State of Oregon
Department of
Environmental
Quality

National Pollutant Discharge Elimination System
Permit Fact Sheet
City of Rogue River

Final: November 22, 2024

Permittee	City of Rogue River Rogue River STP 5680 Foothill Boulevard Rogue River, OR, 97537
Existing Permit Information	File Number: 76030 Permit Number: 102588 EPA Reference Number: OR0023043 Category: Domestic Class: Minor Expiration Date: 8/31/2007
Permittee Contact	Michael Bollweg Public Works Director 541-582-4401, ext. 105 PO Box 1137 Rogue River, OR, 97537
Receiving Water Information	Receiving stream/NHD name: Rogue River NHD Reach Code & % along reach: 17100308000035 – 78.69% USGS 12-digit HUC: 171003080401 OWRD Administrative Basin: Rogue ODEQ LLID & River Mile: 1244292424210 – 110 Assessment Unit ID: OR_SR_1710030804_04_106341
Proposed Action	Permit Renewal Application Number: 975556 Date Application Received: 3/05/2007
Permit Writer	Helen Sanders 541-241-0152 Date Prepared: 9/27/2024

NPDES Permit Fact Sheet
City of Rogue River

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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:

- $CBOD_5$ and TSS limits timeframe changed from May 16 – Nov. 15 to May 1 – Oct 31.
- BOD_5 and TSS limits timeframe changed from Nov. 16 – May 15 to Nov. 1 – April 30.
- Recycle Water Reuse has been added to the permit with conditions that operations can only commence once a Recycle Water Reuse Plan has been approved by DEQ.
- The thermal load limit in Schedule A will change from 29 million BTU/day (converted to 7.0 million kcals/day) to a combination of static limits varying from 11 to 20 million kcal/day and flow-based limits from April to October.
- The permittee will be required to perform a mixing zone study for the next permit renewal. This is stated in Schedule D of the permit.
- Alkalinity, dissolved oxygen, Oil and Grease, total dissolved solids will be included in the effluent monitoring requirements.

2. Facility Description

2.1 Wastewater Facility

The Rogue River sewage treatment facility serves the City of Rogue River with a population of about 2,418 and discharges into the Rogue River. The facility is located at 5680 Foothill Boulevard, Rogue River, OR, 97537.

The treatment plant's design maximum dry weather design flow is 0.48 million gallons per day (MGD) and the wet weather design flow is 0.63 MGD. The last major upgrade to the system was completed in 1997.

The treatment plant's operation includes twin Sequencing Batch Reactor (SBR) units. Raw sewage is pumped from an influent pump station up to the headworks at the facility. The pump station has three submersible screw-centrifugal, single speed pumps that are rated at 1.2 MGD. The headworks consists of a mechanical bar screen and gravity grit removal. An ultrasonic level sensor measures the influent flow. Each treatment unit has a capacity of 0.6 MGD. Each tank continuously receives flow from the flow splitter at the headworks. Sludge is pumped by fixed rate pumps to the digesters (124,540 gallons each). Effluent from the SBR is decanted through an automatic variable level decant system. Discharged effluent then flows to the equalization basins and is sent to the UV disinfection system. After UV disinfection, the effluent flows into the Rogue River at river mile 110. The Outfall 001 location is about 20 feet from shore and at least 1 foot in depth.

The facility operation is permitted to include Class B biosolid land application to farmland in Jackson County in the summer. The Biosolids Management Plan provides additional details. Biosolids are handled in a two-stage process. The first stage is a pair of aerobic digesters. Each SBR currently feeds to its own digester, and therefore the two digesters are not operated in series. The digesters are periodically allowed to settle, and the supernatant decanted back to the process to increase the solids content under aeration. Digested solids are periodically removed from the digesters and sent to a lined lagoon for further treatment. Solids are removed from the lagoon using a bottom drainpipe. Polymer is added to the solids stream, and then allowed to settle in a tank, followed by a Parkson unit for de-watering and then transferred to the solar barn. Supernatant is then returned to the headworks of the plant. A biosolid management plan (BMP) was last approved on Oct. 12, 2000. The facility does not accept hauled waste.

This renewal permit includes allowance for recycle water reuse contingent on the DEQ approval of a Recycle Water Reuse Plan. There is notation in the permit that Recycle Water Reuse may only occur after the Recycle Water Reuse Plan has gone through DEQ Public Notice.

