State of Oregon
Department of
Environmental
Quality

National Pollutant Discharge Elimination System
Permit Fact Sheet
City of Bandon

Final: Sept. 5, 2024

Permittee	City of Bandon Bandon Wastewater Treatment Plant (WWTP) P.O. Box 67 Bandon, OR 97411
Existing Permit Information	File Number: 5664 Permit Number: 101546 EPA Reference Number: OR0020206 Category: Domestic Class: Minor Expiration Date: 10/31/2024
Permittee Contact	Steven H. James Supervisor 541-347-9122 80 Fillmore Ave SE Bandon, OR 97411
Receiving Water Information	Receiving stream/NHD name: Coquille River NHD Reach Code & % along reach: 17100305000010, 7.67% USGS 12-digit HUC: 171003050506, Ferry Creek-Coquille River OWRD Administrative Basin: South Coast ODEQ LLID & River Mile: 1244273431235-0.8 Assessment Unit ID: OR_EB_1710030505_01_100284
Proposed Action	Permit Renewal Application Number: 948188 Date Application Received: 11/29/2023
Permit Writer	Olivia Stoken 971-867-1077 Date Prepared: 7/25/2024

NPDES Permit Fact Sheet
City of Bandon

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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:

Schedule B:

- Influent and effluent monitoring requirements in Tables B2 and B3 have been updated to meet current monitoring matrix requirements, except BOD_5, TSS, and Enterococci which have been updated based on a monitoring reduction request analysis.
- Receiving stream monitoring in the Coquille River Estuary upstream of Outfall 001 has been added in Table B4.

2. Facility Description

2.1 Wastewater Facility

The City of Bandon (population about 3,321) owns and operates an activated sludge type wastewater treatment plant (WWTP) with a current average dry weather design flow (ADWDF) of 0.50 million gallons per day (MGD) and an average wet weather design flow (AWWDF) of 0.82 MGD. The treatment facility was originally constructed in 1970 and discharges treated wastewater year-round near the mouth of the Coquille River at river mile 0.8. The plant was upgraded in 1993-1994 to correct recurrent effluent violations. Upgrades included a new outfall that was built out into the river to address past problems of effluent backing up into the outfall line during very high tidal conditions.

The WWTP is a conventional activated sludge plant designed for a population of 5,068 persons. The plant includes head works consisting of a mechanical auger screen and grit removal system. In late 2023, both the mechanical auger screen and grit classifier were upgraded. The removed solids are transported to a landfill for disposal.

From the headworks, wastewater flows to one or both of two aeration basins through a distribution channel, depending on the amount of flow the plant is receiving. Basin #1 has a capacity of 157,000 gallons and basin #2 has a capacity of 145,000 gallons. A baffle in the channel detains grease which is manually removed through an access port. The second basin is typically brought online during wet weather flows. Blowers provide air to the basins through fine bubble diffusers.

From the aeration basins, flow goes to the secondary clarifiers for settling. Each secondary clarifier has a capacity of 199,000 gallons. Disinfection takes place following clarification with ultraviolet lights in a two-channel system. Following disinfection, treated effluent is discharged through Outfall 001.

Sludge from the clarifiers is pumped back to the aeration basins or to the aerobic digesters for further digestion of the biomass. Digester #1 has a capacity of 127,000 gallons, while digesters #2 and #3 hold 133,000 gallons each. The biosolids produced from digestion are Class B and are land applied as a beneficial soil amendment at DEQ approved sites in Coos County or landfilled.

