



State of Oregon
Department of
Environmental
Quality

National Pollutant Discharge Elimination System Permit Fact Sheet City of Depoe Bay

Final: February 22, 2024

Permittee	City of Depoe Bay Depoe Bay Wastewater Treatment Plant 212 S Point St. Depoe Bay, OR 97341
Existing Permit Information	File Number: 24095 Permit Number: 101383 EPA Reference Number: OR0026107 Category: Domestic Class: Minor Expiration Date: August 31, 2023
Permittee Contact	Brady Weidner Superintendent (541) 765-3005 PO Box 8 Depoe Bay, OR 97341
Receiving Water Information	Receiving stream/NHD name: Pacific Ocean NHD Reach Code & % along reach: 17100204000085, 42.21% along reach USGS 12-digit HUC: 171002041000 OWRD Administrative Basin: Mid Coast ODEQ LLID & River Mile: 1240637462558, RM 121.08 Integrated Report Assessment Unit ID: OR_CL_1710020410_106218
Proposed Action	Permit Renewal Application Number: 948354 Date Application Received: February 28, 2023
Permit Writer	Neha Ghosh (503) 933-7537 Date Prepared: January 4, 2024

NPDES Permit Fact Sheet City of Depoe Bay

Table of Contents

1. Introduction	4
2. Facility Description	4
2.1 Wastewater Facility	4
2.2 Compliance History	7
2.3 Stormwater	7
2.4 Wastewater Classification	7
3. Schedule A: Effluent Limit Development	7
3.1 Existing Effluent Limits	8
3.2 Technology-Based Effluent Limit Development	9
3.3 Water Quality-Based Effluent Limit Development	11
3.4 Antibacksliding	20
3.5 Antidegradation	21
3.6 Groundwater	21
4. Schedule A: Other Limitations	21
4.1 Mixing Zone	21
4.2 Biosolids	21
4.3 Chlorine Usage	21
5. Schedule B: Monitoring and Reporting Requirements	22
6. Schedule C: Compliance Schedule	22
7. Schedule D: Special Conditions	22
7.1 Inflow and Infiltration	22
7.2 Emergency Response and Public Notification Plan	22
7.3 Exempt Wastewater Reuse at the Treatment System	22
7.4 Biosolids Management Plan	22
7.5 Wastewater Solids Transfers	23
7.6 Hauled Waste Control Plan	23
7.7 Operator Certification	23
7.8 Industrial User Survey	23
7.9 Outfall Inspection	23
8. Schedule F: NPDES General Conditions – Domestic Facilities	23

List of Tables

Table 2-1: List of Outfalls.....	7
Table 3-1: Existing BOD5 and TSS Limits - Summer	8
Table 3-2: Existing BOD5 and TSS Limits - Winter.....	8
Table 3-3: Additional Existing Limits	9
Table 3-4: Comparison of TBELs for Federal Secondary Treatment Standards and Oregon Basin-Specific Design Criteria.....	9
Table 3-5: Technology-Based Effluent Limits	11
Table 3-6: 303d and TMDL Parameters	12
Table 3-7: Domestic Toxic Pollutants of Concern	13
Table 3-8: Pollutants of Concern	13
Table 3-9: Mixing Zone Dilution Summary – Year-Round	14
Table 3-10: pH Reasonable Potential Analysis	15
Table 3-11: Temperature Criteria Information	16
Table 3-12: Temperature Criterion Effluent Limits.....	17
Table 3-13: Thermal Plume Effluent Limit	18
Table 3-14: Proposed Enterococcus Limits	18
Table 3-15: Proposed Fecal Coliform Limits	19
Table 3-16: Ammonia Analysis Information – Year-round	20

List of Figures

Figure 2-1: Aerial view of Depoe Bay Wastewater Treatment Plant and Outfall 001	5
Figure 2-2: Line Diagram of Depoe Bay Wastewater Treatment Plant.....	6
Figure 2-3: Depoe Bay Wastewater Treatment Plant Pump Station Flow Diagram	6

NPDES Permit Renewal Fact Sheet

City of Depoe Bay

1. Introduction

As required by Oregon Administrative Rule 340-045-0035, this fact sheet describes the basis and methodology used in developing the permit. The permit is divided into several sections:

- Schedule A – Waste discharge limitations
- Schedule B – Minimum monitoring and report requirements
- Schedule C – Compliance conditions and schedules
- Schedule D – Special conditions
- Schedule E – Pretreatment conditions
- Schedule F – General conditions

A summary of the major changes to the permit are listed below:

- Added an effluent monthly reporting requirement for % of samples exceeding the limit for fecal coliform and enterococci parameters
- Increased monthly effluent ammonia monitoring to once a month
- Decreased effluent alkalinity monitoring to once a quarter
- Added a daily effluent monitoring requirement for UV dose
- Added a quarterly effluent monitoring requirement during the third year of the permit cycle for salinity, total phosphorous, and total dissolved solids
- Increased the effluent monitoring requirement for dissolved oxygen, total kjeldahl nitrogen (TKN), nitrate plus nitrite nitrogen, and oil and grease to quarterly during the third year of the permit cycle

