at 206-684-1171 or [sue.meyer@kingcounty.gov](mailto:sue.meyer@kingcounty.gov) to obtain a copy of the rule.



## **King County**

Department of Natural Resources and Parks

### **Wastewater Treatment Division**

King Street Center, KSC-NR-0505  
201 South Jackson Street  
Seattle, WA 98104

## **Environmental Checklist**

**for the**

# **King County Wastewater Treatment Division Fremont Siphon Replacement Project**

July 25, 2012

Prepared in compliance with the State Environmental Policy Act (SEPA)  
(RCW 43.21C), the SEPA Rules (WAC 197-11), and Chapter 20.44 King  
County Code, implementing SEPA in King County procedures.

This information is available in accessible formats upon request at  
206-684-1280 (voice) or 711 (TTY).

## ENVIRONMENTAL CHECKLIST

### A. BACKGROUND

**1. Name of proposed project, if applicable:**

Fremont Siphon Replacement Project

**2. Name of applicant:**

King County Wastewater Treatment Division (WTD), Department of Natural Resources and Parks (DNRP)

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

King County Wastewater Treatment Division  
201 South Jackson Street, MS: KSC-NR-0505  
Seattle, WA 98104-3855

**CONTACT:**

Sue Meyer, Water Quality Planner, telephone: 206-684-1171,  
email: sue.meyer@kingcounty.gov

**4. Date checklist prepared:**

July 25, 2012

**5. Agency requesting checklist:**

King County Wastewater Treatment Division, Department of Natural Resources and Parks

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

King County would acquire the private property on which the North Shaft would be located in 2013. The existing building on the property would be demolished and the site graded prior to the onset of construction activities. Construction of the new siphon and associated facilities is expected to begin in the summer of 2014 and take approximately two years to complete.

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

No

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

Cultural Resources Investigation for the Fremont Siphon Project, Seattle, King County, Washington, Northwest Archaeological Associates, December 2, 2010

Fremont Siphon Phase 2 Geotechnical Exploration Program Archaeological Monitoring of Geotechnical Borings, Northwest Archaeological Associates, February 15, 2012

Fremont Siphon Geotechnical Design Memorandum, Jacobs Associates, July 2012

Other environmental information that will be prepared for the proposal include Phase I and Phase II Environmental Site Assessments, noise and traffic analyses, and a Biological Assessment.

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.**

None known

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

Government approvals or permits that may be needed for the proposed project include:

City of Seattle Department of Planning and Development

- Master Use Permit
- Shoreline Substantial Development Permit
- Grading/Construction Permits
- Building Permit
- Demolition Permit

City of Seattle Department of Transportation

- Street Improvement Permit
- Major Utility Street Use Permit
- Term Permit

King County WTD

- Industrial Waste Discharge Permit

Puget Sound Clean Air Agency

- Air Quality Notice of Construction Permit

Washington Department of Archaeology and Historic Preservation

- Section 106 Consultation (National Historic Preservation Act)

Washington Department of Ecology (Ecology)

- National Pollutant Discharge Elimination System General Construction Permit
- Coastal Zone Management Consistency Determination
- Section 401 Water Quality Certification (federal Clean Water Act)
- State Environmental Review Process compliance

Washington Department of Fish and Wildlife (WDFW)

- Hydraulic Project Approval

United States Army Corps of Engineers (USACE)

- Section 408/10 Permit (Rivers and Harbors Act)
- Nationwide Permit (NWP) Utility Line Activities
- Section 404 Permit (Clean Water Act)

United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS)

- Section 7 Consultation (Endangered Species Act)

- 11. Give 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. (Lead agencies may modify this form to include additional specific information on project description).**

King County WTD's Fremont Siphon conveys up to 220 million gallons per day of wastewater from WTD's northeastern service district, which extends from Seattle north to Snohomish County and east to Lake Sammamish, to the West Point Treatment Plant. The siphon, which was constructed between 1912 and 1914, is located beneath the Lake Washington Ship Canal (Ship Canal), about 3,200 feet northwest of the Fremont Bridge. It consists of twin cast iron barrels (48-inch- and 60-inch-diameter pipes), which are contained by a horseshoe-shaped concrete tunnel. The tunnel also contains a decommissioned 24-inch-diameter steel water line, which is owned by Seattle Public Utilities (SPU). Condition surveys indicate that WTD's cast iron barrels are at the end of their service life. The concrete tunnel in which the siphon is enclosed appears to be in sound condition.

Because the existing Fremont Siphon is at the end of its service life, WTD proposes to replace the existing siphon with two new microtunnel crossings beneath the Ship Canal. The new crossings would have the same conveyance capacity as the existing siphon. Once the new siphon is installed, the existing siphon pipes would be taken out of service. The proposal can generally be described in terms of the following elements (see attached design drawings):

- Shaft construction
- Tunnel construction
- Sewer tie-in connections
- CSO outfall replacement
- Odor control facility construction
- Existing siphon decommissioning

**Shaft construction.** To provide access for construction of the two new microtunnel crossings under the Ship Canal, a vertical shaft would be constructed on each end of the crossing locations. The North Shaft would be constructed in the Fremont neighborhood (north construction area) and the South Shaft would be constructed in the Queen Anne neighborhood (south construction area—see proposal location description in Section 12). Each shaft would require an excavation support system around its perimeter to support the ground during shaft excavation and tunnel construction. Following construction of the crossings, each shaft would be fitted with riser pipes to connect the crossing pipes with the existing North Interceptor pipes, and then backfilled.

The North Shaft would be the microtunnel boring machine (MTBM) launch location, and would therefore be used to stage all microtunnel activities. The warehouse and parking lot currently on the North Shaft site would be demolished before construction of the shaft begins. If the North Shaft is rectangular, its internal dimensions would be approximately 25 feet by 25 feet. If the shaft is circular, the interior diameter would be approximately 34 feet. The North Shaft would be approximately 75 feet deep.

The South Shaft would be used to stage MTBM reception and final pipe routing activities. If the South Shaft is rectangular, the internal dimensions would be approximately 25 feet by 15 feet. If the shaft is circular, the interior diameter would be approximately 23 feet. The South Shaft would be approximately 65 feet deep.

**Tunnel construction.** The MTBM would mine two side-by-side microtunnel crossings under the Ship Canal, beginning at the North Shaft and ending at the South Shaft. The crossings would be finished with permanent 60-inch-diameter linings. Each crossing would be located approximately 110 to 150 feet west of the existing Fremont Siphon and would be approximately 435 feet in length. The crossings would be approximately 20 feet under the bottom of the Ship Canal.

A temporary soil separation facility would be required at the north construction area to process tunneling spoils. Mined soils would be mixed with water for conveyance to the soil separation facility where the slurry would be screened. Water would be conveyed back into the tunnel and reused in the mining process. Screened material would be hauled offsite to an approved disposal site. Excess construction water would be disposed of to the King County sewer system.

**Sewer Tie-in Connections.** On the north side of the Ship Canal, a new 108-inch-diameter pipeline would be installed by trenching west from the existing 108-inch-diameter pipeline (located beneath Canal Street) to a new siphon inlet, where the flow would be split into two siphon barrels (pipes) before entering the North Shaft. The two siphon barrels would exit the South Shaft on the south side of the Ship Canal, where a new siphon outlet would recombine the flows into a new 108-inch-diameter pipe. This pipe would be installed by trenching and connect to a new junction pipe which would route the flow into the existing 138-inch-diameter North Interceptor beneath the West Ewing Street right-of-way. (See attached design drawings for structure locations.)

**CSO Outfall Replacement.** Approximately 110 linear feet of an existing Seattle Public Utilities-owned CSO outfall that lies in the path of WTD's proposed new 108-inch-diameter sewer tie-in pipe in the north construction area would be replaced in a new alignment. Replacement of the on-land portion of the CSO outfall would include installation of three manhole structures, a sluice gate, and piping installed by trenching. The new outfall pipe would also need to be connected to the upstream sewer pipe from which it would receive flow.

In-water work would be required to replace the portion of the outfall that extends into the Ship Canal. A temporary coffer dam would be established around the in-water work area to create a dry work area and isolate impacts to the Ship Canal during construction. In addition to installation of the coffer dam, work in the Ship Canal would consist of temporary removal of riprap around the existing CSO outfall, trenching to install the replacement outfall, breaching a portion of the existing Ship Canal splash wall, removing the existing outfall pipe, placing new pipe and pipe bedding, and repairing the splash wall. The new outfall would discharge into the Ship Canal at the same location as the existing outfall. Construction of the CSO outfall replacement is anticipated to occur in summer 2014 or 2015 and take approximately six to eight weeks to complete.

If a CSO occurred during construction, the existing CSO outfall pipe would be available for use.

**Existing siphon decommissioning.** After the new siphon is constructed and operating, the existing siphon would be decommissioned. The siphon pipes would be

isolated, dewatered, flushed and then disinfected. After the proposed project is completed, King County would retain the existing space in the Fremont Tunnel for Wastewater Treatment Division uses.

**Odor Control Facility Construction.** A new permanent above-ground odor control facility would be constructed on the North Shaft site to reduce wastewater odors generated by WTD wastewater pipelines in the Fremont project area. The footprint of the facility would be approximately 30 feet by 30 feet. An activated carbon scrubber unit would be screened from view by walls that are approximately 10 feet high. Air would exit the unit through an approximately 20-foot-tall ventilation stack.

