

# **FACT SHEET FOR NPDES PERMIT WA-003060-1**

## **Puget Sound Energy**

### ***Whitehorn Generating Station***

**July 26, 2010**

#### **PURPOSE of this Fact Sheet**

This fact sheet contains an explanation of, and documents the decisions Ecology made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for Puget Sound Energy (PSE) – Whitehorn Generating Station.

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 the Department of Ecology (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 PSE – Whitehorn Generating Station, NPDES permit WA-003060-1, are available for public review and comment from June 17, 2010, until the close of business July 17, 2010. For more details on preparing and filing comments about these documents, please see *Appendix A—Public Involvement Information*.

Before publishing the draft NPDES permit, PSE 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 its 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. Ecology will not revise the rest of the fact sheet, but the full document will become part of the legal history contained in the facility’s permit file.

Jeanne Tran prepared this permit and fact sheet.

## **SUMMARY**

Puget Sound Energy (PSE) – Whitehorn Generating Station is a standby power plant. It operates a water treatment system for use in a turbine water injection system, which it employs to control nitrogen oxide emissions. The power plant generates wastewater from the deionization process and from floor washing. PSE treats this combined wastewater and then discharges it to Strait of Georgia. Stormwater collected on-site is routed to a retention pond, and then discharged to a roadside ditch which drains into Terrell Creek and ultimately to Birch Bay. Ecology issued the previous permit for this facility on June 2, 2004.

Outfall 001: Effluent limits for flow, pH, total settleable solids, total dissolved solids, oil & grease, and oily sheen are unchanged from the previous permit issued in 2004.

Outfall 002: Effluent limits for pH, oil & grease, and oily sheen are unchanged from the previous permit issued in 2004.

PSE discharges domestic wastewater to an on-site septic system which is regulated by Whatcom County Health Department.

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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).

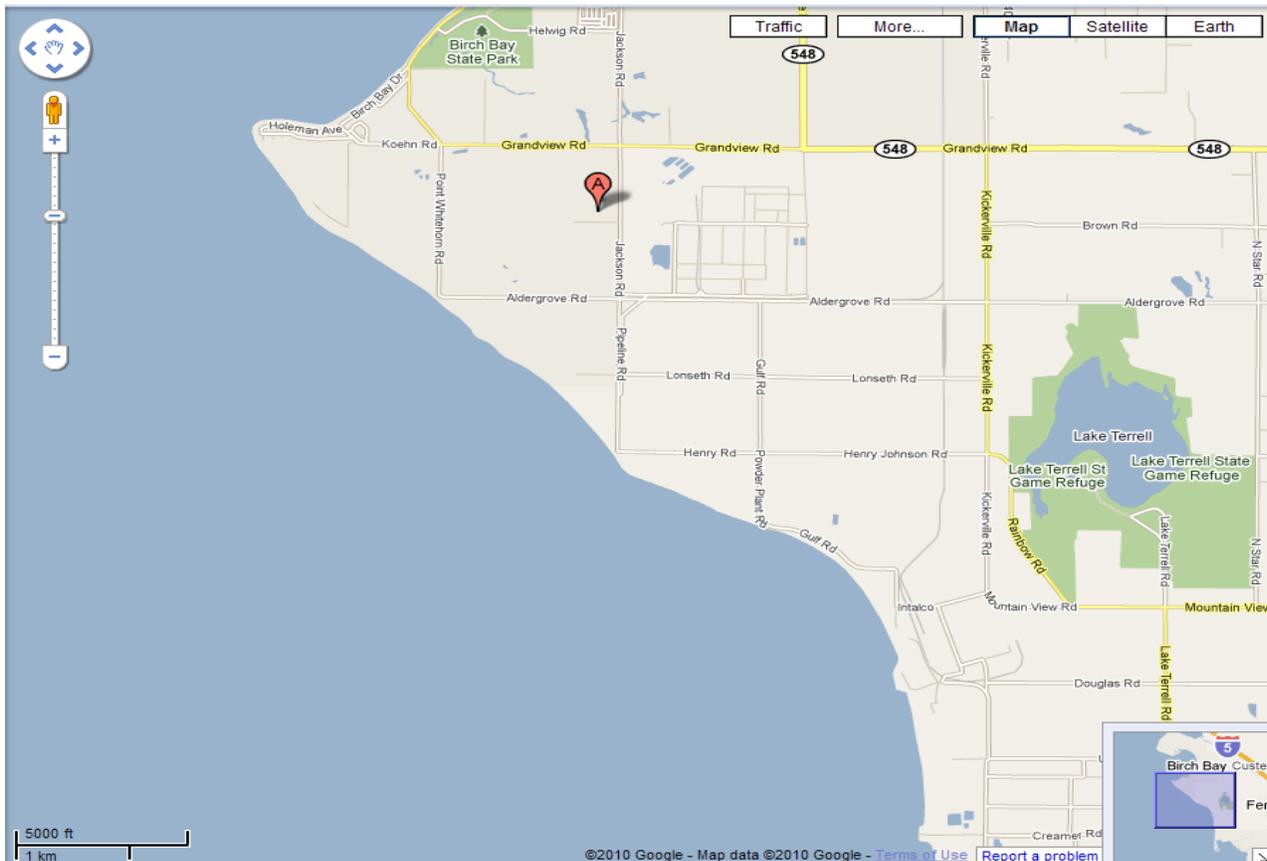
These rules require any industrial facility operator to obtain an NPDES permit before discharging wastewater to state waters. They also help define the basis for limits on each discharge and for performance requirements imposed by the permit.