2. Facility Description

2.1 Wastewater Facility

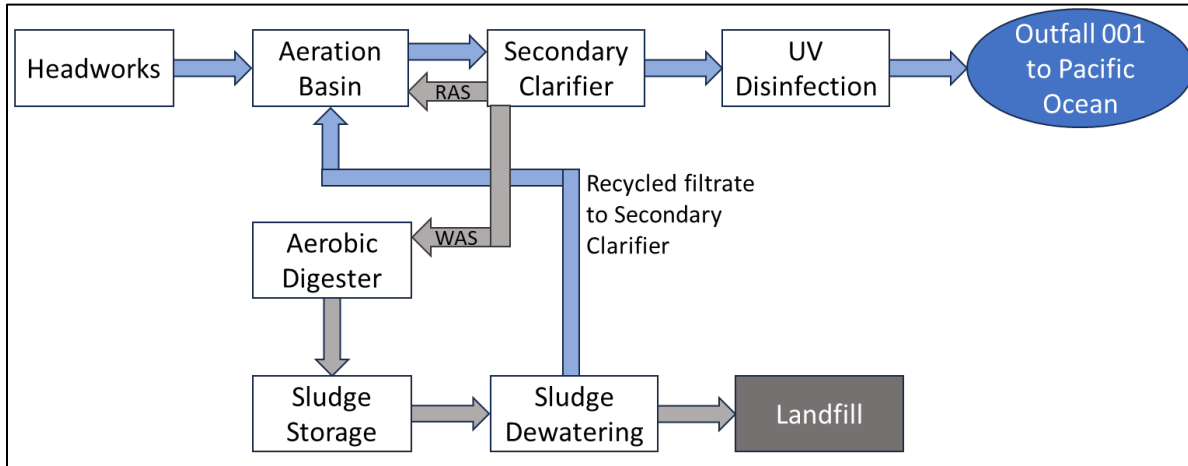
The City of Depoe Bay owns and operates a wastewater treatment plant (WWTP) and a sanitary sewage collection system. The plant receives and treats the collected wastewater from the City of Depoe Bay and the Gleneden Sanitary District (GSD). Flow into the plant is primarily domestic and commercial sewage with no significant industrial wastes. The facility was initially constructed in 1975 and then upgraded in 2000 with the addition of a second aeration basin. The upgraded facility's average dry weather design flow (ADWDF) is 0.85 million gallons per day (mgd). The WWTP uses the conventional activated sludge process to treat wastewater and Ultraviolet (UV) light to disinfect the treated wastewater before discharging it into the Pacific Ocean. Figure 2-1 shows an aerial view of the treatment plant and the location of Outfall 001.

Figure 2-1: Aerial view of Depoe Bay Wastewater Treatment Plant and Outfall 001



The WWTP primary treatment unit includes headworks with grit removal, an influent composite sampler, and an in-line magnetic flow meter. The secondary treatment unit comprises two annular aeration basins, two secondary clarifiers, one aerobic sludge digester, a UV disinfection unit, an effluent composite sampler, and an in-line magnetic effluent flow meter. The WWTP is equipped with a 500-kilowatt backup power generator. The sludge is dewatered with a screwpress before hauling the solids to a landfill. The facility uses UV sterilization to disinfect the treated wastewater prior to discharge to the Pacific Ocean through Outfall 001. Figure 2-2 is a visual depiction of the flow of wastewater and sludge through the system.

Figure 2-2: Line Diagram of Depoe Bay Wastewater Treatment Plant



The City’s collection system comprises four pump stations (Vista, Harbor, Little Whale Cove, Edgewater), approximately 5 to 6 miles of gravity line, and less than 1 mile of pressurized line. GSD’s collection system comprises 19 pump stations with associated gravity and pressurized lines. The boat harbor collects septage from small boats and pumps it to the WWTP. This is the only septage accepted by the WWTP.

Figure 2-3 below is a flow schematic of the pump stations and the WWTP.