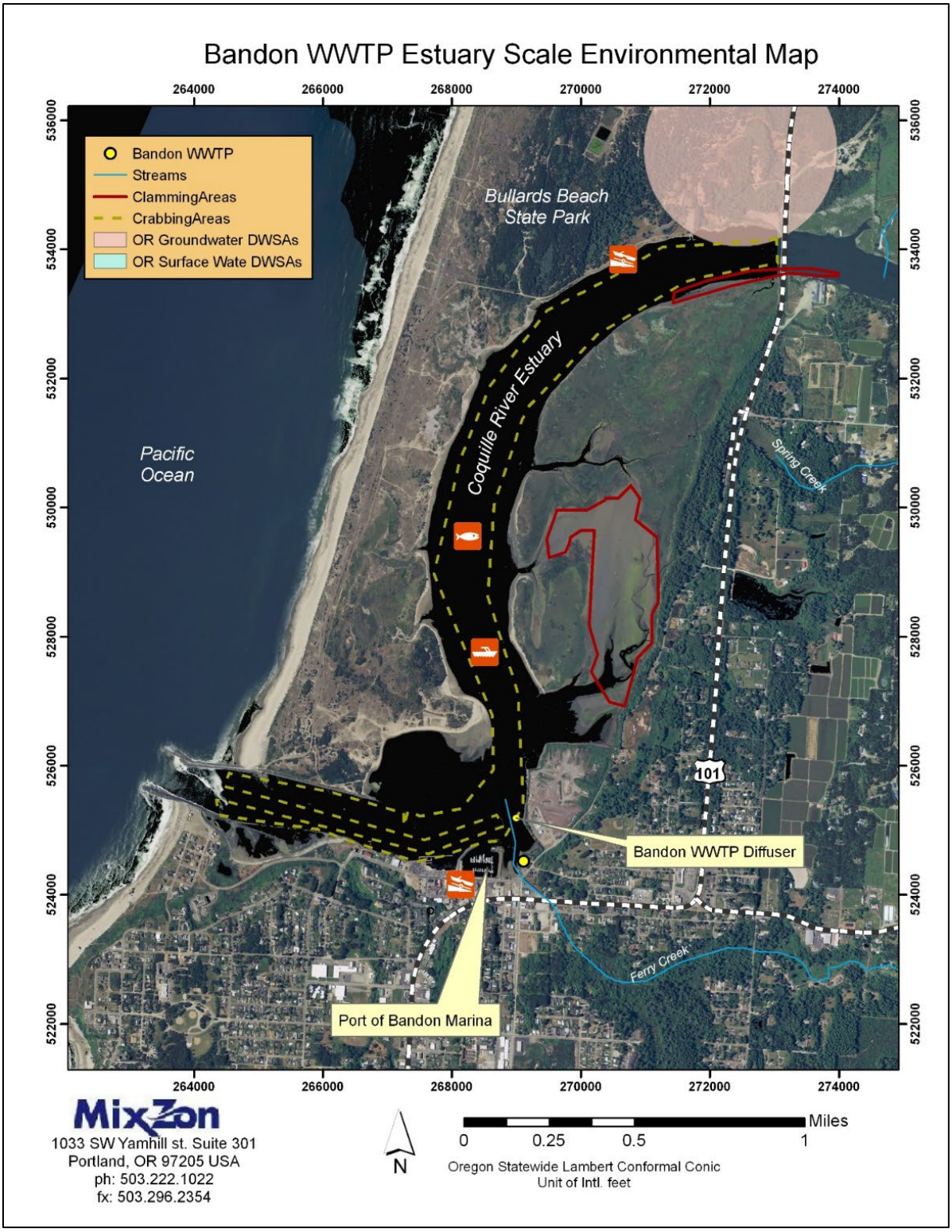

Figure 2-1: Facility Location

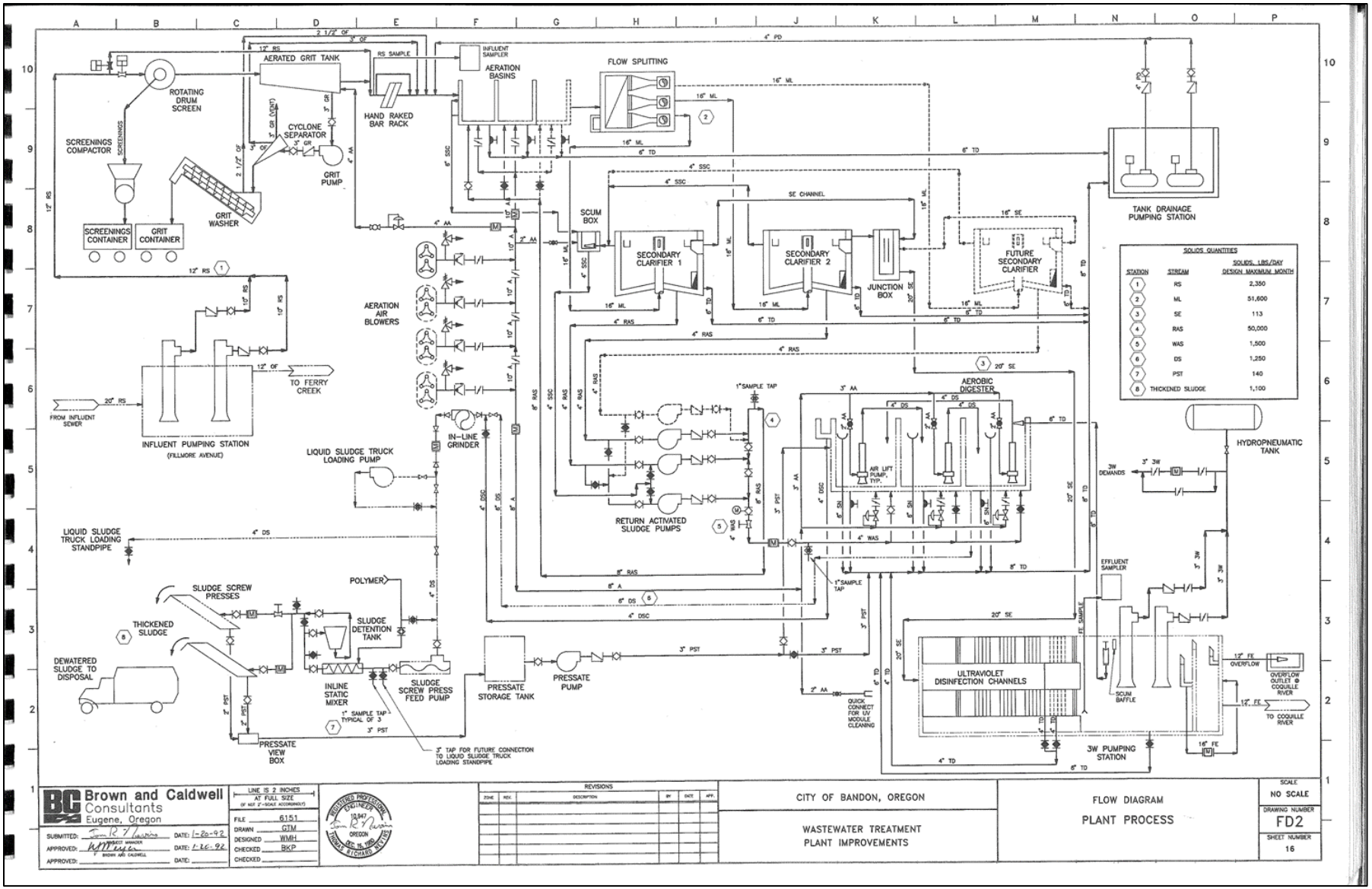

Figure 2-2: Line Drawing of Wastewater Treatment

Table 2-1: List of Outfalls

Outfall Number	Type of Waste	Lat/Long
001	Treated Wastewater	43.122446, -124.40466 (WGS84)

