FACT SHEET FOR CITY OF PORT ANGELES WASTEWATER TREATMENT PLANT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT WA0023973

Purpose of this Fact Sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for the city of Port Angeles Wastewater Treatment Plant.

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.

Ecology makes the draft permit and fact sheet available for public review and comment at least 30 days before issuing the final permit. Copies of the fact sheet and draft permit for the city of Port Angeles, NPDES permit WA0023973, are available for public review and comment. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement Information**.

The city of Port Angeles reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, wastewater discharges, or receiving water prior to publishing this draft fact sheet for public notice.

After the public comment period closes, Ecology will summarize substantive comments and provide responses to them. Ecology will include the summary and responses to comments in this fact sheet as **Appendix E - Response to Comments**, and publish it when issuing the final NPDES permit. Ecology generally will not revise the rest of the fact sheet. The full document will become part of the legal history contained in the facility's permit file.

Summary

The city of Port Angeles operates a wastewater treatment plant that discharges to the Strait of Juan de Fuca. Ecology issued the previous permit for this facility on July 15, 2008. The permit was modified on August 19, 2010.

The proposed permit contains the same effluent limits for five-day Carbonaceous Biological Demand ($CBOD_5$), Total Suspended Solids (TSS), Fecal Coliform Bacteria, and pH as the permit issued in 2008. The proposed permit includes revised limits for Total Residual Chlorine due to the change in discharge location and the use of the old industrial outfall (Outfall #002) as the new main outfall. Also, due to Whole Effluent Toxicity (WET) testing results, the limit for Acute WET was removed. The permit does not include any other significant changes.

This permit does transition the facility to using the new Combined Sewer Overflow (CSO) facilities, including the new outfall (Outfall #002), the CSO storage tank, and the new influent and effluent diversion structures. With the use of these new facilities and completion of Phase 2 of the CSO reductions, the number and amount of CSO discharges should be greatly reduced during the term of this permit.

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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 (NPDES), administered by the federal Environmental Protection Agency (EPA). The EPA authorized the state of Washington to manage the NPDES permit program in our state. Our 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 Revised Code of Washington (RCW).

The following regulations apply to domestic wastewater NPDES permits:

- Procedures the Department of Ecology (Ecology) follows for issuing NPDES permits [chapter 173-220 Washington Administrative Code (WAC)]
- Technical criteria for discharges from municipal wastewater treatment facilities (chapter 173-221 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC)
- Water quality criteria for groundwaters (chapter 173-200 WAC)
- Whole effluent toxicity testing and limits (chapter 173-205 WAC)
- Sediment management standards (chapter 173-204 WAC)
- Submission of plans and reports for construction of wastewater facilities (chapter 173-240 WAC)

The following additional regulations apply to communities operating collection systems with Combined Sewer Overflows (CSOs):

- Submission of plans and reports for construction and operation of Combined Sewer Overflow reduction facilities (chapter 173-245 WAC)
- US EPA CSO control policy (59 FR 18688)

These rules require any treatment facility owner/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 requirements imposed by the permit.

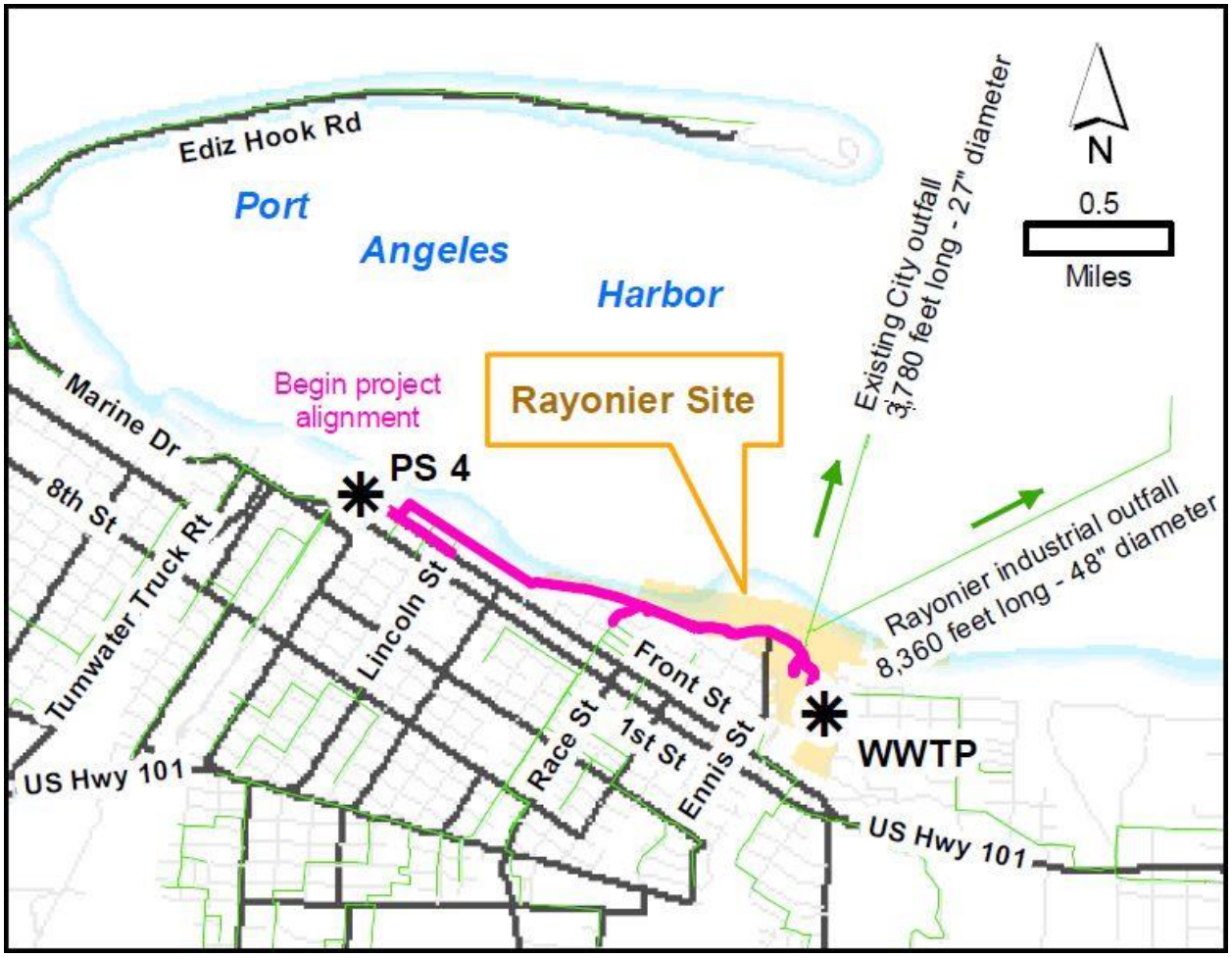
Under the NPDES permit program and in response to a complete and accepted permit application, Ecology must prepare a draft permit and accompanying fact sheet, and make them available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where 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 comment(s). Ecology will summarize the responses to comments and any changes to the permit in **Appendix E**.

II. BACKGROUND INFORMATION

Table 1 General Facility Information

Facility Information	
Applicant	City of Port Angeles 321 East 5th Street Port Angeles, WA 98362
Facility Name and Address	Port Angeles Wastewater Treatment Plant 1509 East Columbia Street Port Angeles, WA 98362
Contact at Facility	Name: Jeff D. Young Telephone #: 360-417-4845 Cell #: 360-461-1044 Email: jyoung@cityofpa.us
Responsible Official	Name: Dan McKeen Title: City Manager Address: 321 East 5th Street Telephone #: 360-417-4501 FAX #: 360-417-4509
Type of Treatment	Secondary (Trickling Filter/Solids Contact/Chlorine)
Facility Location (NAD83/WGS84 reference datum)	Latitude: 48.11113 Longitude: -123.40215
Discharge Waterbody Name and Location (NAD83/WGS84 reference datum)	Outfall 001 — Port Angeles Harbor Latitude: 48.12722 Longitude: -123.39806 Outfall 002 — Strait of Juan de Fuca 48.12826 -123.37935
Permit Status	
Issuance Date of Previous Permit	July 15, 2008
Application for Permit Renewal Submittal Date	March 29, 2013
Inspection Status	
Date of Last Non-sampling Inspection	September 9, 2014

Figure 1 Facility Location Map



A. Facility Description

History

The city of Port CityAngeles Wastewater Treatment Plant (WWTP) was built in 1968-69 as a primary wastewater treatment facility. The facility consisted of a grit chamber, a barminutor (bar screen with comminutor), one primary clarifier, and a chlorinator. Two anaerobic digesters in series stabilized sludge prior to land application or drying for landfill disposal.

The WWTP was upgraded to a secondary treatment facility in 1994. The upgraded facility consisted of two bar screens (one mechanically cleaned and one manually cleaned), one grit chamber, two primary clarifiers, two trickling filters, one solids contact tank, one solids reaeration tank, two secondary clarifiers, two chlorine contact basins, and a dechlorinator. Sludge was processed with a gravity thickener, two anaerobic digesters, and a belt filter press. Biosolids were hauled to the city of Port Angeles's (City) composting facility where they were composted and/or stored for land application.

In 2013 and 2014, as part of its CSO Reduction Plan, certain improvements were made at the WWTP. The CSO Reduction Plan and several changes to the City's collection system are discussed in the next section of this document (*Collection System Status*). Improvements at the WWTP include the following items.

- Conversion of an existing 5 million gallon (MG) tank, located on the former industrial site previously occupied by the Rayonier Pulp and Paper Mill, for use as a temporary CSO storage tank.

- Construction of a new influent diversion structure (IDS) upstream of the headworks. This structure allows the WWTP to split flows from the collection system between the treatment plant and the newly refurbished CSO storage tank.

- Installation of two, 1/4-inch mechanically cleaned bar rack systems in parallel at the headworks. These units replaced the previous bar screen systems and provide redundancy for the screening process.

- The launders in the rectangular primary clarifier were raised in order to avoid submergence at higher flows.

- An additional trickling filter influent pump was installed for redundancy purposes, and the trickling filter rotary distributors were upgraded to increase capacity.

- A new submersible chemical induction system was installed to improve initial mixing of the hypochlorite with secondary effluent.

- Construction of a new Effluent Diversion Structure (EDS) which manages WWTP effluent between the new outfall (002) and the City's original outfall (001) during extreme, high-flow events.

- The industrial outfall formerly used by the now defunct Rayonier Mill was procured and refurbished to serve at the City's primary outfall (002).

- Improvements to the WWTP's supervisory control and data acquisition (SCADA) system were also made as part of the project.

The Port Angeles Publicly Owned Treatment Works (POTW) is an Environmental Protection Agency (EPA) major facility with a maximum month design flow of 10.8 million gallons per day (MGD).

Collection System Status

The City's sewage collection system consists of both separate sanitary system (67 percent) and combined sanitary and stormwater system (33 percent). The City's original collection system was designed as a combined sewer system with storm water routed along with sanitary sewage. The collection system has approximately 119 miles of 6- to 30-inch diameter pipeline. There are also 66 miles of storm drains. The system serves approximately 11,642 acres. It has 17 pump stations. The WWTP receives most of the

wastewater (about 90 percent) from pump station number 4 which has a peak capacity of 13.4 mgd. This pump station will be upgraded to 28 mgd in 2016 as part of the CSO reduction plan. Wastewater also comes through a gravity line serving the area north of the WWTP. A new 12-inch gravity interceptor serving eastern Urban Growth Area (UGA) was connected 2008.