Figure 2-3: Depoe Bay Wastewater Treatment Plant Pump Station Flow Diagram

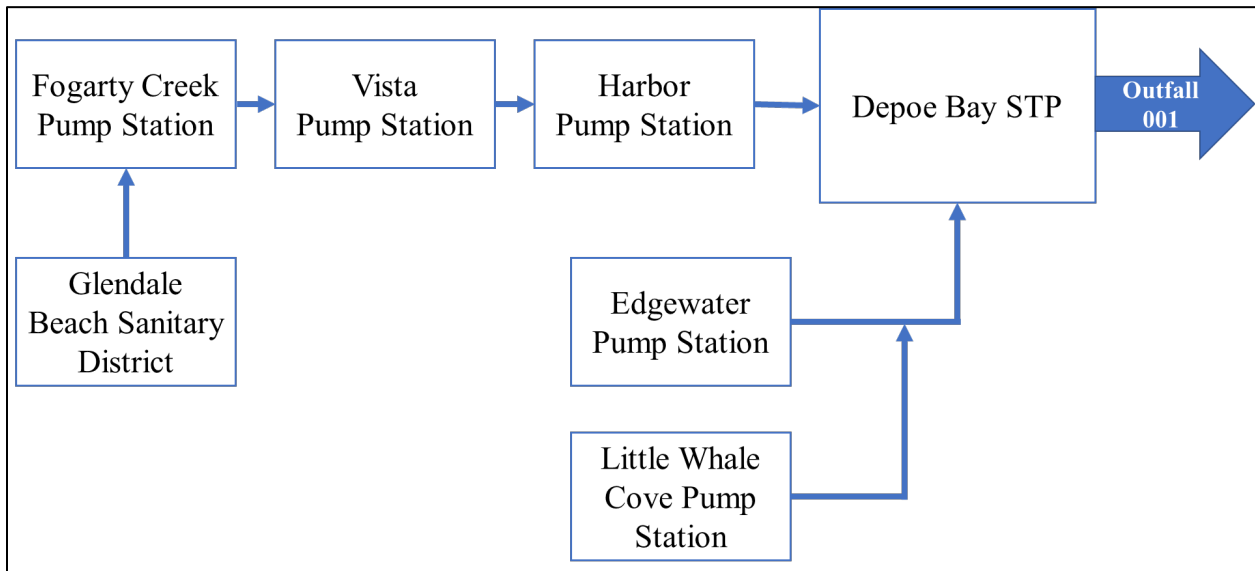


Table 2-1: List of Outfalls

Outfall Number	Type of Waste	Lat/Long	Design Flow (mgd)	Existing Flow ² (mgd)
001	Treated wastewater	44.80003 N/ 124.07166 W	0.85 ¹	1.1
			0.68 ³	1.1
			0.80 ⁴	1.1
<ol style="list-style-type: none"> 1. Design Flow = design average dry weather flow 2. Existing Flow = existing average monthly dry weather flow from September 2019 to October 2022 3. Design Flow (summer) = highest monthly average discharge flow with a two-year recurrence at the 20-year design of the facility from May through October. 4. Design Flow (winter) = highest monthly average discharge flow with a two-year recurrence at the 20-year design of the facility from November through April. 				

2.2 Compliance History

DEQ last inspected this facility on February 23, 2017. No compliance issues were noted during this inspection.

Two sanitary sewer overflows (SSOs) occurred between 2019 to 2022. All spills were contained correctly and cleaned up. The events that resulted in a discharge to surface water included proper monitoring to observe the impact of the spill and the mitigation of those impacts.

2.3 Stormwater

General NPDES permits for stormwater are not required for wastewater treatment facilities with a design flow greater than 1 MGD when stormwater is collected, treated, and discharged as part of its treated wastewater.

2.4 Wastewater Classification

OAR 340-049 requires all permitted municipal wastewater collection and treatment facilities to receive a classification based on the size and complexity of the systems. DEQ evaluated the treatment and collection system classifications, which are publicly available at: <https://www.deq.state.or.us/wq/opcert/Docs/OpcertReport.pdf>.

3. Schedule A: Effluent Limit Development

Effluent limits serve as the primary mechanism in NPDES permits for controlling discharges of pollutants to receiving waters. Effluent limitations can be based on either the technology available to control the pollutants or limits that are protecting the water quality standards for the receiving water. DEQ refers to these two types of permit limits as technology-based effluent limitations (TBELs) and water quality-based effluent limits (WQBELs), respectively. When a TBEL is not restrictive enough to protect the receiving stream, DEQ must include a WQBEL in the permit.

3.1 Existing Effluent Limits

The tables below show the limits contained in the existing permit.

a. BOD₅ and TSS

- i. May 1 – October 31. During this time period, the permittee must comply with the limits in the following table:

Table 3-1: Existing BOD₅ and TSS Limits - Summer

Parameter	Average Effluent Concentrations, mg/L		Monthly Average lb/day	Weekly Average lb/day	Daily Maximum lb/day
	Monthly	Weekly			
BOD ₅	20	30	114	170	230
TSS	20	30	114	170	230

- ii. November 1 – April 30: During this time period, the permittee must comply with the limits in the following table:

Table 3-2: Existing BOD₅ and TSS Limits - Winter

Parameter	Average Effluent Concentrations, mg/L		Monthly Average lb/day	Weekly Average lb/day	Daily Maximum lb/day
	Monthly	Weekly			
BOD ₅	30	45	200	300	400
TSS	30	45	200	300	400

- iii. Additional information for the limits in Tables A1 and A2 above.
 - (A) Average dry weather design flow to the facility equals 0.85 MGD. Mass loads have been individually assigned based on what the plant can reasonably achieve and the highest monthly average discharge flow with a two-year recurrence at the 20-year design of the facility.

b. Additional Parameters

Permittee must comply with the limits in the following table (year-round except as noted):

Table 3-3: Additional Existing Limits

Year-round (except as noted)	Limits
BOD ₅ and TSS Removal Efficiency	May not be less than 85% monthly average for BOD ₅ and TSS.
Enterococci Bacteria	A monthly geometric mean of 35 organisms per 100 mL. No more than 10% of the samples may exceed 130 organisms per 100 mL.
Fecal Coliform Bacteria	A monthly median of 14 organisms per 100 mL. No more than 10% of the samples may exceed 43 organisms per 100 mL.
pH	Must be within the range of 6.0 - 9.0 s.u.

3.2 Technology-Based Effluent Limit Development

40 CFR 122.44(a)(1) requires publicly owned treatment works (POTW) to meet technology-based effluent limits for five-day biochemical oxygen demand (BOD₅), total suspended solids (TSS), and pH (i.e., federal secondary treatment standards). Substitution of 5-day carbonaceous oxygen demand (CBOD₅) for BOD₅ is allowed. The numeric standards for these pollutants are contained in 40 CFR 133.102. In addition, DEQ has developed minimum design criteria for BOD₅ and TSS that apply to specific watershed basins in Oregon. These are listed in the basin-specific criteria sections under OAR 340-041-0101 to 0350. During the summer low flow months, as defined by OAR, these design criteria are more stringent than the federal secondary treatment standards. The basin-specific criteria are not effluent limits but are implemented as design criteria for new or expanded wastewater treatment plants. The table below shows a comparison of the federal secondary treatment standards and the basin-specific design criteria for the Mid Coast basin.