2.2 Compliance History

DEQ conducted a data gap analysis during the last permit cycle and determined receiving water monitoring upstream of the outfall was needed for the proposed permit renewal. A monitoring request letter was sent on 5/16/2022. The permittee did not collect the requested data. As a result, receiving water monitoring upstream of the outfall is included in the proposed permit.

2.3 Stormwater

Stormwater is not addressed in this permit. General NPDES permits for stormwater are not required for facilities with a design flow of less than 1 MGD.

2.4 Industrial Pretreatment

The permittee does not have a DEQ-approved industrial pretreatment program. Based on current information, no industrial pretreatment program is needed. Schedule D of the proposed permit requires the permittee to perform an industrial user survey.

2.5 Wastewater Classification

OAR 340-049 requires all permitted municipal wastewater collection and treatment facilities receive a classification based on the size and complexity of the systems. DEQ evaluated the classifications for the treatment and collection system, 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 table below shows the limits contained in the existing permit.

Table 3-1: Existing Effluent Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum (See note a.)
BOD_5 (May 1 – October 31)	mg/L	20	30	-
	lb/day	75	110	150
	% removal	85	-	-
TSS (May 1 – October 31)	mg/L	20	30	-
	lb/day	75	110	150
	% removal	85	-	-
BOD_5 (November 1 – April 30)	mg/L	30	45	-
	lb/day	210	310	410
	% removal	85	-	-
TSS (November 1 – April 30)	mg/L	30	45	-
	lb/day	210	310	410
	% removal	85	-	-
pH	SU	Instantaneous limit between a daily minimum of 6.0 and a daily maximum of 9.0		
Fecal Coliform Bacteria	#/100 mL	Must not exceed a monthly median of 14, and no more than 10% of the samples may exceed 43		
Enterococcus Bacteria	#/100 mL	Must not exceed a monthly geometric mean of 35, and no more than 10% of samples may exceed 130		

Note:

a. The daily mass load limit is suspended on any day in which the flow to the treatment facility exceeds 0.9 MGD (twice the design average dry weather flow).

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 (BOD_5), total suspended solids (TSS) and pH (i.e., federal secondary treatment standards). Substitution of 5-day carbonaceous oxygen demand ($CBOD_5$) for BOD_5 is allowed. The numeric standards for these pollutants are contained in 40 CFR 133.102. In addition, DEQ has developed minimum design criteria for BOD_5 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 South Coast basin.

Table 3-2: Comparison of TBELs for Federal Secondary Treatment Standards and Oregon Basin-Specific Design Criteria

Parameter	Federal Secondary Treatment Standards		South Coast Basin-Specific Design Criteria (OAR 340-041-0305)
	30-Day Average	7-Day Average	Monthly Average
BOD_5 (mg/L)	30	45	May 1 to Oct 31: 20 mg/L, Nov 1 to Apr 30: secondary treatment (same as federal)
TSS (mg/L)	30	45	May 1 to Oct 31: 20 mg/L, Nov 1 to Apr 30: secondary treatment (same as federal)
pH (S.U.)	6.0 – 9.0. (instantaneous)		Not applicable
BOD_5 and TSS % Removal	85%	Not applicable	Not applicable

The limits for BOD_5 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 permittee's facility has been engineered to achieve BOD_5 and TSS monthly average concentrations of 20 mg/L during the dry weather season and 30 mg/L during the wet weather season. DEQ uses the average 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 average dry weather flow (DADWF) or design average wet weather flow (DAWWF).

The following table lists the effluent flows and concentration limits used for the calculations.

Table 3-3: Design Flows and Concentrations Limits

Season	Design Flow (mgd)	Monthly TSS Concentration Limit (mg/L)	Monthly BOD_5 Concentration Limit (mg/L)
Dry Weather	0.45	20	20
Wet Weather	0.82	30	30
Design flow comments: Design average dry weather flow (DADWF), Design average wet weather flow (DAWWF)			

The previous permit contains mass load limits calculated using the following rounding convention:

May 1 to October 31
Monthly Average: 0.45 mgd x 20 mg/L x 8.34 = 75.06 lbs/day, rounded to 75 lbs/day (two significant figures)

Weekly Average: 75.06 lbs/day x 1.5 = 112.59 lbs/day, rounded to 110 lbs/day

Daily Maximum: 75.06 lbs/day x 2 = 150.12 lbs/day, rounded to 150 lbs/day

November 1 to April 30
Monthly Average: 0.82 mgd x 30 mg/L x 8.34 = 205.16 lbs/day, rounded to 210 lbs/day

Weekly Average: 205.16 lbs/day x 1.5 = 307.74 lbs/day, rounded to 310 lbs/day

Daily Maximum: 205.16 lbs/day x 2 = 410.32 lbs/day, rounded to 410 lbs/day

Using the current mass load limit rounding convention, the mass load limits are calculated as:

