

FACT SHEET FOR NPDES PERMIT WA0001503
SEATTLE STEAM COMPANY

xx-xx, 2011

PURPOSE of this Fact Sheet

This fact sheet contains an explanation of, and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for Seattle Steam Company.

The Environmental Protection Agency (EPA) developed the NPDES permitting program as a tool to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” EPA delegated to Ecology the power and duty to write, issue, and enforce NPDES permits within Washington State. Both state and federal laws require any industrial facility to obtain a permit before discharging waste or chemicals to a water body.

An NPDES permit limits the types and amounts of pollutants the facility may discharge. Those limits are based either on (1) the pollution control or wastewater treatment technology available to the industry, or on (2) the receiving water’s designated beneficial uses. This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit and accompanying fact sheet for public evaluation before issuing an NPDES permit.

PUBLIC ROLE in the Permit

Ecology makes the draft permit and fact sheet available for public review and comment at least thirty (30) days before issuing the final permit to the facility operator (WAC 173-220-050). Copies of the fact sheet and draft permit for Seattle Steam Company, NPDES permit WA0001503, are available for public review and comment from insert month day, year until the close of business month day, year. For more details on preparing and filing comments about these documents, please see *Appendix A – Public Involvement Information*.

Before publishing the draft NPDES permit, Seattle Steam Company reviewed it for factual accuracy. Ecology corrected any errors or omissions about the facility’s location, product type or production rate, discharges or receiving water, or its history.

After the public comment period closes, Ecology will summarize substantive comments and our responses to them. Ecology will include its summary and responses to comments to this fact sheet as *Appendix D – Response to Comments*, and publish it when issuing the final NPDES permit.

Jeanne Tran prepared the permit and fact sheet.

SUMMARY

The Seattle Steam Company discharges backwash water from the ion exchange unit, to Elliott Bay under Pier 57. Ecology issued the previous permit for this facility on June 15, 2004. The effluent limits for flow, pH and oil and grease are unchanged from the permit issued in 2004. A temperature mixing zone study is required to be conducted in this proposed permit in order to evaluate whether the effluent has a reasonable potential to cause a violation of the water quality temperature standards.

Elliott Bay is included in the state of Washington's 303 (d) list of impaired waters for water quality exceedences of ammonia, dissolved oxygen, endosulfan, temperature, and fecal coliform in the water column, and numerous sediment criteria exceedences in the sediment column.

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I. INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later amendments in 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), administered by the federal Environmental Protection Agency (EPA). The EPA authorized the state of Washington to manage the NPDES permit program in our state. The Washington State legislature accepted the delegation and assigned the power and duty for conducting NPDES permitting and enforcement to Ecology. The legislature defined Ecology's authority and obligations for the Wastewater Discharge Permit Program in 90.48 RCW (Revised Code of Washington).

Ecology adopted rules describing how it exercises its authority:

- Procedures Ecology follows for issuing NPDES permits (Chapter 173-220 WAC).
- Water quality criteria for surface waters (Chapter 173-201A WAC) and for ground waters (Chapter 173-200 WAC).
- Sediment management standards (Chapter 173-204 WAC).
- Submission of Plans and Reports for Construction of Wastewater Facilities (Chapter 173-240 WAC).

These rules require any industrial facility operator to obtain an NPDES permit before discharging wastewater to state waters. They also help define the basis for limits on each discharge and for performance requirements imposed by the permit.

Under the NPDES permit program, and in response to a complete and accepted permit application, Ecology must prepare a draft permit and accompanying fact sheet, and make them available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments, during a period of thirty days (WAC 173-220-050). (See *Appendix A – Public Involvement Information* for more detail about the public notice and comment procedures.) After the public comment period ends, Ecology may make changes to the draft NPDES permit in response to comments. Ecology will summarize the responses to comments and any changes to the permit in *Appendix D*.