Table 3-4: Comparison of TBELs for Federal Secondary Treatment Standards and Oregon Basin-Specific Design Criteria

Parameter	Federal Secondary Treatment Standards		Mid Coast Basin-Specific Design Criteria (OAR 340-041-0225)
	30-Day Average	7-Day Average	Monthly Average
BOD ₅ (mg/L)	30	45	20 mg/L during summer months (May 1 – Oct. 31), 30 mg/L during winter (Nov. 1 – Apr. 30)
TSS (mg/L)	30	45	
pH (S.U.)	6.0 – 9.0. (instantaneous)		Not applicable
BOD ₅ and TSS % Removal	85%	Not applicable	Not applicable

The limits for BOD₅ and TSS shown in the table above are concentration-based limits. Mass-based limits are required in addition to the concentration-based limits per OAR 340-041-0061(9). For any new facility or any facility that has expanded its dry weather treatment capacity after June 30, 1992, OAR 340-041-0061(9)(b) requires that the mass load limits be calculated based on the proposed treatment facility capabilities and the highest and best practicable treatment to minimize the discharge of pollutants. The winter and summer mass load limits for BOD₅ and TSS were derived based on what the treatment plant could reasonably achieve and the highest monthly average discharge flow with a two-year recurrence at the 20-year design of the facility. When the existing facility was designed, the consulting engineer determined the BOD₅ and TSS mass loads to be a monthly average of 114 lb/day in summer and 200 lb/day in winter. These permit limits will be retained in the proposed permit. DEQ uses the maximum monthly design flow to calculate the mass load limits, as shown below for the dry and wet weather seasons.

Monthly Avg. Mass Load = (Design Flow*) x (Monthly Concentration Limit) x (Unit Conversion factor)

Weekly Average Mass Load = 1.5 x (Monthly Average Mass Load Limit)

Daily Maximum Mass Load = 2 x (Monthly Average Mass Load Limit)

* Design flow is the design maximum monthly dry weather flow (DMMDWF) or design maximum monthly wet weather flow (DMMWWF)

Mass Load Calculations:

The City of Depoe Bay's summer mass load limits (monthly and weekly average and daily maximum) for BOD₅ and TSS are based on what the treatment plant can reasonably achieve and the highest monthly average discharge flow with a two-year recurrence at the 20-year design of the facility. The consulting engineer calculated a monthly average of 114 lb/day for the summer months. The summer calculations are:

Monthly Average: (0.68 MGD) x (20 mg/L) x 8.34 = 114 lb/day, rounded to two significant figures

Weekly Average: (114 lb/day) x 1.5 = 171 lb/day, rounded to 170 lb/day to two significant figures

Daily Maximum: (114 lb/day) x 2 = 228 lb/day, rounded to 230 lb/day to two significant figures

The City of Depoe Bay's winter mass load limits (monthly and weekly average and daily maximum) for BOD₅ and TSS are based on what the treatment plant can reasonably achieve and the highest monthly average discharge flow with a two-year recurrence at the 20-year design of the facility. The consulting engineer calculated a monthly average of 200 lb/day for the winter months. The winter calculations are:

Monthly Average: (0.80 MGD) x (30 mg/L) x 8.34 = 200 lb/day, rounded to two significant figures

Weekly Average: $(200 \text{ lb/day}) \times 1.5 = 300 \text{ lb/day}$

Daily Maximum: $(200 \text{ lb/day}) \times 2 = 400 \text{ lb/day}$

All mass load limitations are rounded to two significant figures, consistent with the number of significant figures associated with flow measurements for this facility and with the accuracy of BOD measurements of 10 or greater. These calculations follow DEQ’s Internal Management Directive guidance for significant figures and differ from the approved limits in the existing permit. DEQ will retain the existing mass load limits in the current permit to address anti-backsliding and anti-degradation regulations.

The proposed BOD₅ and TSS limits are listed in the following table.

Table 3-5: Technology-Based Effluent Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
BOD ₅ (May 1 – October 31)	mg/L	20	30	-
	lb/day	114	170	230
	% removal	85	-	-
TSS (May 1 – October 31)	mg/L	20	30	-
	lb/day	114	170	230
	% removal	85	-	-
BOD ₅ (November 1 – April 30)	mg/L	30	45	-
	lb/day	200	300	400
	% removal	85	-	-
TSS (November 1 – April 30)	mg/L	30	45	-
	lb/day	200	300	400
	% removal	85	-	-

3.3 Water Quality-Based Effluent Limit Development

40 CFR 122.44(d) requires that permits include limitations more stringent than technology-based requirements where necessary to meet water quality standards. Water quality-based effluent limits may be in the form of a wasteload allocation required as part of a Total Maximum Daily Load (TMDL). They may also be required if a site-specific analysis indicates the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality criterion. DEQ establishes effluent limits for pollutants that have a reasonable potential to exceed a criterion. The analyses are discussed below.

3.3.1 Designated Beneficial Uses

NPDES permits issued by DEQ must protect the following designated beneficial uses of the Pacific Ocean. These uses are listed in OAR-340-041-0220 for Mid Coast.

- Industrial water supply
- Fish and aquatic life (including salmonid rearing, migration, and spawning)
- Wildlife and hunting
- Fishing
- Boating
- Water contact recreation
- Aesthetic quality
- Commercial navigation and transportation

3.3.2 303d Listed Parameters and Total Maximum Daily Loads

The following table lists the parameters on the 2022 303(d) list (Category 5) within the discharge’s stream reach. The table also lists any parameters with a TMDL wasteload allocation assigned to the facility (Category 4).

