

**FACT SHEET FOR SEASHORE VILLA MOBILE HOME PARK
WASTEWATER TREATMENT PLANT
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
(NPDES) PERMIT WA0037273**

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 Seashore Villa Mobile Home Park Wastewater Treatment Plant (WWTP).

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 Seashore Villa WWTP, NPDES Permit WA0037273, are available for public review and comment from March 29, 2019, until April 28, 2019. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement Information**.

Emerald Properties, LLC and Future Clear Environmental Services 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

Emerald Properties, LLC owns an activated sludge wastewater treatment plant that serves the Seashore Villa Mobile Home Park and discharges to Outer Budd Inlet. Future Clear Environmental Services operates the WWTP under contract to Emerald Properties, LLC. Ecology issued the previous permit for this facility on July 12, 2013.

The proposed permit contains the same effluent limits for Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), Fecal Coliform Bacteria, and pH as the permit issued in 2013. The proposed permit requires an Engineering Report to examine the collection system, recommend inflow and infiltration correction, and corrective action to bring the collection system up to standards. The permit does not include any other significant changes.

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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 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)

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**.

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II. BACKGROUND INFORMATION

Table 1 - General Facility Information

Facility Information	
Applicant/Owner	Emerald Properties, LLC 8625 Evergreen Way, Suite 200 Everett, WA 98208
Contract Operator	Future Clear Environmental Services 26208 41 st Avenue Spanaway, WA 98387
Facility Name and Address	Seashore Villa Mobile Home Park WWTP 4805 Cushman Road Northeast Olympia, WA 98506
Contact at Facility	Name: Brian Gibson, WWTP Operator Telephone #: 253-255-1539 e-mail: futureclearenv@gmail.com
Responsible Official	Name: Fred W. Hines, Jr. Title: Manager Address: 8625 Evergreen Way, Suite 200 Everett, WA 98208 Telephone #: 425-438-1925 e-mail: hinespcf@aol.com
Type of Treatment	Membrane Bioreactor (MBR) with UV disinfection
Facility Location (NAD83/WGS84 reference datum)	Latitude: 47.09975 Longitude: -122.89334
Discharge Waterbody Name and Location (NAD83/WGS84 reference datum)	Budd Inlet Latitude: 47.09952 Longitude: -122.89633
Permit Status	
Renewal Date of Previous Permit	August 1, 2013
Application for Permit Renewal Submittal Date	December 21, 2017
Date of Ecology Acceptance of Application	January 9, 2018
Inspection Status	
Date of Last Non-sampling Inspection	July 18, 2017

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Figure 1 - Facility Location Map



A. Facility Description

History

The original Package Activated Sludge Treatment Plant was from the 1960s. The original package treatment plant was replaced with a Membrane Bioreactor (MBR) Package Wastewater Treatment Plant (WWTP) in November 2007. The MBR serves the 157 residents of the Seashore Villa Mobile Home Park. The MBR is an EPA minor facility with a design capacity of 34,000 gallons per day (gpd).

Collection System Status

The collection system was built in the 1970s, and consists of gravity concrete and PVC pipe. Some of the PVC pipe running down the hill to the WWTP is above ground and is subject to damage and deterioration due to sunlight. Inflow and Infiltration (I&I) is an issue with clear flow into the WWTP during the winter decreasing the membranes ability to pass flow. Due to these high flows the WWTP experienced bypasses and numerous effluent limit violations. For the last few years these bypasses and violations have not been repeated.

I&I investigation and study completed led to the conclusion that total replacement of the collection system may be the only solution to the I&I. For now, the owners rely on pumper trucks during heavy rain events, to prevent bypasses or overflows.

The proposed permit requires reporting of flow diverted to the storage tank, and flow hauled off site. The total gallons diverted each month and the total gallons hauled each month needs to be reported on the monthly DMR. The proposed permit also requires an

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Engineering Report to assess the condition of the collection system and make recommendation for improvements.

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/>.

Wastewater from the Seashore Villa Mobile Home Park flows downhill to the influent manhole at the MBR. The influent manhole has a screening basket installed that needs to be manually cleaned. From the manhole, flow is pumped up to the MBR. The flow is screened again, then enters the MBR. The MBR WWTP was manufactured by Environquip and uses Kubota flat plate membrane filters. The treatment process is an aerobic activated sludge process. The filters are installed in the mixed liquor of the activated sludge process. The membranes are chemically cleaned 3 or 4 times a year.

After the MBR, the filtered flow goes to the UV disinfection system and then out the marine outfall. Refrigerated automatic samplers are used to collect influent and effluent samples. Other than pH and temperature, samples are sent to a contract lab for analysis. Waste solids are pumped to the old treatment tank of the original WWTP, which is now used for waste solids and as a high flow holding tank. High flows can be temporarily stored in the tank, and between the tank and calling in pumper trucks, the WWTP has thusfar prevented overflows during high flow storm events.