May 1 to October 31
Monthly Average: 0.45 mgd x 20 mg/L x 8.34 = 75.06 lbs/day, rounded to 75 lbs/day (two significant figures)

Weekly Average: 75 lbs/day x 1.5 = 112.5 lbs/day, rounded to 110 lbs/day

Daily Maximum: 75 lbs/day x 2 = 150 lbs/day

November 1 to April 30
Monthly Average: 0.82 mgd x 30 mg/L x 8.34 = 205. 16 lbs/day, rounded to 210 lbs/day (two significant figures)

Weekly Average: 210 lbs/day x 1.5 = 315 lbs/day, rounded to 320 lbs/day

Daily Maximum: 210 lbs/day x 2 = 420 lbs/day

Mass load limits calculated using the current rounding convention are less stringent than the limits included in the previous permit. As a result, the mass load limits from the previous permit are retained in the proposed permit to comply with antibacksliding (CWA sections 402(o), 303(d)(4), and 40 CFR 122.44(l)) and antidegradation (OAR 340-041-0004) rules. The proposed BOD_5 and TSS limits are listed in the following table.

Table 3-4: BOD_5 and TSS Technology Based Effluent Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
BOD_5 (May 1 – Oct. 31)	mg/L	20	30	-
	lbs/day	75	110	150
	% removal	85	-	-
TSS (May 1 – Oct. 31)	mg/L	20	30	-
	lbs/day	75	110	150
	% removal	85	-	-
BOD_5 (Nov. 1 – Apr. 30)	mg/L	30	45	-
	lbs/day	210	310	410
	% removal	85	-	-
TSS (Nov. 1 – Apr. 30)	mg/L	30	45	-
	lbs/day	210	310	410
	% 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 Coquille River Estuary. These uses are listed in OAR-340-041-0300 for estuarine waters of the South Coast Basin.

- Industrial water supply
- Fish and aquatic life (including salmonid rearing and migration)

- Wildlife and hunting
- Fishing
- Boating
- Water contact recreation
- Aesthetic quality
- Commercial navigation and transportation

3.3.2 303(d) Listed Parameters and Total Maximum Daily Loads

The following table lists the parameters that are 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 (WLA) assigned to the facility (Category 4).

Table 3-5: 303(d) and TMDL Parameters

Water Quality Limited Parameters (Category 5)	
AU ID:	OR_EB_1710030505_01_100284
AU Name:	Coquille River
AU Status:	Impaired
Year Listed	2012
Year Last Assessed	2018
303d Parameters (Category 5)	Fecal Coliform, Arsenic - Inorganic
TMDL Parameters (Category 4A)	
None	

DEQ has not developed a TMDL for fecal coliform or arsenic in the Coquille River Estuary. The fecal coliform listing is addressed in section 3.3.9, while the arsenic listing is addressed in section 3.3.10.3.

3.3.3 TMDL Wasteload Allocations

DEQ issued a TMDL for the Coquille River and Estuary in 1996. Primary parameters of concern in the 1996 TMDL were dissolved oxygen and bacteria. No WLAs from this TMDL are applicable to the permittee. Effluent from the Bandon WWTP was not found to significantly affect dissolved oxygen in the water quality limited sections of the Coquille, so a WLA was not developed. Dissolved oxygen is not listed on the 2022 303(d) list as a water quality limited parameter for the Coquille River Estuary.

Table 3-6: Applicable WLAs

Parameter	WLA	Time Period
NA	NA	NA

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 that the State's marine resources be conserved. DEQ believes that the intent of these criteria is 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.

Residual chlorine in treated wastewater, if any, immediately reacts with bromide naturally present in seawater to produce other oxidants that are toxic to living organisms. These other oxidants are referred to as chlorine produced oxidants. Chlorine, which is still present in the reaction products, is too reactive to be bioavailable from soil, water, or other environmental media and too reactive to bio-accumulate in the food chain. The City of Bandon, however, uses ultraviolet light for disinfection, and chlorine compounds are prohibited in the discharge. Bacteria do not bio-accumulate 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 bio-accumulate 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 City of Bandon 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	Total Residual Chlorine
≥ 0.1 mgd and < 1.0 mgd	Total Residual Chlorine, Total Ammonia Nitrogen
≥ 1.0 mgd	Total Residual Chlorine, Total Ammonia Nitrogen, Metals, Volatile Organic Compounds, Acid Extractable Compounds, Base Neutral Compounds

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
Fecal Coliform	Effluent Monitoring
Enterococcus	Effluent Monitoring
Total Ammonia Nitrogen	Application Requirement

The sections below discuss the analyses that were 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 regulatory mixing zone (RMZ) from the existing permit is described as:

> The allowable mixing zone is that portion of the Coquille River Estuary within a radius extending out no more than 200 feet from the point of discharge. The Zone of Immediate Dilution (ZID) is defined as that portion of the allowable mixing zone that is within a 20-foot radius from the point of discharge.

Mapping of the current RMZ shows that it is inappropriately sized for the area. The current RMZ not only overlaps dry land, but also overlaps into shallow water areas that are likely exposed at low tide as well as old dock piles likely to attract fish. It is proposed to resize the RMZ to a 100 ft radius and the ZID to a 10-foot radius to avoid these features. Because the outfall is located at a bend in the river and the tidal influence could move the effluent in varying directions, the RMZ will be kept as a radius from the outfall instead the more common description of a distance upstream and downstream. The proposed regulatory mixing zone will be described as:

> The Regulatory Mixing Zone (RMZ) is defined as that portion of the Coquille River Estuary within a 100-foot radius from the point of discharge. The Zone of Immediate Dilution (ZID) is defined at that portion of the Coquille River Estuary within a 10-foot radius from the point of discharge.