II. BACKGROUND INFORMATION

Table 1. General Facility Information

Applicant:	Seattle Steam Company
Facility Name and Address:	1319 Western Avenue Seattle, WA 98101 King County
Type of Facility:	Steam Supply
SIC Code:	4961
Discharge Location:	Elliott Bay Outfall 001: Latitude: 47.606389° N Longitude: 122.336111° W

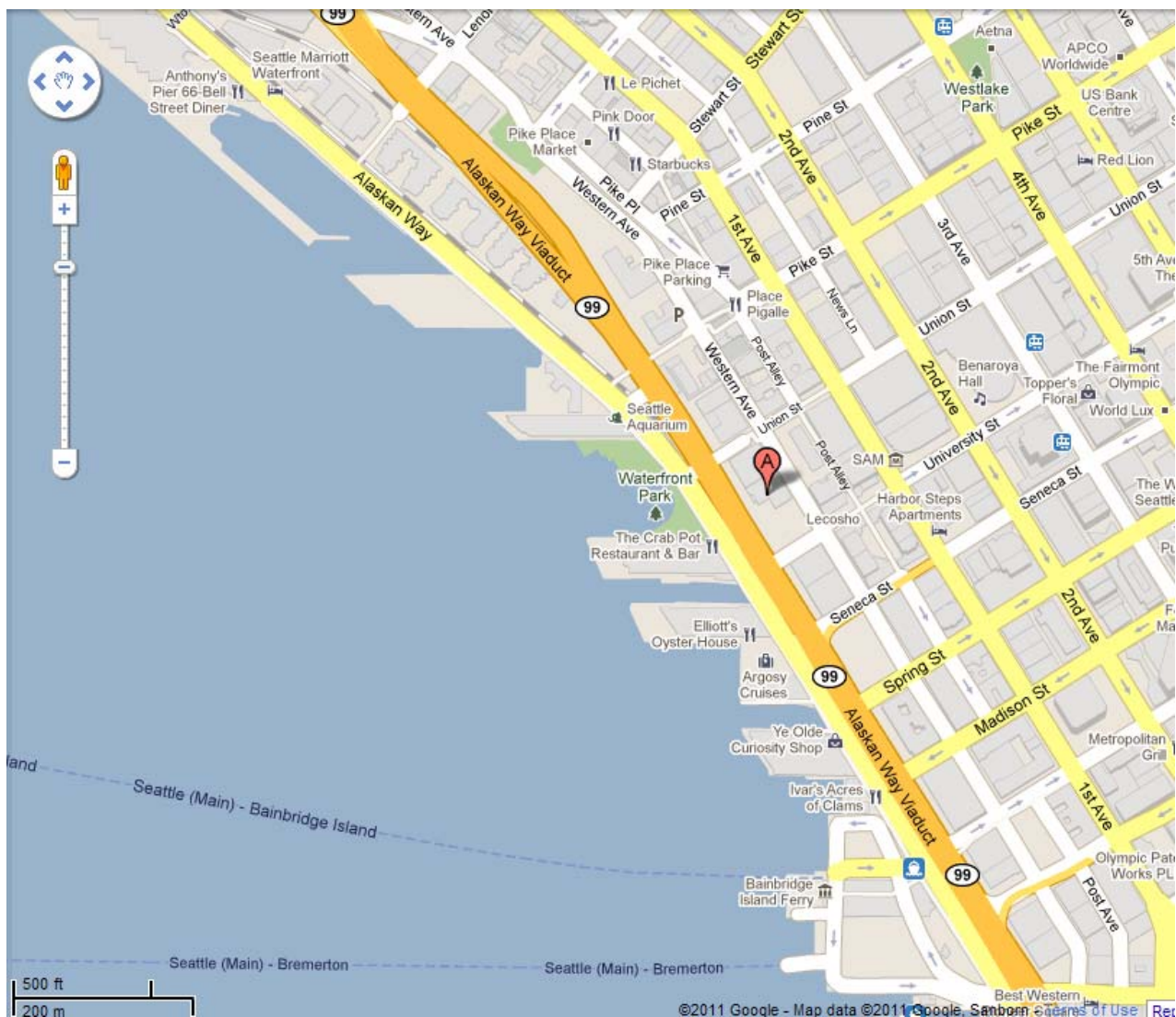


Figure 1 – Location Map

A. Facility Description

Location

The Seattle Steam Company was founded in 1893 as the Seattle Steam Heat and Power Co. It owns 18 miles of pipes under the streets of downtown Seattle. Seattle Steam's biggest customers are Swedish Medical Center, Harborview Medical Center, and Virginia Mason Medical Center, which use the steam for heat and sterilization. Other big customers include hotels, which use the steam for heat and for generating hot water; Seattle Public Library, which uses it for heat; and the Seattle Art Museum, which uses it for heat and humidity control. Its plants are located on Western Avenue at Union Street, just west of the Pike Place Market, and on Post Avenue at Yesler Way, in Pioneer Square.