There are no industrial or commercial users; just waste from the mobile home park. The mobile home park and MBR WWTP are privately owned and use a contract operator. The WWTP requires a Class II operator.

Contract Operations

Emerald Properties, LLC contracts the operation and maintenance of the wastewater treatment plant with Future Clear Environmental Services by the terms and conditions contained in a mutually agreed upon service agreement. Ecology reviewed the service agreement to ensure it is consistent with chapters 90.46 and 90.48 RCW as required by RCW 70.150.040(9). The agreement identifies the responsibilities of both the contractor and the owner.

It is the Water Quality Program's standard procedure to identify contract operators as co-permittees on individual municipal NPDES permits, to address both state and federal requirements for permittees. However, it is not required in every case. Ecology may consider issuing the permit only to the owner; Ecology staff and managers should:

1. Consider the extent of the operator's control over the treatment system, as described in the service agreement.
2. Consider the experience and record of the operator at other facilities.
3. Consider the performance and enforcement provisions in the service agreement between the owner and the operator.

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4. Review the recommendations or comments from the Attorney General's office.
5. Make a reasoned decision based on the facts, Ecology guidance, and the manner in which the entities' service agreement defines the responsibilities each will have.

Ecology decided not to include the contract operator as a co-permittee for this facility. While it is Ecology policy for municipally owned wastewater treatment plants to list both the public body and the contract operator as co-permittees, in this case the facility is privately owned. The contract operator does control the day to day operation of the treatment plant, but Ecology determined it could create a disproportionate burden for the owner to attract an operator, if the operator was listed as co-permittee, especially given the conditions of the collection system.

When a domestic wastewater facility with co-permittees does not comply with permit conditions, Ecology will consider the roles identified in the reviewed service agreement between the owner and operator when it develops both formal and informal enforcement actions.

Solid Wastes/Residual Solids

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Seashore Villa WWTP drains grit, rags, scum, and screenings and disposes this solid waste at the local landfill. Solids removed from the MBR are stored in the old WWTP until hauled off site for further treatment and disposal. This facility has met the solid waste requirements for screening, as required by WAC 173-308-205, by the headwork screens.

Discharge Outfall

The treated and disinfected effluent flows into outer Budd Inlet, through a 3-inch diameter PVC outfall. The outfall extends approximately 335 feet offshore to a water depth of approximately 14 feet at Mean Lower Low Water (MLLW). The in-water portion of the outfall has been covered by loose sediments and daylights about 15 feet before the discharge. The terminus is open-ended. There is a small (1/2") hole on the crown of the pipe about 5 feet back from the terminus. Some of the effluent exits from this hole.

B. Description of the Receiving Water

The Seashore Villa WWTP discharges to Budd Inlet just south of Gull Harbor. Other nearby point source outfalls include Tamoshan WWTP, Boston Harbor WWTP, and the LOTT Budd Inlet WWTP. Significant nearby non-point sources of pollutants include septic tanks and stormwater runoff. Section III E of this fact sheet describes any receiving waterbody impairments.

The ambient background data used for this permit includes the following from the Ecology long-term marine water quality monitoring station BUD005-Budd Inlet-Olympia Shoal, and the Mixing Zone Study Report (Cosmopolitan Engineering Group, 2010):

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Table 2 - Ambient Background Data

Parameter	Value Used
Temperature	8.9°C to 18.4°C
pH (Maximum / Minimum)	8.1 / 7.2 Standard Units
Dissolved Oxygen	8.4 mg/L
Total Ammonia-N	82.2 µg/L
Fecal Coliform	36/100 mL
Salinity	27.4 psu
Lead	0.01 µg/L
Copper	0.74 µg/L
Zinc	0.51 µg/L

C. Wastewater Influent Characterization

The Seashore Villa WWTP reported the concentration of influent pollutants in discharge monitoring reports. The influent wastewater from DMR data from August 1, 2013, to March 31, 2018, is characterized as follows:

Parameter	Units	Average Value	Maximum Value
BOD ₅	mg/L	218	1540
BOD ₅	lbs/day	20	132
TSS	mg/L	295	1280
TSS	lbs/day	28	161

D. Wastewater Effluent Characterization

The Seashore Villa WWTP 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, 2013, to March 31, 2018. The wastewater effluent is characterized as follows:

Parameter	Units	Average Value	Maximum Value
BOD ₅	mg/L	6.4	137
BOD ₅	lbs/day	0.53	12.6
TSS	mg/L	9.5	186
TSS	lbs/day	0.70	17.1
Ammonia	mg/L	0.78	40.9

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Parameter	Units	Average Value	Maximum Value
Ammonia	Lbs/day	0.07	3.4
Flow	gpd	12,014	45,300
Temperature	°C	15.6	29
Parameter	Units	Maximum Monthly Geometric Mean	Maximum Weekly Geometric Mean
Fecal Coliforms	#/100 mL	794	6,300
Parameter	Units	Minimum Value	Maximum Value
pH	SU	6.01	7.89

E. Summary of Compliance with Previous Permit Issued

The previous permit placed effluent limits on BOD₅, TSS, Fecal Coliform Bacteria, and pH.