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:	Puget Sound Energy
Facility Name and Address:	Whitehorn Generating Station 4930 Brown Road Blaine, WA 98230 Whatcom County
Type of Treatment:	Oil/water separation, neutralization, and hay bale filtration system
SIC	4911, Combustion Turbine for Power Generation
Discharge Location:	Puget Sound Outfall 001: Latitude: 48.877778 N Longitude: 122.77 W Outfall 002: Latitude: 48.886111 N Longitude: 122.755278 W



**Figure 1. Vicinity Map**

## A. Facility Description

### General Description

The Point Whitehorn Power Generating Station is a standby power plant located on approximately 40 acres of property owned by Puget Sound Energy (PSE). The site is located in the SE ¼ of the NW ¼ and the SW ¼ of the NE ¼ of Section 12, Township 30 North, Range 1 West (see Figure 1).

The facility is a natural gas/petroleum-fueled electrical power generating station that operates during emergencies, equipment outages and maintenance, and to help maintain reliable service during periods of adverse water or weather conditions.

The station consists of two 75 megawatt (MW) combustion turbine generating units (Units 2 and 3), associated electrical transformers and switchgear, and an electrical substation and control house. PSE removed combustion turbine generating Unit 1, a 60 MW generator, from the site in March 2000.

The generating station's other structures include aboveground distillate oil storage tanks, a water treatment building and associated equipment, a waste water pond, an enclosed oil/flammable materials storage facility, and the plant office building (See Figure 2).

PSE stores, uses, or handles oil at the aboveground distillate oil storage tanks, the oil/flammable material storage facility, in the electrical transformers and switchgear, and the oil/water sump. The wastewater pond is used for temporary storage of process water from the on-site water treatment plant. Figure 2 shows the locations where oil is stored and handled. Other materials stored at the facility include electrical cable and conduit, insulators, and miscellaneous-related electrical hardware and equipment.

The generating station operates automatically and PSE can operate it by remote control from its main control center in Redmond, Washington. To ensure and maintain the station's reliability and performance, it is operated periodically and is visually inspected daily (during normal working hours) by on-site Turbine Personnel from PSE's Energy Resource Team. A substation inspector from Whatcom Division also inspects the electrical substation monthly, including the oil containment system.

### Fuel Storage

The generating station uses natural gas as the primary fuel, and diesel (No. 2 fuel) as the secondary fuel. Natural gas is supplied by a 12-inch underground pipeline from Cascade Natural Gas Corporation. No natural gas is stored on-site.

PSE also receives diesel fuel by means of tanker truck. Diesel fuel is stored in a 4.2 million-gallon storage tank (Tank No. 3) and two-1 million-gallon storage tanks (Tank No. 1 and Tank No. 2). The fuel storage tanks are equipped with high level indicators to prevent overfilling of the tanks. Each indicator has an audible alarm and an indicating light.