Table 3-6: 303d and TMDL Parameters

Water Quality Limited Parameters (Category 5)	
AU ID:	OR_CL_1710020410_106218
AU Name:	Depoe Bay
AU Status:	Impaired
Year Listed	2018
Year Last Assessed	2018
303d Parameters (Category 5)	Shellfish toxins (Narrative criteria for toxic substances)
TMDL Parameters (Category 4)	
N/A	

3.3.3 TMDL Wasteload Allocations

During this permit renewal period DEQ has not issued a TMDL for marine waters in the Mid Coast Basin.

3.3.4 Ocean Discharge Findings

Federal rules (40 CFR §125.120 – 40 CFR §125.124) require that a discharge into territorial seas that is to be permitted under the NPDES program be evaluated as to whether the discharge will cause unreasonable degradation of the marine environment. Goals 6 and 19 of Oregon’s Statewide Planning Goals and Guidelines and Oregon’s Territorial Seas Plan require the State’s marine resources to be conserved. DEQ believes these criteria intend to reduce or prevent the discharge of those persistent pollutants that bio-accumulate in the marine food chain. Pollutants found in sewage that are amenable to treatment by typical wastewater treatment facilities include Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), pH, bacteria, nutrients, and potentially toxic substances, such as chlorine, which is used for disinfection of pathogenic

organisms, BOD, TSS, and pH are not discrete substances that can accumulate in living organisms. BOD is a measure of the oxygen used by microorganisms when they break down organic matter. TSS is a measure of organic and inorganic solid materials that are suspended in the water column, and pH is a measure of the amount of hydrogen ions in solution.

The City of Depoe Bay WWTP uses UV light for disinfection, and chlorine compounds are prohibited in the discharge. Bacteria do not bioaccumulate in other living organisms. Nutrients (e.g., nitrogen and phosphorus) can have deleterious effects on the marine environment by stimulating algal blooms. These algal blooms have the potential to cause turbidity problems and fluctuations in dissolved oxygen and pH. However, nutrients do not bioaccumulate in the tissues of living organisms and do not bio-magnify in the trophic levels of marine food chains.

DEQ has concluded that the discharge from the Depoe Bay wastewater treatment plant will not cause unreasonable degradation of the marine environment.

3.3.5 Pollutants of Concern

To ensure that a permit is protecting water quality, DEQ must identify pollutants of concern. These are pollutants that are expected to be present in the effluent at concentrations that could adversely impact water quality. DEQ uses the following information to identify pollutants of concern:

- Effluent monitoring data.
- Knowledge about the permittee’s processes.
- Knowledge about the receiving stream water quality.
- Pollutants identified by applicable federal effluent limitation guidelines.

Based on EPA’s NPDES permit application requirements, toxic pollutants of concern for domestic facilities are listed in the following table.

Table 3-7: Domestic Toxic Pollutants of Concern

Flow Rate	Pollutants
> 0.1 mgd and < 1.0 mgd	Total Residual Chlorine, Total Ammonia Nitrogen

DEQ identified the following pollutants of concern for this facility listed in the following table.

Table 3-8: Pollutants of Concern

Pollutant	How was pollutant identified?
pH	Effluent Monitoring
Temperature	Effluent Monitoring
Enterococcus	Effluent Monitoring
Fecal Coliform	Effluent Monitoring
Total Ammonia Nitrogen	Application Requirement

The sections below discuss the analyses conducted for the pollutants of concern to determine if water quality-based effluent limits are needed to meet water quality standards.

3.3.6 Regulatory Mixing Zone

The proposed permit contains a mixing zone as allowed per OAR 340-041-0053. The proposed mixing zone remains unchanged from the existing permit and is described as follows:

The regulatory mixing zone is that portion of the Pacific Ocean within a one hundred (100) foot radius of the discharge. The Zone of Immediate Dilution (ZID) is that portion of the regulatory mixing zone that is within ten (10) feet of the point of discharge.

The dilutions at the edge of the zone of initial dilution and mixing zone are shown in Table 3-9. These dilutions are based on a 2023 mixing zone study conducted by DEQ. For this memo, DEQ used CORMIX to simulate the discharge and provide updated dilution values at the edge of the ZID (10 ft) and the edge of the Regulatory Mixing Zone (100 ft). The updated model runs are documented in a 2023 Mixing Zone Memo, which is part of the administrative record. The exact model inputs used in each design case are included in the mixing zone memo, and model files are available in the administrative record.

Table 3-9: Mixing Zone Dilution Summary – Year-Round

Water Quality Standard	Velocity		Effluent Flow		Dilution	Location
	Statistic	Velocity (m/s)	Statistic	Flow (MGD)		
Aquatic Life, Acute	Mean	0.1	<input checked="" type="checkbox"/> ADWDF x PF <input type="checkbox"/> Max Daily Avg <input type="checkbox"/> Other	1.941	14	ZID (10 ft)
Aquatic Life, Chronic	Mean	0.1	<input checked="" type="checkbox"/> ADWDF <input type="checkbox"/> Max Monthly Avg <input type="checkbox"/> Other	0.85	65	MZ (100 ft)
Human Health, Non-Carcinogen	Mean	0.1	<input checked="" type="checkbox"/> ADWDF <input type="checkbox"/> Max Monthly Avg <input type="checkbox"/> Other	0.85	65	MZ (100 ft)
Human Health, Carcinogen	Mean	0.1	<input type="checkbox"/> Annual Avg Design <input type="checkbox"/> Annual Avg <input checked="" type="checkbox"/> Other: ADWDF	0.85	65	MZ (100 ft)
ADWDF = Average dry weather design flow PF = Peaking factor (1.5)						
Comments: Click or tap here to enter text.						