Other than a few months in late 2013/early 2014 when the old plant was temporarily being used and they violated for most everything, the Seashore Villa WWTP has complied with the effluent limits and permit conditions throughout the duration of the permit issued on July 12, 2013. During the incident in 2013, the former contract operator took the MBR offline in early September for repairs. When Ecology inspected the plant in January 2014, the MBR was still offline. At that time Thurston County closed several beaches in the area. Ecology issued a Notice of Violation for over 70 permit violations that occurred while the MBR was offline. The violations stopped once the MBR was brought back online. The former contract operator was eventually let go.

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 and permit triggers that occurred during the permit term. The table only lists the worst of the weekly violations that occurred during the 2013/2014 incident. Permit triggers are not violations but rather when triggered require the permit holder to take an action defined in the permit.

Begin Date	Parameter	Units	Value	Limit	Violation
11/1/17	TSS	lbs/day	58.78	62	85% of Design Criteria Permit Trigger
7/1/2017	TSS	lbs/day	64.825	62	Design Criteria Violation
2/1/17	BOD ₅	lbs/day	-	-	Frequency of Sampling Violation

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Begin Date	Parameter	Units	Value	Limit	Violation
2/1/17	TSS	lbs/day	-	-	Frequency of Sampling Violation
6/1/2014	Fecal Coliform	#/100 mL	-	-	Frequency of Sampling Violation
2/1/2014	Fecal Coliform (GM7)	#/100 mL	702	172	Numeric Effluent Violation
2/1/2014	TSS	lbs/day	59.59	62	85% of Design Criteria Permit Trigger
1/1/2014	Fecal Coliform (GEM)	#/100 mL	541	47	Numeric Effluent Violation
1/1/2014	Fecal Coliform (GM7)	#/100 mL	6,300	172	Numeric Effluent Violation
1/1/2014	BOD ₅ (AVG)	mg/L	97.8	30	Numeric Effluent Violation
1/1/2014	BOD ₅ (AVW)	mg/L	137	45	Numeric Effluent Violation
1/1/2014	BOD ₅ (AVG)	lbs/day	8.98	3.8	Numeric Effluent Violation
1/1/2014	BOD ₅ (AVW)	lbs/day	12.6	5.6	Numeric Effluent Violation
1/1/2014	BOD ₅ Percent Removal	%	18.7	85	Numeric Effluent Violation
1/1/2014	TSS (AVG)	mg/L	104	30	Numeric Effluent Violation
1/1/2014	TSS (AVW)	mg/L	186	45	Numeric Effluent Violation
1/1/2014	TSS (AVW)	lbs/day	17.1	5.6	Numeric Effluent Violation
1/1/2014	TSS Percent Removal	%	56.09	85	Numeric Effluent Violation
12/1/2013	Fecal Coliform (GEM)	#/100 mL	456	47	Numeric Effluent Violation
12/1/2013	Fecal Coliform (GM7)	#/100 mL	2,000	172	Numeric Effluent Violation

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Begin Date	Parameter	Units	Value	Limit	Violation
12/1/2013	BOD ₅ (AVG)	mg/l	38.8	30	Numeric Effluent Violation
12/1/2013	BOD ₅ (AVW)	lbs/day	7.0	5.6	Numeric Effluent Violation
12/1/2013	BOD ₅ Percent Removal	%	82.9	85	Numeric Effluent Violation
12/1/2013	TSS (AVG)	mg/l	73.1	30	Numeric Effluent Violation
12/1/2013	TSS (AVW)	mg/l	99	45	Numeric Effluent Violation
12/1/2013	TSS (AVG)	lbs/day	6.71	3.8	Numeric Effluent Violation
12/1/2013	TSS (AVW)	lbs/day	9.1	5.6	Numeric Effluent Violation
12/1/2013	TSS Percent Removal	%	82.6	85	Numeric Effluent Violation
10/1/2013	Fecal Coliform (GEM)	#/100 mL	378	47	Numeric Effluent Violation
10/1/2013	Fecal Coliform (GM7)	#/100 mL	2,520	172	Numeric Effluent Violation
10/1/2013	TSS (AVG)	mg/l	53.9	30	Numeric Effluent Violation
10/1/2013	TSS (AVW)	mg/l	61	45	Numeric Effluent Violation
10/1/2013	TSS (AVG)	lbs/day	4.495	3.8	Numeric Effluent Violation

The following table summarizes compliance with report submittal requirements over the permit term.