PSE may also supply fuel using tanker trucks in the event that BP is unable to supply fuel. A concrete fueling dock at the diked fuel storage area of Tanks No. 1 and No. 2 provides for tanker truck fueling operations. PSE uses a drip bucket in the adjacent shelter to collect fuel drips that may occur while connecting and disconnecting the transfer hose to the system piping.

### **Industrial Process and Wastewater Generation**

Combustion turbines operate on the same thermodynamic principle as an aircraft jet engine. Air at atmospheric temperature and pressure is drawn into a compressor driven by a turbine where it is compressed through the multistage blading to a pressure 10 to 15 times that of atmospheric. The compressed air then mixes with natural gas fuel, and the mixture ignites in the combustion chamber. The resultant high temperature gases (approximately 1,900° F) expand through the power turbine section, driving the turbine, which in turn drives the compressor and the electrical generator.

Exhaust gases (approximately 975° F) from the turbine are then discharged upward through exhaust stacks. The Northwest Air Pollution Authority regulates operational emissions from the turbines consisting primarily of NO<sub>x</sub>, SO<sub>2</sub>, particulates, hydrocarbons, carbon dioxide, and carbon monoxide. To reduce the formation of NO<sub>x</sub> and other emission constituents during the combustion process, PSE injects demineralized water into the gas turbine combustion chamber at a fuel-to-water ratio of 2 to 1 in order to lower the peak combustion temperature.

The demineralized water is stored in a 500,000-gallon water injection storage tank. PSE treats raw PUD water (drawn from the Nooksack River) by running it through a series of sand filters and demineralization beds (ion exchange: anion and cation process).

The facility generated approximately 23,000 gpd of process wastewater by backwashing the water treatment filters and demineralization system, and 500 gpd from the floor drain. It neutralizes this wastewater with sulfuric acid and caustic soda prior to discharge. The neutralized wastewater may contain some suspended and dissolved solids. Dissolved solids are primarily sodium and sulfate ions due to the addition of sulfuric acid and sodium hydroxide for ion exchange regeneration.

The facility discharges domestic wastewater on-site to a septic system, located next to the control house/office, in the northwest corner of the building.

### **Dike Containment Areas**

Tanks No. 1 and No. 2 are situated within a diked containment area with a capacity of 1,200,000 gallons. Tank No. 3 is situated within a diked containment area that has a capacity of 6,100,000 gallons. PSE designed the containment areas to retain the contents of the largest fuel storage tank in the containment area plus a minimum freeboard of 12 inches to allow for precipitation. The containment area is lined with bentonite and is designed to contain spilled oil.

Discharge of water from each containment area is controlled by a valve located in a valve pit outside and away from the diked area. This valve is padlocked in the closed position under normal conditions. If oil appears on the surface of the water within the dike, PSE removes it using a vacuum truck or absorbent materials.

### **Discharge Outfall**

#### *Wastewater – Outfall 001:*

After PSE neutralizes the treated filter and demineralizer backwash and floor drain water, it pumps it out to the Strait of Georgia via an underground pipe which runs south of Jackson Road, then 1/2 mile west along Alder Grove Road to a roadside drainage swale, which carries the wastewater 1/2 mile to the Strait of Georgia.

#### *Stormwater – Outfall 002:*

Water including stormwater and spillage discharged through the valve from the containment area for oil storage tanks No. 1 and 2 flows into the storm drain system. The storm drain system runs along the north side of the site and discharges into the siltation pond. Discharge water from the containment area for fuel tank No. 3 also flows through the storm drain system and into the siltation pond. Water in the siltation pond passes through a weir structure that includes a hay filter spillway and rock riprap system before emptying into Terrell Creek at the east end of the property. Terrell Creek ultimately empties into Birch Bay, which then drains into the Strait of Georgia. The drainage distance from the site to the mouth of Terrell Creek on Birch Bay is about 1.8 miles. PSE does not discharge during the drier, summer months.

The facility contains and ships occasional tank water draw-off to an off-site oil recycler.

## **B. Permit Status**

Ecology issued the previous permit for this facility on June 30, 2003. The previous permit placed effluent limits on flow, pH, total settleable solids, total dissolved solids, and oil & grease.

The facility submitted an application for permit renewal on December 3, 2008, and Ecology accepted it on June 2, 2009. Ecology administratively extended the expired permit on June 4, 2009.