Figure 2-1: Rogue River WWTP Location and Outfall

Figure 2-2: Rogue River WWTP Schematic

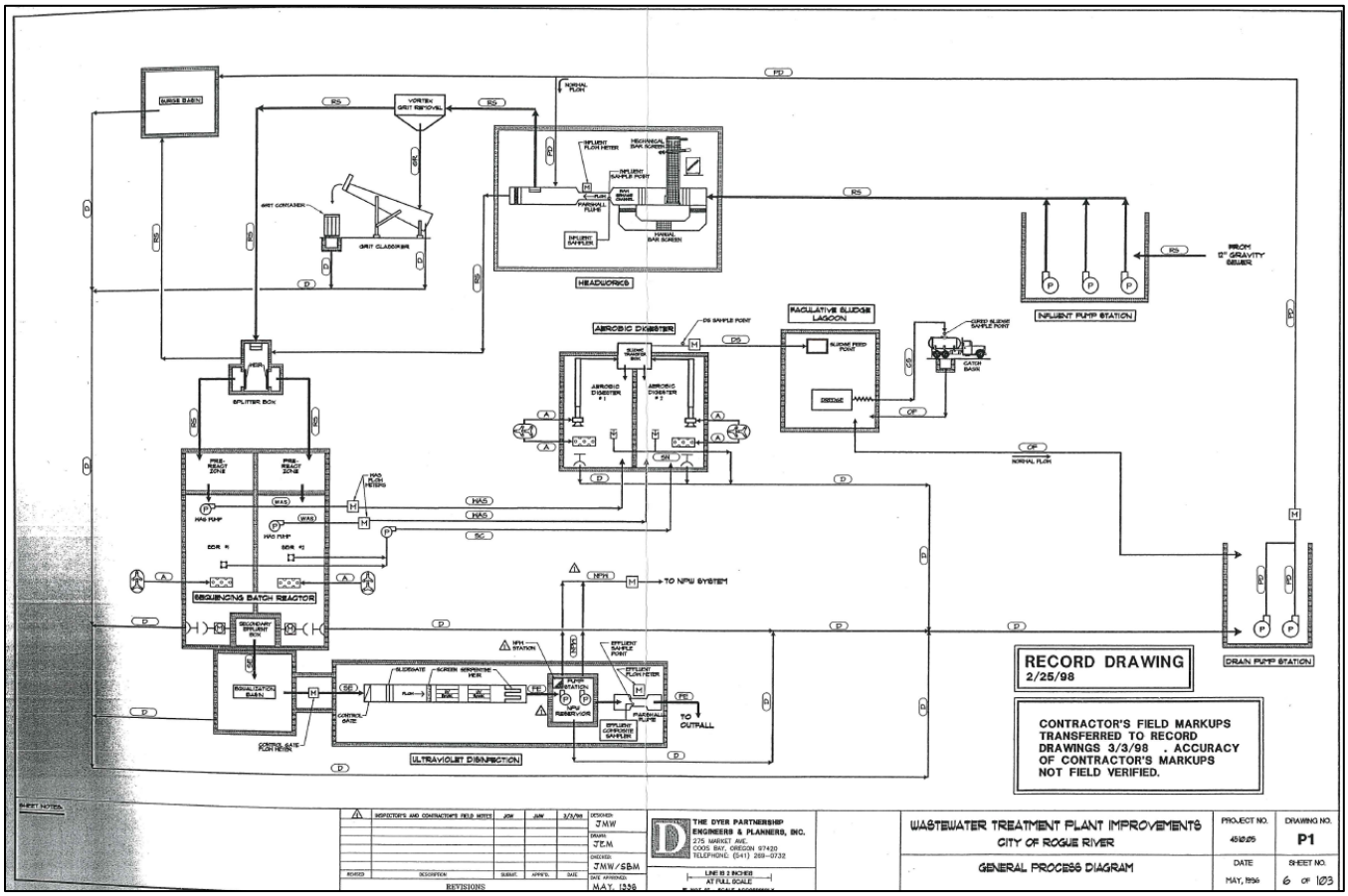

Table 2-1: List of Outfalls

Outfall Number	Type of Waste	Lat/Long	Design Flow[1] (mgd)	Existing Flow[2] (mgd)
001	Treated Wastewater	42.4313, -123.1836	0.48	0.46
002	Recycle Water Reuse	-	-	-
003	Biosolids	-		-

1. Design Flow = design average dry weather flow
2. Existing Flow = existing average monthly dry weather flow

2.2 Compliance History

A Warning Letter with Opportunity to Correct was issued on August 16, 2006, for exceeding $CBOD_5$ mass load limits. Another Warning Letter was issued on May 2, 2007, for failure to monitor for ammonia. A third Warning Letter was issued on June 30, 2009, for several exceedances of $CBOD_5$ mass load limits. The most recent Warning Letter was issued on Feb. 28, 2017, for an exceedance of bacteria limits and TSS mass load limits. The most recent compliance inspection was conducted on August 3, 2021, and no violations were noted.

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 show the limits contained in the existing permit.