Figure 3-1: Bandon Outfall with Current Regulatory Mixing Zone (red circle) and Proposed Regulatory Mixing Zone (yellow circle)

Outfall 001 has two diffusers 5 feet in length shaped in the form of a "T" with 5 ports on each diffuser. The outfall is approximately 130 ft from the bank and discharges into the Coquille River Estuary at 43.122446, -124.40466 (WGS84). A 2022 outfall inspection study showed that the outfall pipe was in very poor condition, with many of the original diffuser ports blocked and the pipe deteriorating with multiple holes ranging from 1 to 12 inches in diameter.

The City of Bandon submitted a 2017 mixing zone study conducted by MixZon. The study provided predicted dilution values for Bandon's existing outfall, but an outfall inspection conducted in 2017 did not show the extent of pipe deterioration existing in 2022. The dilution values were updated by DEQ for this memo, using CORMIX v12.0, to account for current effluent flows and temperature, the poor condition of the pipe, and the new ZID and RMZ size. To account for the poor condition of the pipe the outfall was conservatively modeled as a single port 12 inches in diameter, which removes the increase in dilution normally achieved by a diffuser. The ambient values used in the 2017 mixing zone study were retained.

The dilution factors at the edge of the Regulatory Mixing Zone and Zone of Initial Dilution are shown in Tables 3-9 and 3-10. These dilutions are based on a 2017 mixing zone study reviewed and updated by DEQ. The mixing zone memo documenting this analysis is in a March 7, 2024 Mixing Zone Memo which is part of the administrative record.

Table 3-9: Dry Weather Dilution Values

Dilution Summary – Outfall 001 – May 1 to October 31 (Dry Weather)						
Water Quality Standard	**Tidal Velocity**		**Effluent Flow (mgd)**		**Dilution Factor**	**Location**
	Statistic	**ft/s**	**Statistic**	**Flow**		
Aquatic Life, Acute	10th Percentile	0.59	☐ ADWDF x PF ☒ Max Daily Avg ☐ Other	0.32	6.7	ZID (10 ft)
Aquatic Life, Chronic	50th Percentile	1.31	☐ ADWDF ☒ Max Monthly Avg ☐ Other	0.28	115	RMZ (100 ft)
Human Health, Non-Carcinogen	Median	1.31	☐ ADWDF ☒ Max Monthly Avg ☐ Other	0.28	115	RMZ (100 ft)
ADWDF = Average dry weather design flow *PF = Peaking factor (1.5)*						
Comments: Tidal measurements from 1963 McAlister Report, used in 2017 MZ Study						

Table 3-10: Wet Weather Dilution Values

Dilution Summary – Outfall 001 – November 1 to April 30 (Wet Weather)						
Water Quality Standard	**Tidal Velocity**		**Effluent Flow (mgd)**		**Dilution Factor**	**Location**
	Statistic	**Flow**	**Statistic**	**Flow**		
Aquatic Life, Acute	10th Percentile	0.69	☐ ADWDF x PF ☒ Max Daily Avg ☐ Other	1.4	1.7	ZID
Aquatic Life, Chronic	50th Percentile	1.43	☐ ADWDF ☒ Max Monthly Avg ☐ Other	0.64	56	RMZ
Human Health, Non-Carcinogen	Median	1.43	☐ ADWDF ☒ Max Monthly Avg ☐ Other	0.64	30	RMZ
ADWDF = Average dry weather design flow *PF = Peaking factor (1.5)*						
Comments: Tidal measurements from 1963 McAlister Report, used in 2017 MZ Study						

3.3.7 pH

The pH criterion for this basin is 6.5 – 8.5 per OAR 340-041-0305. DEQ determined there is no reasonable potential for the discharge to exceed the pH criterion at the edge of the mixing zone. The proposed pH limit is maintained from the previous permit at 6.0 – 9.0 and is a TBEL. The following provides a summary of the data used for the analysis.

Table 3-11: pH Reasonable Potential Analysis

Input	Lower pH Criteria	Upper pH Criteria
1. Discharge area characteristics		
a) Dilution at mixing zone boundary	56	56
b) Depth of discharge (m)	2	2
2. Upstream characteristics		
a) Temperature (deg C)	16.7	8.3
b) pH (S.U.)	7.8	8.0
c) Alkalinity (mg $CaCO_3$/L)	97.4	97.4
d) Salinity (psu)	20	20
3. Effluent characteristics		
a) Temperature (deg C)	21.2	14.5
b) pH (S.U.)	6.0	9.0
c) Alkalinity (mg $CaCO_3$/L)	149.0	149.0
d) Salinity (psu)	2	2
4. Applicable pH criteria	6.5	8.5
pH at mixing zone boundary	**7.4**	**8.0**
Is there reasonable potential?	**No**	**No**
Proposed effluent limits	**6.0**	**9.0**
Effluent data source: ICIS summary statistics - 2/1/2020 to 1/31/2024 for effluent temperature DMR raw data - 2/6/2020 to 2/23/2024 for effluent salinity and alkalinity		
Ambient data source: AWQMS - 1/31/2000 to 10/29/2013 for ambient pH, temperature, and alkalinity at ORDEQ monitoring locations – 11723, 13401, 13402, 13403, 13404, 13525, 13526, 13527, 13528, 13530, 13531, 13672, 13673, 13680, 13682, 25657, and 25669. Ambient salinity is the average salinity from stations and dates above.		