## **C. Summary of Compliance With Previous Permit Issued June 2, 2004**

Whitehorn Generating Station has complied with the effluent limits and permit conditions throughout the duration of the permit issued on June 2, 2004. Ecology assessed facility compliance based on our review of the facility's Discharge Monitoring Reports (DMRs).

## **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 2. Wastewater Characterization**

<b>Outfall 001</b>			
<b>Parameter</b>	<b>Maximum Daily Limit</b>	<b>Average Concentration</b>	<b>Maximum Concentration</b>
Flow	47,000 gpd	6,532 gpd	9,333 gpd
Total Settleable Solids	0.1 ml/L	--	< 0.1 ml/L
Total Dissolved Solids (TDS)	10,000 mg/L	2582 mg/L	7970 mg/L
Sulfate (SO <sub>4</sub> )	---	983 mg/L	3135 mg/L
pH	Between 7.0 and 8.5 su	6.7 su	8.0 su
Oil & grease	15 mg/L	4.2 mg/L	5.7 mg/L
TPH-Diesel	---	0.32 mg/L	6.8 mg/L
<b>Outfall 002</b>			
<b>Parameter</b>	<b>Maximum Daily Limit</b>	<b>Average Concentration</b>	<b>Maximum Concentration</b>
Flow	---	55,700 gpd	193,500 gpd
Oil & grease	15 mg/L	3 mg/L	5 mg/L
pH	Between 6.5 and 8.5 su	6.4 su	7.5 su

**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**

The generating station discharges to the Strait of Georgia which (marine water - Outfall 001), and Terrell Creek (fresh water - Outfall 002). Chapter 173-201A WAC, Table 612, lists both the Strait of Georgia and Terrell Creek as “Extraordinary for aquatic life uses, shellfish harvest, primary contact for recreational uses and includes wildlife habitat, harvesting, commerce/navigation, boating and aesthetic under miscellaneous uses.”

**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, hydrogeology, 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 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 this permit are as follows:

**Table 3. Technology-Based Effluent Limits**

<b>Outfall 001</b>	
<b>Parameter</b>	<b>Maximum Daily Limit</b>
Flow	47,000 gpd
Total Settleable Solids	0.1 ml/L
TDS	10,000 mg/L
Oil & grease	15 mg/L, and No Visible Oily sheen
<b>Outfall 002</b>	
<b>Parameter</b>	<b>Maximum Daily Limit</b>
Oil & grease	15 mg/L, and No Visible Oily sheen

The flow, total settleable solids, total dissolved solids, oil & grease, and no visible oily sheen remain the same as in the previous permit, based on the performance of similar facilities, and Ecology’s best professional judgment (BPJ).

## **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. Waste discharge 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 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 shellfish 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.

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.

### **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 4 through 7**.

#### ***Terrell Creek (Fresh Water Discharge):***

- 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 in addition to the key species. The Aquatic Life Uses for this receiving water are identified below.

**Table 4. Aquatic Life Uses & Associated Criteria**

<b>Core Summer Salmonid Habitat</b>	
Temperature Criteria – Highest 7DAD MAX	16°C (60.8°F)
Dissolved Oxygen Criteria	9.5 mg/L
Turbidity Criteria	<ul style="list-style-type: none"> <li>• 5 NTU over background when the background is 50 NTU or less; or</li> <li>• A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.</li> </ul>
Total Dissolved Gas Criteria	Total dissolved gas shall not exceed 110 percent of saturation at any point of sample collection.
pH Criteria	pH shall be within the range of 6.5 to 8.5, with a human-caused variation within the above range of less than 0.2 units.

- The recreational uses are extraordinary primary contact recreation, primary contact recreation, and secondary contact recreation. The recreational uses for this receiving water are identified below.

**Table 5. Recreational Uses & Associated Criteria**

<b>Recreational use</b>	<b>Criteria</b>
Extraordinary Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 50 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 100 colonies/100 mL

- The **water supply uses** are domestic, agricultural, industrial, and stock watering.
- The **miscellaneous fresh water uses** are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

***Strait of Georgia (Marine Water Discharge):***

- **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.