Table 3-1: Existing Effluent Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
$CBOD_5$ (May 16 to Nov 15) (See note a.)	mg/L	10	15	
	lb/day	32	51	70
	% removal	85	-	-
TSS (May 16 to Nov 15)	mg/L	10	15	
	lb/day	32	51	70
	% removal	85	-	-
BOD_5 (November 16 to May 15)	mg/L	30	45	
	lb/day	110	160	210
	% removal	85	-	-

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
TSS (November 16 to May 15)	mg/L	30	45	
	lb/day	110	160	210
	% removal	85	-	-
pH (Year-round)	SU	Instantaneous limit between a daily minimum of 6.0 and a daily maximum of 9.0		
E. coli (Year-round)	#/100 mL	Must not exceed a monthly geometric mean of 126, no single sample may exceed 406		
Excess Thermal Load Limit (ETLL) (Year-round)	million BTU (MBTU/day)	7-day average shall not exceed 29 million BTU per day		

Note:

a. The $CBOD_5$ concentration limits are considered equivalent to the minimum design criteria for BOD_5 specified in OAR 340-041.

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 Rogue basin.

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

Parameter	Federal Secondary Treatment Standards		Rogue Basin-Specific Design Criteria (OAR 340-041-0275)
	30-Day Average	7-Day Average	Monthly Average
BOD_5 or $CBOD_5$ (mg/L)	30	45	10 mg/L (May 1 – Oct. 31)
TSS (mg/L)	30	45	10 mg/L (May 1 – Oct. 31)
pH (S.U.)	6.0 – 9.0. (instantaneous)		Not applicable

Parameter	Federal Secondary Treatment Standards		Rogue Basin-Specific Design Criteria (OAR 340-041-0275)
	30-Day Average	7-Day Average	Monthly Average
BOD_5 or $CBOD_5$ 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)b. 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 $CBOD_5$ and TSS monthly average concentrations of 10 mg/L during the dry weather season and 30 mg/L of BOD_5 and TSS during the wet weather season. DEQ uses the actual maximum monthly flow to calculate the mass load limits as shown below for the wet and dry weather season. The mass load limits were calculated based on the capacity of the treatment system and described in two Department initiated memos dated November 13, 2000, and November 29, 2000. This adjustment is because the City of Rogue River hired the Dyer Partnership in 1996 to prepare the report *Evaluation of BOD and TSS Mass Load Increase and Mixing Zone Extension.* In this report new mass load limitations were proposed to BOD_5 and TSS. The Department reviewed this information using technology-based calculations and proposed alternate mass load effluent limitations, as mentioned in the November 2000 memos, and calculated with a Streeter-Phelps model. Discussions between DEQ and the permittee at time determined that the treatment facility should be capable of producing an effluent quality of 9 mg/L at the design average dry weather flow and, that it would be reasonable to use this as that basis of the low flow season mass load limitations. This results in a monthly average load of 36 ppd (9 mg/L x 0.48 x 8.34). Wet weather mass load limitations were based on the facility designs for the variation in concentrations and flows during this season.

Monthly Avg Mass Load = Actual 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

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 /$CBOD_5$ Concentration Limit (mg/L)
Dry Weather	0.48	10	10
Wet Weather	0.63	30	30
Design flow comments: Daily average design weather flow (DADWF). Dry weather limits are for $CBOD_5$ and wet weather limits are for BOD_5			

Dry Weather Mass Load Calculations:

Monthly Average: 0.48[design flow] mgd x 10 [concentration] mg/L x 8.34 = 40.032 (Rounded to two significant figures, 40) lbs/day

Weekly Average: 35.9 lbs/day monthly average x 1.5 = 60 lbs/day

Daily Maximum: 35.9 lbs/day monthly average x 2 = 80 lbs/day

Wet Weather Mass Load Calculations:

Monthly Average: 0.63 [design flow] mgd x 30 [concentration] mg/L x 8.34 = 157.6 (Rounded to two significant figures 160)

Weekly Average: 157.6 lbs/day monthly average x 1.5 = 236.4 (Rounded to two significant figures 240)

Daily Maximum 157.6 lbs/day monthly average x 2 = 315

The mass loads calculated above are less stringent than what is in the current permit. Due to Antibacksliding and Antidegradation, DEQ will retain the limits in the current permit.

A review of the previous permit fact sheet and associated development documents indicates that an error was made regarding the effective dates of these limits. The dates in the current permit are May 16 – Nov. 15 (Dry Weather) and Nov. 16 – May 15 (Wet Weather). The correct dates should have been May 1 – Oct. 31 and Nov. 1 – Apr. 30, which correlate with the applicable dates in the Rogue Basin-specific criteria (OAR 340-041-0275). The proposed permit includes these corrected dates. Antibacksliding and antidegradation considerations associated with these limit changes are addressed in Sections 3.4 and 3.5, below.

The proposed BOD_5/$CBOD_5$ and TSS limits are listed in the following table.

Table 3-4: BOD_5/$CBOD_5$ and TSS Technology Based Effluent Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
$CBOD_5$ (May 1 to Oct. 31)	mg/L	10	15	-
	lbs/day	32	51	70
	% removal	85	-	-
TSS (May 1 to Oct. 31)	mg/L	10	15	-
	lbs/day	32	51	70
	% removal	85	-	-
BOD_5 (Nov. 1 to April 30)	mg/L	30	45	-
	lbs/day	110	160	210
	% removal	85	-	-
TSS (Nov. 1 to April 30)	mg/L	30	45	-
	lbs/day	110	160	210
	% 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 Rogue River. These uses are listed in OAR-340-041-0271 for the Rogue basin.