- 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 project site is located in the City of Seattle in King County, Washington, in SE Section 13, Township 25N, Range 3E (see attached vicinity map). It includes a north construction area located in the Fremont neighborhood on the northeast side of the Ship Canal and a south construction area located in the Queen Anne neighborhood on the southwest side of the Ship Canal.

The north construction area includes the approximately 12,840-square-foot North Shaft site, which is located at 215 Northwest 36<sup>th</sup> Street in Fremont. This property is currently in private ownership, but would be acquired by King County. The north construction area also includes approximately 8,000 to 10,000 square feet (SF) of adjacent right-of-way owned by the City of Seattle and approximately 9,500 SF of USACE (U.S. Army Corps of Engineers)-owned property in and adjacent to the Ship Canal (the USACE owns this portion of the Ship Canal and a 15-foot-wide band of land along each side of the Ship Canal). Approximately 7,000 to 9,000 SF of the City of Seattle-owned property is part of Fremont Canal Park.

The south construction area includes the South Shaft site, which is located on King County-owned property at 322 West Ewing Street. The King County Environmental Laboratory building occupies the western two-thirds of the property. The South Shaft site includes the undeveloped eastern third of the property, and is approximately 10,805 SF in size. The south construction area also includes approximately 11,700 SF of adjacent right-of-way that is owned by the City of Seattle, approximately 1,000 SF of land that is owned by Burlington Northern Santa Fe (BNSF) Railroad and approximately 1,600 SF of West Ewing Mini Park. The park is owned by the City of Seattle, except for a 15-foot-wide band of land along the side of the Ship Canal. This land is owned by the USACE.

See the attached construction drawings for specific structure locations.

## **B. ENVIRONMENTAL ELEMENTS**

### **1. Earth**

- a. **General description of the site (circle one):** Flat, rolling, hilly, steep slopes, mountainous, other: gently sloped.

The project site is located between Fremont Hill (to the northeast) and Queen Anne Hill (to the southwest). The ground surface on the project site slopes down from each hill toward the Ship Canal. The ground surface is relatively flat at each shaft location, due to the placement of fill at both locations. On the north side of the Ship Canal, the ground surface begins to slope down at approximately 3 horizontal to 1 vertical (3H:1V) towards the Ship Canal about 30 feet from the Ship Canal waterline. A concrete splash wall located along the shoreline on each side of the canal retains upland soils and prevents the shoreline from being eroded by water in the Ship Canal.

The bottom of the Ship Canal slopes from each shoreline down to the dredge line at approximately 3H:1V.

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

The steepest slope on the site is shoreline adjacent to the Ship Canal. This slope is approximately 33%.

- 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 prime farmland.**

Fill and granular, clay and silt soils underly the project site.

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

No such indications are known.

- e. **Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.**

It is estimated that approximately 7,650 cubic yards (CY) of soil would be excavated in the north construction area to construct the North Shaft, two microtunnel crossings under the Ship Canal, the interceptor connection, the siphon inlet and the CSO outfall replacement. This estimate includes soils excavated in the Ship Canal. It is estimated that approximately 4,725 CY of soil would be excavated in the south construction area to construct the South Shaft, the siphon outlet and the junction pipe.

Approximately 2,900 CY and 2,175 CY of fill material (soil and gravel) would be needed to backfill excavations made for shafts, pipes and structures in the north and south construction areas, respectively. These estimates do not include asphalt and concrete. The amount of imported fill that would be required for the proposed project would be dependent upon the engineering characteristics of the native soil. Whenever possible native material would be used as fill or cover. Imported material would be used to provide an engineered base or as cover material. All imported material would be subjected to material specifications and inspection and acceptance by King County's project construction manager. All imported material would be obtained from local commercial sources. All



excavated material that could not be used as fill would be disposed of at an approved disposal site.

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

Some erosion could occur during excavation and filling for shafts, trenches or structures, but erosion control measures would be used to minimize this potential (see item B.1.h below).

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

Approximately 40-45% and 50-55% percent of the north and south construction areas are currently covered with impervious surfaces, respectively. After project construction, approximately 40-45% and 50-55% percent of the north and south construction areas would be covered with impervious surfaces, respectively. New impervious surfaces in the north project area (i.e., areas that are currently pervious but would become impervious) would include three manholes and a gate structure for the City of Seattle (SPU)-owned CSO outfall. New impervious surfaces in the south project area (i.e., areas that are currently pervious but would become impervious) would include a siphon access slab, manhole and utility/traffic cabinet.

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

Temporary erosion and sedimentation control measures would be employed throughout project construction. Typical measures that could be used are filter fabric fences, hay bales, covering soil stockpiles and exposed soils, and use of settling tanks or other means to prevent sediment from leaving the site.

Additional Best Management Practices (BMPs) and other measures could include the following:

- designate personnel to inspect and maintain temporary erosion and sediment control measures;
- store materials away from surface waters;
- refuel construction equipment and vehicles away from surface waters whenever practicable;
- maintain spill containment and clean up material at the construction site;
- contain equipment, materials and vehicle wash water associated with construction and keep it from draining into surface waters;
- dispose of spoils at an approved disposal site;
- use appropriate means to minimize tracking of sediment onto public roadways by construction vehicles; and
- restore disturbed areas by repaving or replanting as soon as practical after construction is completed.

Temporary erosion and sediment control measures would be identified in the project's construction plans and specifications and would be implemented as required by the City of Seattle. Appropriate erosion and sediment control measures would be installed prior to clearing, grading or excavation activities.

Vibration generated by construction activities such as microtunneling support equipment (soil separation) is expected to be noticeable, but is not expected to damage nearby structures. However, to protect existing structures, a maximum vibration limit would be specified to ensure that structures are not compromised. Vibration in the immediate area of construction would be monitored during construction to ensure that it does not exceed allowable limits. A preconstruction and post-construction vibration survey would also be used to evaluate construction induced vibration.

The project itself is a measure to prevent potential adverse impacts to Ship Canal sediments. The purpose of the proposed project is to replace a critical wastewater conveyance siphon that is at the end of its service life. Failure of the Fremont Siphon could result in the discharge of untreated wastewater to the Ship Canal.

## 2. Air

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

The proposal would involve temporary construction-related air emissions. These would include dust generated by construction activities and exhaust from construction equipment. Sewer odors could be temporarily emitted where existing sewer pipes or vaults are opened during construction.

After the project is completed, an odor control facility would release treated sewer odors through a ventilation stack on the North Shaft site.

A King County Greenhouse Gas Emissions Worksheet is attached.

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

No

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

During construction, BMPs would be implemented to control dust. Types of BMPs that would be used include street sweeping, watering exposed soil surfaces, and covering soil stockpiles to help minimize the amount of fugitive dust and particulate pollution to the surrounding areas.

Construction equipment-related emissions would be reduced by requiring proper maintenance of equipment, using electrically powered equipment where practical, and avoiding prolonged idling of vehicles and equipment.

King County would provide advance notice to project area near neighbors when sewer tie-ins or other known odor causing activities are to occur and would be on-call to address concerns while the work is being completed.

After the proposed project is completed, the new odor control facility would reduce wastewater odors generated by WTD wastewater pipelines in the Fremont project area.

### 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, or wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.**

Yes. The project site includes a portion of the Lake Washington Ship Canal (Ship Canal) between Lake Union and Salmon Bay. In this area, the Ship Canal is approximately 270 feet wide. The USACE defined channel width of the Ship Canal is 100 feet, with a dredge depth of 30 feet. Water from the Cedar River, Sammamish River and Lake Washington flow through Lake Union into the Ship Canal and then flow into Salmon Bay, the Hiram M. Chittenden Locks and then Puget Sound.

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

Yes. Work would take place adjacent to, under and in the Ship Canal.

The north and south construction areas are located within 200 feet of the Ship Canal. Work in these areas would include construction of the North and South Shafts, the odor control facility, and the sewer tie-in connections. It would also include replacement of a portion of the SPU-owned CSO outfall pipe and decommissioning of the existing Fremont Siphon.

Two new pipe crossings would be microtunneled approximately 20 feet under the bottom of the Ship Canal.

Work in the Ship Canal would be required to replace the in-water portion of the SPU-owned CSO outfall. A temporary coffer dam would be established around an approximately 625-square-foot area in the canal, most likely by vibrating in sheet piles (see attached plan). The area within the coffer dam would be dewatered to create a dry work area and isolate impacts to the Ship Canal during construction. An approximately 20-foot-long section of the splash wall would be breached and a trench excavated so that the existing CSO outfall pipe could be removed and a new CSO outfall pipe installed. After the pipe is installed, it would be covered with rip rap and the splash wall would be repaired.

Construction activities in the Ship Canal would be performed from the shore and an approximately 100' x 40' barge in the canal. In-water work to replace the CSO outfall is anticipated to occur in summer 2014 or 2015 and take approximately six to eight weeks to complete. This work would most likely be completed in dry summer months when CSOs are least likely to occur.