**Extraordinary 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 6. Aquatic Life Uses & Associated Criteria**

<b>Extraordinary Quality</b>	
Temperature Criteria – Highest 1D MAX	13°C (55.4°F)
Dissolved Oxygen Criteria – Lowest 1-Day Minimum	7.0 mg/L
Turbidity Criteria	<ul style="list-style-type: none"> <li>• 5 NTU over background when the background is 50 NTU or less; or</li> <li>• A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.</li> </ul>
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 0.2 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 7. Recreational Uses and Associated Criteria**

<b>Recreational Use</b>	<b>Criteria</b>
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. Evaluation of Surface Water Quality-Based Effluent Limits for Numeric Criteria**

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near-field) or at a considerable distance from the point of discharge (far-field). Toxic pollutants, for example, are near-field pollutants—their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as biological oxygen demand (BOD) is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

Pollutant concentrations in the proposed discharge do not have a reasonable potential to exceed water quality criteria; thus, no water quality-based effluent limits are proposed in this permit.

#### **E. Human Health**

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 the applicant’s discharge is unlikely to contain chemicals regulated to protect human health. Ecology will reevaluate the discharge for impacts to human health at the next permit reissuance.

#### **F. 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.

#### **G. 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 determined that this discharge has no reasonable potential to violate the sediment management standards.

#### **H. 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).

The facility does not discharge wastewater to ground. Therefore, Ecology imposed no permit limits to protect ground water.

**I. Comparison of Effluent Limits With Limits of the Previous Permit Issued on June 2, 2004**

**Table 8. Comparison of Effluent Limits**

	<b>Previous Effluent Limits: Outfall # 001</b>	<b>Proposed Effluent Limits: Outfall # 001</b>	<b>Previous Effluent Limits: Outfall # 002</b>	<b>Proposed Effluent Limits: Outfall # 002</b>
<b>Parameter</b>	<b>Maximum Daily</b>	<b>Maximum Daily</b>	<b>Maximum Daily</b>	<b>Maximum Daily</b>
Flow	47,000 gpd	47, 000 gpd	---	---
Total Settleable Solids	0.1 ml/L	0.1 ml/L	---	---
Total Dissolved Solids (TDS)	10,000 mg/L	10,000 mg/L	---	---
Oil & grease	15 mg/L, and no visible sheen			
pH	Not outside the range of 7.0 to 8.5 standard units.	Not outside the range of 7.0 to 8.5 standard units.	Not outside the range of 6.5 to 8.5 standard units.	Not outside the range of 6.5 to 8.5 standard units.

**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 its authority to specify any appropriate reporting and record keeping requirements to prevent and control waste discharges (WAC 173-220-210).

**B. Spill Control Plan**

This facility stores a quantity of chemicals on-site that have the potential to cause water pollution if accidentally released. Ecology can require a facility to develop best management plans to prevent this accidental release [Section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080].

PSE developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the facility to update this plan and submit it to Ecology.

**C. Operation and Maintenance Plan**

Ecology requires industries to take all reasonable steps to properly operate and maintain their wastewater treatment system in accordance with state and federal regulations [40 CFR 122.41(e) and WAC 173-220-150 (1)(g)]. The facility is required to maintain and update the Operation and Maintenance Manual as necessary. Implementation of the procedures in the Operation and Maintenance Plan ensures the facility's compliance with the terms and limits in the permit.

**D. Stormwater Pollution Prevention Plan**

The permit requires the facility to update the Stormwater Pollution Prevention Plan to minimize process wastewaters or particular contaminants to process wastewaters.

**E. 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.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Puget Sound Energy – Whitehorn Generating Station.

2008. NPDES permit applications – EPA Forms 1, and 2C.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109.

Washington State Department of Ecology.

2007. Focus Sheet on Solid Waste Control Plan, Developing a Solid Waste Control Plan for Industrial Wastewater Discharge Permittees. Publication Number 07-10-024.

Washington State Department of Ecology.

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>)

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

## APPENDIX A—PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to reissue a permit to Puget Sound Energy – Whitehorn Generating Station. 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 8, and 15, 2009, in the *Bellingham Herald* to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology placed a Public Notice of Draft on June 17, 2010, in the *Northern Light* 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 – 160<sup>th</sup> 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.