Industrial Process

The facility operates three boilers which are primarily using natural gas fuel while bunker fuel oil can be used as a backup. Steam production typically varies with the season as production increases in the winter months to over 400,000 pounds per hour.

The plant uses city water to generate steam. Boiler water must be conditioned through a four-step process before it can be introduced into the boilers.

City water enters the plant at 20 to 25 ppm of total calcium and magnesium hardness. It is first introduced into a sodium zeolite ion exchanger which transfers calcium and magnesium hardness ions to the zeolite medium and releases non-scale forming sodium ions. When the zeolite bed is exhausted, calcium and magnesium chlorides are backwashed to waste as the zeolite is regenerated with sodium chloride. This delivers softened cold water with a hardness of less than 1ppm to the Deaerating (DA) Feedwater Heater.

The DA heater is a direct contact type water heater which heats feedwater to 220°F and in the process removes oxygen and other undissolved gases. Hot feedwater is then delivered to the feedwater supply system where treatment chemicals are added in proportion to flow to further reduce the negative effects of hardness ions, and to purge any trace of oxygen before entering the boilers.

Oxides of silica and iron are removed in the pretreatment process through a closely monitored continuous blowdown system. The blowdown rate is generally maintained at 3 to 4% of flow.

The final step in the process is to add a filming amine to the generated steam to prevent corrosion in the steam condensate system.

Wastewater Discharge

The only process wastewater discharged to Elliott Bay is the ion exchange backwash. This wastewater has not been heated. Elevated concentrations of sodium, calcium, magnesium, and chloride may be expected in the wastewater. Due to valve leakage, some untreated city water is also discharged. Wastewater is discharged through a dedicated outfall into Elliott Bay under Pier 57.

The blowdown was redirected to the King County sanitary sewer system in 1988.

The NPDES permit will only address the ion exchanger regenerate wastewater, and storm water. The ion exchange regenerate wastewater is essentially city water with a higher concentration of hardness and chloride ions. These constituents are not expected to have any measurable effect in the marine receiving water environment.

B. Permit Status

Ecology issued the previous permit for this facility on June 15, 2004. The previous permit placed effluent limitations on flow, temperature, pH, and oil & grease.

The facility submitted an application for permit renewal on December 10, 2008, that Ecology accepted on June 18, 2009.

C. Summary of Compliance With Previous Permit Issued June 15, 2004

Ecology staff last conducted a compliance inspection on November 20, 2008. Ecology assessed facility compliance based on its review of the facility's Discharge Monitoring Reports (DMRs) and on inspections conducted by Ecology. The facility's discharge had the following violations during the history of the permit issued on June 15, 2004.

Table 2. Discharge Violations Reflected on DMRs for Outfall 001

Parameter	Reporting Period	Reported Value	Permit Limits
pH	02/01/08, 11/01/08	6.9, and 6.6 s.u., respectively	7 s.u.
pH	05/01/10, 07 through 11 of 2010, 02/01/11, 3/01/11	Failure to report	Not outside the range of 7 to 8.5 s.u.

D. Wastewater Characterization

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports submitted during the last five years. The effluent is characterized as follows:

Table 3. Wastewater Characterization

Parameter	Average Reported Maximum	95 Percentile of Reported Maximum	
Outfall 001			
Flow	20,744 gpd	49,049 gpd	
Oil & grease	2.68 mg/L	7.11 mg/L	
Temperature Summer (June through August) °C			
Reported Values	Discharge Sump	Sampling Point ¹	Background ²
Average	18.3	7.1	7.1
Maximum	29.5	15	15
Temperature Winter (December through February) °C			
Average	11.2	4.8	4.8
Maximum	16.7	10	10
Temperature Fall (September through November) °C			
Average	15.8	6.2	6.2
Maximum	23.4	15	15
Temperature Spring (March through May) °C			
Average	11.3	4.6	4.66
Maximum	18.3	11.6	11.6
¹ According to the facility, water samples and the temperature measurements were collected at approximately 145 feet to 155 feet downstream from the outfall.			
² Background sampling is some distance beyond the sampling point.			