- 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.**

To replace the in-water portion of the SPU CSO outfall, approximately 120 CY of rip rap that surrounds the existing outfall pipe would be removed. Approximately 700 CY of soil would be excavated from the bottom of the Ship Canal and the shoreline in order to remove the existing outfall and install the replacement outfall. The trench would be backfilled with approximately 660 CY of bedding and cover material for the new pipe. This fill material would be consistent with state and federal permit conditions placed on the in-water work. Fill material would be obtained from local commercial sources.

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

Yes. After the coffer dam is installed, water inside the dam would be pumped into the Ship Canal to create a dry work area and isolate impacts to the Ship Canal during construction. It is anticipated that approximately 72,000 gallons of water would need to be pumped out of the coffer dam.

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

No

- 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.**

The proposed project includes the replacement of a City of Seattle-owned CSO outfall that discharges combined sanitary and storm sewage to the Ship Canal during and/or after wet weather events when flows exceed the capacity of Seattle's local wastewater system. The replacement outfall pipe would discharge into the Ship Canal at the same location and have the same conveyance capacity as the existing outfall pipe. The proposed project would not change the volume or frequency of discharges from this CSO location.

**b. Ground:**

- 1) **Will ground water be withdrawn, or will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.**

Yes. Groundwater would be withdrawn to allow construction in shaft and trench excavations to be carried out in dry conditions.

In order to prevent groundwater from entering into the shafts, structural invert slabs made of concrete would likely be placed at the bottom of the shafts. Continuous dewatering at a rate of approximately 150 to 250

gallons per minute (GPM) would be required at each shaft until the invert slab is placed. Greater flows would occur during the initial drawdown. It is expected that dewatering would occur in each shaft for approximately 12 weeks. If structural invert slabs were not placed in the shafts, then continuous dewatering would be required for approximately one year until the shafts were backfilled.

For the trenched excavations, it is expected that dewatering would be required at a rate of approximately 180 to 360 GPM to create dry work areas. Greater flows would occur during initial drawdowns.

Dewatering water would be discharged to the King County sewer system or possibly the Ship Canal. Discharge of dewatering water to the sewer system would require a King County Industrial Waste Discharge Permit. Any dewatering water discharged directly to the Ship Canal would have to meet Washington State Water Quality Standards.

- 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.**

None

c. **Water Runoff (including storm water):**

- 1) **Describe 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 source of runoff would be stormwater, as is currently the case at the site. During construction and operation this runoff would infiltrate into grassy areas or be directed to the local stormwater collection system, the sanitary sewer system or the Ship Canal. The Ship Canal flows into Salmon Bay and then through the Hiram M. Chittenden Locks to Puget Sound. The stormwater collection system conveys stormwater to the Ship Canal or the sanitary sewer system. The sanitary sewer system conveys wastewater to the West Point Treatment Plant, which treats the water and discharges it to Puget Sound.

Runoff control measures during and after construction would comply with the City of Seattle's stormwater management requirements. These measures could include the installation of new bioretention facilities on the site. If this occurs, soils and plantings in the bioretention facilities would settle, absorb and filter stormwater runoff prior to infiltration or conveyance to the sewer system.

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

Runoff from construction sites has the potential to contain small amounts of motor oil, diesel fuel, hydraulic fluid, and other equipment-related materials, as well as sediment. These substances could enter ground or surface waters. See item B.3.d below for measures to minimize this potential.

If, during or immediately after a wet weather event, storm water and sanitary sewage exceeded the capacity of the local City of Seattle-owned combined sewer system, it would be discharged to the Ship Canal through the City of Seattle-owned CSO outfall that would be replaced as part of the project. The replacement outfall would discharge at the same point as the existing outfall in the Ship Canal and have the same conveyance capacity. It would not change the frequency or volume of discharges from the outfall.

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

The project would be constructed in accordance with applicable local, state and federal permits and government approvals, which would specify a range of measures designed to reduce or control potential surface, ground or runoff water impacts. Measures to reduce impacts from in-water work would be included, such as the use of a silt curtain to minimize turbidity and sedimentation. Permits and approvals would likely include consultation under Section 7 of the Endangered Species Act with NMFS and USFWS, Section 10 and Section 404 Permits from the USACE, a Hydraulic Project Approval from WDFW, a Shoreline Substantial Development Permit from the City of Seattle and other regulatory permits and approvals.

Potential BMPs and other erosion and sediment control measures are described in Section B.1.h. above.

Water discharged from the project site during construction would be monitored and, if necessary, treated. Settling tanks and/or other treatment measures would be used if needed to ensure that this water meets water quality standards before it is discharged to the stormwater collection system, the sewer system or surface waters. Contaminants removed during treatment would be disposed of at an approved disposal site. Implementation of applicable measures would be included in project construction contract specifications.

Site design for the project site post-construction would include stormwater management control measures to address runoff control and treatment issues as required by the City of Seattle. These measures would likely include the construction of bioswales on the project site. The bioswales would contain plants and bioretention soils that would filter out pollutants in runoff that is routed to the bioswales.

The project itself is a measure to prevent potential adverse impacts to the Ship Canal. The purpose of the proposed project is to replace a critical wastewater conveyance siphon that has deteriorated and is at the end of its service life. Failure of the Fremont Siphon could result in the discharge of untreated wastewater to the Ship Canal.

#### 4. Plants

##### a. Check or circle types of vegetation found on the site:

- ☒ deciduous tree
- ☒ evergreen tree
- ☒ shrubs
- ☒ grass
- ☐ pasture
- ☐ crop or grain
- ☐ wet soil plants
- ☐ water plants:
- ☐ other types of vegetation

The north and south construction areas contain “exceptional” trees, as defined by the City of Seattle. The Lombardy poplars that line the canal are part of the historic setting described for the Ship Canal. The South Shaft site also includes several memorial trees. All of these trees would be protected and not disturbed to the maximum extent practicable.

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

Construction of the proposed project would require the removal and replacement of landscaped areas including the removal or transplanting of existing trees and other vegetation.

Trees within the immediate construction work area that are well-suited for transplanting, as determined by an arborist, could be temporarily relocated and replanted within the project site or transplanted to new locations outside of the work area. Generally, trees that are well-suited for transplanting include those that are in good condition and up to 10” diameter at breast height (DBH). It is anticipated that approximately 20 trees in the north construction area could be transplanted. These trees range in size from 3” to 10” DBH and include the following species: crab apple, zelkova, oak, hawthorne, weeping spruce, shore pine, cherry, red maple and vine maple. It is anticipated that approximately 13 trees in the south construction area could be transplanted. These trees range in size from 4” to 12” and include the sweetgum and fastigata european hornbeam species.

Trees within the immediate work area in poor condition or too large to successfully transplant would be removed. The trees would be cut down and their stumps removed or ground to a depth of 12” below existing grade. It is anticipated that approximately 11 trees in the north construction area would be removed. These trees range in size from 3” to 8” DBH and include the following species: plum, cherry, hawthorne, birch, shore pine, big leaf maple and red leaf maple. It is anticipated that approximately 10 trees in the south construction area would be removed. These trees range in size from 4” to 20” DBH and include the following species: sweetgum, sugar leaf maple, alder, red maple, fastigata european hornbeam and european birch.

Approximately 5,250 SF and 13,400 SF of grass and shrubs would be removed from the north and south construction areas, respectively. All but approximately 1,000 SF of the total area would be replanted with grass and shrubs.

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

None are known to be on or near the site.

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

“Exceptional” trees, as defined by the City of Seattle; trees described as part of the Ship Canal’s historic district; and memorial trees would be protected and not disturbed to the maximum extent practicable. Trees outside of the construction areas would be protected to City of Seattle tree protection standards. Examples of tree protection measures that could be implemented include prohibiting heavy equipment from driving over tree roots and installing fencing and signage around trees to be protected.

Trees within the immediate construction work area that are well-suited for transplanting, as determined by an arborist, could be temporarily relocated and replanted within the project site or transplanted to new locations outside of the work area instead of being cut down. Trees designated for transplanting would be transplanted when dormant.

Trees and other vegetation removed from the project site would be replaced and the sites restored in compliance with applicable City of Seattle code standards and applicable agency and design standards. If memorial trees needed to be removed, associated plaques would be protected and stored and the tree and plaque would be restored following construction. Tree protection measures would meet City of Seattle tree protection requirements.

**5. Animals**

**a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:**

birds: hawk, heron, eagle, songbirds, other: cormorants, gulls

mammals: deer, bear, elk, beaver, other: rodents

fish: bass, salmon, trout, herring, shellfish, other: various game and nongame freshwater native and non-native fish species

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

Chinook Salmon (*Oncorhynchus tshawytscha*) and Steelhead (*Oncorhynchus mykiss*) use the Ship Canal during migration. Bull Trout (*Salvelinus confluentus*) may also use the Ship Canal during migration. These species are listed as “threatened” under the federal Endangered Species Act (ESA).

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

Yes. The Ship Canal is used for migration by salmon and other anadromous fish. The entire Puget Sound area is part of the Pacific flyway migration route.