Submittal Name	Due Date	Received Date
Wasteload Assessment	6/15/2014	6/12/2014
Infiltration and Inflow Evaluation	6/15/2014	6/12/2014
Outfall Evaluation	6/15/2014	6/11/2014
Application for Permit Renewal	1/1/2018	12/21/2017

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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 Regulation (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 dated November 2005 and prepared by Gibbs & Olsen, Inc. The table below includes design criteria from the referenced report.

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Table 7 - Design Criteria for the Seashore Villa WWTP

Parameter	Design Quantity
Maximum Month Design Flow (MMDF)	34,000 gpd
BOD ₅ Loading for Maximum Month	62 lbs/day
TSS Loading for Maximum Month	62 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.

The table below identifies technology-based limits for pH, fecal coliform, BOD₅, 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 8 - Technology-based Limits

Parameter	Average Monthly Limit	Average Weekly Limit
BOD ₅ (concentration)	30 mg/L	45 mg/L
BOD ₅ (concentration)	In addition, the BOD ₅ effluent concentration must not exceed 15 percent of the average influent concentration.	
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.	
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

Technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b). Ecology calculated potential monthly and weekly average mass limits for BOD₅ and Total Suspended Solids as follows:

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$$\text{Mass Limit} = \text{CL} \times \text{DF} \times \text{CF}$$

where:

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

DF = Maximum Monthly Average Design flow (MGD)

CF = Conversion factor of 8.34

$$\text{Mass Limit} = (30 \text{ mg/L})(.034 \text{ MGD})(8.34) = 8.5 \text{ lbs/day}$$

Table 9 - Technology-based Mass Limits

Parameter	Concentration Limit (mg/L)	Mass Limit (lbs/day)
BOD ₅ Monthly Average	30	8.5
BOD ₅ Weekly Average	45	12.7
TSS Monthly Average	30	8.5
TSS Weekly Average	45	12.7

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

In 1992, U.S. EPA published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State in its National Toxics Rule (40 CFR (EPA, 1992). Ecology submitted a standards revision for 192 new human health criteria for 97 pollutants to EPA on August 1, 2016. In accordance with requirements of

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CWA section 303(c)(2)(B), EPA finalized 144 new and revised Washington specific human health criteria for priority pollutants, to apply to waters under Washington's jurisdiction. EPA approved 45 human health criteria as submitted by Washington. The EPA took no action on Ecology submitted criteria for arsenic, dioxin, and thallium. The existing criteria for these three pollutants as adopted in the National Toxics Rule (40 CFR 131.36) remain in effect.

These newly adopted criteria, located in WAC 173-201A-240, 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 AKART.
- Apply three tiers of protection (described below) for surface waters of the state.

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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.

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) or WAC 173-201A-400(7)(b)(ii-iii)].

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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.

Most aquatic life *acute* criteria are 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. Most aquatic life *chronic* criteria are 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 and four tenths (2.4) liters/day for drinking water (increased from two liters/day in the 2016 Water Quality Standards update)
- 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).

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2. The facility must fully apply AKART to its discharge.

Ecology has determined that the treatment provided at the Seashore Villa WWTP 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 10 - Critical Conditions Used to Model the Discharge

Critical Condition	Value
Water depth at MLLW	14 feet
Density profile with a difference of 3 sigma-t units between 14 feet and the surface	24.5 – 27.5
90 th percentile current speeds for acute mixing zone	1.05 ft/sec ft/sec
50th percentile current speeds for chronic and human health mixing zones	0.46 ft/sec
Maximum average monthly effluent flow for chronic and human health non-carcinogen	0.034 million gallons per day (MGD)
Annual average flow for human health carcinogen	0.012 MGD
Maximum daily flow for acute mixing zone	0.114 MGD
1 DAD MAX effluent temperature	29 degrees C

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Ecology obtained ambient data at critical conditions in the vicinity of the outfall from the Mixing Zone Study Report conducted in 2010 and from ambient data from ambient station BUD005- located in Budd Inlet at the Olympia Shoal.

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 Whole Effluent Toxicity (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.

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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% 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

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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

This mixing zone does 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.

1. 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.
2. 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.
3. 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.
4. 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.
5. Fair quality salmonid and other fish migration.

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

Table 11 - Marine Aquatic Life Uses and Associated Criteria

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

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

The recreational use is primary contact recreation.

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

Table 12 - 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

Outer Budd Inlet is listed on the current 303(d) and is impaired for Bacteria and Dissolved Oxygen. Ecology is currently conducting a TMDL Analysis that is expected to be completed in 2020. The TMDL will include Wasteload Allocations (WLA) once it is complete.