Most of the sewer lines were constructed between 1900 and 1960. The oldest part of town, the area known as the "Old Downtown," was built with street and building storm water drainage purposely routed to the combined system, which was constructed around 1915. The City's storm sewer system was not built until the 1960s. The sewer lines were constructed of terra cotta or concrete. The system has mostly small diameter 8-inch gravity sewers, and sometimes as small as 6-inch because of steep slope in the general north-south alignment. Wastewater is subsequently pumped eastward along the waterfront to the WWTP.

The City has two UGAs (western and eastern) that are part of the WWTP collection system. It annexed a portion of the western UGA in 2005 and has provided service to some areas but the eastern UGA remains outside the city limit. The 2006 general sewer plan identified the collection system bottlenecks that need to be upgraded to accommodate build out flows in 2026.

The collection system is subject to significant infiltration and inflow (I/I) during storm events. Treatment plant inflows are directly correlated with rainfall. The combined collection system does not have adequate conveyance capacity during rainfall events that result in bypass of the treatment plant and discharge of raw sewage into the Port Angeles Harbor. At present, there are four CSO outfalls in the collection system. After completion of the CSO Plan, the collection system will have a total peak design flow capacity of 50 mgd, which will result in control of CSOs into Port Angeles Harbor.

Treatment Processes

You can find basic information describing wastewater treatment processes included in a booklet at the Water Environment Federation website at: http://www.wef.org/publicinformation/default.aspx

Port Angeles WWTP is a secondary treatment facility that utilizes Trickling Filter/Solids Contact (TF/SC) process. The TF/SC process combines trickling filters with short detention solids contact to promote flocculation and subsequent settling. The plant is designed for a maximum month flow of 10.8 mgd. Peak daily flow is limited to 13.4 mgd. Flow is either pumped to the plant from Pumping Station 4 or enters the force main approaching the plant from a gravity-pressure line from an elevated plateau where the Francis Street diversion manholes are located. Flow is pre-chlorinated to reduce odors.

The headworks consist of screening, flow measurement and splitting, and screenings and grit removal. All flows pass through an automatic mechanical screen. Influent flow is measured by Parshall flumes. Plant flow is normally routed through the newer rectangular primary clarifier. High flows are routed to both the rectangular and older circular clarifiers. The older primary clarifier is 70 feet in diameter and has a 10 feet side water depth. The newer rectangular clarifier is 104 feet by 21.5 feet with a 10 feet side water depth. Primary sludge is pumped to cyclonic de-gritters where grit are recovered,

and then to gravity thickener. The grit is dewatered and combined with screenings and the combined solid material is disposed in a landfill.

Secondary treatment is provided by the TF/SC process which combines positive features of an attached growth system (energy efficiency and resistance to shock loading) with positive features of a suspended growth system (ability to flocculate dispersed solids and polish effluent to low dissolved organic levels). The trickling filter contains a biofilm reactor that primarily removes soluble Biochemical Oxygen Demand (BOD) from primary effluent. The trickling filter effluent and sloughed off solids flow to the solids contact tank. The solids contact tank with a low hydraulic residence time provides conditions in which sloughed off solids can flocculate and produce a rapidly settling mixed liquor. Residual soluble BOD is also removed in the solids contact tank.

Primary effluent joins with filtrate recycle and trickling filter circulation recycle and flows to the trickling filter circulation pumping station. Primary effluent is pumped to the top of the two 55 feet diameter trickling filters. Trickling filter effluent passes a channel hopper where any accumulated snails can be pumped to a de-gritting cyclone.

The solids contact part of the TF/SC process consist of two 150,000 gallons rectangular tanks (110 feet x 12 feet x 16 feet) that can be operated in three different modes. In solids re-aeration mode, a large proportion of solids inventory is retained in one tank resulting in lower Mixed Liquor Suspended Solids (MLSS) in solids contact tank and therefore a lower loading to the clarifier. Three blowers supply air to the solids contact tanks.

Mixed liquor from the solids contact tank is split between two 68 feet secondary clarifiers (16 feet side water depth). Solids settle to the bottom of the clarifiers where a sludge collector device sweeps clarifier bottom and return secondary sludge pumps withdraw the sludge. Sludge is recycled to the solids re-aeration tank with a portion wasted to the gravity thickener.

Secondary effluent is chlorinated with liquid sodium hypochlorite in two chlorine contact tanks with a total volume of 263,000 gallons. The effluent is then dechlorinated with sodium bisulfite immediately upstream of the outlet weir of the chlorine contact tanks.

The plant is provided with a standby generator and dual sources of electrical power. In the event of an emergency power failure, wastewater will receive primary treatment and disinfection.

Degritted primary sludge and waste activated sludge are conveyed to a covered gravity thickener (32 feet in diameter and 12 feet deep). Thickened sludge and scum (collected separately) are pumped into two anaerobic digesters of 40 feet diameter and 23 feet deep each. One digester is equipped with a fixed cover while the other is equipped with a floating cover. Volatile solids are destroyed anaerobically at a high temperature environment.

Sludge flows by gravity from the digesters to a 70,000 gallons storage tank where it is well mixed before dewatering. Sludge from the storage tank is pumped to a single 2.2 m belt filter press that produces 18 to 20 percent solids. Dewatered sludge is sent to

municipal landfill for composting. Filtrate is stored in an 114,000 gallon tank and is eventually recycled with primary effluent for secondary treatment.

The City has a partially delegated pretreatment program where it regulates the Minor Industrial Users (MIUs) and Ecology regulates the Significant Industrial Users (SIUs). At present, there are 13 MIUs and 1 SIU. The MIUs include small industries such as laundries, printers, breweries, film developers, and seafood.

The WWTP is classified as a level III facility that requires an operator certification level "Group III" to be in responsible charge of the day-to-day operation. The wastewater division has 12 staff, three of which handle the collection system while the other nine operate and maintain the treatment plant. The plant is staffed from 7:00 am to 3:30 pm Monday through Friday. On weekends, one operator works three hours each day from 7:00 am to 10:00 am.

Solid Wastes/Residual Solids

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the primary and secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Port Angeles drains grit, rags, scum, and screenings and disposes this solid waste at the local landfill. Solids removed from the primary and secondary clarifiers are treated. This facility has met the solid waste requirements for screening, as required by WAC 173-308-205.

Discharge Outfalls

The treated and disinfected effluent flows into Port Angeles Harbor and the Strait of Juan de Fuca through two outfalls. The old City Outfall 001 is a 27-inch concrete pipe that is 3,550 feet long. Outfall 001 will now only be used during high tides and flows when the recently acquired ex-industrial outfall (002) cannot handle all the flow. This new primary outfall is a 48-inch diameter pipe that is 7,990 feet long. It discharges to the Strait, and has a 940 foot diffuser with 48, 6-inch ports spaced on 20-foot centers. The depth is 52 feet MLLW and the capacity is 40 mgd. Due to the location and higher currents of the Strait, the ex-industrial outfall provides better dilution than old City outfall 001.

B. Description of the Receiving Water

Port Angeles discharges primarily to the Strait of Juan de Fuca through Outfall 002. Some flows may still be discharged to Port Angeles Harbor through Outfall 001. There are no other nearby point source outfalls. Significant nearby non-point sources of pollutants include stormwater runoff. Section IIIE of this fact sheet describes any receiving waterbody impairments.

The ambient background data used for this permit includes the following from Ecology marine water monitoring site PAH008 – Port Angeles Harbor – Morse Creek:

Table 2 Ambient Background Data

Parameter	Value Used
Temperature (highest annual 1-DADMax)	11.9° C
pH (Maximum / Minimum)	7.9/7.77 Standard Units
Dissolved Oxygen	7.3 mg/L
Total Ammonia-N	0.014 mg/L
Fecal Coliform	1/100 mL dry weather (8/100 mL storm related)
Salinity	31.3 mg/L

C. Wastewater Influent Characterization

Port Angeles reported the concentration of influent pollutants in discharge monitoring reports. The influent wastewater is characterized as follows:

Parameter	Units	Average Value	Maximum Value
Biochemical Oxygen Demand (BOD_5)	mg/L	**182**	**492**
BOD_5	lbs/day	**3,287**	**9,272**
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	mg/L	**115**	**368**
$CBOD_5$	lbs/day	**2,047**	**6,111**
Total Suspended Solids (TSS)	mg/L	**346**	**10,226**
TSS	lbs/day	**4,883**	**52,521**
Flow	mgd	**2.5**	**8.7**
Ammonia (Total)	mg/L	**22.7**	**45.8**
pH	Standard units	**6.1 (Min.)**	**7.7**

D. Wastewater Effluent Characterization

Port Angeles reported the concentration of pollutants in the discharge in the permit application and in discharge monitoring reports. The tabulated data represents the quality of the wastewater effluent discharged from August 1, 2009, to July 31, 2014. The wastewater effluent is characterized as follows:

Parameter	Units	Average Value	Maximum Value
$CBOD_5$	mg/L	**4.83**	**12.0**
$CBOD_5$	lbs/day	**101**	**661**

Parameter	Units	Average Value	Maximum Value
TSS	mg/L	**9.1**	**35**
TSS	lbs/day	**194**	**1,997**
Ammonia (Total)	mg/L	**13.3**	**33.0**
Chlorine (Total Residual)	mg/L	**0.09**	**0.57**
Temperature	°C	**13.9**	**19.9**
Parameter	**Units**	**Maximum Monthly Geometric Mean**	**Maximum Weekly Geometric Mean**
Fecal Coliform	#/100 ml	**76**	**995**
Parameter	**Units**	**Minimum Value**	**Maximum Value**
pH	Standard Units	**6.1**	**8.0**

E. Summary of Compliance with Previous Permit Issued

The previous permit placed effluent limits on $CBOD_5$, TSS, Fecal Coliform Bacteria, pH, Total Residual Chlorine, and Acute Whole Effluent Toxicity (WET).

Port Angeles has complied with the effluent limits and permit conditions throughout the duration of the permit issued on July 15, 2008. Ecology assessed compliance based on its review of the facility's information in the Ecology Permitting and Reporting Information System (PARIS), Discharge Monitoring Reports (DMRs) and on inspections.

The following table summarizes the violations that occurred during the permit term.

Table 3 Violations

Date	Monitoring Point	Parameter	Statistical Base	Units	Value	Limit
11/1/2009	001	Fecal Coliform	Weekly Geometric Mean	#/100 mL	537	400
11/1/2011	001	Fecal Coliform	Weekly Geometric Mean	#/100 mL	995	400
01/01/2012	001	$CBOD_5$ Removal	Average	Percent	81	85
2/1/2014	001	TSS Removal	Average	Percent	81	85
7/1/2010	Influent	TSS Loading	Average	lbs/day	12,382	11,750

Port Angeles has been in compliance with report submittal requirements over the permit term.

F. State Environmental Policy Act (SEPA) Compliance

State law exempts the issuance, 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 federal and state rules and regulations (RCW 43.21C.0383). The exemption applies only to existing discharges, not to new discharges.

III. PROPOSED PERMIT LIMITS

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 Code of Federal Regulations (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.

Ecology does not usually develop limits for pollutants not reported in the permit application but 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 if significant changes occur in any constituent [40 CFR 122.42(a)]. Until Ecology modifies the permit to reflect additional discharge of pollutants, a permitted facility could be violating its permit.

A. Design Criteria

Under WAC 173-220-150 (1)(g), flows and waste loadings must not exceed approved design criteria. Ecology approved design criteria for this facility's treatment plant in the plans and specifications from 1991 and prepared by Brown and Caldwell. The table below includes design criteria from the referenced report.