E. SEPA Compliance

Regulation exempts reissuance or modification of any wastewater discharge permit from the SEPA process as long as the permit contains conditions that are no less stringent than state rules and regulations. The exemption applies only to existing discharges, not to new discharges.

F. Description of the Receiving Water

Seattle Steam discharges to Elliott Bay, which was formerly listed in Chapter 173-201A as a Class A water body. The new listings (Chapter 173-201A, Table 612) list Elliott Bay as “Excellent for Aquatic life uses, primary contact for recreational uses and includes shellfish harvest, wildlife habitat, harvesting commerce/navigation, and boating, as designated uses.”

Elliott Bay is included on the 1998 EPA 303(d) list for exceeding the fecal coliform, endosulfan, ammonia-N, temperature, and dissolved oxygen water quality standards. The 303(d) list also reports numerous water quality exceedences in the sediment column, including PCB, cadmium, and copper.

III. PROPOSED PERMIT CONDITIONS

Federal and state regulations require that effluent limits in an NPDES permit must be either technology- or water quality-based.

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and Chapter 173-220 WAC).
- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (40 CFR 131.36).
- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

The limits in this permit reflect information received in the application and from supporting reports (engineering, etc.). Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the state of Washington. Ecology does not develop effluent limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation.

Nor does Ecology usually develop permit limits for pollutants that were not reported in the permit application but that may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. During the five-year permit term, the facility's effluent discharge conditions may change from those conditions reported in the permit application. The facility must notify Ecology, as described in 40 CFR 122.42(a), if significant changes occur in any constituent. Industries may be in violation of their permit until Ecology modifies the permit to reflect additional discharge of pollutants.

A. Technology-Based Effluent Limits

Ecology may base effluent limits on the technology available to treat the pollutants at a reasonable cost (technology-based) or it may base them on the effect of the pollutants in the receiving water (water quality-based), whichever is most stringent. The technology-based effluent limits in the proposed permit are as follows:

Table 4. Technology-Based Effluent Limits

Outfalls	Parameter	Daily Maximum
001	Flow	50,000 gpd
001	Oil & grease	10 mg/L

The flow and oil & grease limits have remained unchanged from the previous permit. The facility has demonstrated the ability to meet the oil & grease limit, which is based on the proven performance of gravity oil/water separators. This permit also contains some specific best management practices (BMP) requirements for the discharge of stormwater in general including the uncovered parking garage area.

B. Surface Water Quality-Based Effluent Limits

The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) were designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. NPDES Permits must include conditions that ensure the discharge will meet established surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily loading study (TMDL).

Numerical Criteria for the Protection of Aquatic Life and Recreation

Numerical water quality criteria are published in the Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water to protect aquatic life and recreation in and on the water. Ecology uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

Numerical Criteria for the Protection of Human Health

The U.S. EPA has published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State (40 CFR 131.36). These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and drinking contaminated surface waters. The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

Narrative Criteria

Narrative water quality criteria [for example, WAC 173-201A-240(1); 2006] limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge to levels below those which have the potential to:

- Adversely affect designated water uses.
- Cause acute or chronic toxicity to biota.
- Impair aesthetic values.
- Adversely affect human health.

Narrative criteria protect the specific designated uses of all fresh waters (WAC 173-201A-200, 2006) and of all marine waters (WAC 173-201A-210, 2006) in the state of Washington.

Antidegradation

The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330; 2006) is to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- Apply three tiers of protection (described below) for surface waters of the state.

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions. Tier II ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities.

Tier III prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

A facility must prepare a Tier II analysis when all three of the following conditions are met:

- The facility is planning a new or expanded action.
- Ecology regulates or authorizes the action.
- The action has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone.

This facility must meet Tier I requirements.

- Dischargers must maintain and protect existing and designated uses. Ecology may not allow any degradation that will interfere with, or become injurious to, existing or designated uses, except as provided for in Chapter 173-201A WAC.
- Whenever the natural conditions of a water body are of a lower quality than the assigned criteria, the natural conditions constitute the water quality criteria. Where water quality criteria are not met because of natural conditions, human actions are not allowed to further lower the water quality, except where explicitly allowed in this chapter.

Ecology's analysis described in this section of the fact sheet demonstrates that the existing and designated uses of the receiving water will be protected under the conditions of the proposed permit.