- Public and private domestic water supply
- Industrial water supply
- Irrigation and livestock watering
- Fish and aquatic life (including salmonid rearing, migration, and spawning)
- Wildlife and hunting
- Fishing
- Boating
- Water contact recreation
- Aesthetic quality

- Commercial navigation and transportation

3.3.2 303(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 assigned to the facility (Category 4).

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

Water Quality Limited Parameters (Category 5)	
AU ID:	OR_SR_1710030804_04_106341
AU Name:	Rogue River
AU Status:	Impaired
Year Listed	2010
Year Last Assessed	2022
303d Parameters (Category 5)	Fecal Coliform, Turbidity, Temperature year-round, Temperature- spawning
TMDL Parameters (Category 4)	
Temperature, fecal coliform	

3.3.3 TMDL Wasteload Allocations

DEQ issued a TMDL for the Rogue River Basin in 2008. The temperature Wasteload Allocations (WLAs) for Rogue River STP apply during the critical period of April 1 through October 31. WLAs from this temperature TMDL that are applicable to the permittees are listed in the following table. The TMDL did not assign a WLA for Rogue River STP for fecal coliform. The *E. coli* limits in the permit are expected to be protective of the water quality criteria for bacteria (See Section 3.3.8).

Table 3-6: Applicable WLAs

Parameter	WLA	Time Period
Temperature	See Section 3.3.7, below	April 1 through October 31

3.3.4 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
E. coli	Effluent Monitoring
Total Ammonia Nitrogen	Effluent Monitoring

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.

3.3.5 Regulatory Mixing Zone

The proposed permit contains a mixing zone as allowed per OAR 340-041-0053. The mixing zone in the existing permit is describes as follows:

The allowable mixing zone is that portion of the Rogue River contained within a band extending out from the bank to the center of the Rogue River and extending from a point 10 feet upstream of the outfall to a point 150 feet downstream from the outfall. The Zone of Immediate dilution (ZID) shall be defined as that portion of the allowable mixing zone that is within 15 ft downstream from the point of discharge.

The proposed mixing zone has been updated to reflect current MZ sizing description guidance. The upstream portion of the RMZ has been removed as there is no expectation of tidal influence or backflow up the stream.

The allowable Regulatory Mixing Zone (RMZ) is that portion of the Rogue River extending from the outfall to a point 150 ft downstream from the outfall. The Zone of Immediate dilution (ZID) shall be defined as the portion of the allowable mixing zone that is within 15 ft downstream from the point of discharge.

The dilution factors at the edge of the zone of initial dilution and mixing zone are shown in Table 3-9. These dilutions are based on a 1996 mixing zone study reviewed by DEQ. For this memo, DEQ used CORMIX 12.0.1 to simulate the discharge and provide updated dilution values at the edge of the ZID (15 feet) and edge of the RMZ (150 feet). These updated model runs are documented in a 2023 Mixing Zone Memo which is part of the administrative record. The model inputs and data sources are shown in the Outfall Description, Receiving Water, and Effluent Flow Parameters tables in the mixing zone memo. 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 Dilutions

Dilution Summary – May 16 to Nov 15 (Dry Weather)						
Water Quality Standard	**Stream Flow (cfs)**		**Effluent Flow (mgd)**		**Dilution Factor**	**Location**
	Statistic	**Flow**	**Statistic**	**Flow**		
Aquatic Life, Acute	1Q10	894	☐ ADWDF x PF ☒ Max Daily Avg ☐ Other	0.46	6.9	ZID
Aquatic Life, Chronic	7Q10	913	☐ ADWDF ☒ Max Monthly Avg ☐ Other	0.33	220	RMZ
Human Health, Non-Carcinogen	30Q5	1053	☐ ADWDF ☒ Max Monthly Avg ☐ Other	0.33	250	RMZ
ADWDF = Average dry weather design flow *PF = Peaking factor (1.5)*						
Comments: The Aquatic Life, 30-day Chronic criteria is used in the Ammonia RPA analysis. The statistics used to calculate dilutions follow the same guidance as for Human Health, non-carcinogen criteria in the Regulatory Mixing Zone IMD, Part 2.						

Dilution Summary – Nov 16 to May 15 (Wet Weather)						
Water Quality Standard	**Stream Flow (cfs)**		**Effluent Flow (mgd)**		**Dilution Factor**	**Location**
	Statistic	**Flow**	**Statistic**	**Flow**		
Aquatic Life, Acute	1Q10	1028	☐ ADWDF x PF ☒ Max Daily Avg ☐ Other	0.39	7.7	ZID
Aquatic Life, Chronic	7Q10	1081	☐ ADWDF ☒ Max Monthly Avg ☐ Other	0.25	310	MZ
Human Health, Non-Carcinogen	30Q5	1278	☐ ADWDF ☒ Max Monthly Avg ☐ Other	0.25	310	MZ
ADWDF = Average dry weather design flow *PF = Peaking factor (1.5)*						
Comments: The Aquatic Life, 30-day Chronic criteria is used in the Ammonia RPA analysis. The statistics used to calculate dilutions follow the same guidance as for Human Health, non-carcinogen criteria in the Regulatory Mixing Zone IMD, Part 2.						