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



BMPs would be used to preserve or enhance wildlife. These and other measures are listed in Sections B.1.h and B.3.d. In addition, the project would comply with conditions of applicable permits and government approvals, including consultation under Section 7 of the Endangered Species Act with NMFS and USFWS; Section 10, Section 408 and Section 404 Permits from the USACE; a Hydraulic Project Approval from WDFW; a Shoreline Substantial Development Permit from the City of Seattle and other regulatory permits and approvals. Through these conditions, applicable regulations would require mitigation of impacts to fish and wildlife resources, including endangered species.

The project itself is a measure to prevent potential adverse impacts to fish and wildlife. The purpose of the proposed project is to replace a critical wastewater conveyance siphon that has deteriorated and is at the end of its service life. Failure of the Fremont Siphon could result in the discharge of untreated wastewater to the Ship Canal.

## **6. Energy and Natural Resources**

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

During construction, fossil fuels and electricity would power construction vehicles, equipment and haul trucks. During operation, the project would use fossil fuels for vehicles used by maintenance staff during periodic site visits. The completed project would also use electricity to power fans, instruments and lighting.

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

No

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

None

## **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.**

Potential exposure to construction-related materials such as fuel and hydraulic fluid could occur as the result of accidental spills or mechanical failures. However, the potential for spills or mechanical failures to occur and adversely affect the environmental health of workers and nearby residents is very low.

There is a potential to encounter petroleum-contaminated soils/groundwater as part of excavation work. If encountered, contaminated soils would be removed from the work area and transported to a permitted disposal site. Contaminated

groundwater removed from work areas would be treated on site and disposed of into the sewer system under a King County Industrial Waste Discharge Permit.

**1) Describe special emergency services that might be required.**

None needed

**2) Proposed measures to reduce or control environmental health hazards, if any:**

As described in items B.1.h. and B.3.d. above, BMPs and other measures would be used to avoid or contain/control any spills or other releases of hazardous materials during project construction.

If contaminated soils or groundwater are encountered, contaminated soils would be removed from the work area and transported to a permitted disposal site. Contaminated groundwater removed from work areas would be treated on site and disposed of into the sewer system under a King County Industrial Waste Discharge Permit.

The contractor would prepare a health and safety plan as part of the contract for the proposed project. This plan would comply with all applicable health regulations and would detail measures to control environmental health hazards.

The project itself is a measure to reduce a possible environmental health hazard. The purpose of the proposed project is to replace a critical wastewater conveyance siphon that has deteriorated and is at the end of its service life. Failure of the Fremont Siphon could result in the discharge of untreated wastewater to the Ship Canal, which could adversely affect the health of humans who come into contact with contaminated water or eat contaminated fish. The proposed project would reduce this potential health hazard.

**b. Noise**

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

Noise in the project area would not affect the 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.**

Temporary construction-related noise in the north and south construction areas would typically consist of engine noise, reverse gear warning systems, generator noise and mechanical and scraping noises associated with the use of heavy construction equipment such as bulldozers, graders, scrapers and loaders. Noise would also be generated by equipment used at the soil separation facility on the North Shaft site. These types of equipment typically generate noise in the range of 70 to 90 dBA at a distance of 50 feet from the source.

Additional temporary noise would be generated by a vibratory pile driver that would likely be used to install sheet piles for the coffer dam in the Ship Canal and shoring for trenches. Vibratory pile driving equipment typically generates noise measuring approximately 95 to 101 dBA at a distance of 50 feet. If a hoe ram is used to demolish the existing building on the North Shaft site, it would be expected to generate noise measuring approximately 90 dBA at a distance of 50 feet.

Noise would also be generated during construction by pumps used to dewater excavations and the coffer dam. These pumps would run 24 hours per day during dewatering.

Materials hauling activities and workers' vehicles would add slightly to traffic noise on roads used to access the site during project construction.

Project construction would mainly occur during normal weekday working hours. It is expected that weekend or overtime work would occur at times.

During operation of the proposed project, fans used to draw foul air into the new permanent odor control facility on the North Shaft site could generate noise that is audible from the property boundary.

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

Measures to reduce or control noise impacts would be implemented during construction. These could include the following:

- restricting nighttime construction activity,
- shutting off equipment when not in use,
- using effective vehicle mufflers,
- creating a 24-hour construction hotline to promptly respond to questions and complaints,
- notifying residences in advance of project construction scheduling and phasing,
- positioning noise-generating equipment on the project site so that it is as far away as possible from sensitive receivers,
- constructing temporary noise barriers, and
- using quieted generators or site-provided power for non-mobile equipment in lieu of diesel-powered generators/engines.

Businesses and/or residents next to the site could be temporarily relocated, if necessary, to comply with applicable noise requirements.

All construction activities would comply with the City of Seattle's Noise Control Ordinance.

**8. Land and Shoreline Use**

**a. What is the current use of the site and adjacent properties?**

The north construction area includes the North Shaft site, which currently contains a concrete warehouse, a retail store and an asphalt parking lot. A general gas supply business operates within the warehouse and runs the retail

store. The north construction area also includes a City of Seattle-owned open grassy area with trees and shrubs that is adjacent to the shaft site. This parcel is located between the North Shaft site and the Burke-Gilman Trail. In addition to this primary construction area on the north side of the Ship Canal, work would be performed in Fremont Canal Park and in the Ship Canal to make sewer tie-in connections and replace the existing SPU-owned CSO outfall. Properties adjacent to the north construction area are used for parking, commercial and residential uses, recreation and open space (Fremont Canal Park) and recreation and navigation (the Ship Canal).

The south construction area includes the South Shaft site, which is on a piece of property owned by King County. The King County Environmental Laboratory occupies the western two-thirds of the property. The South Shaft site is undeveloped land on the eastern one-third of the property. In addition to this primary construction area, work would be performed in West Ewing Street right-of-way and West Ewing Mini Park to decommission the existing Fremont Siphon. The south construction area is bordered by the King County Environmental Laboratory, the Ship Canal, West Ewing Mini Park, City of Seattle right-of-way, land owned by BNSF Railroad and Seattle Pacific University's Otto Miller Hall.

**b. Has the site been used for agriculture? If so, describe.**

No

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

The North Shaft site contains a concrete warehouse. A concrete splash wall is located along the shoreline on each side of the Ship Canal.

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

The concrete warehouse on the North Shaft site would be demolished so that the North Shaft and odor control facility could be constructed in its place. An approximately 20-foot-long section of the concrete splash wall on the north side of the Ship Canal near the existing SPU-owned CSO outfall would be removed and replaced.

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

The zoning classifications of the north and south construction areas are General Industrial 2 (IG2) and General Industrial 1 (IG1), respectively.

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

The current comprehensive plan designation of the project site is Industrial.

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

The shoreline master program designations of the north and south construction areas are Urban General and Urban Industrial, respectively. The shoreline master program designation of the Ship Canal in the project area is Conservancy Navigation.

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

Yes. City of Seattle environmentally critical areas maps identify the portions of the north and south construction areas that lie within 100 feet of the Ship Canal as Shoreline Habitat Buffer. The North Shaft site is not located within this area. The portion of the north project area that is adjacent to the Ship Canal is identified as having Steep Slopes.

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

No people would reside in the completed project. It is estimated that the completed project would be visited by King County staff on a weekly basis for normal operation and maintenance purposes.

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

The proposed project would displace Praxair, Incorporated—the business currently located at 215 Northwest 36<sup>th</sup> Street in Fremont. This property would be acquired by King County and used as the North Shaft site. This would result in the displacement of approximately five people who currently work for Praxair Distribution, Incorporated.

King County could temporarily relocate approximately three small businesses and one resident to mitigate temporary construction impacts (e.g., noise), if necessary, to comply with applicable noise requirements.

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

Property owners, residents or businesses displaced by the proposed project would receive relocation assistance from King County, if eligible for relocation benefits, in accordance with the provisions of the King County Wastewater Treatment Division Real Property Acquisition and Relocation Policy, Procedures, and Guidelines.

King County would acquire necessary property at fair market value and provide relocation assistance to qualified property owners and qualified tenants. The County would follow the Uniform Relocation Assistance and Real Property Acquisition Policies Act (49 Code of Federal Regulations Part 24) and the Washington State law covering property acquisition (Chapter 8.26 Revised Code of Washington, Title 468-100 Washington Administrative Code) to provide consistent treatment, to minimize hardship of persons displaced as a direct result of the proposed project, and to seek cooperative settlements of property acquisitions and relocation claims.

King County would implement measures to reduce noise impacts to nearby residents and businesses, as described in Section B.7.b.3.

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

During the permit approval process, the City of Seattle would be consulted to ensure that the proposed project is compatible with existing and proposed land uses and plans.

## 9. Housing

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

None

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

None

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

None

## 10. Aesthetics

- a. **What is the tallest height of any proposed structure(s), not including antennae; what is the principal exterior building material(s) proposed?**

The new odor control facility is the tallest proposed structure. The structure's footprint would be approximately 900 square feet and it would be approximately ten feet tall. The facility's ventilation stack would be approximately 20 feet tall. The facility's principal exterior would be determined during final design.

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

The visual quality of the immediate project area would be temporarily altered for up to 2.5 years—from the time of demolition through the end of construction. After the building currently located on the North Shaft site is demolished, the site would be fenced. Temporary visual impacts during demolition and construction would include the presence of construction equipment, work crews, dust/exhaust, materials, signage, temporary fencing, noise barriers, staging areas in the construction zone, and traffic congestion along haul routes. A crane and other construction equipment would be located in both the north and south construction areas during demolition and for most of the approximately two-year construction period. Construction equipment would also be located in the Ship Canal when the SPU-owned CSO outfall is being replaced.