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 estuary is water quality-limited for temperature and whether a TMDL wasteload allocation has been assigned. Using this information, DEQ performed several analyses to determine if effluent limits were needed to comply with the temperature criteria.

Table 3-12: 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)	☐Yes ☒No
Applicable dates: NA	
WQ-limited?	☐Yes ☒No
TMDL wasteload allocation assigned?	☐Yes ☒No
Applicable dates: NA	
TMDL based on natural conditions criterion?	☐Yes ☐No ☒NA
Cold water summer protection criterion applies?	☐Yes ☒No
Cold water spawning protection applies?	☐Yes ☒No
Comments: NA	

OAR 340-041-0028(7) specifies that effluent discharges may not warm ocean and bay waters by more than 0.3 ℃ above the natural condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life. DEQ presumes that the ambient temperature of the estuary upstream and downstream of the outfall is the same as the natural thermal condition or would result in an analysis that is protective of water quality standards. Minimal ambient data was available solely upstream of the outfall, so DEQ included downstream sites in the analysis as well. The permittee will be required to collect temperature data upstream of the outfall during the proposed permit cycle.

DEQ conducted a temperature reasonable potential analysis (RPA) to determine if the effluent discharge has the reasonable potential to warm the Coquille River Estuary at the edge of the mixing zone by more than 0.3 ℃ above the natural condition. The effluent temperature value used in this analysis is 21.5 °C. This value was taken from the facility's DMRs for the period from May 2021 to October 2023 and represents the maximum 7-day average of the daily maximum in the summer period. The ambient temperature used in this analysis is 7.4 °C. This value was taken from monitoring stations close to Bandon's outfall in ORDEQ's Ambient Water Quality Monitoring System for the period from January 2000 to October 2013 and represents the minimum ambient temperature year-round. These temperature values paired with the most restrictive mixing zone dilution represent the most conservative conditions possible for the RPA.

The result of this RPA indicates that there is no potential for the facility's discharge to exceed the temperature standard. Based on these analyses, no temperature limit associated with the applicable temperature criteria is included in the proposed permit (Appendix A). Final effluent limits are listed in the following table.

Table 3-13: Temperature Criterion Effluent Limits

Effluent limit needed? ☐Yes ☒No
TMDL WLA Limit: NA
Applicable time period: Dates ☒NA
Temperature Criterion Limit: NA
Applicable time period: Dates ☒NA
Comments: NA

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 ºC or more for salmon and steelhead, and 9 ºC or more for bull trout.

  The Coquille River Estuary is not designated as salmonid spawning habitat; therefore, the spawning area requirement is met.

- 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 ºC or more to less than 2 seconds.

  The maximum daily effluent temperature recorded between May 2021 and October 2023 was 22 °C, below the criterion of 32 °C. Therefore, the discharge is not expected to cause acute impairment to salmonid species.

- 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 ºC or more to less than 5% of the cross-section of 100% of the 7Q10 flow of the water body.

  The maximum daily effluent temperature recorded between May 2021 and October 2023 was 22 °C. Since the maximum effluent temperature is below 25 °C, thermal shock caused by the discharge is prevented or minimized.

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

An analysis related to migration blockage, included in Appendix B, indicates that when the effluent plume reaches 25% of the receiving stream's cross-sectional area, the plume's temperature will not be above 21.0°C, and migration blockage caused by the discharge is therefore prevented or minimized.

Effluent limits needed to comply with the thermal plume requirements are shown in the following table.

Table 3-14: Thermal Plume Effluent Limit

Effluent limit needed? ☐Yes ☒No
Calculated limit: NA
Applicable timeframe: NA
Comments: NA

3.3.9 Bacteria

OAR 340-041-0009(6)(a) requires discharges of bacteria into coastal waters 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 3-15: Proposed Enterococcus Limits

Enterococcus (#/100 ml)	Geometric Mean	No more than 10% exceed
Existing Limit	35	130
Proposed Limit	35	130

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 3-16: Proposed Fecal Coliform Limits

Fecal Coliform (#/100 ml)	Median	No more than 10% exceed
Existing Limit	14	43
Proposed Limit	14	43

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.

An ammonia reasonable potential analysis was performed for summer (May 1 – October 31) and winter (November 1 – April 30). The results of the analyses show that there was no reasonable potential to exceed water quality at the edge of the ZID or the RMZ. As a result, no effluent limits are included in the proposed permit.

The following table provides a summary of the data used for the ammonia analyses and the results of the analyses.