Mixing Zones

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing zones the pollutant concentrations may exceed water quality numeric criteria, so long as the diluted wastewater doesn't interfere with designated uses of the receiving water body (for example, recreation, water supply, and aquatic life and wildlife habitat, etc.). The pollutant concentrations outside of the mixing zones must meet water quality numeric criteria.

State and federal rules allow mixing zones because the concentrations and effects of most pollutants diminish rapidly after discharge, due to dilution. Ecology defines mixing zone sizes to limit the amount of time any exposure to the end-of-pipe discharge could harm water quality, plants, or fish.

The state's water quality standards allow Ecology to authorize mixing zones for the facility's permitted wastewater discharges only if those discharges already receive all known, available, and reasonable methods of prevention, control, and treatment (AKART). In estuaries, mixing zones typically require compliance with water quality criteria within 200 feet from the point of discharge; and use the minimum extent of the water body needed to meet the limits. Ecology uses modeling to estimate the amount of mixing within the

mixing zone and determine the potential for violating the water quality standards at the edge of the mixing zone and derive any necessary effluent limits. Steady-state models are the most frequently used tools for conducting mixing zone analyses. Ecology chooses values for each effluent and for receiving water variables that correspond to the time period when the most critical condition is likely to occur (see Ecology's *Permit Writer's Manual*). Each critical condition parameter (by itself) has a low probability of occurrence and the resulting dilution factor is conservative. The term "reasonable worst-case" applies to these values.

The mixing zone analysis produces a numerical value called a dilution factor (DF). A dilution factor represents the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. For example, a dilution factor of 10 means the effluent comprises 10 percent by volume and the receiving water comprises 90 percent of the total volume at the boundary of the mixing zone. Ecology uses dilution factors with the water quality criteria to calculate reasonable potentials and effluent limits. Water quality standards include both aquatic life-based criteria and human health-based criteria. The former are applied at both the acute and chronic mixing zone boundaries; the latter are applied only at the chronic boundary. The concentration of pollutants at the boundaries of any of these mixing zones may not exceed the numerical criteria for that zone.

Each aquatic life **acute** criterion is based on the assumption that organisms are not exposed to that concentration for more than one hour and more often than one exposure in three years. Each aquatic life **chronic** criterion is based on the assumption that organisms are not exposed to that concentration for more than four consecutive days and more often than once in three years.

The two types of human health-based water quality criteria distinguish between those pollutants linked to non-cancer effects (non-carcinogenic) and those linked to cancer effects (carcinogenic). The human health-based water quality criteria incorporate several exposure and risk assumptions. These assumptions include:

- A 70-year lifetime of daily exposures.
- An ingestion rate for fish or shellfish measured in kg/day.
- An ingestion rate of two liters/day for drinking water
- A one-in-one-million cancer risk for carcinogenic chemicals.

A mixing zone was granted to the facility in previous permit cycles for temperature as follows:

The maximum boundary of the mixing zone shall be no greater than 200 feet from the discharge point into Elliott Bay.

However, a mixing zone study has never been conducted to justify the above mixing zone size. For this reason, Ecology is requiring the facility to conduct a mixing zone study in this permit. Once Ecology approves the mixing zone study, the dilution factors associated

with the new approved mixing zone will be used to determine whether the effluent temperature has a reasonable potential to exceed the water quality temperature standards at the edge of the mixing zone. If there is reasonable potential to exceed the temperature standard, a temperature effluent limit will be imposed in the permit by means of a permit modification.

C. Designated Uses and Surface Water Quality Criteria

Applicable designated uses and surface water quality criteria are defined in Chapter 173-201A WAC. In addition, the U.S. EPA set human health criteria for toxic pollutants (40 CFR 131.36). Criteria applicable to this facility's discharge are summarized below in Table 5.

- **Aquatic Life Uses** are designated based on the presence of, or the intent to provide protection for, the key uses. All indigenous fish and non-fish aquatic species must be protected in waters of the state.

Excellent quality salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.

The Aquatic Life Uses for this receiving water are identified below.

Table 5. Aquatic Life Uses & Associated Criteria

Excellent Quality	
Temperature Criteria – Highest 1D MAX	16°C (60.8°F)
Dissolved Oxygen Criteria – Lowest 1 Day Minimum	6.0 mg/L
Turbidity Criteria	<ul style="list-style-type: none">• 5 NTU over background when the background is 50 NTU or less; or• A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
pH Criteria	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

- To protect **shellfish harvesting**, fecal coliform organism levels must not exceed a geometric mean value of 14 colonies/100 mL, and not have more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 43 colonies/100 mL.