3.3.6 pH

The pH criterion for this basin is 6.5 – 8.5 per OAR 340-041-0275. 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 limits are 6.0 – 9.0 SU based on the WQBEL analysis. The following table provides a summary of 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	220.0	220.0
2. Upstream characteristics		
a. Temperature (deg C)	18.3	5.4
b. pH	7.6	8.1
c. Alkalinity (mg CaCO3/L)	33.5	33.5
3. Effluent characteristics		
a. Temperature (°C)	24.5	16.7
b. pH (S.U.)	6.0	9.0
c. Alkalinity (mg CaCO3/L)	134.6	134.6
4. Applicable pH criteria	6.5	8.5
pH at mixing zone boundary	7.4	8.1
Is there reasonable potential?	No	No
Proposed effluent limits	6.0	9.0
Effluent data source: ICIS Summary Data 2019-2023.		
Ambient data source: AWQMS Ambient Data (2019-2023) ORDEQ Station-10421 and ORDEQ-10422.		

3.3.7 Temperature

3.3.7.1 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 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 3-11: Temperature Criteria Information

Applicable Temperature Criterion	Rearing/Migration 18ºC (OAR 340-041-0028(4)(c)
Applicable dates: Year-round	
Salmon/Steelhead Spawning 13 °C? OAR 340-041-0028(4)(a)	☒Yes ☐No
Applicable dates: Oct. 15 – May 15	
WQ-limited?	☒Yes ☐No
TMDL wasteload allocation assigned?	☒Yes ☐No
Applicable dates: April 1 – Oct. 31	
TMDL based on natural conditions criterion?	☒Yes ☐No
Cold water summer protection criterion applies?	☐Yes ☒No
Cold water spawning protection applies?	☐Yes ☒No
Comments:	

The fish and spawning use designations for the receiving stream are contained in OAR 340-041-0271, Figures 271A and 271B. Figure 271A indicates that the fish use designation is salmon and trout rearing and migration habitat year-round, with an applicable biologically based numeric criterion of 18.0 ºC expressed as a 7-day average maximum (7dAM). Figure 271B indicates that the designated salmon & steelhead spawning use is from October 15 – May 15, with an applicable biologically based numeric criterion of 13.0 ºC (7dAM). As noted in Section 3.3.3 above, the Rogue River downstream of the outfall is currently listed as water quality limited for the 18.0 ºC criterion and the 13.0 ºC criterion. The 2008 Rogue Basin TMDL was developed to address both of these criteria year-round. The TMDL gave wasteload allocations (WLAs) to the facility for the April 1 through October 31 period. The TMDL also determined that an allocation and associated limits were not necessary for the remainder of the year.

The WLA for the facility, expressed as Equation 2-4 in the TMDL, was used to directly convert the wasteload allocations into thermal effluent limits:

$$\text{ETL Limit} = (\Delta T) \times (Q_e + Q_r) \times C_f$$

Where,

ETL Limit = Excess Thermal Load Limit, million kcal/day. 7-day average

ΔT = 0.0043 °C allowable temperature increases from TMDL (from TMDL Table 2.16)

Q_e = average dry weather design flow of effluent flow rate, 0.67 cfs (0.43 MGD)

Q_r = river flow rate, upstream, cfs

C_f = conversion factor, 2.446 million kcal·s / °C·ft^3·day

This equation may be modified to express the effluent flow in units of million gallons per day (MGD) by also converting the river flow from cfs to MGD (0.646 cfs/MGD) and using the conversion factor (C_f) of 3.785 million kcal·day / °C·MG·day:

$$\mathbf{ETLL = 0.0043 \times (Q_e + Q_r \times 0.646) \times 3.785}$$

Where,

ETLL = Excess Thermal Load Limit, million kcal/day. 7-day average

ΔT = 0.0043 °C allowable temperature increase (from TMDL Table 2.16)

Q_e = effluent flow rate (MGD)

Q_r = river flow rate, upstream, cfs

C_f = conversion factor, 2.446 million kcal·s / °C·ft^3·day

The TMDL allows for either a flow-based effluent limit (equation above) or a static limit based on the 7Q10 low river flow and the facility design flow. Each of these limits are 7-day rolling averages. The estimated upstream 7Q10 low river flows[1] for various periods within the April – October period are provided in the table below. As provided for in the TMDL, the average dry weather design flow (0.43 MGD) was used to determine the static limits. The table also includes the temperature criteria to be used for permit compliance determination (TMDL Table 2.15(E) on TMDL page 2-55).