Table 4 Design Criteria for the Port Angeles WWTP

Parameter	Design Quantity
Maximum Month Design Flow (MMDF)	10.8 MGD
Maximum Daily Flow	13.4 MGD
BOD_5 Loading for Maximum Month	8,100 lbs/day
TSS Loading for Maximum Month	11,750 lbs/day

B. Technology-Based Effluent Limits

Federal and state regulations define technology-based effluent limits for domestic wastewater treatment plants. These effluent limits are given in 40 CFR Part 133 (federal) and in chapter 173-221 WAC (state). These regulations are performance standards that constitute all known, available, and reasonable methods of prevention, control, and treatment (AKART) for domestic wastewater.

Both the federal and state regulations allow alternate limits for waste stabilization ponds (lagoons), trickling filters, and facilities with less concentrated influent wastewater.

Ecology may approve a request for alternative limits only if a facility meets all of the following conditions.

- The discharge must not cause water quality violations.
- The facility must identify effluent concentrations consistently achievable through proper operation and maintenance.
- The facility must demonstrate that industrial wastewater does not interfere with the domestic wastewater facility.
- The wastewater facility must be within Ecology approved hydraulic and organic design loading capacity.
- The facility must evaluate whether seasonal alternative limits are more appropriate than year-round.
- The facility must meet all other permit requirements and conditions.

The federal CSO Control Policy (59 FR 18688) also requires entities with Combined Sewer Overflows to implement "Nine Minimum Controls" as technology-based performance standards for CSO discharges. Nine Minimum Controls are discussed in more detail in Section V of this fact sheet.

The table below identifies technology-based limits for pH, fecal coliform, BOD_5, and TSS, as listed in chapter 173-221 WAC. Section III.F of this fact sheet describes the potential for water quality-based limits.

Table 5 Technology-based Limits

Parameter	Average Monthly Limit	Average Weekly Limit
$CBOD_5$ (concentration)	25 mg/L	40 mg/L
$CBOD_5$ (concentration)	In addition, the $CBOD_5$ effluent concentration must not exceed 15 percent of the average influent concentration, except when the monthly average influent falls below 90 mg/L.	
TSS (concentration)	30 mg/L	45 mg/L
TSS (concentration)	In addition, the TSS effluent concentration must not exceed 15 percent of the average influent concentration, except when the monthly average influent falls below 90 mg/L.	
Chlorine	0.5 mg/L	0.75 mg/L
Parameter	**Monthly Geometric Mean Limit**	**Weekly Geometric Mean Limit**
Fecal Coliform Bacteria	200 organisms/100 mL	400 organisms/100 mL
Parameter	**Daily Minimum**	**Daily Maximum**
pH	6.0 Standard Units	9.0 Standard Units

Ecology derived the technology-based monthly average limit for chlorine from standard operating practices. The Water Pollution Control Federation's *Chlorination of Wastewater* (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, *Wastewater Engineering, Treatment, Disposal and Reuse*, Third Edition, 1991. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L chlorine limit on a monthly average basis. According to WAC 173-221-030(11)(b), the corresponding weekly average is 0.75 mg/L.

Technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b). Ecology calculated the monthly and weekly average mass limits for $CBOD_5$ and Total Suspended Solids as follows:

Mass Limit = CL x DF x CF

where:

CL = Technology-based concentration limits listed in the above table

DF = Maximum Monthly Average Design flow (MGD)

CF = Conversion factor of 8.34

For this facility, the existing permitted values for $CBOD_5$ and TSS were used for the mass limits, as they are lower than the above calculation. The Permittee requested that the required 85

percent removal of $CBOD_5$ and TSS be reduced when the influent concentrations are below 90 mg/L. A minimum of 75 percent removal is required during that situation.

Table 6 Technology-based Mass Limits

Parameter	Concentration Limit (mg/L)	Mass Limit (lbs/day)
$CBOD_5$ Monthly Average	25	905
$CBOD_5$ Weekly Average	40	1,358
TSS Monthly Average	30	1,676
TSS Weekly Average	45	2,515

C. Surface Water Quality-Based Effluent Limits

The Washington State surface water quality standards (chapter 173-201A WAC) are 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 the 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 Load (TMDL) Study.

Numerical Criteria for the Protection of Aquatic Life and Recreation

Numerical water quality criteria are listed in the water quality standards for surface waters (chapter 173-201A WAC). They specify the maximum 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 (EPA, 1992). 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 (e.g., 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

Description--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.

Facility Specific Requirements--This facility must meet Tier I requirements.

- Dischargers must maintain and protect existing and designated uses. Ecology must 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 proposed permit conditions will protect existing and designated uses of the receiving water.

Combined Sewer Overflows

Chapter 173-245 WAC requires that "All CSO sites shall achieve and at least maintain the greatest reasonable reduction, and neither cause violations of applicable water quality standards, nor restrictions to the characteristic uses of the receiving water, nor accumulation of deposits which: (a) Exceed sediment criteria or standards; or (b) have an adverse biological effect." "The greatest reasonable reduction" means control of each CSO outfall such that an average of no more than one untreated discharge may occur per year. Ecology includes specific conditions in the proposed permit to ensure that Port Angeles continues to make progress towards meeting water quality goals for each CSO outfall in its system. Section V of this fact sheet contains more detailed information on these CSO requirements.

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 standards, so long as the discharge 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 standards.

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 AKART. Mixing zones typically require compliance with water quality criteria within a specified distance from the point of discharge and must not use more than 25 percent of the available width of the water body for dilution [WAC 173-201A-400 (7)(a)(ii-iii)].

Ecology uses modeling to estimate the amount of mixing within the mixing zone. Through modeling Ecology determines the potential for violating the water quality standards at the edge of the mixing zone and derives 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 4 means the effluent is 25 percent and the receiving water is 75 percent of the total volume of water 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.

This permit authorizes a small acute mixing zone, surrounded by a chronic mixing zone around the point of discharge (WAC 173-201A-400). The water quality standards impose certain conditions before allowing the discharger a mixing zone:

1. Ecology must specify both the allowed size and location in a permit.

   The proposed permit specifies the size and location of the allowed mixing zone (as specified below).

2. The facility must fully apply "all known, available, and reasonable methods of prevention, control and treatment" (AKART) to its discharge.

   Ecology has determined that the treatment provided at Port Angeles meets the requirements of AKART (see "Technology-based Limits").

3. Ecology must consider critical discharge conditions.

   Surface water quality-based limits are derived for the water body's critical condition (the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or

designated waterbody uses). The critical discharge condition is often pollutant-specific or waterbody-specific.

Critical discharge conditions are those conditions that result in reduced dilution or increased effect of the pollutant. Factors affecting dilution include the depth of water, the density stratification in the water column, the currents, and the rate of discharge. Density stratification is determined by the salinity and temperature of the receiving water. Temperatures are warmer in the surface waters in summer. Therefore, density stratification is generally greatest during the summer months. Density stratification affects how far up in the water column a freshwater plume may rise. The rate of mixing is greatest when an effluent is rising. The effluent stops rising when the mixed effluent is the same density as the surrounding water. After the effluent stops rising, the rate of mixing is much more gradual. Water depth can affect dilution when a plume might rise to the surface when there is little or no stratification. Ecology uses the water depth at mean lower low water (MLLW) for marine waters. Ecology's *Permit Writer's Manual* describes additional guidance on criteria/design conditions for determining dilution factors. The manual can be obtained from Ecology's website at: https://fortress.wa.gov/ecy/publications/SummaryPages/92109.html.

Table 7 Critical Conditions Used to Model the Discharge

Critical Condition	Value for Outfall 001	Value for Outfall 002
Water depth at MLLW	60 feet	52 feet
Density	25	24
10^{th} percentile current speeds for acute mixing zone	0.056 m/sec	0.022 m/sec
50th percentile current speeds for chronic and human health mixing zones	0.155 m/sec	0.14 m/sec
Maximum average monthly effluent flow for chronic and human health non-carcinogen	5.3 million gallons per day (MGD)	8.44 MGD
Maximum daily flow for acute mixing zone	13.4 MGD	26.7 MGD
1 DAD MAX effluent temperature	12 degrees C	10 °C

Ecology obtained ambient data at critical conditions in the vicinity of the outfall from "Outfall Location Studies, Port Angeles, Washington" study conducted in 1971 by Rayonier, and Ecology obtained ambient data from ambient stations PAH003, PAH006, PAH007, and PAH008 located in the area.

4. Supporting information must clearly indicate the mixing zone would not:

   - Have a reasonable potential to cause the loss of sensitive or important habitat.

- Substantially interfere with the existing or characteristic uses.
- Result in damage to the ecosystem.
- Adversely affect public health.

Ecology established Washington State water quality criteria for toxic chemicals using EPA criteria. EPA developed the criteria using toxicity tests with numerous organisms and set the criteria to generally protect the species tested and to fully protect all commercially and recreationally important species.

EPA sets acute criteria for toxic chemicals assuming organisms are exposed to the pollutant at the criteria concentration for one hour. They set chronic standards assuming organisms are exposed to the pollutant at the criteria concentration for four days. Dilution modeling under critical conditions generally shows that both acute and chronic criteria concentrations are reached within minutes of discharge.

The discharge plume does not impact drifting and non-strong swimming organisms because they cannot stay in the plume close to the outfall long enough to be affected. Strong swimming fish could maintain a position within the plume, but they can also avoid the discharge by swimming away. Mixing zones generally do not affect benthic organisms (bottom dwellers) because the buoyant plume rises in the water column. Ecology has additionally determined that the effluent will not exceed 33 degrees C for more than two seconds after discharge; and that the temperature of the water will not create lethal conditions or blockages to fish migration.

Ecology evaluates the cumulative toxicity of an effluent by testing the discharge with WET testing.

Ecology reviewed the above information, the specific information on the characteristics of the discharge, the receiving water characteristics, and the discharge location. Based on this review, Ecology concluded that the discharge does not have a reasonable potential to cause the loss of sensitive or important habitat, substantially interfere with existing or characteristics uses, result in damage to the ecosystem, or adversely affect public health if the permit limits are met.

5. The discharge/receiving water mixture must not exceed water quality criteria outside the boundary of a mixing zone.

Ecology conducted a reasonable potential analysis; using procedures established by the EPA and by Ecology, for each pollutant and concluded the discharge/receiving water mixture will not violate water quality criteria outside the boundary of the mixing zone if permit limits are met.

6. The size of the mixing zone and the concentrations of the pollutants must be minimized.

   At any given time, the effluent plume uses only a portion of the acute and chronic mixing zone, which minimizes the volume of water involved in mixing. Because tidal currents change direction, the plume orientation within the mixing zone changes. The plume mixes as it rises through the water column therefore much of the receiving water volume at lower depths in the mixing zone is not mixed with discharge. Similarly, because the discharge may stop rising at some depth due to density stratification, waters above that depth will not mix with the discharge. Ecology determined it is impractical to specify in the permit the actual, much more limited volume in which the dilution occurs as the plume rises and moves with the current.

   Ecology minimizes the size of mixing zones by requiring dischargers to install diffusers when they are appropriate to the discharge and the specific receiving waterbody. When a diffuser is installed, the discharge is more completely mixed with the receiving water in a shorter time. Ecology also minimizes the size of the mixing zone (in the form of the dilution factor) using design criteria with a low probability of occurrence. For example, Ecology uses the expected 95th percentile pollutant concentration, the 90th percentile background concentration, the centerline dilution factor, and the lowest flow occurring once in every ten years to perform the reasonable potential analysis.