Table 3-17: Ammonia Analysis Information - Summer

	Acute	Chronic	
		4-day	30-day
Dilution	6.7	115	115
Ammonia Criteria	8.3	1.1	-
Effluent Data Used			
Ammonia (mg/L)	36.0	36.0	
pH (SU)	7.5	7.5	
Temperature (ºC)	20.8	20.8	
Alkalinity (mg/L $CaCO_3$)	100.0	100.0	
Receiving Water Body Data Used			
Ammonia (mg/L)	0.1	0.1	
pH (SU)	8.0	8.0	
Temperature (ºC)	16.6	16.6	
Alkalinity (mg/L $CaCO_3$)	108.6	108.6	
Ammonia Limit Needed?	**No**		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	NA	NA	
Effluent data source			
DMR raw data - 2/6/2020 to 2/23/2024 for effluent ammonia, alkalinity, pH, salinity, and temperature			
Ambient data source			
AWQMS - 1/31/2000 to 10/29/2013 for ambient ammonia, pH, and temperature at ORDEQ monitoring locations: 11723, 13401, 13402, 13403, 13404, 13525, 13526, 13527, 13528, 13530, 13531, 13672, 13673, 13680, 13682, 25657, and 25669. Ambient salinity is the average salinity from stations and dates above.			

Table 3-18: Ammonia Analysis Information - Winter

	Acute	Chronic	
		4-day	30-day
Dilution	1.7	56	30
Ammonia Criteria	21.1	2.9	-
Effluent Data Used			
Ammonia (mg/L)	28.0	28.0	
pH (SU)	7.4	7.4	
Temperature (ºC)	16.5	16.5	
Alkalinity (mg/L $CaCO_3$)	70.0	70.0	
Receiving Water Body Data Used			
Ammonia (mg/L)	0.0	0.0	
pH (SU)	7.7	7.7	
Temperature (ºC)	12.4	12.4	
Alkalinity (mg/L $CaCO_3$)	116.0	116.0	
Ammonia Limit Needed?	**No**		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	NA	NA	
Effluent data source			
DMR raw data - 2/6/2020 to 2/23/2024 for effluent ammonia, alkalinity, pH, salinity, and temperature			
Ambient data source			
AWQMS - 1/31/2000 to 10/29/2013 for ambient ammonia, pH, and temperature at ORDEQ monitoring locations: 11723, 13401, 13402, 13403, 13404, 13525, 13526, 13527, 13528, 13530, 13531, 13672, 13673, 13680, 13682, 25657, and 25669. Ambient salinity is the average salinity from stations and dates above. Ambient alkalinity ocean default value used.			

3.3.10.2 Priority Pollutant Toxics

The City of Bandon's WWTP discharges less than 1 MGD and no priority pollutant toxics are known to be present in the discharge. Therefore, no additional controls or monitoring will be required.

3.3.10.3 Other Pollutants Associated with Water Quality Impairments

This assessment unit is listed for Arsenic in Category 5 for not meeting human health criterion for arsenic. Monitoring is required for facilities where the pollutant is known to be present. Arsenic is not known or expected to be present in the facility discharge. Therefore, there is no reasonable potential to cause or contribute to this listing and monitoring for arsenic is not being required in the proposed permit.

3.3.10.4 Mercury – Human Health Criterion

DEQ determined that this facility is not a likely source of mercury. Therefore, no additional controls or monitoring will be required.

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 Whole Effluent Toxicity

DEQ does not require whole effluent toxicity testing (WET) for minor domestic facilities because concentrations of toxics are typically very low and WET testing is not warranted.

3.7 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 currently produces a Class B biosolids for land application by distribution or sale and anticipates continuing to do so. DEQ reviewed the biosolids management plan and land application plan. These are available for public review and comment along with the permit. Once approved after public comment, conditions in the biosolids management plan and land application plan become permit conditions.

Schedule A of the permit requires the facility to apply biosolids according to their biosolids management plan. In addition, Schedule A requires the following:

- Apply at or below agronomic rates
- The permittee must have written site authorization for each location from DEQ before land applying and abide by the restrictions for each site
- Prior to application, the permittee must ensure that biosolids meet one of the pathogen reduction standards under 40 CFR 503.32
- The permittee must not apply biosolids containing pollutants in excess of the ceiling concentrations for the nine metals shown in Schedule A of the permit

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.

The permittee requested monitoring reductions for BOD_5, TSS, enterococcus, and fecal coliform. DEQ reviewed the request using EPA's memo "Interim Guidance for Performance – Based Reductions of NPDES Permit Monitoring Frequencies - April 19, 1996" and found that the permittee was eligible for reductions in BOD_5, TSS, and enterococci monitoring and adjusted monitoring frequencies accordingly. Due to water quality impairments in the receiving water for fecal coliform, no reduction in monitoring frequency was granted.

All available ambient or receiving water quality data located in the Coquille River Estuary near Bandon's outfall is older than 10 years. Data 10 years or newer is required to adequately characterize the ambient water quality, therefore receiving water monitoring upstream of the outfall by the permittee is included in the proposed permit.

To monitor the receiving stream (Table B4 of the proposed permit), the permittee must collect the samples outside the influence of the effluent. Because the effluent plume is influenced by the tide, the effluent travels both upstream and downstream of the outfall. The CORMIX mixing zone models conducted as part of a mixing zone memo for this permit renewal were referenced to determine the distance away from the outfall at which the plume would be fully vertically mixed with the receiving stream. Beyond the point at which the plume is fully mixed, it could be expected that a receiving stream sampling location would be outside the influence of the effluent. The furthest distance at which the plume would be fully mixed is approximately 2000 feet away from the outfall. As a result, the permittee should sample at least 2000 feet upstream or downstream from the outfall within the main channel of the receiving stream and prior to inputs from any major tributaries if possible. A map of the locations that are expected to be outside of the influence of the effluent is shown below. The permittee may propose an alternate sampling location to DEQ, which may be used if approved by DEQ in writing.