Table 3-12: Temperature Criterion Effluent Limits

Time Period	Applicable TMDL Criterion, °C (T_R)	7Q10 (cfs) Flow at Rogue River WWTP	Critical Case ETLL, million kcal/day (Option A)	Stream Flow based limits, million kcal/day (Option B)
Apr 1 – May 15	13.0	1257	13	**0.0043 x (Q_e + Q_r x 0.646) x 3.785**
May 16 – May 31	18.0	1979	21	
Jun. 1 – Jun. 15		1938	20	
Jun. 16 – Jun. 30		1292	14	
Jul 1 – Aug 31	19.8			
Sep 1 – Sep 15	18.8			
Sep. 16 – Oct. 15	18.0	1003	11	
Oct 16 – Oct 31	13.0			

[1] The nearest upstream USGS gage is 14359000 Rogue River at Raygold near Central Point. Daily flows were evaluated from January 1, 1984 to December 31, 2023.

The following equation is used to calculate the permittee's daily effluent ETL (the excess thermal load discharged from the facility):

$$\mathbf{ETL=Q_e \times (T_e-T_r) \times 3.785}$$

Where,

ETL= Excess Thermal Load, million Kcals/day

Q_e= Daily average effluent flow, MGD

T_e= Daily maximum effluent temperature, °C

T_r= Applicable criterion, °C (from table above)

3.785= Conversion factor

The ETL limits are based on a rolling seven-day average of daily maximums. Therefore, when the ETL is calculated, compliance will be evaluated starting on the seventh day of each TMDL period.

DEQ conducted a separate temperature analysis for the period that the TMDL limit does not apply (November 1 – March 31). For this, DEQ conducted a temperature reasonable potential analysis with consideration for the spawning season (Oct 15 – May 15). The applicable temperature criterion is 13 ºC. Since the TMDL does not have a WLA assigned for this timeframe, this analysis is based on the portion of Oregon's temperature rule for implementing the criterion prior to the development of a TMDL. The effluent temperature value used in this analysis is 19.9 °C. This value was taken from the facility's DMRs for the period from November 1 to March 31 and represents the maximum 7-day average of the daily maximums for the spawning season. The results of this RPA indicate that there is no potential for the facility's discharge to exceed the temperature standard (see Appendix A).

3.3.7.2 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.

  Rogue River: While this segment of the receiving stream is identified as having salmonid spawning use, and that active fall chinook spawning has been recorded in the general area, but there is no information indicating that there is an active salmonid spawning area where spawning redds are located or likely to be located within the mixing zone. As noted above, DEQ performed an analysis of the discharge related to the spawning criterion. The result of this analysis indicates that the discharge does not have a reasonable potential to heat the receiving stream above the spawning criterion by more than an insignificant amount at the edge of the mixing zone. Since the likely location of

any active salmonid spawning areas would be outside of the mixing zone, the impairment of an active spawning area is prevented or minimized. See Appendix B.

- 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.

  Rogue River: The daily maximum-recorded temperature of the discharge to Rogue River for the 2019 to 2023 period was 31.6 ºC, below the 32 ºC criterion. Therefore, the discharge does not have the potential to cause acute impairment or instantaneous lethality due to the thermal plume.

- 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.

  Rogue River: An analysis related to thermal shock, included in Appendix B, indicates that when both the effluent and upstream receiving water temperatures are at their maximum measured values, the plume's temperature at 5% of the receiving stream's cross-sectional area will be below 25 °C (21.5 °C), a situation that is not likely to cause thermal shock. Based on this analysis, 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.

  Rogue River: The maximum recorded receiving water upstream of the discharge location is 21.3 ºC (daily maximum) and the maximum effluent temperature is 31.6 ºC (daily maximum). A conservative 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.

Table 3-13: Thermal Plume Effluent Limit

Effluent limit needed? ☐Yes ☒No
Calculated limit: N/A
Applicable timeframe: N/A
Comments:

3.3.8 Bacteria

OAR 340-041-0009(6)(b) requires discharges of bacteria into freshwaters meet a monthly geometric mean of 126 *E. coli* per 100 mL, with no single sample exceeding 406 *E. coli* per 100 mL. If a single sample exceeds 406 *E. coli* per 100 mL, then the permittee may take five consecutive re-samples. If the geometric mean of the five re-samples is less than or equal to 126, a violation is not triggered. The re-sampling must be taken at four-hour intervals beginning within 48 hours after the original sample was taken. This adjustment to the typical re-sample timeline of 28 hours is to account for exceedances that may occur on a Friday when labs are not open on weekends. To ensure the re-sampling for compliance does not result in increased standard exceedances, a condition will be added to the permit requiring the permittee to inspect the operation of the UV disinfection unit prior to conducting the 5 resamples. The following table includes the proposed permit limits and apply year-round.