As Budd Inlet is an impaired waterbody for Dissolved Oxygen and Fecal Coliform, the mass-based effluent limits for BOD₅ and TSS, and the effluent limits for Fecal Coliform were not increased from the previous permit, consistent with Ecology’s guidance for

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permitting discharges to 303d listed water bodies when a TMDL is not in place (*Permit Writer's Manual*, Chapter 6, Section 3.3). For BOD₅ and TSS, these limits are 3.8 lbs/day (monthly average) and 5.6 lbs/day (weekly average). For Fecal Coliform, the limits are 47/100 mL (monthly geometric mean) and 172/100 mL (weekly geometric mean). As the plant is designed to produce effluent concentrations of 10 mg/L for both BOD₅ and TSS at design flows, the facility can meet these mass limits even at design flows. The facility has also met the limits for Fecal Coliform and Ecology expects it can continue to do so.

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 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 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 BOD₅ 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.

There is no diffuser at Outfall 001. The Outfall is open ended at about 335 feet offshore. The Outfall is a 3-inch diameter PVC pipe. There is a small (1/2") hole on the crown of the pipe about 5 feet back from the terminus. Some of the effluent exits from this hole. The depth at the end of the Outfall is 14 feet at mean lower low water (MLLW). Ecology obtained this information from the Dilution Ratio Study Report submitted on June 4, 2010.

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

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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 214 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 21.4 feet in any direction from any discharge port.

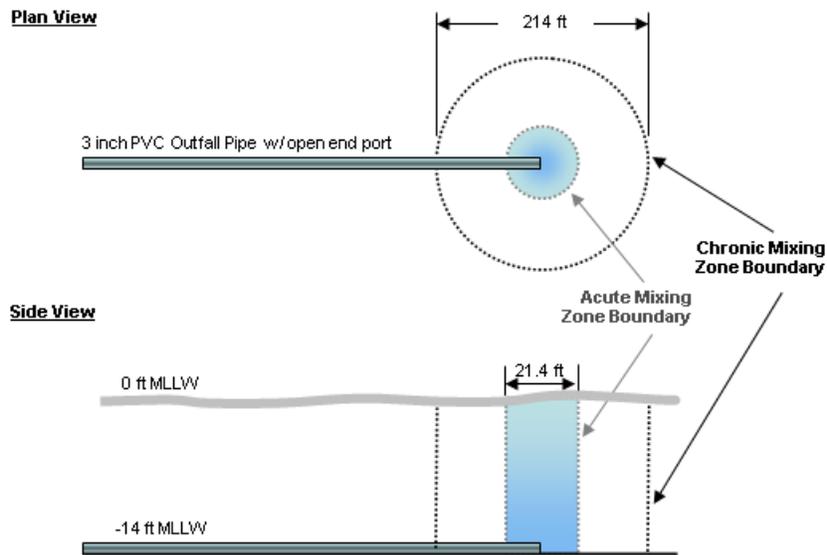


Figure 2. Outfall Mixing Zones.

Ecology determined the dilution factors that occur within these zones at the critical condition using results of the *Seashore Villa Mobile Home Park Mixing Zone Study Report* (June 2010). The dilution factors are listed below.

Table 13 - Dilution Factors (DF)

Criteria	Acute	Chronic
Aquatic Life	45.1	536
Human Health, Carcinogen		536
Human Health, Non-carcinogen		536

Ecology determined the impacts of pH, fecal coliform, ammonia, 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.

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Nutrients-- Ecology is currently developing a TMDL for Budd Inlet. Based on the most recent modeling completed by Ecology for the Budd Inlet TMDL, Nitrogen and BOD discharges from sources to Budd Inlet will need to be reduced. Ecology's studies have shown that reduced discharges during the critical period of August and September will have the largest beneficial impact on Dissolved Oxygen in Budd Inlet. Ecology's practice is to wait until TMDLs are complete to make changes to effluent limits. Ecology expects to have draft allocations available for review in 2019. Once the TMDL is approved, if it includes reductions in Nitrogen and BOD discharges for the Seashore Villa WWTP, Ecology may modify or reissue this permit to incorporate the new wasteload allocations. The modified permit will contain a compliance schedule if one is needed.

Dissolved Oxygen--BOD₅ 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 BOD₅ 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 BOD₅ relative to the large amount of dilution in the receiving water at critical conditions. As noted above, Ecology may modify this permit to incorporate new limits for BOD₅ and Nutrients, including ammonia, once the Budd Inlet TMDL is completed.

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 536. Ecology determined there is no reasonable potential to violate Water Quality Standards for Fecal Coliform.

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 pollutant is present in the discharge: Ammonia. Ecology conducted a reasonable potential analysis on this parameter 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 for ambient station BUD005- located in Budd Inlet at the Olympia Shoal, and Ecology spreadsheet tools.

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Valid ambient background data is available for ammonia (See Table 2). Ecology used all applicable data to evaluate reasonable potential for this discharge to cause a violation of Water Quality Standards.