3.3.7 pH

The pH criterion for the Mid Coast basin marine waters is 7.0 – 8.5, per OAR 340-041-0225(1)(a). The current permit limits for pH are 6.0 S.U. to 9.0 S.U., which are the federal secondary treatment standards for wastewater treatment facilities (40 CFR Part 133.102). DEQ conducted a pH potential reasonable analysis to determine if there is reasonable potential for the WWTP discharge to exceed the pH criterion at the edge of the mixing zone. Based on the results of the analysis, there is no reasonable potential. Therefore, the federal secondary treatment standard for pH will carry over to the proposed permit; the proposed limit is considered a technology-based effluent limit. Based on the facility's performance during the past permit cycle, the facility will be able to meet the proposed limits. The following table summarizes the data used for the analysis.

Table 3-10: pH Reasonable Potential Analysis

INPUT	Lower pH Criteria	Upper pH Criteria
1. Dilution at mixing zone boundary	65.0	65.0
2. Upstream characteristics		
a. Temperature (deg C)	12.0	8.9
b. pH	7.7	8.1
c. Alkalinity (mg CaCO ₃ /L)	116.0	116.0
3. Effluent characteristics		
a. Temperature (° C)	21.5	15.7
b. pH (S.U.)	6.0	9.0
c. Alkalinity (mg CaCO ₃ /L)	224.0	224.0
4. Applicable pH criteria	7.0	8.5
pH at mixing zone boundary	7.3	8.1
Is there reasonable potential?	No	No
Proposed effluent limits	6.0	9.0
Effluent data source: ICIS summary statistic data for temperature. Alkalinity data from ICIS data summary between September 2019 and February 2023. Effluent salinity data were not available, so a default was used.		
Ambient data source: CE01ISSM ocean buoy data from October 2018 to December 2020. Used default values for alkalinity since there were no ambient monitoring data for alkalinity.		

3.3.8 Temperature

3.3.8.1 Temperature Criteria OAR 340-041-0028

The following table summarizes the temperature criteria that apply at the discharge location, along with whether the receiving stream is water quality-limited for temperature. OAR 340-041-0028(7) states that effluent discharges may not warm ocean and bay waters by more than 0.3 °C (0.5 °F) above the natural condition unless a greater increase would not reasonably be expected to affect fish or other aquatic life adversely. Using the information in Table 3-11 and the temperature water quality limits for marine waters, DEQ conducted a temperature reasonable potential analysis for ocean and bay waters to determine if the effluent discharge has the reasonable potential to warm the Pacific Ocean at the edge of the mixing zone by more than 0.3 °C above the natural condition, in addition to determining if effluent limits were needed to comply with the temperature criteria.

Table 3-11: Temperature Criteria Information

Applicable Temperature Criterion	Oceans & Bays (340-041-0028(7))
Applicable dates: Year-round	
Salmon/Steelhead Spawning 13 °C? OAR 340-041-0028(4)(a)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Applicable dates:	
WQ-limited?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
TMDL wasteload allocation assigned?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Applicable dates:	
TMDL based on natural conditions criterion?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Cold water summer protection criterion applies?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Cold water spawning protection applies?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Comments:	

The Pacific Ocean water quality data was obtained from a near-shore ocean observing buoy (CE01ISSM¹). The buoy is located 2 km offshore and 16 km south of Outfall 001 (the buoy coordinates are 44.6584, -124.0955). The temperature reasonable potential analysis calculated the change in temperature at the edge of the mixing zone using the ambient temperature, mixing zone dilution, and effluent temperature. The ambient temperature for this analysis was the average of the 7-day average of the daily maximum ocean temperature from October 2018 to December 2020, which was 11.3 °C. The facility DMR records for September 2019 to February 2023 show the maximum summertime effluent temperature for the facility was 22.2 °C. The temperature change at the edge of the mixing zone was 0.17 °C. Since this meets the rule citation to limit discharges from causing warming to receiving ocean waters more than 0.3 °C, DEQ concluded that there is no potential for the facility’s discharge to exceed the temperature

¹ Oregon Inshore Surface Mooring buoy CE01ISSM, sponsored by the Ocean Observatories Initiative. Location and technical specifications can be found at this link: <https://oceanobservatories.org/site/ce01issm/>

standard. Based on this analysis, no temperature limit associated with the applicable temperature criteria is included in the proposed permit, shown in Table 3-12 below.

Table 3-12: Temperature Criterion Effluent Limits

Effluent limit needed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
TMDL WLA Limit: N/A
Applicable time period: Dates <input checked="" type="checkbox"/> NA
Temperature Criterion Limit: N/A
Applicable time period: Dates <input checked="" type="checkbox"/> NA
Comments:

3.3.8.2 Thermal Plume OAR 340-041-0053(2)(d)

In addition to compliance with the temperature criteria, OAR 340-041-0053(2)(d) contains thermal plume limitation provisions designed to prevent or minimize adverse effects to salmonids that may result from thermal plumes. The discharge was evaluated for compliance with these provisions as follows:

- OAR 340-041-0053(2)(d)(A): Impairment of an active salmonid spawning area where spawning redds are located or likely to be located. This adverse effect is prevented or minimized by limiting potential fish exposure to temperatures of 13 °C or more for salmon and steelhead and 9 °C or more for bull trout.

Since the Pacific Ocean does not have salmon, steelhead, or bull trout spawning listed as a designated beneficial use creek, the spawning criterion does not apply.