Figure 5-1: Proposed Receiving Water Monitoring Area Outside of Effluent Plume

6. Schedule C: Compliance Schedule

The permittee is expected to meet all effluent limits once the permit becomes effective and therefore a compliance schedule is not needed.

7. Schedule D: Special Conditions

The proposed permit contains the following special conditions:

7.1 Inflow and Infiltration

A requirement to submit an annual inflow and infiltration report in order to reduce groundwater and stormwater from entering the collection system.

7.2 Emergency Response and Public Notification Plan

A requirement to develop 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 Hauled Waste Annual Report

A condition requiring submittal of an annual hauled waste report that summarizes hauled waste accepted at the facility during the previous year.

7.8 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.

7.9 Industrial User Survey

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

7.10 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

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

Appendix A: Temperature Reasonable Potential Analysis

Discharge to Natural Lakes (OAR 340-041-0028(6)) and Ocean/Bays (OAR 340-041-0028(7))

Analysis at Edge of Mixing Zone

Section 5.7 of the Temperature IMD

Note: This spreadsheet is generally only appropriate for analyses of effluent from minor domestic facilities. For other facilities, an analysis using paired seasonal ambient and effluent data is more appropriate.

Facility Name: **Date:**

Enter data into white cells below:

			Data Metric/Source
Mixing Zone Dilution =	56		Aquatic life chronic dilution Nov 1 - Apr 30 in MZ memo
Ambient Temperature =	7.4	°C	Minimum ambient temperature 2000-2013
Effluent Temperature =	21.5	°C	Max 7 day average summer effluent temperature 2021-2023
Allowable Increase =	0.3	°C	Max monthly average effluent flow May 1 to Oct 31 x 1.5
Effluent Flow =	0.42	mgd	

ΔT at MZ edge= 0.25 °C **No Reasonable Potential**

Thermal Load Limit = N/A Million Kcals

Note: If Reasonable Potential is indicated, use a more refined analysis (e.g. paired temperature analysis) to make the final RP determination.

Equation used to calculate ΔT at edge of MZ

$$\Delta T_{mz} = \frac{T_e + (S-1)T_a}{S} - T_a$$

Equation used to calculate thermal load limit

$$TLL = 3.7854 Q_e S \Delta T_{all} C_p \rho$$

Where:

Qe = Effluent Flow in mgd

S = Dilution

ΔT_{all} = Allowable temperature increase at edge of MZ (°C)

Cp = Specific Heat of Water (1 cal/g °C)

ρ = Density of Water (1 g/cm^3)

3785.41 = Flow conversion from mgd to m^3/day

Appendix B: Thermal Plume Reasonable Potential Analyses

Temperature Thermal Plume Limitations within the Mixing Zone Rule (OAR 340-041-0053(2)(d))

Sections 5.6 and 6.5 of Temperature IMD

This rule only applies to receiving streams with salmonid uses. For migration blockage, applies to upstream migration of anadromous salmonits (See associated notes in the "Thermal Plumes Instructions".) This spreadsheet assesses compliance with OAR 340-042-0053(2)(d) subparts C and D. Subparts A and B need to be assessed separately (see Thermal Plumes Instructions).

Facility Name: **Date:**

OAR 340-041-0053(2)(d)(C): Thermal Shock

25 deg C at 5% of the stream cross section

Enter data into white cells below:

			Data Metric/Source
7Q10 =	6288	cfs	May 1 to Oct 31 aquatic life, chronic tidal velocity x 5 ft depth x 800 ft width
Ambient Temperature=	21.1	°C	Max ambient temperature 2000-2013
Effluent Flow =	0.42	mgd	Max monthly average effluent flow May 1 to Oct 31 x 1.5
Max Daily Effluent Temperature =	22	°C	Max daily effluent temperature 2021-2023

5% of 7Q10 = **314.4** cfs

5% dilution = **485** dilution = (Qr*0.05)/Qe + 1

Temperature at 5% cross section = 21.1 °C

No Reasonable Potential

OAR 340-041-0053(2)(d)(D): Migration Blockage

21 deg C at 25% of the stream cross section

Enter data into white cells below:

			Data Metric/Source
7Q10 =	6288	cfs	May 1 to Oct 31 aquatic life, chronic tidal velocity x 5 ft depth x 800 ft width
Ambient Temperature =	21	°C	Ambient criterion
Effluent Flow =	0.42	mgd	Max monthly average effluent flow May 1 to Oct 31 x 1.5
Max 7dAM Effluent Temperature =	21.5	°C	Max 7 day average summer effluent temperature 2021-2023

25% of 7Q10 = **1572.0** cfs

25% dilution = **2420** dilution = (Qr*0.25)/Qe + 1

Temperature at 25% cross section = 21.0 °C

ΔT at 25% Stream Flow= 0.0 °C

No Reasonable Potential

Notes:

Equation used to calculate ΔT at edge of MZ

$$\Delta T_{mz} = \frac{T_e + (S-1)T_a}{S} - T_a$$

Equation used to calculate thermal load limit

$$TLL = 3.7854 Q_e S \Delta T_{all} C_p \rho$$

Where:

Qe = Effluent Flow in mgd

S = Dilution

ΔT_{all} = Allowable temperature increase at edge of MZ (°C)

Cp = Specific Heat of Water (1 cal/g °C)

ρ = Density of Water (1 g/cm^3)

3785.41 = Flow conversion from mgd to m^3/day