The appearance of the North Shaft site would be permanently altered. The existing concrete warehouse on the site would be replaced with a new odor control facility. The site would also likely contain security fencing, bioretention facilities and other landscaping. WTD would seek and consider community input on architectural and landscape elements during final design.

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

The design process for the proposed odor control facility would follow City of Seattle policies and guidelines for incorporating aesthetic considerations into design. Additionally, King County would work with the community on architectural and landscaping elements of the odor control facility and site during final design.

“Exceptional” trees, as defined by the City of Seattle, and trees described as part of the Ship Canal’s historic district would be protected and not disturbed to the maximum extent practicable. Trees outside of the construction areas would be protected to City of Seattle tree protection standards.

Any area where grass, shrubs and trees were removed to construct the proposed project would be replanted, except for approximately 1,000 SF. Any other surface improvements impacted by construction would also be restored.

## **11. Light and Glare**

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

Temporary lighting may be used at the beginning and end of work days when daylight hours are short. No nighttime construction is anticipated.

The proposed odor control facility would include exterior security lighting that would be used during nighttime hours.

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

The proposed odor control facility’s exterior security lighting would be noticeable from surrounding properties that currently have views of the site.

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

None

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

Security lighting for the odor control facility would be configured so that light is not cast beyond the edge of the odor control facility site to minimize light that would be noticeable from surrounding properties.

## **12. Recreation/Tribal Fishing**

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

In the north construction area, the proposed project would take place in and adjacent to Fremont Canal Park, the Burke-Gilman Trail and the Ship Canal. Fremont Canal Park is located along the Ship Canal and includes lawn/open space and views of the Ship Canal. Public events such as festivals are held in the park during the summer months. The Burke-Gilman Trail runs through the park and is used by walkers, bikers, skateboarders and rollerbladers. The Ship Canal

is used for recreational boating and fishing. The Ship Canal is also used for Tribal fishing.

In the south construction area, the proposed project would take place in and adjacent to West Ewing Mini Park, which contains grassy areas and the Ship Canal Trail. The trail is used by walkers, bikers, skateboarders and rollerbladers. The south construction area is adjacent to the Ship Canal and in the vicinity of the Seattle Pacific University track, athletic field, gymnasium and boat dock.

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

Construction would be required in Fremont Canal Park to complete the sewer tie-in connections and SPU-owned CSO outfall replacement on the north side of the Ship Canal. Approximately 1,800 SF of the park would be unavailable for recreational use for approximately one month so that the sewer tie-in connections could be completed. Approximately 3,400 SF of the park would be unavailable for recreational use for approximately one month so that the SPU-owned CSO outfall could be replaced. Approximately 240 linear feet of the Burke-Gilman Trail that passes through these work areas would be rerouted to another location within the park for approximately one month duration at two different times during the project to accommodate this work. On a few occasions, the trail may be closed for an extremely brief period of time.

Approximately 4,625 SF of the Ship Canal would be unavailable for recreational use or Tribal fishing for approximately six to eight weeks while the temporary coffer dam is installed and the in-water portion of the SPU-owned CSO outfall is replaced.

Construction would be required in West Ewing Mini Park on the south side of the Ship Canal to complete decommissioning of the old siphon. Approximately 4,800 SF of the park would be unavailable for recreational use for approximately one month. Approximately 850 linear feet of the Ship Canal Trail that passes through the project area would be rerouted to West Ewing Street for approximately one month so that the sewer tie-in work could be completed. On a few occasions, the trail may be closed for an extremely brief period of time.

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

Construction of the North Shaft on private property rather than in Fremont Canal Park, the only other technically feasible site for the shaft, is a measure to reduce impacts to Fremont Canal Park, the Burke-Gilman Trail and associated recreational opportunities.

Project construction activities would be sequenced so as to minimize impacts to parks and trails.

The contractor would be required to provide safe pedestrian and bicycle access to Fremont Canal Park, West Ewing Mini Park, the Burke-Gilman Trail and the Ship Canal Trail (except for areas of the parks and trails that are temporarily closed during construction). Measures to ensure pedestrian and bicyclist safety could include the use of signage regarding park access routes and the use of



temporary fencing to designate safe walkways through or near construction areas.

Construction BMPs would be implemented to minimize construction noise (see Section B.7.b.3).

King County would provide the City of Seattle with advance notice of times when portions of Fremont Canal Park and West Ewing Mini Park would need to be closed for construction so that festivals and other events that occur in the park could be planned accordingly. Project construction updates would be posted on signs in the project area and mailed, emailed or hand-delivered to interested parties so that park and trail users could anticipate when construction would be occurring in the parks and when the trails would be rerouted.

Park, trail and Ship Canal areas impacted by project construction would be restored to preconstruction conditions except for new areas of impervious surface that would be required (see Section B.1.g).

Installation of the temporary coffer dam outside of the Ship Canal's navigation channel would reduce impacts on recreational boating.

King County would work with affected Tribes to minimize impacts to Tribal fishing. Tribal concerns regarding potential impacts to Tribal fishing would be addressed during the USACE permitting process.

The project itself is a measure to reduce potential impacts to recreation and Tribal fishing. The purpose of the proposed project is to replace a critical wastewater conveyance siphon that has deteriorated and is at the end of its service life. The proposed project would greatly reduce the potential for failure of the Fremont Siphon and consequent discharge of untreated wastewater to the Ship Canal that could adversely affect fish and other aquatic life.

### 13. Historic and Cultural Preservation

- a. Are there any places or objects listed on, or proposed for, national, state or local preservation registers known to be on or next to the site? If so, generally describe.**

Part of the project area is located in the Fremont Cut (referred to as the "Ship Canal" elsewhere in this document). The Fremont Cut is a contributing component of the Chittenden Locks-Lake Washington Ship Canal Historical District, which is listed on the National Register of Historic Places. The Lombardy poplars that line the canal are part of the historic setting.

No archaeological sites have been recorded within one-half mile of the project area.

- b. Generally describe any landmarks or evidence of historic, archaeological, scientific or cultural importance known to be on or next to the site.**

Several unevaluated historic buildings dating from the early part of the 20<sup>th</sup> century are located within 0.1 to 0.5 mile of the construction areas, however, they are outside of the construction footprints and would not be affected by the proposed project.

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

The proposed project would be reviewed under Section 106 of the National Historic Preservation Act and would comply with any conditions or mitigation measures imposed on it through that process.

If artifacts are discovered during excavation, work would be stopped pending notification of and consultation with the Washington Department of Archaeology and Historic Preservation Program, the King County Historic Preservation Program and, if Native American archaeological resources are encountered, concerned Tribes.

Construction-related vibration is not expected to affect any historic structures located near project sites. However, Section B.1.h, above, identifies measures to protect structures from potential vibration impacts during construction.

**14. Transportation**

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

Streets serving the north construction area are Northwest 36<sup>th</sup> Street, Leary Way Northwest and Northwest Canal Street. Streets serving the south construction area are West Ewing Street and 3<sup>rd</sup> Avenue West.

**b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?**

Yes. The north project site is served by King County Metro Transit bus routes 26, 28 and 46 along North 36<sup>th</sup> Street. The south project site is served by King County Metro Transit bus routes 13, 17 and 31 along West Nickerson Street.

**c. How many parking spaces would the completed project have? How many would the project eliminate?**

The completed project would have four parking spaces on the North Shaft site for use by King County WTD maintenance employees. Five parking spaces in the parking lot that is currently on the private property that would be acquired by King County would be eliminated.

Approximately 15 parking spaces on NW 36<sup>th</sup> Street and 2<sup>nd</sup> Avenue NW would be temporarily eliminated for approximately two years during construction of the proposed project on the north side of the Ship Canal.

Approximately 20 parking spaces would be temporarily eliminated for approximately two years along West Ewing Street during construction of the proposed project on the south side of the Ship Canal. An additional 15 parking spaces used by Seattle Pacific University on West Ewing Street would be temporarily eliminated for approximately six months for construction on the south side of the Ship Canal.

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

The proposal would not require any new roads or streets. Construction activities in the north construction area would temporarily occupy and require the removal of pavement from both lanes in 2<sup>nd</sup> Avenue Northwest between Northwest 36<sup>th</sup> Street and Northwest Canal Street, as well as in Northwest Canal Street at the point where it meets 2<sup>nd</sup> Avenue Northwest. Buildings located on Northwest Canal Street would still be accessible from the alley that runs behind them.

Construction activities in the south construction area would temporarily occupy and require the removal of pavement from West Ewing Street. After construction is complete, these streets would be repaved and restored in accordance with City of Seattle requirements. All affected streets are public.

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

Work in the Ship Canal would be required to replace the in-water portion of the SPU-owned CSO outfall. A temporary coffer dam would be established around an approximately 625-square-foot area in the canal. The coffer dam would be located outside of the Ship Canal's navigation channel.

