



State of Oregon
Department of
Environmental
Quality

National Pollutant Discharge Elimination System Permit Fact Sheet City of the Dalles

Permittee	City of The Dalles 1215 West 1 st Street The Dalles, OR 97058
Existing Permit Information	File Number: 87830 Permit Number: 101728 EPA Reference Number: OR0020885 Category: Domestic Class: Major Expiration Date: November 30, 2023
Permittee Contact	Jill Hoyenga Regulatory Compliance Manager (541) 506-2005 1215 West 1 st Street The Dalles, OR 97058
Receiving Water Information	Receiving stream/NHD name: Columbia River NHD Reach Code & % along reach: 17070105000159 70.38% USGS 12-digit HUC: 170701050406 OWRD Administrative Basin: Mainstem Columbia River ODEQ LLID & River Mile: 1240483462464 RM 185.8 Assessment Unit ID: OR_LK_1707010504_88_100137
Proposed Action	Permit Renewal Application Number: 948285 Date Application Received: May 31, 2023
Permit Writer	Stuart Blois 541-714-0035 Date Prepared: 4-7-2025

NPDES Permit Fact Sheet

City of The Dalles

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NPDES Permit Renewal Fact Sheet

City of The Dalles

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:

- New ammonia limit and compliance schedule
- pH limit changed from 6.0 – 9.0 to 6.1 – 9.0

2. Facility Description

2.1 Wastewater Facility

The City of The Dalles Water Reclamation Facility owns and operates a wastewater treatment plant (WWTP) that provides service to approximately 16,000 residents. The WWTP is a conventional activated sludge facility. After treatment and disinfection using UV radiation, wastewater is discharged to the Columbia River at river mile 185.8 (Figures 1 and 2). The average dry weather design flow (ADWDF) is 4.10 million gallons per day (MGD)¹. The maximum wet weather design flow is 6.8 (MMWWF) MGD¹. Although the WWTP primarily receives domestic wastewater from residential and commercial sources, the City also receives wastewater from five permitted Significant Industrial Users (SIUs); two categorical and three non-categorical industrial users, which makes it necessary for the City to have a formal DEQ-approved pretreatment program (see section 2.4).

Wastewater from the City is collected in a manhole at the plant then diverted to a wet well where it is pumped through the headworks. The headworks consist of parallel channel climbing rake screens with washer/compactors on each, a single Pista-Grit grit collector with a recessed impeller grit pump, and a grit cyclone with grit classifier. There are also parallel channel primary filters with associated screw conveyers and a single sludge pump. Waste activated sludge is thickened and, along with the primary filter sludge, anaerobically digested. The primary filters that are part of the current design pass influent through a sieved conveyor belt that is then

¹ Wastewater Treatment Plant Upgrade (Kennedy/Jenks, February 2018)

pumped directly to the primary digester for anaerobic digestions. Since 2022, the primary filters have been bypassed and all influent flow goes to the aeration basins after the headworks. The stabilized sludge is hauled to nearby agricultural land in accordance with the Biosolids Management Plan where it is applied at crop agronomic nitrogen rates.

The methane gas produced in the anaerobic digester is burned through the waste gas flare. The cogeneration microturbine that is part of the current design has not been in service since 2022.

After passing through the headworks, wastewater enters fine bubble diffused aeration basins, which includes two 157,000-gallon basins (labelled North and South Aeration Basin in Figure 2-2) and one 502,000-gallon basin (labelled West Aeration Basin in Figure 2-2). The larger 502,000-gallon basin does not have a source of direct influent. The influent flow exits the smaller basins and enters the larger 502,000-gallon aeration basin via pass-through windows. The two 157,000-gallon contact basins are designed to operate in parallel or in combination with the large basin. Aeration basin detention times will vary from anywhere between approximately 4-10 hours. Any combination of basins can be used during the dry weather period of the permit and provides sufficient treatment. During the wet weather period of the permit one small basin and one large basin are used for greater detention time and sufficient treatment.

After aeration, wastewater is discharged to two 80-foot diameter clarifiers that can operate in parallel or individually. After clarification, wastewater is disinfected with UV radiation. Flow is then conducted to the effluent wet well of the main pumping station via the downstream side of the diversion box. Treated effluent enters the Columbia River, either by gravity flow or pumping, depending on the level of the river.