The **recreational uses** for this receiving water are identified below.

Table 6. Recreational Uses and Associated Criteria

Recreational Use	Criteria
Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 14 colonies/100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 43 colonies /100 mL.

- The **miscellaneous marine water uses** are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

D. Human Health Criteria

Washington's water quality standards include 91 numeric human health-based criteria that Ecology must consider when writing NPDES permits. These criteria were established in 1992 by the U.S. EPA in its National Toxics Rule (40 CFR 131.36). The National Toxics Rule allows states to use mixing zones to evaluate whether discharges comply with human health criteria.

Ecology determined that the applicant's does not contain chemicals of concern based on existing data or knowledge. Ecology will reevaluate the discharge for impacts to human health at the next permit reissuance.

E. Whole Effluent Toxicity

The water quality standards for surface waters forbid discharge of effluent that causes toxic effects in the receiving waters. Many toxic pollutants cannot be measured by commonly available detection methods. However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Using the screening criteria in WAC 173-205-040, Ecology determined that toxic effects caused by unidentified pollutants in the effluent are unlikely. Therefore, this permit does not require WET testing. Ecology may require WET testing in the future, if it receives information indicating that toxicity may be present in this effluent.

F. Sediment Quality

The aquatic sediment quality standards (WAC 173-204) protect aquatic biota and human health. Under these standards, Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400). You can obtain additional information about sediments at the Aquatic Lands Cleanup Unit website. <http://www.ecy.wa.gov/programs/tcp/smu/sediment.html>

Through a review of the discharger characteristics and of the effluent characteristics, Ecology has determined that this discharge has no reasonable potential to violate the sediment management standards.

G. Ground Water Quality Limits

The ground water quality standards (Chapter 173-200 WAC) protect beneficial uses of ground water. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100).

Seattle Steam does not discharge wastewater to ground and therefore Ecology has imposed no permit limits to protect ground water in the proposed permit.

H. Comparison of Effluent Limits With Limits of the Previous Permit Issued on June 15, 2004.

Table 7. Comparison of Effluent Limits, Outfall 001

	Previous Effluent Limits	Proposed Effluent Limits
Parameter	Maximum Daily	Maximum Daily
Flow	50,000 gpd	50,000 gpd
Temperature	16 °C	TBD pending on Mixing Zone Study
pH	7 to 8.5 standard units	7 to 8.5 standard units
Oil & grease	10 mg/L	10 mg/L

IV. MONITORING REQUIREMENTS

Ecology requires monitoring, recording, and reporting (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's effluent limits.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

A. Lab Accreditation

Ecology requires that facilities use a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*, to prepare all monitoring data (with the exception of certain parameters).

V. OTHER PERMIT CONDITIONS

A. Reporting and Record Keeping

Ecology based permit Condition S3 on our authority to specify any appropriate reporting and record keeping requirements to prevent and control waste discharges (WAC 173-220-210).

B. Non-Routine and Unanticipated Discharges

Occasionally, this facility may generate wastewater which was not characterized in the permit application because it is not a routine discharge and was not anticipated at the time of application. These wastes typically consist of waters used to pressure-test storage tanks or fire water systems or of leaks from drinking water systems.

The permit authorizes non-routine and unanticipated discharges under certain conditions. The facility must characterize these waste waters for pollutants and examine the opportunities for reuse. Depending on the nature and extent of pollutants in this wastewater and on any opportunities for reuse, Ecology may:

- Authorize the facility to discharge the wastewater.
- Require the facility to treat the wastewater.
- Require the facility to reuse the wastewater.

C. General Conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual industrial NPDES permits issued by Ecology.

VI. PERMIT ISSUANCE PROCEDURES

A. Permit Modifications

Ecology may modify this permit to impose numerical limits, if necessary, to comply with water quality standards for surface waters, with sediment quality standards, or with water quality standards for ground waters, after obtaining new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit to comply with new or amended state or federal regulations.

B. Proposed Permit Issuance

This proposed permit includes all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes to issue this permit for a term of five (5) years.