Table 3-14: Proposed *E. coli* Limits

E. coli **(#/100 ml)**	**Geometric Mean**	**Maximum**
Existing Limit	126	406
Proposed Limit	126	406

3.3.9 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.

3.3.9.1 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. The following tables provides a summary of the data used for the ammonia analysis and the results of the analysis. The existing permit does not have an ammonia limit set. The RPA for permit renewal also did not find a reasonable potential to exceed ammonia criteria and will not feature ammonia limits. Tables 3-17 and 3-18 provides a summary of the RPAs for summer and winter.

Table 3-15: Ammonia Analysis Information - Summer

	Acute	Chronic	
		4-day	30-day
Dilution	6.9	220	250
Ammonia Criteria	3.6	1.7	0.7
Effluent Data Used			
Ammonia (mg/L)	8.8	8.8	
pH (SU)	7.8	7.8	
Temperature (ºC)	24.5	24.5	
Alkalinity (mg/L CaCO3)	64.0	64.0	
Receiving Stream Data Used			
Ammonia (mg/L)	0.1	0.1	
pH (SU)	8.1	8.1	
Temperature (ºC)	19.1	19.1	
Alkalinity (mg/L CaCO3)	43.5	43.5	
Ammonia Limit Needed?	No		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	NA	NA	
Effluent data source			
ICIS data 2019-2023.			
Ambient data source			
AWQMS ambient data 2019-2023. Monitoring Station ORDEQ-10421 and ORDEQ-10422.			

Table 3-16: Ammonia Analysis Information - Winter

	Acute	Chronic	
		4-day	30-day
Dilution	7.7	310	310
Ammonia Criteria	6.0	3.9	1.6
Effluent Data Used			
Ammonia (mg/L)	16.0	16.0	
pH (SU)	7.8	7.8	
Temperature (ºC)	17.5	17.5	
Alkalinity (mg/L CaCO3)	64.0	64.0	
Receiving Stream Data Used			
Ammonia (mg/L)	0.2	0.2	
pH (SU)	8.0	8.0	
Temperature (ºC)	9.2	9.2	
Alkalinity (mg/L CaCO3)	46.2	46.2	
Ammonia Limit Needed?	No		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	NA	NA	
Effluent data source			
ICIS data 2019-2023.			
Ambient data source			
AWQMS ambient data 2019-2023. Monitoring Station ORDEQ-10421 and ORDEQ-10422.			

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). Compliance with the antibacksliding provisions related to the thermal load limit and the $CBOD_5$ and TSS limits is discussed below. The other proposed limits are the same or more stringent than those in the existing permit, so the antibacksliding provisions are satisfied for those limits.

As noted in Section 3.2, above, the applicable dates of the $CBOD_5/BOD_5$ and TSS limits have been changed to correct a technical error made during the previous permit renewal. The change results in a relaxation of limits for the November 1 – 15 period, when state-based TBELs apply in the current permit. As noted in Section 3.3.2, above, the receiving stream is not listed as impaired for dissolved oxygen. As noted in the following section, antidegradation requirements related to this change are met. According to Clean Water Act section 303(d)(4)(B), backsliding is allowed in this situation.

As discussed in section 3.3.7 above, the thermal load effluent limit has been changed to meet the wasteload allocated to Rogue River STP in the 2008 Rogue River Basin TMDL. The current permit expresses the temperature limit as 29 million BTU relative to an instream temperature of 17.8 °C (64 °F). This converts to 7.0 million Kcal/day relative to an instream temperature of 18.0 °C. This is more stringent than some of the excess thermal load limits in the proposed permit. Although antibacksliding provisions generally do not allow relaxation of effluent limits in renewal permits, section 303(d)(4)(A) of the Clean Water Act allows relaxation when the receiving water is not in attainment for the limiting or related pollutant, the effluent limit is based on a TMDL wasteload allocation (WLA), and it can be shown that relaxation is consistent with antidegradation requirements. As noted above, the receiving water is water quality limited, and the new limit is based on a TMDL WLA. It also complies with the antidegradation requirement since TMDL WLA ensures the temperature increase is an insignificant increase according to the Oregon's antidegradation rule, OAR 340-041-0004(3)(c). Therefore, the new thermal load limit based on the TMDL wasteload allocation is allowed and is included in the proposed permit.

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 discharge loadings as the existing permit, with the exception of the temperature (thermal load) limits and the $CBOD_5/BOD_5$ and TSS limits as discussed above.

Under Oregon's Antidegradation Rule, discharges with insignificant temperature increases are not considered degradation (OAR 340-041-0004(3)(c)). Specifically, the rule states that insignificant temperature increases authorized under OAR 340-041-0028(11) and (12) are not considered a reduction in water quality. Section 3.3.7 of this report provides an analysis of the temperature impacts of this discharge and determines appropriate effluent limits to ensure the discharge will result in temperature increases at or below those authorized under OAR 340-041-0028(11) and (12). Based on OAR 340-041-0004 and the Section 3.3.7 of this report, the discharge from the facility does not have the potential to reduce water quality as it pertains to temperature.