An approximately 20-foot-long section of the Ship Canal's splash wall on the north side of the canal would be breached and a trench excavated within the coffer dam so that the existing CSO outfall pipe could be removed and a new CSO outfall pipe installed. After the pipe is installed, it would be covered with rip rap and the splash wall would be repaired.

Construction activities in the Ship Canal may be performed from a barge in the canal. In-water work to replace the CSO outfall is anticipated to occur in summer 2014 or 2015 and take approximately six to eight weeks to complete. This work must be completed in dry summer months when CSOs are least likely to occur.

- f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.**

The completed project would generate one or two vehicle trips per week by maintenance employees visiting the site.

It is estimated that over the course of the approximately two-year construction period, construction would generate a total of approximately 3,300 one-way truck trips (single dump trucks and trucks for materials delivery) on the north side of the Ship Canal and approximately 2,100 one-way truck trips (single dump trucks and trucks for materials delivery) on the south side of the Ship Canal. If the contractor elects to use trailers/pups with dump trucks, these numbers would be reduced.

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

Transportation impact mitigation could include the following during construction:

- Use flaggers if necessary to manage traffic during construction.
- Develop a traffic control plan describing detour routes, lane closures, sidewalk closures, signage, flagging, hauling routes, etc. for approval by the City of Seattle prior to construction.
- To the extent practicable, schedule construction traffic to avoid peak commuter hours and try to minimize weekday truck traffic during rush hours.
- Require construction vehicles to follow major arterial routes to the maximum extent practicable.
- During the academic year, require trucks to use a haul route that minimizes potentially dangerous encounters between Seattle Pacific University students and construction traffic.
- Perform work that would eliminate Seattle Pacific University parking on West Ewing Street outside of the academic year, to the extent feasible.
- Require construction workers to park off-site and carpool to the construction areas.
- Work with the USACE and the U.S. Coast Guard to minimize disruption of boat traffic in the Ship Canal.

Sections of streets in which pavement is removed to construct the proposed project would be repaved and restored in accordance with City of Seattle requirements.

All parking spaces that are temporarily eliminated during construction would be restored following construction.

Installation of the temporary coffer dam outside of the Ship Canal's navigation channel would reduce impacts on recreational boating.

## 15. Public Services

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

No

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

None needed

## 16. Utilities

- a. **Circle the utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.**
- 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 project would use electricity provided by the City of Seattle.

**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.**

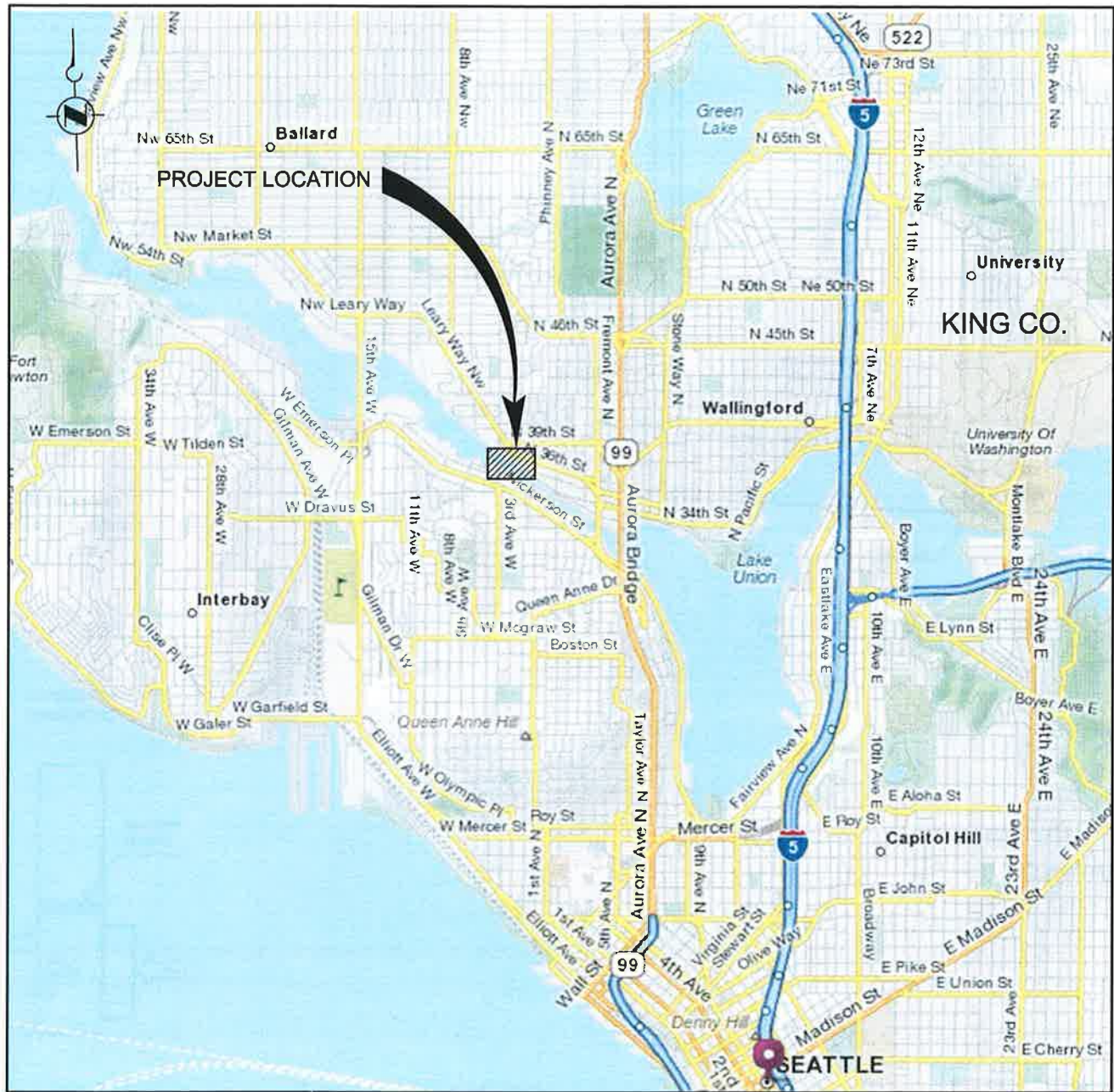
Signature: Wesley Sprague

Date Submitted: 7/26/12





PROJECT LOCATION  
NO SCALE



VICINITY MAP  
NO SCALE

- GENERAL NOTE:
- LEGAL DESCRIPTION:
  - BASIS OF HORIZONTAL CONTROL:
  - BASIS OF VERTICAL CONTROL:
  - SURVEYOR OF RECORD:  
TRUE NORTH LAND SURVEYING, INC.  
157 YESLER WAY, SUITE 301  
SEATTLE, WA 98104  
(206) 332-0800

PROJECT CONTROL POINTS					
CONTROL POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION	LOCATION (SEE PROJECT LOCATION MAP)
CP-X	XXXXXX.XXX	XXXXXX.XXX	XXX.XXX	X X	X X
CP-X	XXXXXX.XXX	XXXXXX.XXX	XXX.XXX	X	X X



30%  
PRELIMINARY REVIEW  
INFORMATION ONLY



DESIGNED/DRAWN:  
J. PERUCHINI  
PROJECT ENGINEER:  
J. CLARE  
DESIGN APPROVAL:  
J. ABDALKHANI  
PROJECT ACCEPTANCE:  
W. SROUFE