   Because of the above reasons, Ecology has effectively minimized the size of the mixing zone authorized in the proposed permit.

7. Maximum Size of Mixing Zone

   The authorized mixing zone does not exceed the maximum size restriction.

8. Acute Mixing Zone

   - The discharge/receiving water mixture must comply with acute criteria as near to the point of discharge as practicably attainable.

     Ecology determined the acute criteria will be met at 10 percent of the distance of the chronic mixing zone.

   - The pollutant concentration, duration, and frequency of exposure to the discharge will not create a barrier to migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.

     As described above, the toxicity of any pollutant depends upon the exposure, the pollutant concentration, and the time the organism is exposed to that concentration. Authorizing a limited acute mixing zone for this discharge assures that it will not create a barrier to migration. The effluent from this discharge will rise as it enters the receiving water,

assuring that the rising effluent will not cause translocation of indigenous organisms near the point of discharge (below the rising effluent).

- Comply with size restrictions.

  The mixing zone authorized for this discharge complies with the size restrictions published in chapter 173-201A WAC.

9. Overlap of Mixing Zones

   The mixing zones do not overlap another mixing zone.

D. 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 (EPA 1992). The tables included below summarize the criteria applicable to the receiving water's designated uses.

- Aquatic life uses are designated using the following general categories. All indigenous fish and non-fish aquatic species must be protected in waters of the state.

  1. 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.

  2. 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.

  3. Good quality salmonid migration and rearing; 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.

  4. Fair quality salmonid and other fish migration.

  The *Aquatic Life Uses* and the associated criteria for this receiving water are identified below.

  Table 8 Marine Aquatic Life Uses and 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	• 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when

Excellent Quality	
	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* are primary contact recreation and secondary contact recreation.

  The recreational uses for this receiving water are identified below.

  Table 9 Recreational Uses

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.

E. Water Quality Impairments

Port Angeles Harbor is listed on the current 303(d) and is impaired for Fecal Coliform Bacteria.

F. Evaluation of Surface Water Quality-Based Effluent Limits for Narrative Criteria

Ecology must consider the narrative criteria described in WAC 173-201A-160 when it determines permit limits and conditions. Narrative water quality criteria limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge which have the potential to adversely affect designated uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health.

Ecology considers narrative criteria when it evaluates the characteristics of the wastewater and when it implements all known, available, and reasonable methods of treatment and prevention (AKART) as described above in the technology-based limits section. When Ecology determines if a facility is meeting AKART it considers the pollutants in the wastewater and the adequacy of the treatment to prevent the violation of narrative criteria.

In addition, Ecology considers the toxicity of the wastewater discharge by requiring whole effluent toxicity (WET) testing when there is a reasonable potential for the discharge to contain toxics. Ecology's analysis of the need for WET testing for this discharge is described later in the fact sheet.

G. 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 BOD_5 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.

With technology-based controls (AKART), predicted pollutant concentrations in the discharge exceed water quality criteria. Ecology therefore authorizes a mixing zone in accordance with the geometric configuration, flow restriction, and other restrictions imposed on mixing zones by chapter 173-201A WAC.

The diffuser at Outfall 001 is 250 feet long with a diameter of 42 inches. The diffuser has a total of 13, 6-inch diameter ports. The distance between ports is 20 feet. The mean lower low water (MLLW) depth is 60 feet. The diffuser at Outfall 002 is 940 feet long with a diameter of 42 inches. The diffuser has a total of 48, 6-inch diameter ports. The distance between ports is 20 feet. The mean lower low water (MLLW) depth is 52 feet.

Outfall 001:

Chronic Mixing Zone--WAC 173-201A-400(7)(b) specifies that mixing zones must not extend in any horizontal direction from the discharge ports for a distance greater than 200 feet plus the depth of water over the discharge ports and may not occupy more than 25 percent of the width of the water body as measured during MLLW.

The horizontal distance of the chronic mixing zone is 260 feet. The mixing zone extends from the bottom to the top of the water column.

Acute Mixing Zone--WAC 173-201A-400(8)(b) specifies that in estuarine waters a zone where acute criteria may be exceeded must not extend beyond 10 percent of the distance established for the chronic zone. The acute mixing zone for Outfall 001 extends 26 feet in any direction from any discharge port.

Outfall 002:

Chronic Mixing Zone--WAC 173-201A-400(7)(c) specifies that mixing zones must not extend in any horizontal direction from the discharge ports for a distance greater than 300 feet plus the depth of water over the discharge ports as measured during MLLW.

The horizontal distance of the chronic mixing zone is 352 feet. The mixing zone extends from the bottom to the top of the water column.

Acute Mixing Zone--WAC 173-201A-400(8)(b) specifies that in oceanic waters a zone where acute criteria may be exceeded must not extend beyond 10 percent of the distance established for the chronic zone. The horizontal distance of the acute mixing zone is 35.2 feet. The mixing zone extends from the bottom to the top of the water column.

Ecology determined the dilution factors that occur within these zones at the critical condition using models. The dilution factors are listed below.

Table 10 Dilution Factors (DF) for Outfall 001

Criteria	Acute	Chronic
Aquatic Life	37	510
Human Health, Carcinogen		510
Human Health, Non-carcinogen		510

Table 11 Dilution Factors (DF) for Outfall 002

Criteria	Acute	Chronic
Aquatic Life	68	593
Human Health, Carcinogen		593
Human Health, Non-carcinogen		593

Ecology determined the impacts of dissolved oxygen deficiency, nutrients, pH, fecal coliform, chlorine, ammonia, metals, other toxics, and temperature as described below, using the dilution factors in the above table. The derivation of surface water quality-based limits also takes into account the variability of pollutant concentrations in both the effluent and the receiving water.

Dissolved Oxygen--BOD_5 and Ammonia Effects--Natural decomposition of organic material in wastewater effluent impacts dissolved oxygen in the receiving water at distances far outside of the regulated mixing zone. The BOD_5 of an effluent sample indicates the amount of biodegradable material in the wastewater and estimates the magnitude of oxygen consumption the wastewater will generate in the receiving water. The amount of ammonia-based nitrogen in the wastewater also provides an indication of oxygen demand potential in the receiving water.

With technology-based limits, this discharge results in a small amount of biochemical oxygen demand (BOD_5) relative to the large amount of dilution in the receiving water at critical conditions. Technology-based limits will ensure that dissolved oxygen criteria are met in the receiving water.

pH--Compliance with the technology-based limits of 6.0 to 9.0 will assure compliance with the water quality standards of surface waters because of the high buffering capacity of marine water.

Fecal Coliform--Ecology modeled the numbers of fecal coliform by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 37.

Under critical conditions, modeling predicts no violation of the water quality criterion for fecal coliform. Therefore, the proposed permit includes the technology-based effluent limit for fecal coliform bacteria.

Turbidity--Ecology evaluated the impact of turbidity based on the range of total suspended solids in the effluent and turbidity of the receiving water. Ecology expects no violations of the turbidity criteria outside the designated mixing zone provided the facility meets its technology-based total suspended solids permit limits.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require Ecology to place limits in NPDES permits on toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. Ecology does not exempt facilities with technology-based effluent limits from meeting the surface water quality standards.

The following toxic pollutants are present in the discharge: chlorine, ammonia, and heavy metals. Ecology conducted a reasonable potential analysis on these parameters to determine whether it would require effluent limits in this permit.

Ammonia's toxicity depends on that portion which is available in the unionized form. The amount of unionized ammonia depends on the temperature, pH, and salinity of the receiving marine water. To evaluate ammonia toxicity, Ecology used the available receiving water information from ambient stations and Ecology spreadsheet tools.

Ecology determined that chlorine, ammonia, and heavy metals pose no reasonable potential to exceed the water quality criteria at the critical condition using procedures given in EPA, 1991 and as described above. Ecology's determination assumes that this facility meets the other effluent limits of this permit.

Water quality criteria for most metals published in chapter 173-201A WAC are based on the dissolved fraction of the metal (see footnotes to table WAC 173-201A-240(3); 2006). Port Angeles may provide data clearly demonstrating the seasonal partitioning of the dissolved metal in the ambient water in relation to an effluent discharge. Ecology may adjust a metal's translator on a site-specific basis when data is available clearly demonstrating the seasonal partitioning in the ambient water in relation to an effluent discharge.

Temperature--The state temperature standards [WAC 173-201A-200-210 and 600-612] include multiple elements:

- Annual summer maximum threshold criteria (June 15 to September 15)
- Supplemental spawning and rearing season criteria (September 15 to June 15)
- Incremental warming restrictions
- Protections against acute effects

Ecology evaluates each criterion independently to determine reasonable potential and derive permit limits.

- Annual summer maximum and supplementary spawning/rearing criteria

Each water body has an annual maximum temperature criterion [WAC 173-201A-200(1)(c), 210(1)(c), and Table 602]. These threshold criteria (e.g., 12, 16, 17.5, 20°C) protect specific categories of aquatic life by controlling the effect of human actions on summer temperatures.

Some waters have an additional threshold criterion to protect the spawning and incubation of salmonids (9°C for char and 13°C for salmon and trout) [WAC 173-201A-602, Table 602]. These criteria apply during specific date-windows.

The threshold criteria apply at the edge of the chronic mixing zone. Criteria for most fresh waters are expressed as the highest seven-day average of daily maximum temperature (7-DADMax). The 7-DADMax temperature is the arithmetic average of seven consecutive measures of daily maximum temperatures. Criteria for marine waters and some fresh waters are expressed as the highest one-day annual maximum temperature (1-DMax).

- Incremental Warming Criteria

The water quality standards limit the amount of warming human sources can cause under specific situations [WAC 173-201A-200(1)(c)(i)-(ii), 210(1)(c)(i)-(ii)]. The incremental warming criteria apply at the edge of the chronic mixing zone.

At locations and times when background temperatures are cooler than the assigned threshold criterion, point sources are permitted to warm the water by only a defined increment. These increments are permitted only to the extent doing so does not cause temperatures to exceed either the annual maximum or supplemental spawning criteria.

At locations and times when a threshold criterion is being exceeded due to natural conditions, all human sources, considered cumulatively, must not warm the water more than 0.3°C above the naturally warm condition.

When Ecology has not yet completed a TMDL, our policy allows each point source to warm water at the edge of the chronic mixing zone by 0.3°C. This is true regardless of the background temperature and even if doing so would cause the temperature at the edge of a standard mixing zone to exceed the numeric threshold criteria. Allowing a 0.3°C warming for each point source is reasonable and protective where the dilution factor is based on 25 percent or less of the critical flow. This is because the fully mixed effect on temperature will only be a fraction of the 0.3°C cumulative allowance (0.075°C or less) for all human sources combined.

- Protections for Temperature Acute Effects

Instantaneous lethality to passing fish: The upper 99th percentile daily maximum effluent temperature must not exceed 33°C, unless a dilution analysis indicates ambient temperatures will not exceed 33°C two seconds after discharge.

General lethality and migration blockage: Measurable (0.3°C) increases in temperature at the edge of a chronic mixing zone are not allowed when the receiving water temperature exceeds either a 1DMax of 23°C or a 7DADMax of 22°C.

Lethality to incubating fish: Human actions must not cause a measurable (0.3°C) warming above 17.5°C at locations where eggs are incubating.