- OAR 340-041-0053(2)(d)(B): Acute impairment or instantaneous lethality is prevented or minimized by limiting potential fish exposure to temperatures of 32 °C or more to less than 2 seconds.

The maximum effluent temperature between September 2019 and February 2023 was 22.2 °C, below 32 °C. Therefore, acute impairment or instantaneous lethality is prevented or minimized.

- OAR 340-041-0053(2)(d)(C): Thermal shock caused by a sudden increase in water temperature is prevented or minimized by limiting potential fish exposure to temperatures of 25 °C or more to less than 5% of the cross-section of 100% of the 7Q10 flow of the water body.

The maximum effluent temperature between September 2019 and February 2023 was 22.2 °C, below 25 °C. Therefore, thermal shock caused by the discharge is prevented or minimized.

- OAR 340-041-0053(2)(d)(D): Unless the ambient temperature is 21 °C or greater, migration blockage is prevented or minimized by limiting potential fish exposure to temperatures of 21 °C or more to less than 25% of the cross-section of 100% of the 7Q10 flow of the water body.

Although the maximum effluent temperature during the period analyzed was 22.2 °C, it is apparent that the potential fish exposure to temperatures of 21 °C or above due to the discharge will not occur at 25% of the cross-section of the receiving water (the Pacific Ocean).

Based on the thermal plume analysis results, the discharge from the City of Depoe Bay WWTP facility meets the temperature thermal plume limits in OAR 340-041-0053(2)(d). Table 3-13 shows that no effluent limits are needed to comply with the thermal plume requirements.

Table 3-13: Thermal Plume Effluent Limit

Effluent limit needed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Calculated limit: N/A
Applicable timeframe: N/A
Comments:

3.3.9 Bacteria

OAR 340-041-0009(6)(a) requires discharges of bacteria into coastal waters to meet a monthly geometric mean of 35 enterococcus organisms per 100 mL, with no more than 10 percent of samples exceeding 130 enterococcus organisms per 100 mL. The following table includes the proposed permit limits and apply year-round.

Table 3-14: Proposed Enterococcus Limits

Enterococcus (#/100 ml)	Geometric Mean	No more than 10% exceed
Existing Limit	35 organisms per 100 mL	Not more than 10% of the samples may exceed 130 organisms per 100 ml
Proposed Limit	35 organisms per 100 mL	Not more than 10% of the samples may exceed 130 organisms per 100 ml

The proposed permit contains limits based on the fecal coliform standard in OAR 340-041-0009(1)(c) for the protection of shellfishing. The proposed limits are a monthly median concentration of 14 organisms per 100 milliliters, with no more than ten percent of the samples exceeding 43 organisms per 100 ml and apply year-round. The following table includes the proposed permit limits and apply year-round.

Table 3-15: Proposed Fecal Coliform Limits

Fecal Coliform (#/100 ml)	Median	No more than 10% exceed
Existing Limit	14 organisms per 100 ml	Not more than 10% of the samples may exceed 43 organisms per 100 ml
Proposed Limit	14 organisms per 100 ml	Not more than 10% of the samples may exceed 43 organisms per 100 ml

3.3.10 Toxic Pollutants

DEQ typically performs the reasonable potential analysis for toxics according to EPA guidance provided in the Technical Support Document for Water Quality-Based Toxics Control (TSD) (Office of Water Enforcement and Permits, U.S. EPA, March 1991). The factors incorporated into this analysis include:

1. Effluent concentrations and variability
2. Water quality criteria for aquatic life and human health
3. Receiving water concentrations
4. Receiving water dilution (if applicable)

DEQ performs these analyses using spreadsheets that incorporate EPA’s statistical methodology. The following sections describe the analyses for various toxic pollutants below.

3.3.10.1 Total Ammonia Nitrogen

DEQ’s ammonia criteria vary with changes in pH and temperature. DEQ performed a reasonable potential analysis that accounts for changes in the effluent and receiving water pH and temperature to determine the appropriate ammonia criteria.

Table 3-16 provides a summary of the data used for the ammonia reasonable potential analysis and the results of the analysis. The facilities' effluent pH, temperature, alkalinity, and ammonia data were compared against the receiving stream data for the same parameters to determine the reasonable potential for ammonia in the effluent to affect the receiving stream water quality. The facility currently does not monitor for effluent salinity. Therefore, DEQ used a default value of 0.1 psu for this analysis. Similarly, there were no available ambient data for ammonia and alkalinity in the Pacific Ocean. DEQ used default values of 0.2 mg/L and 116 mg/L for ammonia and alkalinity, respectively.

The facility collected effluent ammonia data for the analysis between April 2023 to June 2023. The facility used multiple dilutions to calculate final ammonia concentrations. To minimize error, DEQ used the final effluent concentrations calculated from the lowest dilutions in the reasonable potential analysis. The facility believes the reported concentrations were biased high due to contaminated distilled water. Despite using the high-biased ammonia data, the analysis showed no reasonable potential for the discharge of treated wastewater from Depoe Bay WWTP to exceed the ammonia quality criteria for the Pacific Ocean at the edge of the mixing zone; no limits have been assigned.