QA/QC:  
J. CLARE  
SCALE:  
NONE  
ONE INCH  
(REFERENCE)  
CONTRACT NO:  
E00133E08

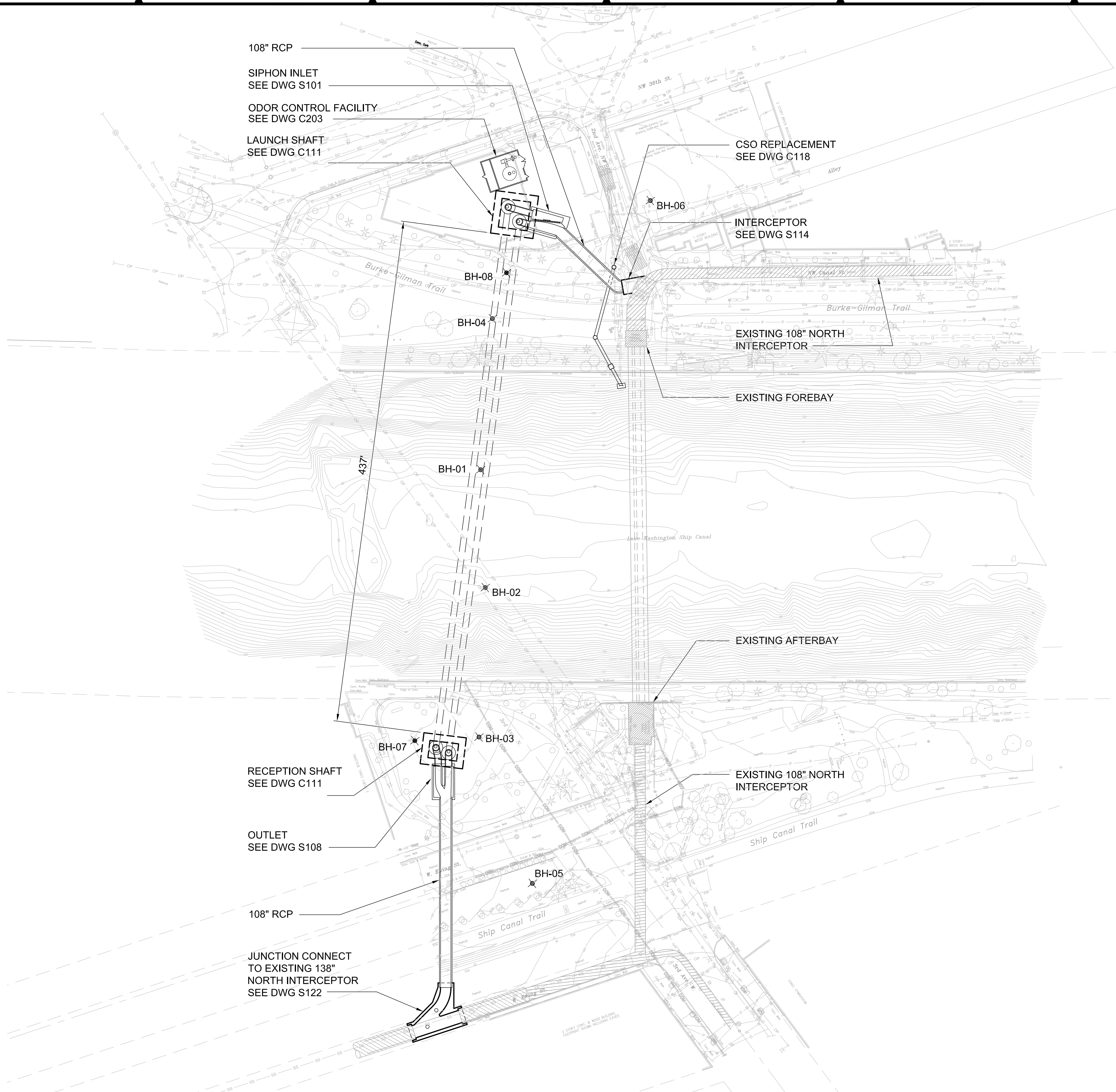
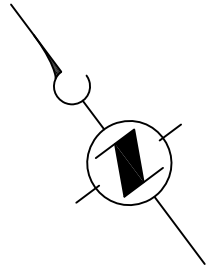


DEPARTMENT OF NATURAL RESOURCES & PARKS  
WASTEWATER TREATMENT DIVISION  
FREMONT SIPHON, SEATTLE WASHINGTON  
FREMONT SIPHON PROJECT  
GENERAL  
PROJECT LOCATION AND  
VICINITY MAP

DCN:  
DATE:  
ISSUE DATE  
PROJECT FILE NO:  
1047697  
DRAWING NO:  
G003  
SHEET NO: 3 OF 94



\\ussea5s01\BU20152\Projects\King County\Fremont Siphon - E00133E08\07B Phase 2 - Final Design\07B.13\_CAD\07B.13\FSP-423-644-6009\_v1.dwg | Layout: SHEET 1  
PLOTED: Jul 20, 2012 - 10:34:39am By Monica L Sanchez  
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IMAGES: king county (DNR).tif;



POINT ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
BH-01	241835.596	1264065.954	83.9	NORTH CANAL BORING
BH-02	241752.622	1264006.451	80.4	SOUTH CANAL BORING
BH-03	241653.87	1263922.72	121.36	SOUTH SHAFT
BH-04	241932.6	1264154.27	128.97	NORTH SHAFT
BH-05	241525.49	1263881.41	122.69	SOUTH TIE - IN
BH-06	241929.28	1264324.95	131.74	NORTH TIE - IN
BH-07	241685.47	1263876.95	121.02	NORTH TIE - IN
BH-08	241956.42	1264188.29	131.63	NORTH TIE - IN

LEGEND:  
BH-XX INDICATES DRILLED BORING HOLE LOCATION.

No.	REVISION	BY	APP'D	DATE



PRELIMINARY FOR  
PERMITTING REVIEW



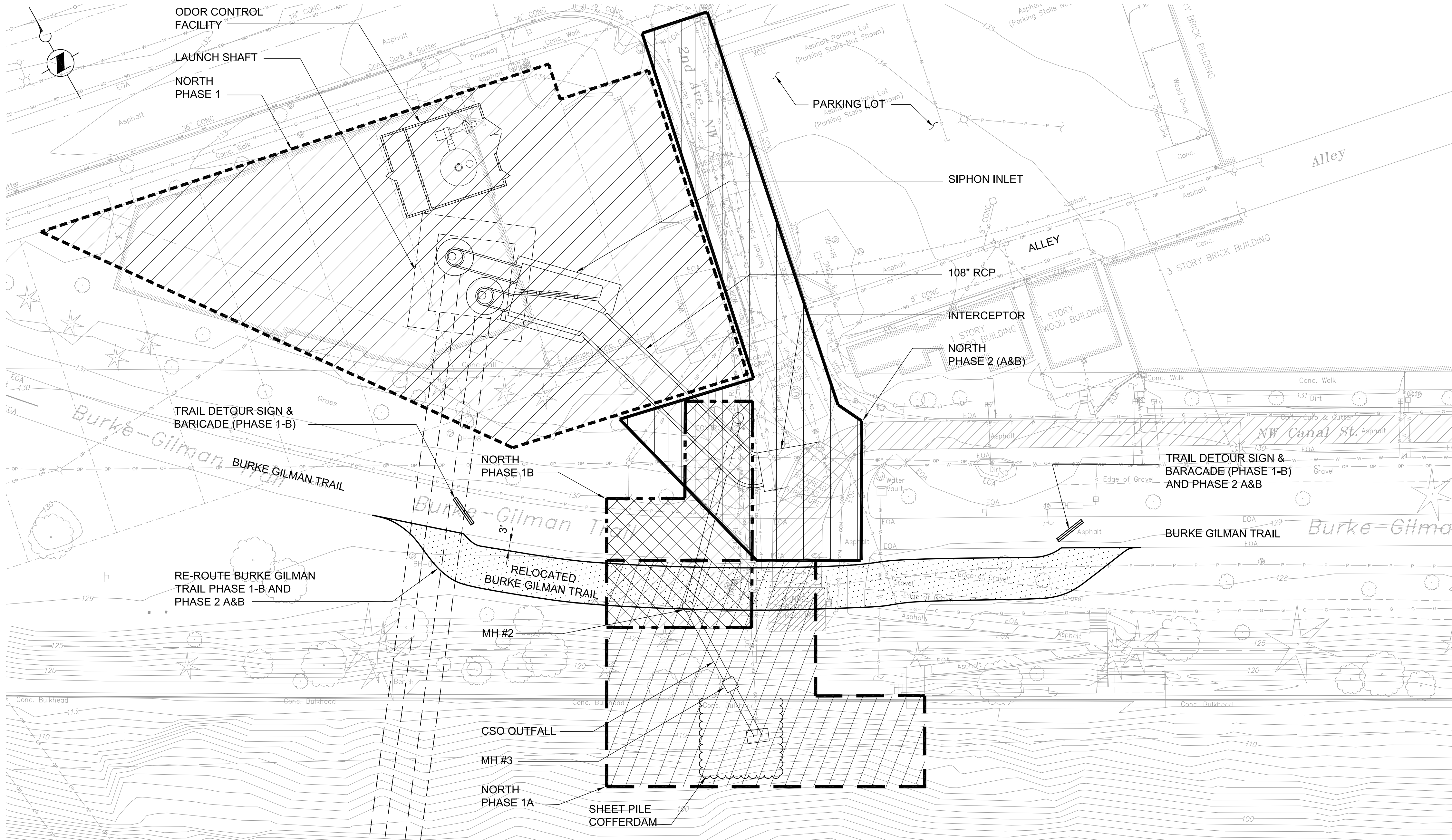
DESIGNED/DRAWN: J. PERUCHINI	QA/QC: J. CLARE
PROJECT ENGINEER: J. JOHNSON	SCALE: 1:50'
DESIGN APPROVAL: J. ABDALKHANI	ONE INCH (REFERENCE)
PROJECT ACCEPTANCE: W. SROUFE	CONTRACT NO: E00133E08



DEPARTMENT OF NATURAL RESOURCES & PARKS  
WASTEWATER TREATMENT DIVISION  
FREMONT SIPHON, SEATTLE WASHINGTON  
FREMONT SIPHON PROJECT  
**GENERAL**  
**PROJECT OVERVIEW**

DCN:	DATE: 7/23/2012
PROJECT FILE NO: 1047697	DRAWING NO: <b>G009</b>
SHEET NO: 9	OF 94

\\ussea5s01\BU20152\Projects\King County\Fremont Siphon - E00133E08\07B Phase 2 - Final Design\07B.13\_01\_CAD\07B.13FSP-423-644-G014\_v1.dwg | Layout: Paper Space  
PLOTED: Jul 23, 2012 - 08:26:14am By: Monica L. Sanchez  
XREFS: FSP-423-644-KCWD-2010-D-D-TB\_v1.dwg; FSP-423-644-MWH&AssocFirms.dwg; FSP-423-644-Sht&PlotInfo.dwg; FREMONT-423-644-C000-A.dwg  
IMAGES: king county (DNR).tif;