Reasonable Potential Analysis

Annual summer maximum and incremental warming criteria: Ecology calculated the reasonable potential for the discharge to exceed the annual summer maximum and the incremental warming criteria at the edge of the chronic mixing zone during critical conditions. No reasonable potential exists to exceed the temperature criterion where:

(Criterion + 0.3) > [Criterion + (Teffluent95 – Criterion)/DF].

(16 + 0.3) > (16 + (25– 16)/510).

Therefore, the proposed permit does not include a temperature limit. The permit requires additional monitoring of effluent. Ecology will reevaluate the reasonable potential during the next permit renewal.

H. 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 effluent may contain chemicals of concern for human health, based on the facility's status as an EPA major discharger.

Ecology evaluated the discharge's potential to violate the water quality standards as required by 40 CFR 122.44(d) by following the procedures published in the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001) and Ecology's *Permit Writer's Manual* to make a reasonable potential determination. The evaluation showed that the discharge has no reasonable potential to cause a violation of water quality standards, and an effluent limit is not needed.

I. Sediment Quality

The aquatic sediment standards (chapter 173-204 WAC) 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/progr6ams/tcp/smu/sediment.html

The facility has performed sediment testing in 1996, 2003/2004, and 2010. These tests were done at Outfall #001 and the CSO outfalls #06, #07, #08, and #10. With the change to the new Outfall #002 from Outfall #001 and the planned reduction in discharges at the CSOs, it was determined to let the facility transition to the new discharge points and then determine the need for any additional sediment testing. Once the CSO reductions occur and the flows are mostly directed to Outfall #002, the need for sediment testing will be re-evaluated based on the success of the CSO

reductions and flow split to Outfalls #001 and #002. The next permit term may include additional sediment testing requirements.

J. Whole Effluent Toxicity

The water quality standards for surface waters forbid discharge of effluent that has the potential to cause 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.

- *Acute toxicity tests measure mortality as the significant response* to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests find early indications of any potential lethal effect of the effluent on organisms in the receiving water.

- *Chronic toxicity tests measure various sublethal toxic responses*, such as reduced growth or reproduction. Chronic toxicity tests often involve either a complete life cycle test on an organism with an extremely short life cycle, or a partial life cycle test during a critical stage of a test organism's life. Some chronic toxicity tests also measure organism survival.

Laboratories accredited by Ecology for WET testing know how to use the proper WET testing protocols, fulfill the data requirements, and submit results in the correct reporting format. Accredited laboratory staff knows about WET testing and how to calculate an NOEC, LC50, EC50, IC25, etc. Ecology gives all accredited labs the most recent version of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* (https://fortress.wa.gov/ecy/publications/SummaryPages/9580.html), which is referenced in the permit. Ecology recommends that Port Angeles send a copy of the acute or chronic toxicity sections(s) of its NPDES permit to the laboratory.

All WET testing results conducted in order to monitor for compliance with an acute WET limit assigned in a previous permit met the acute toxicity performance standard defined in WAC 173-205-020. In addition, Ecology has determined that the Permittee has not made any changes to the facility which would trigger an additional effluent characterization pursuant to WAC 173-205-060. For these reasons, Ecology has not included the acute WET limit in the proposed permit. Instead, the Permittee must conduct WET testing at the end of the permit term in order to verify that effluent toxicity has not increased.

WET testing conducted during effluent characterization showed no reasonable potential for effluent discharges to cause receiving water chronic toxicity. The proposed permit will not include a chronic WET limit. Port Angeles must retest the effluent before submitting an application for permit renewal.

- If this facility makes process or material changes which, in Ecology's opinion, increase the potential for effluent toxicity, then Ecology may (in a regulatory order, by permit modification, or in the permit renewal) require the facility to conduct additional effluent characterization

- If WET testing conducted for submittal with a permit application fails to meet the performance standards in WAC 173-205-020, Ecology will assume that effluent toxicity has increased. Port Angeles may demonstrate to Ecology that effluent toxicity has not increased by performing additional WET testing after the process or material changes have been made.

K. Groundwater Quality Limits

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

Port Angeles does not discharge wastewater to the ground. No permit limits are required to protect groundwater.

L. Comparison of Effluent Limits with the Previous Permit Issued on July 15, 2008

Table 12 Comparison of Previous and Proposed Effluent Limits

		Previous Effluent Limits: Outfall # 001		**Proposed Effluent Limits: Outfall # 001 & #002**	
Parameter	**Basis of Limit**	**Average Monthly**	**Average Weekly**	**Average Monthly**	**Average Weekly**
$CBOD_5$	Technology	25 mg/L, 905 lbs/day, 85% removal	40 mg/L, 1,358 lbs/day	25 mg/L, 905 lbs/day, 85% removal	40 mg/L, 1,358 lbs/day
TSS	Technology	30 mg/L, 1,676 lbs/day, 85% removal	45 mg/L, 2,515 lbs/day	30 mg/L, 1,676 lbs/day, 85% removal	45 mg/L, 2,515 lbs/day
Parameter	**Basis of Limit**	**Monthly Geometric Mean Limit**	**Weekly Geometric Mean Limit**	**Monthly Geometric Mean Limit**	**Weekly Geometric Mean Limit**
Fecal Coliform Bacteria	Technology	200/100 mL	400/100 mL	200/100 mL	400/100 mL
pH	Technology	6.0-9.0 SU		6.0-9.0 SU	
Acute Whole Effluent Toxicity (WET)	WQ	No statistically significant difference in test organism survival between the acute critical effluent concentration (ACEC), 2.7% of the effluent, and the control		NA	
Parameter	**Basis of Limit**	**Average Monthly**	**Maximum Daily**	**Average Monthly**	**Maximum Daily**

		Previous Effluent Limits: Outfall # 001		Proposed Effluent Limits: Outfall # 001 & #002	
Parameter	**Basis of Limit**	**Average Monthly**	**Average Weekly**	**Average Monthly**	**Average Weekly**
Total Residual Chlorine	WQ/ Technology	0.25 mg/L	0.65 mg/L	0.50 mg/L	0.75 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.

If a facility uses a contract laboratory to monitor wastewater, it must ensure that the laboratory uses the methods and meets or exceeds the method detection levels required by the permit. The permit describes when facilities may use alternative methods. It also describes what to do in certain situations when the laboratory encounters matrix effects. When a facility uses an alternative method as allowed by the permit, it must report the test method, detection level (DL), and quantitation level (QL) on the discharge monitoring report or in the required report.

A. Wastewater Monitoring

The monitoring schedule is detailed in the proposed permit under Special Condition S2. 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. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (Publication Number 92-09) for Trickling Filter Plants > 2.0 mgd Average Design Flow.

Ecology has included some additional monitoring of nutrients in the proposed permit to establish a baseline for this discharger. It will use this data in the future as it develops TMDLs for dissolved oxygen and establishes WLAs for nutrients.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Biosolids monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

As a pretreatment POTW, the city of Port Angeles is required to sample influent, primary clarifier effluent, final effluent, and sludge for toxic pollutants in order to characterize the industrial input. Sampling is also done to determine if pollutants interfere with the treatment process or pass-through the plant to the sludge or the receiving water. The city of Port Angeles will use the monitoring data to develop local limits which commercial and industrial users must meet.

B. Lab Accreditation

Ecology requires that facilities must 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). Ecology accredited the laboratory at this facility for:

Table 13 Accredited Parameters

Parameter Name	Category	Method Name	Matrix Description
Turbidity	General Chemistry	SM 2130 B-01	Non-Potable Water
TSS	General Chemistry	SM 2540 D-97	Non-Potable Water
Chlorine (Residual), Total	General Chemistry	SM 4500-Cl G-00	Non-Potable Water
pH	General Chemistry	SM 4500-H+ B-00	Non-Potable Water
Ammonia	General Chemistry	SM 4500-NH3 D-97	Non-Potable Water
Dissolved Oxygen	General Chemistry	SM 4500-O G-01	Non-Potable Water
BOD	General Chemistry	SM 5210 B-01	Non-Potable Water
Fecal Coliform-count	Microbiology	SM 9222 D (m-FC)-97	Non-Potable Water

C. Effluent Limits which are Near Detection or Quantitation Levels

The water quality-based effluent concentration limits may be near the limits of current analytical methods to detect or accurately quantify. The Method Detection Level (MDL) also known as Detection Level (DL) is the minimum concentration of a pollutant that a laboratory can measure and report with a 99 percent confidence that its concentration is greater than zero (as determined by a specific laboratory method). The Quantitation Level (QL) is the level at which a laboratory can reliably report concentrations with a specified level of error. Estimated concentrations are the values between the DL and the QL. Ecology requires permitted facilities to report estimated concentrations. When reporting maximum daily effluent concentrations, Ecology requires the facility to report "less than X" where X is the required detection level if the measured effluent concentration falls below the detection level.

V. OTHER PERMIT CONDITIONS

A. Reporting and Record Keeping

Ecology based Special 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. Prevention of Facility Overloading

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the city of Port Angeles to:

- Take the actions detailed in proposed permit Special Condition S4.
- Design and construct expansions or modifications before the treatment plant reaches existing capacity.

- Report and correct conditions that could result in new or increased discharges of pollutants.

Special Condition S4 restricts the amount of flow.

C. Operation and Maintenance

The proposed permit contains Special Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, chapter 173-230 WAC, and WAC 173-240-080. Ecology included it to ensure proper operation and regular maintenance of equipment, and to ensure that the city of Port Angeles takes adequate safeguards so that it uses constructed facilities to their optimum potential in terms of pollutant capture and treatment.

D. Pretreatment

Duty to Enforce Discharge Prohibitions

This provision prohibits the publicly owned treatment works (POTW) from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer.

- The first section of the pretreatment requirements prohibits the POTW from accepting pollutants which causes "pass-through" or "interference." This general prohibition is from 40 CFR §403.5(a). **Appendix C** of this fact sheet defines these terms.

- The second section reinforces a number of specific state and federal pretreatment prohibitions found in WAC 173-216-060 and 40 CFR §403.5(b). These reinforce that the POTW may not accept certain wastes, which:

  1. Are prohibited due to dangerous waste rules.

  2. Are explosive or flammable.

  3. Have too high or low of a pH (too corrosive, acidic or basic).

  4. May cause a blockage such as grease, sand, rocks, or viscous materials.

  5. Are hot enough to cause a problem.

  6. Are of sufficient strength or volume to interfere with treatment.

  7. Contain too much petroleum-based oils, mineral oil, or cutting fluid.

  8. Create noxious or toxic gases at any point.

  40 CFR Part 403 contains the regulatory basis for these prohibitions, with the exception of the pH provisions which are based on WAC 173-216-060.

- The third section of pretreatment conditions reflects state prohibitions on the POTW accepting certain types of discharges unless the discharge has received prior written authorization from Ecology. These discharges include:

  1. Cooling water in significant volumes.

  2. Stormwater and other direct inflow sources.

  3. Wastewaters significantly affecting system hydraulic loading, which do not require treatment.

Ecology delegated authority to the city of Port Angeles for permitting, monitoring, and enforcement over industrial users discharging to their treatment system to provide more direct and effective control of pollutants. Ecology oversees the delegated Industrial Pretreatment Program to assure compliance with federal pretreatment regulations (40 CFR Part 403) and categorical standards and state regulations (chapter 90.48 RCW and chapter 173-216 WAC).

As sufficient data becomes available, the city of Port Angeles must, in consultation with Ecology, reevaluate its local limits in order to prevent pass-through or interference. If any pollutant causes pass-through or interference, or exceeds established sludge standards, the city of Port Angeles must establish new local limits or revise existing local limits as required by 40 CFR 403.5. In addition, Ecology may require revision or establishment of local limits for any pollutant that causes a violation of water quality standards or established effluent limits, or that causes whole effluent toxicity.