Table 3-16: Ammonia Analysis Information – Year-round

	Acute	Chronic	
		4-day	30-day
Dilution	14	65	65
Ammonia Criteria	10.0	1.3	--
Effluent Data Used			
Ammonia (mg/L)	11.6	11.6	
pH (SU)	7.2	7.2	
Temperature (°C)	21.5	21.5	
Alkalinity (mg/L CaCO3)	74.6	74.6	
Receiving Stream Data Used			
Ammonia (mg/L)	0.2	0.2	
pH (SU)	8.1	8.1	
Temperature (°C)	12.0	12.0	
Alkalinity (mg/L CaCO3)	116.0	116.0	
Ammonia Limit Needed?	No		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	N/A	N/A	
Effluent data source			
DMR data between September 2019 and February 2023 for temperature, pH, and alkalinity. Ammonia data were from additional monitoring from the facility, collected and tested on-site between April 2023 and June 2023.			
Ambient data source			
CE01ISSM ocean buoy from Oct 2018 to Dec 2020. We had to use default values for alkalinity or ammonia since there were no ambient monitoring data for those parameters. The default values for alkalinity and ammonia were 116 mg/L and 0.2 mg/L, respectively.			

3.4 Antibacksliding

The proposed permit complies with the antibacksliding provisions of CWA sections 402(o) and 303(d)(4) and 40 CFR 122.44(l). The proposed limits are the same or more stringent than the existing permit, so the antibacksliding provision is satisfied.

3.5 Antidegradation

DEQ must ensure the permit complies with Oregon's antidegradation policy found in OAR 340-041-0004. This policy is designed to protect water quality by limiting unnecessary degradation from new or increased sources of pollution.

DEQ has performed an antidegradation review for this discharge. The proposed permit contains the same or more stringent discharge loadings as the existing permit. Permit renewals with the same or more stringent discharge loadings as the previous permit are not considered to lower water quality from the existing condition. DEQ is not aware of any information that existing limits are not protecting the receiving stream's designated beneficial uses. DEQ is also not aware of any existing uses present within the water body that are not currently protected by standards developed to protect the designated uses. Therefore, DEQ has determined that the proposed discharge complies with DEQ's antidegradation policy. DEQ's antidegradation worksheet for this permit renewal is available upon request.

3.6 Groundwater

The treatment facility does not have any basins, ponds, or lagoons that have the potential to leach into the groundwater. No groundwater monitoring or limits are required.

4. Schedule A: Other Limitations

4.1 Mixing Zone

Schedule A describes the regulatory mixing zone as discussed above in section 3.

4.2 Biosolids

The permit holder has the capability and/or intends to develop a new biosolids program to land-apply biosolids or produce biosolids for sale and distribution during the term of this permit. The permit holder will develop a comprehensive biosolids management plan and land application plan. DEQ will review the plans and provide an opportunity for public comment on the proposed land application activity. Once approved, conditions in the biosolids management plan and land application plan become permit conditions.

4.3 Chlorine Usage

Schedule A of the permit prohibits the permittee from using chlorine or chlorine compounds for effluent disinfection purposes.

5. Schedule B: Monitoring and Reporting Requirements

Schedule B of the permit describes the minimum monitoring and reporting necessary to demonstrate compliance with the proposed effluent limits. In addition, monitoring for other parameters is required to better characterize the effluent quality and the receiving stream. This data will be used during the next permit renewal. Detailed monitoring frequency and reporting requirements are in Schedule B of the proposed permit. The required monitoring, reporting, and frequency for many of the parameters are based on DEQ's monitoring and reporting matrix guidelines, permit writer judgment, and to ensure the needed data is available for the next permit renewal.

6. Schedule C: Compliance Schedule

The permittee is expected to meet all effluent limits once the permit becomes effective; therefore, a compliance schedule is unnecessary.

7. Schedule D: Special Conditions

The proposed permit contains the following special conditions. The conditions include the following:

7.1 Inflow and Infiltration

A requirement is to submit an updated inflow and infiltration report to reduce groundwater and stormwater from entering the collection system.

7.2 Emergency Response and Public Notification Plan

A requirement to develop and submit an emergency and spill response plan or ensure the existing one is current per General Condition B.8 in Schedule F.

7.3 Exempt Wastewater Reuse at the Treatment System

A condition that exempts the permit holder from the recycled water requirements in OAR 340-055 when recycled water is used for landscape irrigation at the treatment facility or for in-plant processes, such as in plant maintenance activities.

7.4 Biosolids Management Plan

A requirement to manage all biosolids in accordance with a DEQ-approved biosolids management plan and land application plan. The biosolids management plan and the land application plan must meet the requirements in OAR 340-050-0031 and describe where and how the land application of biosolids is managed to protect public health and the environment.

7.5 Wastewater Solids Transfers

A condition that allows the facility to transfer treated or untreated wastewater solids to other in-state or out-of-state facilities that are permitted to accept the wastewater solids.

7.6 Hauled Waste Control Plan

A condition that allows the acceptance of hauled waste according to a DEQ-approved hauled waste plan. The hauled waste plan ensures waste is not accepted that could negatively impact the treatment capabilities of the facility.

7.7 Operator Certification

The permit holder is required to have a certified operator consistent with the size and type of treatment plant covered by the permit per OAR 340-049-0005. This special condition describes the requirements relating to operator certification.

7.8 Industrial User Survey

This condition requires the permittee to conduct or update an industrial user survey. The survey aims to identify whether any categorical industrial users are discharging to the POTW and ensure regulatory oversight of these discharges.

7.9 Outfall Inspection

A condition that requires the permittee to inspect the outfall and submit a report regarding its condition.

8. Schedule F: NPDES General Conditions – Domestic Facilities

Schedule F contains the following general conditions that apply to all NPDES permittees. These conditions are reviewed by EPA on a regular basis.

- Section A. Standard Conditions
- Section B. Operation and Maintenance of Pollution Controls
- Section C. Monitoring and Records
- Section D. Reporting Requirements
- Section E. Definitions