**BOD<sub>5</sub>**—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 BOD<sub>5</sub> 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% by volume and the receiving water 90%.

**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% 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, shellfish, 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.

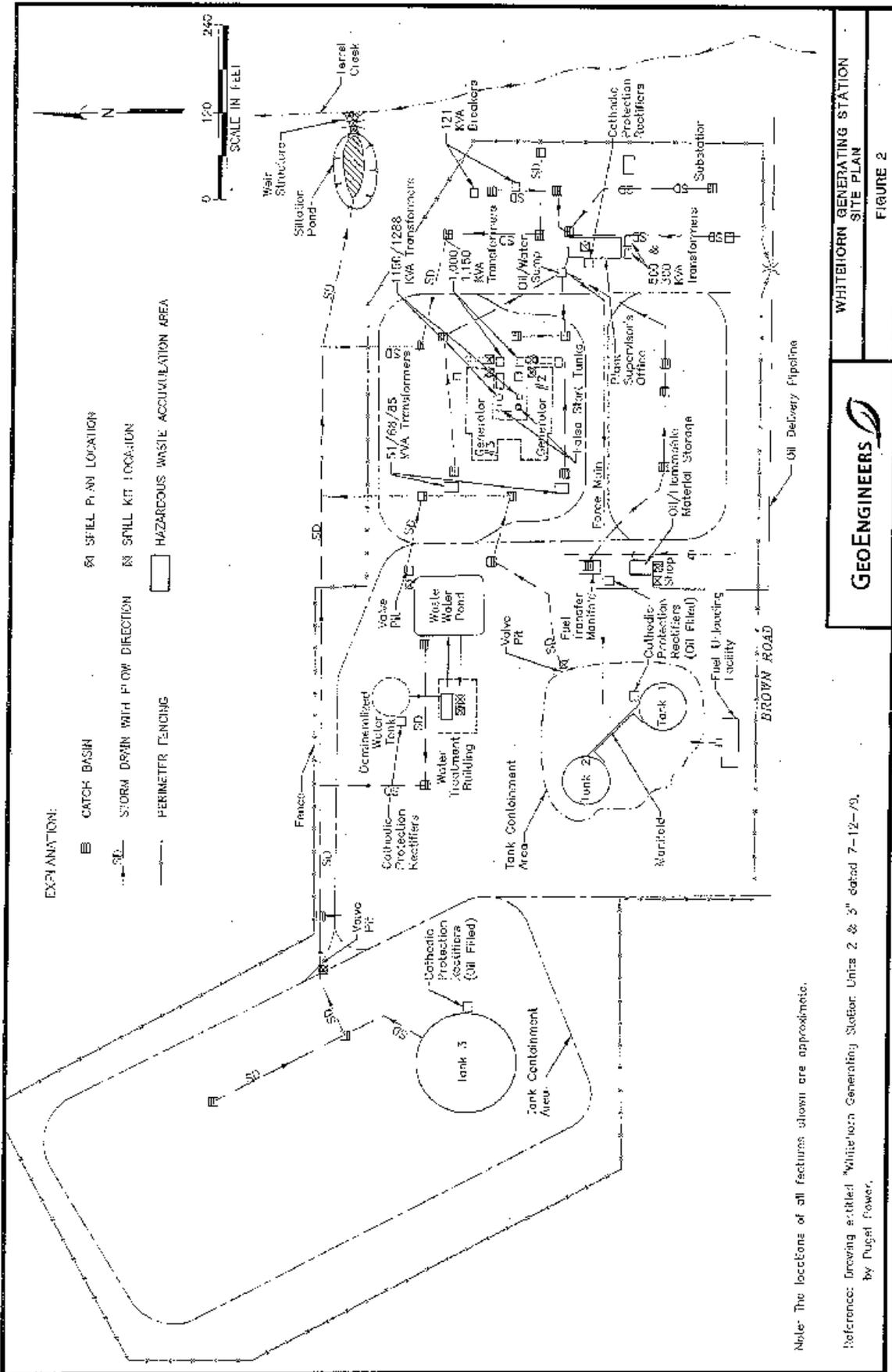
**State Waters**—Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**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



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## APPENDIX D—RESPONSE TO COMMENTS

No substantive comments were received on the proposed permit and fact sheet during the public notice period.