Ecology may modify this permit to incorporate additional requirements relating to the establishment and enforcement of local limits for pollutants of concern.

E. Solid Wastes

To prevent water quality problems the facility is required in permit Special Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state water quality standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under chapter 70.95J RCW, chapter 173-308 WAC "Biosolids Management," and chapter 173-350 WAC "Solid Waste Handling Standards." The disposal of other solid waste is under the jurisdiction of the Clallam County Health Department.

Requirements for monitoring sewage sludge and record keeping are included in this permit. Ecology will use this information, required under 40 CFR 503, to develop or update local limits.

F. Combined Sewer Overflows

Combined sewer systems are sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same piping system. Most of the time, combined sewer systems transport all wastewater to a sewage treatment plant, where it is treated and then discharged to a water body. During periods of heavy rainfall or snowmelt, however, the wastewater volume in a combined sewer system can exceed the capacity of the combined sewer system or treatment plant. For this reason, combined sewer systems are designed to overflow

occasionally and discharge excess wastewater directly to nearby streams, rivers, or other water bodies. Chapter 173-245 WAC and EPA's CSO control policy (59 FR 18688) identify the required measures for control of overflows from combined sewer systems.

CSO Reduction Plan/Long-Term Control Plan and CSO Reduction Plan Amendments

Ecology requires municipalities to initially develop CSO reduction plans per chapter 173-245 WAC requirements. These plans are substantially equivalent to the Long-Term Control Plan (LTCP) as defined by EPA in its CSO control policy. Chapter 173-245 WAC requires that "All CSO sites shall achieve and at least maintain the greatest reasonable reduction, and neither cause violations of applicable water quality standards, nor restrictions to the characteristic uses of the receiving water, nor accumulation of deposits which: (a) Exceed sediment criteria or standards; or (b) have an adverse biological effect." "The greatest reasonable reduction" means control of each CSO outfall such that an average of no more than one untreated discharge may occur per year.

Under EPA's CSO Control Policy's presumption approach, CSO controls are presumed to attain WQS if certain performance criteria are met. Ecology presumes that a program that meets the criteria specified in WAC 173-245 and EPA's CSO control policy provides an adequate level of control to meet the water quality-based requirements of the Clean Water Act. This presumption must be verified via a post-construction monitoring program by characterization, monitoring, and modeling of the system, including consideration of sensitive areas.

Nine Minimum Controls

Municipalities with combined sewer overflow outfalls must implement nine minimum controls as technology-based standards for CSO discharges. The nine minimum controls are largely programmatic policies and practices designed to minimize the impacts untreated CSOs have on human health and the environment. It is not possible with current knowledge and technology to calculate numeric water quality-based effluent limits for CSOs. Ecology may include numeric water quality-based effluent limits in the future permits only after the long-term control plan is in place and after collection of sufficient water quality data.

The nine minimum controls include:

1. Use proper operations and maintenance practices within the combined collection system to reduce the magnitude, frequency and duration of CSOs.

2. Implement procedures that maximize storage capacity of the combined collection system.

3. Minimize pollution from non-domestic wastewater sources through close management of a pretreatment program.

4. Maximize treatable flow to the wastewater treatment plant during wet weather.

5. Prevent CSO discharges during dry weather and properly report any dry weather CSO discharges immediately to Ecology.

6. Implement procedures to control solid and floatable materials in CSOs.

7. Implement and maintain a pollution prevention program designed to keep pollutants from entering the combined sewer system.

8. Establish a process to notify the public when and where CSOs occur.

9. Monitor CSO outfalls to characterize CSO impacts and the efficacy of CSO controls, including event-based monitoring of all CSO flow quantity, frequency and duration.

CSO Monitoring

The proposed permit requires the city of Port Angeles to monitor the volume, duration and precipitation associated with each CSO discharge event at each identified outfall.

Annual CSO Report

The city of Port Angeles must submit annual reports according to the requirements of WAC 173-245-090(1). This report: (a) details the past year's frequency and volume of combined sewage discharge from each CSO site, (b) explains the previous year's CSO reduction accomplishments, and (c) lists the projects planned for the next year. The report must indicate whether a CSO site has increased over the baseline annual condition. If an increase has occurred, the Permittee must propose a project and/or schedule to reduce that site below its baseline conditions. The report must document implementation of the nine minimum controls, and wet weather operation (flow blending) at the treatment plant.

The city of Port Angeles must also assess in its annual reports and CSO reduction plan amendment whether identified outfalls meet the state standard of one untreated discharge per year per CSO. Assessment may be based on a long-term average which is currently defined as five years.

Post-Construction Monitoring Program

The federal CSO control policy (59 FR 18688) requires post-construction monitoring to verify implemented CSO control strategies comply with water quality standards. Post-construction monitoring applies to any CSO outfall that is controlled to meet the "greatest reasonable reduction" of combined sewer overflows, as defined in chapter 173-245 WAC. Implementation requires development of a monitoring plan and completion of a data report that documents compliance. This may be implemented in the next permit term. EPA is currently developing guidance on post-construction monitoring plans.

G. Outfall Evaluation

The proposed permit requires the city of Port Angeles to conduct an outfall inspection and submit a report detailing the findings of that inspection (Special Condition S10). The inspection must evaluate the physical condition of the discharge pipe and diffusers, and evaluate the extent of sediment accumulations in the vicinity of the outfall.

H. General Conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual domestic wastewater 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 groundwater, based on 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 meets 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 years.

VII. REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

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.

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.

December 2011. *Permit Writer's Manual*. Publication Number 92-109 (https://fortress.wa.gov/ecy/publications/SummaryPages/92109.html)

September 2011. *Water Quality Program Guidance Manual – Supplemental Guidance on Implementing Tier II Antidegradation*. Publication Number 11-10-073 (https://fortress.wa.gov/ecy/publications/summarypages/1110073.html)

May 2011. *Technical Memorandum - Dilution Modeling of Port Angeles WWTP New Outfall.*

October 2010 (revised). *Water Quality Program Guidance Manual – Procedures to Implement the State's Temperature Standards through NPDES Permits*. Publication Number 06-10-100 (https://fortress.wa.gov/ecy/publications/summarypages/0610100.html)

Laws and Regulations (http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information (http://www.ecy.wa.gov/programs/wq/permits/guidance.html)

Water Pollution Control Federation.

1976. *Chlorination of Wastewater*.

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 the city of Port Angeles WWTP. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on June 12, 2013, and June 16, 2013, in the *Peninsula Daily News* 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 September 28, 2015, in the *Peninsula Daily News* to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet.

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 https://fortress.wa.gov/ecy/publications/SummaryPages/0307023.html.

You may obtain further information from Ecology by telephone, 360-407-6279, or by email at carey.cholski@ecy.wa.gov, or by writing to the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

The primary author of this permit and fact sheet is Dave Dougherty.

APPENDIX B --YOUR RIGHT TO APPEAL

You have a right to appeal this permit to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of the final permit. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2) (see glossary).

To appeal you must do the following within 30 days of the date of receipt of this permit:

- File your appeal and a copy of this permit with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this permit on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive Southeast Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel Road Southwest, Suite 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk P.O. Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** P.O. Box 40903 Olympia, WA 98504-0903

APPENDIX C--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 time period, 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).

Alternate Point of Compliance -- An alternative location in the ground water from the point of compliance where compliance with the ground water standards is measured. It may be established in the ground water at locations some distance from the discharge source, up to, but not exceeding the property boundary and is determined on a site specific basis following an AKART analysis. An "early warning value" must be used when an alternate point is established. An alternate point of compliance must be determined and approved in accordance with WAC 173-200-060(2).

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 -- 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.

Background Water Quality -- The concentrations of chemical, physical, biological or radiological constituents or other characteristics in or of ground water at a particular point in time upgradient of an activity that has not been affected by that activity, [WAC 173-200-020(3)]. Background water quality for any parameter is statistically defined as the 95 percent upper tolerance interval with a 95 percent confidence based on at least eight hydraulically upgradient water quality samples. The eight samples are collected over a period of at least one year, with no more than one sample collected during any month in a single calendar year.

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 five-day 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_5 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.

Categorical Pretreatment Standards -- National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties, which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

Chlorine -- A chemical 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.

Date of Receipt – This is defined in RCW 43.21B.001(2) as five business days after the date of mailing; or the date of actual receipt, when the actual receipt date can be proven by a preponderance of the evidence. The recipient's sworn affidavit or declaration indicating the date of receipt, which is unchallenged by the agency, constitutes sufficient evidence of actual receipt. The date of actual receipt, however, may not exceed forty-five days from the date of mailing.

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.

Distribution Uniformity -- The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Early Warning Value -- The concentration of a pollutant set in accordance with WAC 173-200-070 that is a percentage of an enforcement limit. It may be established in the effluent, ground water, surface water, the vadose zone or within the treatment process. This value acts as a trigger to detect and respond to increasing contaminant concentrations prior to the degradation of a beneficial use.

Enforcement Limit -- The concentration assigned to a contaminant in the ground water at the point of compliance for the purpose of regulation, [WAC 173-200-020(11)]. This limit assures that a ground water criterion will not be exceeded and that background water quality will be protected.

Engineering Report -- A document that 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.

Ground Water -- Water in a saturated zone or stratum beneath the surface of land or below a surface water body.

Industrial User -- A discharger of wastewater to the sanitary sewer that is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

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.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

- Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Local Limits -- Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

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 seven-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 permit specifies the area of the authorized mixing zone that Ecology defines following 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.

Pass-through -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

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.

Point of Compliance -- The location in the ground water where the enforcement limit must not be exceeded and a facility must comply with the Ground Water Quality Standards. Ecology determines this limit on a site-specific basis. Ecology locates the point of compliance in the ground water as near and directly downgradient from the pollutant source as technically, hydrogeologically, and geographically feasible, unless it approves an alternative point of compliance.

Potential Significant Industrial User (PSIU) --A potential significant industrial user is defined as an Industrial User that does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

1. Exceeds 0.5 percent of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

2. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes). Ecology may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL) -- Also known as Minimum Level of Quantitation (ML) – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration

point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to (1, 2, or 5) x 10^n, where n is an integer (64 FR 30417).

ALSO GIVEN AS: The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs Submitted to the US Environmental Protection Agency December 2007).

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).

Significant Industrial User (SIU) --

1. All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2. Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

Slug Discharge -- Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate that may cause interference or pass through with the POTW or in any way violate the permit conditions or the POTW's regulations and local limits.

Soil Scientist -- An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

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.

Soluble BOD_5 -- Determining the soluble fraction of Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of soluble organic material present in an effluent that is utilized by bacteria. Although the soluble BOD_5 test is not specifically described in Standard Methods, filtering the raw sample through at least a 1.2 um filter prior to running the standard BOD_5 test is sufficient to remove the particulate organic fraction.

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.

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

Total Coliform Bacteria--A microbiological test, which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS) -- Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water 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.

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 Permittee. 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 imposed on the concentration of an effluent parameter to prevent the concentration of that parameter from exceeding its water quality criterion after discharge into receiving waters.

APPENDIX D--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found in the PermitCalc workbook on Ecology's webpage at: http://www.ecy.wa.gov/programs/wq/permits/guidance.html.