The permit also includes a change in the $CBOD_5$/TSS mass loadings, which was discussed in section 3.2 of this document. Under Oregon's Antidegradation Rule (OAR 340-041-0004(3)(d)), up to a 0.1 mg/L decrease in dissolved oxygen within a stream reach is not considered a reduction in water quality so long as it has no adverse effects on threatened and endangered species. DEQ performed a "Streeter-Phelps" analysis to estimate the maximum decrease in dissolved oxygen that can be expected due to the mass load increase from November 1 – 15. The results indicate a maximum decrease of 0.0058 mg/L in dissolved oxygen, well below the 0.1 mg/L value that is considered degradation under the rule. Previous DEQ analyses, as discussed in Section 3.2, concluded that the dissolved oxygen criteria, which are protective of threatened and endangered species, would be met with these discharge loadings.

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.

4.3 Recycled Water or Irrigation of Industrial Wastewater

The permit holder does not currently operate a recycled water program but may develop one during the term of this permit. The permittee is not allowed irrigate without a DEQ approved recycle water reuse plan. If the permit holder chooses to develop a recycled water program, a comprehensive recycled water use plan meeting the requirements in OAR 340-055 will be submitted to DEQ for review and approval; appropriate actions must also be made to OHA and WRD. The recycled water use plan, including the locations of any proposed irrigation projects will be made available for public comment.

Schedule A of the permit requires the permittee to apply recycled water according to their recycled water use plan. Schedule A also restricts the application of recycled water to prevent the following:

- Irrigating above agronomic rates,
- Adverse impact to groundwater,
- Offsite surface runoff or subsurface drainage through drainage tile,
- Creation of odors, fly and mosquito breeding, or other nuisance conditions.

4.4 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 and therefore a compliance schedule is not needed.

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

7.2 Mixing Zone Study

A requirement to submit an updated mixing zone study.

7.3 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.

7.4 Recycled Water Use Plan

A condition requiring the permit holder to develop and maintain a recycled water use plan that meet the requirements in OAR 340-055-0025. The plan must also include location-specific information describing where and how recycled water is managed to protect public health and the environment.

7.5 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.

7.6 Wastewater Solids Annual Report

This condition requires the permittee to submit a Wastewater Solids Annual Report each year documenting removal of wastewater solids from the facility during the previous calendar year.

7.7 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.

7.8 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.

7.9 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.

7.10 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.

7.11 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 RPA

Enter data into white cells below:			Data Metric/Source
Mixing Zone Dilution =	310		2023 Mixing Zone Memo
7Q10 =	1081	cfs	2023 Mixing Zone Memo
Effluent Flow =	0.93	mgd	2023 Mixing Zone Memo
Applicable Temperature Criterion	13	°C	
Effluent Temperature	19.9	°C	ICIS Data 2019-2023 for Nov.-March
Allowable increase =	0.3	°C	
Dilution at 25% Stream Flow =	189	dilution = (Qr*0.25)/Qe + 1	
ΔT at edge of MZ=	**0.0**	**°C**	**No Reasonable Potential**
ΔT at 25% Stream Flow=	**0.0**	**°C**	

Appendix B: Thermal Plume RPA

OAR 340-041-0053(2)(d)(A): Active Spawning Area Impairment 13.0 deg C at location of active spawning area			
Enter data into white cells below:			Data Metric/Source
Dilution at Spawning Area =	310		2023 Mixing Zone Memo
Ambient Temperature =	13	°C	AWQMS Data
Max. 7dAM Effluent Temperature =	20.7	°C	ICIS Data Summary
Applicable Temperature Criterion =	13	°C	
ΔT at Spawning Area=	**0.0**	**°C**	**No Reasonable Potential**
Temp. at Spawning Area=	**13.0**	**°C**	

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 =	913	cfs	2023 Mixing Zone Memo
Ambient Temperature=	21.3	°C	AWQMS Data 2019-2023
Effluent Flow =	0.5	mgd	2023 Mixing Zone Memo
Max Daily Effluent Temperature =	31.6	°C	ICIS Data Summary 2019-2023
5% of 7Q10 =	45.7	cfs	
5% dilution =	60	dilution = (Qr*0.05)/Qe + 1	
Temperature at 5% cross section =	**21.5**	**°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 =	913	cfs	2023 Mixing Zone Memo
Ambient Temperature =	21	ºC	AWQMS Data 2019-2023
Effluent Flow =	0.5	mgd	2023 Mixing Zone Memo
Max 7dAM Effluent Temperature =	31.6	ºC	ICIS Data for 2019-2023
25% of 7Q10 =	228.3	cfs	
25% dilution =	296	dilution = (Qr*0.25)/Qe + 1	
Temperature at 25% cross section =	**21.0**	**ºC**	
ΔT at 25% Stream Flow=	**0.0**	**ºC**	**No Reasonable Potential**