VII. REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1991. *Technical Support Document for Water Quality-based Toxics Control*. EPA/505/2-90-001.
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1985. *Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water*. EPA/600/6-85/002a.
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Laws and Regulations (<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information
(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

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APPENDIX A – PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to reissue a permit to Seattle Steam Company. The permit prescribes operating conditions and wastewater discharge limits. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on June 22, 2009 and June 29, 2009, in the *Seattle Times* to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology will place a Public Notice of Draft on date in the *Seattle Times* to inform the public and to invite comment on the proposed reissuance of this National Pollutant Discharge Elimination System permit as drafted.

The notice –

- Tells where copies of the draft permit and fact sheet are available for public evaluation (a local public library, the closest regional or field office, posted on our website).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Asks people to tell us how well the proposed permit would protect the receiving water.
- Invites people to suggest fairer conditions, limits, and requirements for the permit.
- Invites comments on Ecology's determination of compliance with antidegradation rules.
- Urges people to submit their comments, in writing, before the end of the comment period.
- Tells how to request a public hearing about the proposed NPDES permit.
- Explains the next step(s) in the permitting process.

Ecology has published a document entitled **Frequently Asked Questions about Effective Public Commenting** which is available on our website at <http://www.ecy.wa.gov/biblio/0307023.html>.

You may obtain further information from Ecology by telephone, (425) 649-7078, or by writing to the permit writer at the address listed below:

Water Quality Permit Coordinator
Department of Ecology
Northwest Regional Office
3190 – 160th Avenue SE
Bellevue, WA 98008-5452

The primary author of this permit and fact sheet is Jeanne Tran.

APPENDIX B – GLOSSARY

1-DMax or 1-day maximum temperature – The highest water temperature reached on any given day. This measure can be obtained using calibrated maximum/minimum thermometers or continuous monitoring probes having sampling intervals of thirty minutes or less.

7-DADMax or 7-day average of the daily maximum temperatures – The arithmetic average of seven consecutive measures of daily maximum temperatures. The 7-DADMax for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days prior and the three days after that date.

Acute Toxicity – The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART – The acronym for “all known, available, and reasonable methods of prevention, control and treatment.” AKART is a technology-based approach to limiting pollutants from wastewater discharges which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

Ambient Water Quality – The existing environmental condition of the water in a receiving water body.

Ammonia – Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Annual Average Design Flow (AADF) – The average of the daily flow volumes anticipated to occur over a calendar year.

Average Monthly Discharge Limit – The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs) – Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅ – Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass – The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine – Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity – The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA) – The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance Inspection - Without Sampling – A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling – A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations. In addition, it includes, as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Ecology may conduct additional sampling.

Composite Sample – A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction Activity – Clearing, grading, excavation, and any other activity which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Continuous Monitoring – Uninterrupted, unless otherwise noted in the permit.

Critical Condition – The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Detection Limit – See Method Detection Level.

Dilution Factor (DF) – A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction, for example, a dilution factor of 10 means the effluent comprises 10 percent by volume and the receiving water 90 percent.

Engineering Report – A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report must contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria – Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample – A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Industrial Wastewater – Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Major Facility – A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limit – The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Maximum Day Design Flow (MDDF) – The largest volume of flow anticipated to occur during a one-day period, expressed as a daily average.

Maximum Month Design Flow (MMDF) – The largest volume of flow anticipated to occur during a continuous 30-day period, expressed as a daily average.

Maximum Week Design Flow (MWDF) – The largest volume of flow anticipated to occur during a continuous 7-day period, expressed as a daily average.

Method Detection Level (MDL) – The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the pollutant concentration is above zero and is determined from analysis of a sample in a given matrix containing the pollutant.

Minor Facility – A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone – An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES) – The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both state and federal laws.

pH – The pH of a liquid measures its acidity or alkalinity. It is the negative logarithm of the hydrogen ion concentration. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Peak Hour Design Flow (PHDF) – The largest volume of flow anticipated to occur during a one-hour period, expressed as a daily or hourly average.

Peak Instantaneous Design Flow (PIDF) – The maximum anticipated instantaneous flow.

Quantitation Level (QL) – The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. This may also be called Minimum Level or Reporting Level.

Reasonable Potential – A reasonable potential to cause a water quality violation, or loss of sensitive and/or important habitat.