Simple Mixing:

Ecology uses simple mixing calculations to assess the impacts of certain conservative pollutants, such as the expected increase in fecal coliform bacteria at the edge of the chronic mixing zone boundary. Simple mixing uses a mass balance approach to proportionally distribute a pollutant load from a discharge into the authorized mixing zone. The approach assumes no decay or generation of the pollutant of concern within the mixing zone. The predicted concentration at the edge of a mixing zone (C_{mz}) is based on the following calculation:

$$C_{mz} = Ca + \frac{(Ce - Ca)}{DF}$$

where: Ce = Effluent Concentration
Ca = Ambient Concentration
DF = Dilution Factor

Reasonable Potential Analysis:

The spreadsheets – Reasonable Potential, and LimitCalc in Ecology's PermitCalc Workbook determine reasonable potential (to violate the aquatic life and human health water quality standards) and calculate effluent limits. The process and formulas for determining reasonable potential and effluent limits in these spreadsheets are taken directly from the *Technical Support Document for Water Quality-based Toxics Control*, (EPA 505/2-90-001). The adjustment for autocorrelation is from EPA (1996a), and EPA (1996b).

APPENDIX E--RESPONSE TO COMMENTS

A public comment period was held from September 28, 2015 to October 27, 2015. Comments were received from the Permittee and from Puget Soundkeeper Alliance. During the comment period, the following comments were received from David Freed, Wastewater Division Source Control Specialist, the city of Port Angeles.

Comment 1:

> Special Condition S6.A.1.b. – Pretreatment General Requirements. Should Minor Industrial Users (MIUs) be included along with SIUs? How many State Waste Discharge permits has Ecology issued that contribute to the Port Angeles system? Does Ecology intend the City to replace any such permits with SIU permits? If so, how soon? Do we still need to consult with Ecology for MIU permits?

Response 1:

> The NPDES permit does not reinforce the activities which the Permittee is doing now with respect to Minor Industrial Users (minor non-domestic dischargers). These are businesses that are not discharging enough to be considered Significant Industrial Users (SIUs). The permit language that begins the pretreatment section states that the Permittee is required to administer the Permittee's approved program, which includes provisions for permitting Minor Industrial Users (MIUs). The Permittee is expected to continue to implement those provisions in the same way as they are now despite the lack of explicit reinforcement of such activities in the permit. That said, the Permittee is free to categorize such Users as SIU's at this juncture if they believe such is warranted.
>
> The next comment on this sub-section is with respect to how soon the Permittee would be expected to issue permits for discharges which Ecology has permitted. A query of our PARIS database showed that we have issued two pretreatment permits for the 1) Port Angeles Landfill (ST0006247) and 2) Port Angeles Landfill Transfer Station (ST006249). The Permittee should reissue these permits within 180 days after the effective date of the NPDES permit. Ecology then expects the Permittee to issue permits prior to allowing discharge to the POTW of any new discharger.
>
> The next question at S6.A.1.b was whether this means the Permittee does not need to consult with Ecology prior to issuance of MIU permits. That is correct, however, Ecology will now have to do a Pretreatment Compliance Inspection or Audit of the Permittee's pretreatment program every two years. During such inspections, both MIU and SIU permits will be reviewed for consistency with pretreatment standards and requirements and their permitting rules. The Permittee is free to continue to consult with Ecology on MIU permits if they so desire.

Comment 2:

> Special Condition S6.A.1.d. – Pretreatment General Requirements. Must we inspect and monitor MIUs?

Response 2:

The Permittee is expected to continue to oversee MIUs in accordance with the policies and procedures of its approved pretreatment program, including MIUs.

Comment 3:

Special Condition S6.A.1.f - Pretreatment General Requirements. The citation in this section should end with (viii), not (vii).

Response 3:

You are correct, this section should cite the definition of significant noncompliance as 403.8(f)(2)(viii).

Comment 4:

Special Condition S6.A.3. - Pretreatment General Requirements. Do we need to continue to evaluate whether MIUs as well as SIUs need slug discharge control plans?

Response 4:

Yes, to the extent that a User meets the criteria of the approved program for requiring such review it needs to continue to be done. Also, MIU's which have a potential to cause a slug discharge may be considered SIU's for that reason alone should the Permittee so desire.

Comment 5:

Special Condition S6.A.5.c.- Pretreatment General Requirements. This section should refer to A.6. There is no section A.7.

Response 5:

The observation that S6.A.5.c should refer to Subsection A.6 rather than A.7 is correct.

Comment 6:

Special Condition S6.B.1.- Pretreatment Montoring Requirements. This section should refer to S6.B.11.

Response 6:

The observation that S6.B.1 should refer to S6.B.11 instead of S6.B.4 is correct.

Comment 7:

Special Condition S6.B.5.- Pretreatment Montoring Requirements. No more clean mercury stuff?

Response 7:

The question at S6.B.5 is whether the Permittee still needs to do clean sampling of the influent and effluent for mercury. This is a good one to resolve. They do not need to do clean sampling for mercury in the influent, but they should continue to do clean sampling for mercury in the effluent.

Comment 8:

Special Condition S6.B.9.- Pretreatment Montoring Requirements. Does this replace the previous permit's reference to US EPA Method 1669 for clean mercury sampling?

Response 8:

The question at S6.B.9 is whether they need to do clean sampling of the sludges. No, only clean sampling for mercury in the effluent is needed. As with the influent, normal methods of analysis for mercury in the sludge is sufficient for Ecology needs.

The following comments were received from Kathryn Neal, P.E., Engineering Manager, the city of Port Angeles.

Comment 9:

Sections S4A Design Criteria, and S5F Bypass Procedures will need to be modified.

S5.F Bypass Procedures. We request that the permit contain a provision that allows primary effluent to be conveyed around the TF/SC during storm events when CSO flows are being received by the plant.

The section on bypass procedures in the permit describes circumstances under which the plant is permitted to divert waste streams from a portion of the treatment facility. None of the conditions listed pertain specifically to storm events when additional combined sewer flows will be routed to the treatment plant as a result of implementation of the City's CSO Reduction Plan. As described above, after the Phase 1 CSO improvements, peak plant flows will reach 13.4 mgd on a more frequent basis and may exceed 13.4 mgd for short durations. The TF/SC system will be upgraded to increase its capacity from 10.6 to 13.4 mgd. After the Phase 2 CSO improvements, peak plant flows may reach as high as 20 mgd. In both cases, any primary effluent flow in excess of 13.4 mgd will be conveyed around the TF/SC system. Blending of primary effluent and secondary effluent flows will thus take place at total plant influent flows between 13.4 and 20 mgd. The blended flows will be disinfected and dechlorinated prior to discharge to the outfall. We request that the permit contains a provision that allows primary effluent to be conveyed around the TF/SC during storm events when CSO flows are being received by the plant.

Response 9:

The bypass procedures section was modified to allow operation of the approved wet weather high flow bypass system. The design criteria section was also modified. We often do not list a Maximum Daily Design Flow, so this value was removed.

Comment 10:

The Maximum Month Design Flow is 10.8 MGD, slightly more than the 10.6 MGD shown on the draft permit.

Response 10:

The design flow in S4 was adjusted as requested.

Comment 11:

We request that you review S9.B9. The header paragraph should be updated, and item d. should more clearly specify what water quality data Ecology expects the City to provide.

Response 11:

The section was updated in recognition that the Permittee is past the point of developing an intial baseline on the CSOs and at instead at the point of controled CSOs.

Comment 12:

S9, page 33. It would be good to standardize a name for Outfall #002, it's called different things in different places. I like 'primary outfall'. Then the other outfall could be called 'old City outfall'. Other terms might be 'new City outfall' or 'refurbished industrial outfall' or 'ex-industrial outfall' (as it's called in the fact sheet).

Response 12:

It would be good to standardize the name of Outfall #002. The name was changed in the table on page 33 to primary outfall. In the future Ecology will try to stay with primary outfall, though we did not go back thru this permit and fact sheet to clean up all the references to the outfall.

Comment 13:

Fact Sheet, page 5. The City installed a rock trap and four-celled storage vault at the headworks in 2014 that attenuates batch flows from septage haulers. There are currently no plans for additional construction of a separate septage receiving station.

Response 13:

Paragraph on receiving station was deleted.

Comment 14:

Fact Sheet, Page 5, last paragraph. The MMDF is being increased to 10.8 MGD as a result of improvements constructed to implement the Combined Sewer Overflow Reduction plan. Under high flow conditions in wet weather, the plant can accept flows up to 20 MGD.

Response 14:

Design flow was adjusted as requested.

Comment 15:

Fact Sheet, Page 6. Collection System Status, first paragraph. It has 17 pump stations. Pump Station 4 will be upgraded to 28 MGD in 2016 as part of the CSO reduction plan. The wastewater main from Francis St was also upgraded, to a peak flow capacity of 20 MGD. The remaining wastewater (2MGD peak flow) comes through a gravity line serving the area north of the WWTP. Storm flows in excess of the treatment plant capacity are routed to the 5 MG storage tank for temporary storage, and routed back to the treatment plant when capacity is available.

Response 15:

This paragraph was adjusted.

Comment 16:

Fact Sheet, Page 6. Collection System Status, last paragraph. Because of the implementation of the CSO reduction plan, the combined sewer collection system has a total peak design flow capacity of 50 MGD, which will result in control of combined sewer overflows into Port Angeles harbor.

Response 16:

The paragraph was adjusted.

Comment 17:

Fact Sheet, Page 6, Treatment Processes - The treatment plant improvements installed in 2013 and 2014 result in a maximum month flow of 10.8 million gallons a day (mgd), Peak daily flow is limited to 13.4 mgd, except during winter storm events when up to 20 mgd may flow through the plant. The TF/SC maximum capacity is 13.4 mgd. Flows in excess of 20 mgd, are routed to the storage tank for temporary storage before being returned to the plant for treatment. Most flows will be pumped to the treatment plant from a 28mgd pump station located downtown through new force mains, or flow through the new Francis St. gravity main.

Response 17:

The paragraph was slightly adjusted.

Comment 18:

We have started training our staff on the new NPDES Permit, and noticed a difference in item S3.F.2.a, Immediate Reporting of Permit Violations. The second bullet point now reads "collection system overflows", and the 2008 language was "collection system overflows which may reach surface waters". Under the new requirement, we would report an overflow of a manhole, even if it is contained and never reaches a receiving water. Please confirm that this is

Ecology's intention. I understand that the new language is standard nowadays. This means you will be getting more reports of small incidents from us.

Response 18:

Yes, it is Ecology intention that all overflows be reported, even if they do not reach surface water.

Comment 19:

Another issue involves the third bullet point in S2.F.2.a, "plant bypasses discharging to marine surface waters". Consistent with our earlier comments on section S5F, we request that when the treatment plant is receiving flows between 13.4 and 20MGD during rainstorms, that this is acknowledged as our authorized operating procedure. These flows would bypass the trickling filter/solids contact system, but will be disinfected before discharge from Outfall 002 (the refurbished industrial outfall that now serves as the wastewater treatment plant's primary outfall). It would possible for us to report the duration and volume of these flows, but they should not be accounted as an untreated CSO, and certainly not as a permit violation.

Response 19:

The bullet was adjusted.

Comments from Richard A. Smith on behalf of Puget Soundkeeper Alliance.

Comment 20:

Soundkeeper strongly supports the statement in the fact sheet (p.11) as appropriate and a generally accurate interpretation of applicable law: "Ecology usually does not develop limits for pollutants not reported in the permit application but 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 if significant changes occur in any constituent [40 CFR 122.42(a)]. Until Ecology modifies the permit to reflect additional discharge of pollutants, a permitted facility could be violating its permit." Soundkeeper's concern is that the prohibition of discharge of pollutants not identified by the City in its permit application materials does not appear in the permit itself. To ensure that this limitation is a meaningful and enforceable limitation on the discharge, the permit should include a provision clearly "prohibiting" (i.e., not merely "not authorizing") discharges of pollutants that were not disclosed in application materials.