Ecology determined that Ammonia poses 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.

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

- Annual Summer Maximum Threshold Criteria (June 15th to September 15th)
- Supplemental Spawning and Rearing Season Criteria (September 15th to June 15th)
- Incremental Warming Restrictions
- Protections Against Acute Effects

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

1. 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 7-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 1-Day annual maximum temperature (1-DMax).

2. 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

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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.

3. 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:

$$(\text{Criterion} + 0.3) > [\text{Criterion} + (\text{Teffluent95} - \text{Criterion})/\text{DF}]$$

The figure below graphically portrays the above equation and shows the conditions when a permit limit will apply.

$$(16 + 0.3) > (16 + (29 - 16)/536).$$

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

General Lethality and Migration Blockage: Budd Inlet does not exceed a 1DMax of 23°C or a 7DADMax of 22°C.

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H. Human Health

Washington's water quality standards include numeric human health-based criteria for 97 priority pollutants that Ecology must consider when writing NPDES permits.

Ecology determined the applicant's discharge is unlikely to contain chemicals regulated to protect human health, based on knowledge of discharges to the wastewater treatment system. Ecology will reevaluate this discharge for impacts to human health at the next permit reissuance.

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.

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

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 WET testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

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

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).

The Seashore Villa WWTP does not discharge wastewater to the ground. No permit limits are required to protect groundwater.

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L. Comparison of Effluent Limits with the Previous Permit Issued on July 12, 2013

Table 14 - Comparison of Previous and Proposed Effluent Limits

Parameter	Basis of Limit	Previous Effluent Limits: Outfall # 001		Proposed Effluent Limits: Outfall # 001	
		Average Monthly	Average Weekly	Average Monthly	Average Weekly
BOD ₅	Technology	30 mg/L 3.8 lbs/day 85% removal	45 mg/L 5.6 lbs/day	30 mg/L 3.8 lbs/day 85% removal	45 mg/L 5.6 lbs/day
TSS	Technology	30 mg/L 3.8 lbs/day 85% removal	45 mg/L 5.6 lbs/day	30 mg/L 3.8 lbs/day 85% removal	45 mg/L 5.6 lbs/day
Parameter		Monthly Geometric Mean Limit	Weekly Geometric Mean Limit	Monthly Geometric Mean Limit	Weekly Geometric Mean Limit
Fecal Coliform Bacteria	Water Quality	47/100 mL	172/100 mL	47/100 mL	172/100 mL
Parameter		Limit		Limit	
pH	Technology	6.0 – 9.0		6.0 – 9.0	

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, DL, and 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 S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (Publication Number 92-109) for All Treatment Plants < 0.1 MGD Average Design Flow.

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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.

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). There is not an Ecology accredited the laboratory at this facility. Samples need to be sent to an accredited for analysis.

C. Effluent Limits Which are Near Detection or Quantitation Levels

The Method Detection Level (MDL) also known as 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 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 Seashore Villa WWTP to:

1. Take the actions detailed in proposed permit Special Condition S4.
2. Design and construct expansions or modifications before the treatment plant reaches existing capacity.
3. Report and correct conditions that could result in new or increased discharges of pollutants.

Special Condition S4 restricts the amount of flow.

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C. Operation and Maintenance (O&M)

The proposed permit contains Special Condition S5 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 Seashore Villa WWTP takes adequate safeguards so that it uses constructed facilities to their optimum potential in terms of pollutant capture and treatment.

The Seashore Villa WWTP has documented or suspects inflow, infiltration, overflows, failures in its collection system and it needs to further characterize the problem. Ecology expects leaks are present in the collection system due to its age, materials used, and, construction methods for its installation. Therefore, the proposed permit requires the Seashore Villa WWTP to characterize the collection system for the presence of leaks by providing the following information:

- Volume of the annual average and peak daily flow under worst conditions (inflow or infiltration) attributed to leaks.
- Location of each individual leaks.
- Size of each leak and/or volume of excess flow contributed by a run of sewer.
- Whether exfiltration occurs in the system's force mains and/or inverted siphons.

Three good references to aid in these tasks include:

- American Society of Civil Engineers and Water Environment Federation Manual of Practice FD-6, *Existing Sewer Evaluation and Rehabilitation*.
- U.S. Environmental Protection Agency, *Handbook for Sewer System Infrastructure Analysis and Rehabilitation*, EPA/625/6-91/030, 1991.
- Washington State Department of Transportation, *Standard Specifications for Road, Bridge, and Municipal Construction*, 2002.

Following characterization of the leaks, Ecology may require corrective actions by issuing an administrative order following review of the assessment.

D. Pretreatment

Duty to Enforce Discharge Prohibitions

1. This provision prohibits the treatment works from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer.
 - a. The first section of the pretreatment requirements prohibits the Seashore Villa WWTP 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.