Responsible Corporate Officer – A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Technology-based Effluent Limit – A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS) – Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to receiving waters may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, PPCfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Solid Waste – All putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials.

State Waters – Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater – That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Upset – An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the facility. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit – A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into receiving waters.

APPENDIX C – SITE PLAN

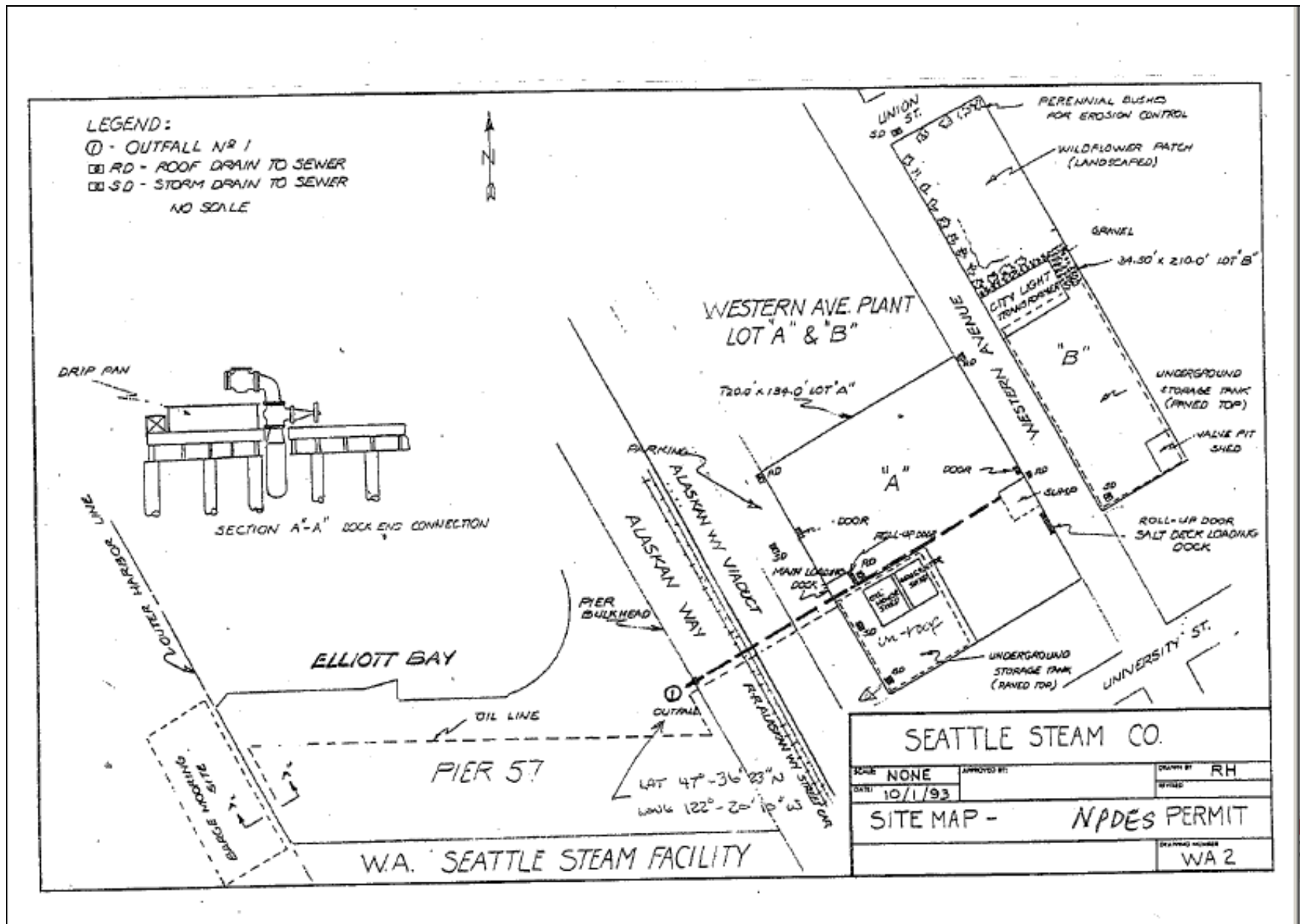


Figure 2 – Site Map

APPENDIX D – RESPONSE TO COMMENTS

[This section will be completed after the Public Notice of Draft comment period.]