Response 20:

The permit does include a condition in section G4 that the Permittee must give notice to Ecology of any change in the nature or an increase in the quantity of pollutants discharged. Therefore, the statement in the fact sheet is already in the permit.

In addition, while we appreciate your concern with pollutants not mentioned in the application, the data that we have seen suggests that one of the best ways for a domestic wastewater treatment plant to have a positive effect on all pollutants is to do a good job on the pollutants listed in the permit.

Comment 21:

Appendix A to the draft permit identifies detection limits ("DLs") and quantitation levels ("QLs") for the individual pollutant analyses required by the permit. Where do these DLs and QLs come from? Many of them are different from those given in the federal regulations. Where do the QLs come from? A QL is typically calculated as the DL multiplied by 3.18, but that does not fit most of the given figures. It is also puzzling that closely related pollutants to be analyzed with the same lab method have apparently inconsistent numbers; for instance, on p. 55, the QLs for PCB-1248 and PCB-1260 are both identified as 0.5 µg/L while the DL for PCB-1248 is 0.25 µg/L and that for PCB-1260 is 0.13 µg/L. How, when, and by whom were the QLs and DLs in these tables developed?

Response 21:

Ecology compiled the list of Appendix A methods, detection levels (DLs), and quantitation levels (QLs) over several years, beginning in 1993. Early efforts relied on input on the DLs and QLs from Ecology staff, EPA Region 10, and several public and private laboratories. In January 2008, EPA Region 10 published a document titled "Table of Limits" that included a list of methods with known detection limits, instrument detection limits, and method detection limits. Also in early 2008, Ecology conducted a survey of all labs accredited in Washington for organics analysis. After comparing the results from Ecology's survey and the Region 10 Table of Limits, Ecology's Water Quality program staff assembled Appendix A in consultation with Ecology's Manchester Laboratory staff, Ecology's Environmental Assessment Program (EAP) staff, and the agency's Quality Assurance (QA) Officer. The version of Appendix A included in the proposed permit is a product of the efforts described above.

Ecology recognizes that many older EPA Part 136 methods lack method detection levels (e.g. EPA Method 608.2). Even when a method includes detection levels, Appendix A values for DLs and QLs may be lower than those published with the method. This reflects advances in laboratory analysis procedures allowing lower DLs and QLs. As noted above, the actual values included in Appendix A by Ecology were influenced by a survey of laboratories and input from experienced chemists at Ecology's Manchester lab. Ecology's Water Quality Program maintains Appendix A and updates the appendix on a regular basis, primarily to add newly approved EPA Part 136 methods. Consideration of edits to DLs and QLs occurs in consultation with appropriate staff at the Manchester Laboratory and Ecology's QA Officer. Ecology last updated the appendix in August 2014.

Ecology added Appendix A to its permit to ensure Permittees meet the detection and quantitation levels necessary for adequate assessment. Consistent with WAC 173-201A-260(3)(h), Appendix A was developed in accordance with the "Guidelines Establishing Test Procedures for the Analysis of Pollutants" (40 C.F.R. Part 136). Use of Part 136 test methods is required by 40 CFR Part 122.41(j)(4).

In general, this comment applies more to Ecology's agency-wide policies and application of the State's WQ standards and EPA required testing methods, rather than to how these standards were applied to this individual permit. Ecology developed this permit consistent with the State's water quality standards, the methods described in its Permit Writers' Manual, and relevant Federal laws and rules.

Comment 22:

Soundkeeper urges the use of more accurate and precise lab analytical methods for screening for permit renewal application requirements per condition S2.A.6. Although the permit language is not specific in requiring the methods identified in Appendix A for this monitoring (it should), it appears that this is the intent. The Appendix A methods appear to be taken from the list of methods approved for NPDES compliance monitoring at 40 CFR 136. For some of these pollutants, better lab methods with lower DLs and PQLs have been developed but not included in 40 CFR 136. Since the S2.A.6. monitoring is not for permit compliance but to provide information to inform the next round of permit issuance, it is sensible and appropriate to require use of the better methods. For example, Appendix A specifies Method 608 for PCB analysis, while Method 1668C has PQLs orders of magnitude lower and is more useful for determining total PCB concentration. Other pollutants identified in Appendix A, including those designated as PBTs by Ecology, are subject to water quality criteria that are far below the PQLs for the methods required. If Ecology really wants to determine whether the pollutants screened for are present at levels of concern, it needs to update the list of required analytical methods to avoid or minimize this problem (PQLs far above criteria).

Response 22:

Consistent methods are used for both compliance and permit application monitoring. The methods used are accurate and precise and switching methods for different purposes would generally lead to less useful data.

Comment 23:

Condition S1.A appears to authorize discharges from outfalls 001 and 002 without distinction or limitation relative to each other. The fact sheet indicates that the facility has switched or is switching to use 002 as the primary outfall, and states (p. 8) that "Outfall 001 will now only be used during high tides and flows when the recently acquired ex-industrial outfall (002) cannot handle the flow." The permit should incorporate this requirement for use of outfall 002 except in specified circumstances, and address the circumstance in which outfall 002 capacity is exceeding during low tide. The permit also lacks effluent limitations for discharge flow from the respective outfalls, which seems inappropriate. The flow capacity of outfall 002 also needs to be identified.

Response 23:

The new effluent diversion structure at the treatment plant is designed to send flow to the new primary Outfall 002. This outfall is ready to be put to use as soon as this permit is issued. All flow will be directed to the new primary outfall, unless during high flow events during high tide where the diversion structure may start to surcharge and then overflow to Outfall 001 as needed. The circumstance that a discharge to Outfall 001 will occur is the water level in the diversion structure reaching the weir elevation of 43.50'. This should take a flow of around 44 MGD, depending on tide height. The dilution factors of both outfalls are similar enough that the same effluent limitations apply to both.

Comment 24:

Upon what information is the authorization of mixing zones and dilution factors based? The fact sheet cites no mixing zone analysis study or report. What is the information that Ecology relies on to satisfy the requirements of WAC 173-201A-400(4)?

Response 24:

Both outfalls 001 & 002 have extensive studies and reports completed on them. Outfall 001 has the *Final Outfall Mixing Zone Study* (January 26, 1996) by Brown and Caldwell. The new primary Outfall 002 has studies back to the *Outfall Location Studies Port Angeles, Washington* (August 1971) by ITT Rayonier and up to the *Technical Memorandum – Dilution Modeling of Port Angeles WWTP New Outfall* (May 2011) by Ecology. The technical memorandum is cited in the Fact Sheet.

Comment 25:

The receiving water, Port Angeles Harbor, is 303(d) listed for fecal coliform, yet it appears that the reasonable potential analysis for fecal coliform incorporates a mixing zone and a dilution factor of 37 (fact sheet p. 25). Under WAC 173-201A-400(4) and EPA mixing zone guidance, consideration of dilution when the receiving waters lack assimilative capacity for the pollutant of concern is inappropriate without justification. Does Port Angeles Harbor have remaining assimilative capacity for fecal coliform despite its 303(d) listing? What information does Ecology have to satisfy WAC 173-201A-400(4) for fecal coliform, given the 303(d) listing?

Response 25:

Portions of Port Angeles Harbor are on the 303(d) list for fecal coliform, but not in the area of Outfalls 001 & 002. The new primary Outfall 002 discharges outside of Port Angeles Harbor into the Strait of Juan de Fuca in an area that is not on the 303(d) list for any pollutants. Likewise, Outfall 001, while on the border/entrance to Port Angeles Harbor, is located in an unlisted area.

Comment 26:

The fact sheet's Appendix D, which is supposed to include technical calculations for reasonable potential analysis, is incomplete – no technical calculations are provided. These are a necessary and important part of the fact sheet.

Response 26:

Appendix D can include technical calculations, but no specific calculation is necessary or required. There are many documents and calculations that support this permit, but they cannot all be included in the fact sheet.

Comment 27:

The mixing zone descriptions provided in the permit and fact sheet are inadequate under WAC 173-201A-400(1) and WAC 173-220-130(3)(c) (permits must specify the "dimensions" of a mixing zone). Condition S1.B purports to describe mixing zones for outfalls 001 and 002 as "a circle" with a radius of a given number of feet "measured from the center of each discharge port."

This is nonsense and unintelligible. Both of the outfalls' diffusers have multiple discharge ports and the shape derived from radii centered on these cannot be a single circle as implied. The shapes of the mixing zones can be a series of neighboring or overlapping circles, or something else. The permit must accurately describe the dimensions of the mixing zones.

Response 27:

We believe the description in the fact sheet is accurate in that it correctly describes the mixing zone as the aggregation of a series of circles centered on each port. The descriptions are adequate and are not in violation of WAC 173-201A-400(1) and WAC 173-220-130(3)(c).

Comment 28:

Soundkeeper does not understand the basis for the no reasonable potential determination for temperature as discussed at fact sheet pp. 26 – 27. Where is the policy described at the bottom of page 26?

Response 28:

The policy can be found in the *Water Quality Program Guidance Manual: Procedures to Implement the State's Temperature Standards through NPDES Permits* (Publication 06-10-100).

Comment 29:

The fact sheet discusses sediment impact evaluation on pp. 27 – 28. There is no reference to any analysis of sediments in the vicinity of outfall 002. Surely some information exists from previous regulatory activity concerning this formerly industrial outfall. Soundkeeper suggests that evaluation of this information, and, possibly, collection of additional outfall 002 sediment monitoring data, should be done now to assess the potential for sediment impacts per WAC 173-204-400(6). No matter what discharge quality improvements result from the cited planned activities, there may be impacts at outfall 002 sediments already that already warrant inclusion of effluent limitations, monitoring, or a sediment impact zone. At a minimum, the permit should prescribe a sediment monitoring program for outfall 002 to provide information for the next permitting round.

Response 29:

There have been studies of sediment in the area of the outfalls. Nothing significant for this permit has been found. The previous discharge to the industrial outfall was of a different nature than the future discharge and no pertinent sediments impacts are known to exist. For a discharge with little industrial input, proper treatment, and to an active marine environment, the existing sediments impact analysis is adequate and indicates no need for a sediment monitoring program. Ecology developed this permit consistent with the State's water quality standards, the methods described in its Permit Writers' Manual, and relevant Federal laws and rules.

Comment 30:

Condition S9, concerning CSOs, states that "[t]his permit does not authorize a discharge from a CSO that causes adverse impacts that threaten characteristic uses of the receiving water …."

Soundkeeper urges that this language be modified to affirmatively "prohibit" such discharges to avoid potential enforcement difficulties.

Response 30:

This is standard language used in all CSO permits. Ecology developed this permit consistent with the State's water quality standards, the methods described in its Permit Writers' Manual, and relevant Federal laws and rules.

Comment 31:

Condition S9.E. references Ecology's "request" "that CSO discharges be directed preferentially to Outfall 002." Presuming the environmental soundness of this request, Soundkeeper suggests that it be converted into a permit requirement with appropriate specificity.

Response 31:

The request to preferentially direct CSO discharges to Outfall 002 has been designed into the CSO upgrades with the focus being able to get flow to the WWTP and the CSO storage tank. Overflow from the CSO storage tank goes directly to Outfall 002. A permit requirement is not needed as the approved system is designed to preferentially send flow to Outfall 002.