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- b. 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:
 - i. Are prohibited due to dangerous waste rules
 - ii. Are explosive or flammable
 - iii. Have too high or low of a pH (too corrosive, acidic or basic)
 - iv. May cause a blockage such as grease, sand, rocks, or viscous materials
 - v. Are hot enough to cause a problem
 - vi. Are of sufficient strength or volume to interfere with treatment
 - vii. Contain too much petroleum-based oils, mineral oil, or cutting fluid
 - viii. Create noxious or toxic gases at any point

Forty (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.

- c. The third section of pretreatment conditions reflects state prohibitions on the Seashore Villa WWTP accepting certain types of discharges unless the discharge has received prior written authorization from Ecology. These discharges include:
 - i. Cooling water in significant volumes
 - ii. Stormwater and other direct inflow sources
 - iii. Wastewaters significantly affecting system hydraulic loading, which do not require treatment.

Federal and State Pretreatment Program Requirements

Ecology administers the Pretreatment Program under the terms of the addendum to the “Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10” (1986) and 40 CFR, part 403. Under this delegation of authority, Ecology issues wastewater discharge permits for Significant Industrial Users (SIUs) discharging to treatment works which have not been delegated authority to issue wastewater discharge permits. Ecology must approve, condition, or deny new discharges or a significant increase in the discharge for existing SIUs [40 CFR 403.8 (f)(1)(i) and (iii)].

Industrial dischargers must obtain a permit from Ecology before discharging waste to the Seashore Villa WWTP [WAC 173-216-110(5)]. Industries discharging wastewater that is similar in character to domestic wastewater do not require a permit.

Routine Identification and Reporting of Industrial Users

The permit requires non-delegated treatment works to take “continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs)” discharging to their sewer system. Examples of such routine measures include regular review of water and sewer billing records, business license and building permit applications, advertisements, and personal reconnaissance. System maintenance personnel should be trained on what to look for so they can identify and report new industrial dischargers in the course of performing their jobs. The treatment works may not allow SIUs to discharge prior to receiving a permit, and must notify all industrial dischargers (significant or not) in writing of their responsibility to apply for a State Waste Discharge Permit. The treatment works must send a copy of this notification to Ecology.

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 Thurston 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. Outfall Evaluation

The proposed permit requires the Seashore Villa WWTP to conduct an outfall inspection and submit a report detailing the findings of that inspection (Special Condition S.9). 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.

G. Engineering Documents

The proposed permit requires the preparation and submittal of an Engineering Report for the collection system.

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 groundwaters, 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.

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VII. REFERENCES FOR TEXT AND APPENDICES

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APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to reissue a permit to the Seashore Villa 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 14, 2018, and June 21, 2018, in the *Olympian* 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 March 29, 2019, in the *Olympian* 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.

You may obtain further information from Ecology by telephone, 360-407-6278 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.

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

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 groundwater from the point of compliance where compliance with the groundwater standards is measured. It may be established in the groundwater 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 (Intermittent) Discharge Limit-- The average of the measured values obtained over a calendar month's time taking into account zero discharge days.

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 groundwater 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.

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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 BOD₅ 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.

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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 (DL)-- 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.

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, groundwater, 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 groundwater at the point of compliance for the purpose of regulation, [WAC 173-200-020(11)]. This limit assures that a groundwater 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.

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Groundwater -- 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 stormwater and, also, leachate from solid waste facilities.

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

1. Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
2. 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 7-day period, expressed as a daily average.

Method Detection Level (MDL) -- See Detection Limit.

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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 groundwater 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 groundwater 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

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5) $\times 10^n$, 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).

Sample Maximum -- No sample may exceed this value.

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

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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 BOD₅ -- 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 BOD₅ 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 BOD₅ 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 stormwater 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 Maximum Daily Load (TMDL) --A determination of the amount of pollutant that a water body can receive and still meet water quality standards.

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.

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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: <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Water-quality-permits-guidance>.

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 Input 2 – 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).

Calculation of Water Quality-Based Effluent Limits:

Water quality-based effluent limits are calculated by the two-value wasteload allocation process as described on page 100 of the TSD (EPA, 1991) and shown below.