CONSTRUCTION PHASING - NORTH  
SCALE: 1"=20'

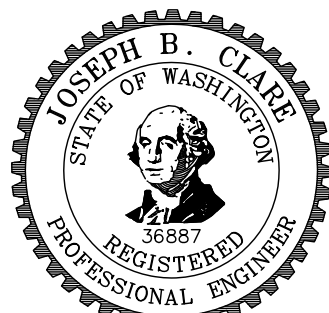
**NORTH CONSTRUCTION PHASING WORK ACTIVITY DESCRIPTION:**  
CONCEPTUAL PHASING OF WORK. ACTUAL PHASING MAY BE DIFFERENT.  
NORTH PHASE 1: SHAFT CONSTRUCTION & TUNNEL CONSTRUCTION.  
DURATION: 2 YEAR  
NORTH PHASE 1-A: CSO REPLACEMENT - IN WATER WORK.  
DURATION: 1 MONTH  
NORTH PHASE 1-B: CSO REPLACEMENT - ON-LAND WORK.  
DURATION: 1 MONTH (JULY TO SEPT 2014)  
NORTH PHASE 2: SEWER TIE-IN CONNECTIONS.  
DURATION: 2 MONTHS (JULY TO SEPT 2015)  
DURATION: 1 MONTH (JULY TO SEPT 2015)  
NORTH PHASE 3: SITE RESTORATION.



No.	REVISION	BY	APP'D	DATE



PRELIMINARY FOR  
PERMITTING REVIEW



DESIGNED/DRAWN: J. PERUCHINI	QA/QC: J. CLARE
PROJECT ENGINEER: S. RADFORD	SCALE: AS NOTED
DESIGN APPROVAL: J. ABDALKHANI	ONE INCH (REFERENCE)
PROJECT ACCEPTANCE: W. SROUFE	CONTRACT NO: E00133E08

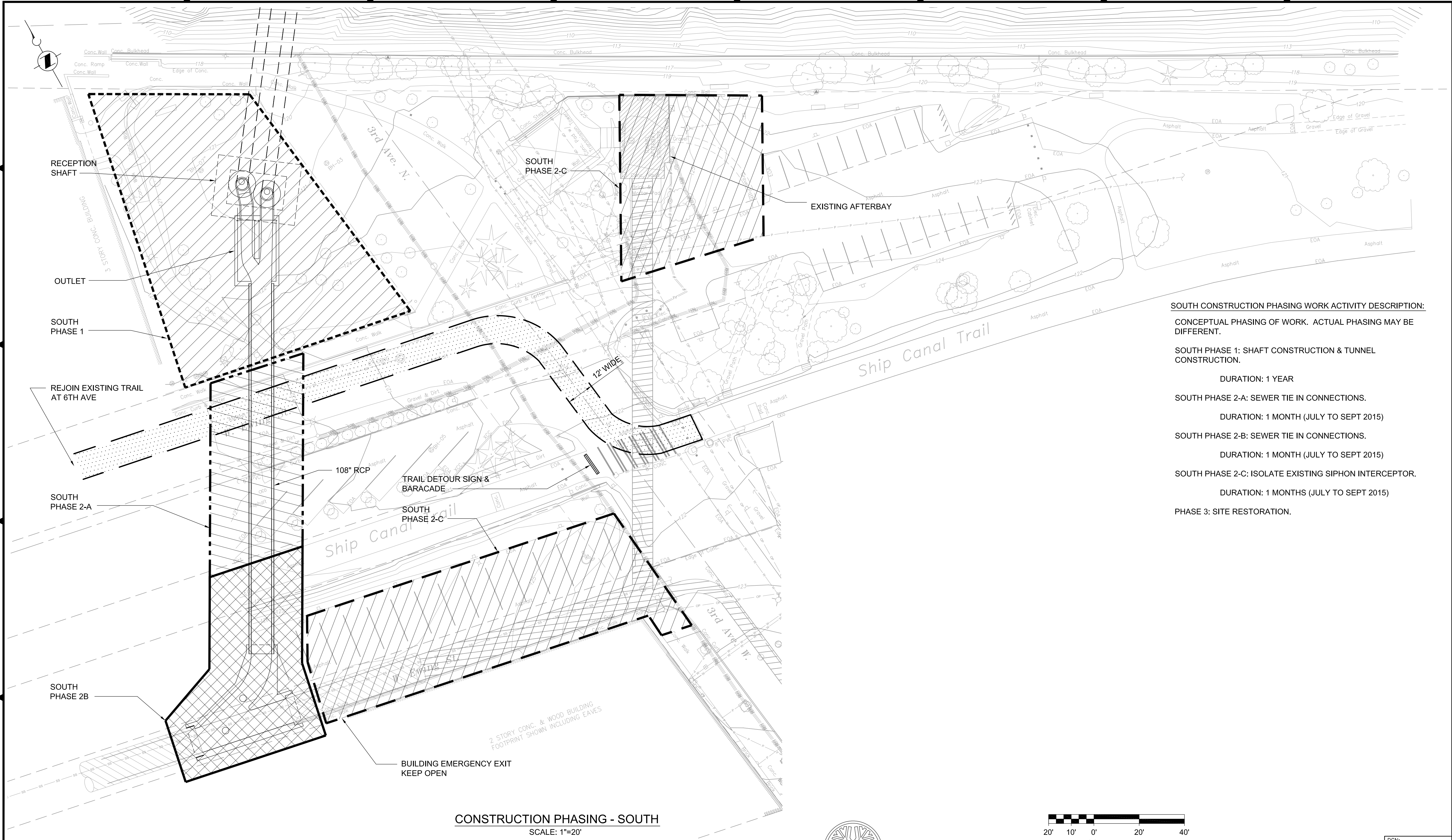


DEPARTMENT OF NATURAL RESOURCES & PARKS  
WASTEWATER TREATMENT DIVISION  
FREMONT SIPHON, SEATTLE WASHINGTON  
FREMONT SIPHON PROJECT  
**CIVIL**  
**CONSTRUCTION PHASING — NORTH**

DATE: 7/23/2012
PROJECT FILE NO: 1047697
DRAWING NO: <b>G014</b>
SHEET NO: 14 OF 94



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IMAGES: king county (DNR).tif;



**SOUTH CONSTRUCTION PHASING WORK ACTIVITY DESCRIPTION:**  
CONCEPTUAL PHASING OF WORK. ACTUAL PHASING MAY BE DIFFERENT.

**SOUTH PHASE 1: SHAFT CONSTRUCTION & TUNNEL CONSTRUCTION.**  
DURATION: 1 YEAR

**SOUTH PHASE 2-A: SEWER TIE IN CONNECTIONS.**  
DURATION: 1 MONTH (JULY TO SEPT 2015)

**SOUTH PHASE 2-B: SEWER TIE IN CONNECTIONS.**  
DURATION: 1 MONTH (JULY TO SEPT 2015)

**SOUTH PHASE 2-C: ISOLATE EXISTING SIPHON INTERCEPTOR.**  
DURATION: 1 MONTHS (JULY TO SEPT 2015)

**PHASE 3: SITE RESTORATION.**

CONSTRUCTION PHASING - SOUTH  
SCALE: 1"=20'



No.	REVISION	BY	APP'D	DATE

**MWH and Associated Firms**

**PRELIMINARY FOR PERMITTING REVIEW**

STATE OF WASHINGTON  
REGISTERED LANDSCAPE ARCHITECT  
Scott W. Radford  
CERTIFICATE NO. 688  
EXPIRES 6/29/2013

DESIGNED/DRAWN: J. PERUCHINI	QA/QC: J. CLARE
PROJECT ENGINEER: S. RADFORD	SCALE: AS NOTED
DESIGN APPROVAL: J. ABDALKHANI	ONE INCH (REFERENCE)
PROJECT ACCEPTANCE: W. SROUFE	CONTRACT NO: E00133E08

**King County**

DEPARTMENT OF NATURAL RESOURCES & PARKS  
WASTEWATER TREATMENT DIVISION  
FREMONT SIPHON, SEATTLE WASHINGTON  
FREMONT SIPHON PROJECT  
**CIVIL**

CONSTRUCTION PHASING — SOUTH

DATE: 7/23/2012
PROJECT FILE NO: 1047697
DRAWING NO: <b>G015</b>
SHEET NO: 15 OF 94

# King County Greenhouse Gas Emissions Worksheet—Fremont Siphon Replacement Project

## Section I: Buildings

Type (Residential) or Principal Activity (Commercial)	# Units	Square Feet (in thousands of square feet)	Emissions <b>Per Unit</b> or <b>Per Thousand Square Feet</b> (MTCO <sub>2</sub> e)			<b>Lifespan Emissions (MTCO<sub>2</sub>e)</b>
			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 (odor control facility).....		0.9	39	162	47	223

## Section II: Pavement.....

Pavement (where not previously paved)....		0.10				5
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**Total Project Emissions:**

**228**

Note: The proposed project consists of a new approximately 435-foot-long wastewater siphon, connections between the new siphon and existing pipes, two shafts required to construct the new siphon and a new above-ground odor control facility. It also includes restoration of existing streets and trails that would be removed or damaged during construction.