1. Calculate the acute wasteload allocation WLA_a by multiplying the acute criteria by the acute dilution factor and subtracting the background factor. Calculate the chronic wasteload allocation (WLA_c) by multiplying the chronic criteria by the chronic dilution factor and subtracting the background factor.

$$WLA_a = (\text{acute criteria} \times DF_a) - [(\text{background conc.} \times (DF_a - 1))]$$

$$WLA_c = (\text{chronic criteria} \times DF_c) - [(\text{background conc.} \times (DF_c - 1))]$$

where: DF_a = Acute Dilution Factor
 DF_c = Chronic Dilution Factor

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2. Calculate the long term averages (LTA_a and LTA_c) which will comply with the wasteload allocations WLA_a and WLA_c .

$$LTA_a = WLA_a \times e^{[0.5\sigma^2 - z\sigma]}$$

where: $\sigma^2 = \ln[CV^2 + 1]$

$$z = 2.326$$

CV = coefficient of variation = std. dev/mean

$$LTA_c = WLA_c \times e^{[0.5\sigma^2 - z\sigma]}$$

where: $\sigma^2 = \ln[(CV^2 \div 4) + 1]$

$$z = 2.326$$

3. Use the smallest LTA of the LTA_a or LTA_c to calculate the maximum daily effluent limit and the monthly average effluent limit.

MDL = Maximum Daily Limit

$$MDL = LTA \times e^{(z\sigma - 0.5\sigma^2)}$$

where: $\sigma^2 = \ln[CV^2 + 1]$

$z = 2.326$ (99th percentile occurrence)

LTA = Limiting long term average

AML = Average Monthly Limit

$$AML = LTA \times e^{(z\sigma_n - 0.5\sigma_n^2)}$$

where: $\sigma^2 = \ln[(CV^2 \div n) + 1]$

n = number of samples/month

$z = 1.645$ (95th % occurrence probability)

LTA = Limiting long term average

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Reasonable Potential Calculation

Facility	Seashore Villa WWTP
Water Body Type	Marine

Dilution Factors:	Acute	Chronic
Aquatic Life	45.1	536.0
Human Health Carcinogenic		536.0
Human Health Non-Carcinogenic		536.0

Pollutant, CAS No. & NPDES Application Ref. No.	AMMONIA, Criteria as Total NH3													
Effluent Data	# of Samples (n)	255												
	Coeff of Variation (Cv)	4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	
	Effluent Concentration, ug/L (Max. or 95th Percentile)	40,900												
	Calculated 50th percentile Effluent Conc. (when n>10)													
Receiving Water Data	90th Percentile Conc., ug/L	82												
	Geo Mean, ug/L													
Water Quality Criteria	Aquatic Life Criteria, ug/L	5,223												
	Acute													
	Chronic	785												
	WQ Criteria for Protection of Human Health, ug/L	-												
	Metal Criteria	-												
	Translator, decimal	-												
Chronic	-													
Carcinogen?	N													

Aquatic Life Reasonable Potential

Effluent percentile value		0.950											
s	$s^2 = \ln(CV^2 + 1)$	1.683											
Pn	$Pn = (1 - \text{confidence level})^{1/n}$	0.988											
Multiplier		1.00											
Max concentration (ug/L) at edge of...	Acute	987											
	Chronic	158											
Reasonable Potential? Limit Required?		NO											

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APPENDIX E--RESPONSE TO COMMENTS

The following comment was received during the Public Notice of Permit held for NPDES permit WA0037273. The public notice lasted from March 29, 2019, through April 28, 2019. A Public hearing was not held.

The one comment received was from Brian Gibson, the contract operator at the Seashore Villa WWTP. The comment was on this fact sheet and points out that Seashore Villa had submitted DMRs with erroneous data.

Comment 1:

After reviewing the draft fact sheet for Permit WA0037273 (Seashore Villa WWTP), I discovered an erroneous high flow reading listed in D. Wastewater Effluent Characterization which came from November 2014. Looking at the flow data for that month, there are changes to the Effluent flow record for the 6th, 7th, and 30th of that month. I tried to make the corrections on-line, but it is not permissible that far back.

The flow reading on the 7th was 0.1140. This reading should have been 0.0114

The flow reading on the 30th was listed as 0.080 and should have read 0.008

After reviewing the available data from April of 2014 until March 2018, and making one other online correction, the highest Effluent flow reading I could find during this period was 0.0453 on November 25th, 2016. This may impact the Average Value from the fact sheet as well.

The reading on the 6th was 0.0010 and should have read 0.0102. This day was also a lab day.

Inf BOD lbs/day was listed as 1 and should have read 10.5

Inf TSS lbs/day was listed as 2 and should have read 20.8

EFF BOD lbs/day was listed as 0 and should have read 0.2

EFF TSS lbs/day was listed as 0 and should have read 0.3

Sorry I didn't discover this sooner.

Also under E - Summary of Compliance of Previous Permit Issued, the first listing for Fecal Coliform November 1, 2017, Frequency of sampling violation, this was a result omission, and has been corrected online.

Also, June 1, 2014, was listed as a Frequency of Compliance Violation. This was also an omission, as I have 1/100 mL listed for each of the four weeks that month. I am also unable to correct this online.

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Response 1:

Ecology expects Permittees to submit correct data on their DMRs. Ecology has requested the Permittee submit corrected DMRs for June and November 2014, so that we can correct our database. The data in Sections D and E of this fact sheet was corrected as possible.