The plant is equipped with two emergency generators that are capable of running all processes at the facility. During a loss of line power the main generator (500 KW) powers the entire facility with the exception of the main pumping station. A second generator (300 KW) provides back up power to the main pumping station as needed. The generators are tested weekly and operated under a load quarterly.

Figure 2-1: Site Map



Figure 2-2: Process Flow Chart

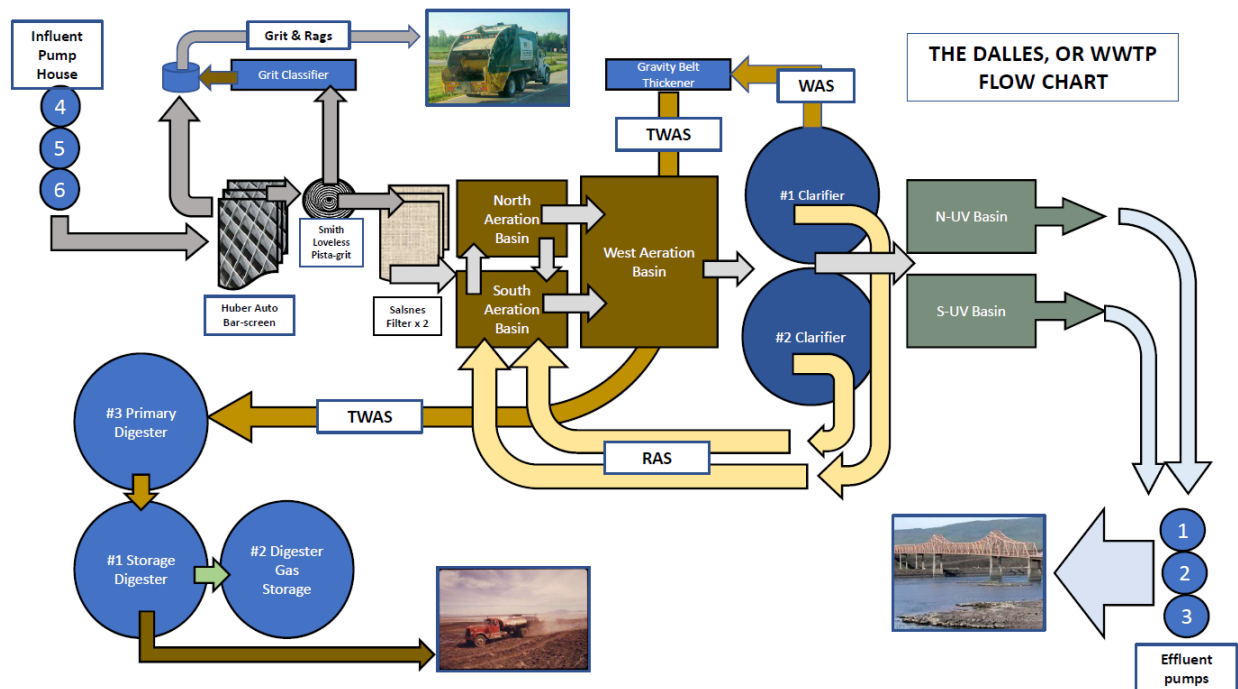


Table 2-1: List of Outfalls

Outfall Number	Type of Waste	Lat/Long
001	Treated Wastewater	45.603403, -121.177861

2.2 Compliance History

DEQ issued The Dalles a civil penalty and order (WQ-M-ER-2021-137) on December 22, 2021 in response to a Pre-Enforcement Notice (2021-PEN-6326) issued on August 2, 2021 for four separate sanitary sewer overflows in 2020 and 2021, for BOD₅ and mercury monitoring violations, and for effluent *E. coli* exceedances.

DEQ and the city resolved the above civil penalty through a Mutual Agreement and Order (MAO) on December 16, 2022, where the city agreed to complete a Supplemental Environmental Project (SEP) and DEQ agreed to reduce the civil penalty. The city certified that the SEP was completed on September 24, 2023.

DEQ issued The Dalles a civil penalty and order (WQ-M-ER-2023-005) on October 24, 2023 in response to a Pre-Enforcement Notice (2023-PEN-7976) issued on January 13, 2023 for discharging untreated sewage in violation of the bacteria water quality standard, for failure to conduct effluent monitoring, and for effluent *E. coli* exceedances. This case is pending resolution with DEQ's Office of Compliance and Enforcement at the time of this permit action.

2.3 Stormwater

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

2.4 Industrial Pretreatment

The city implements an industrial pretreatment program that was approved by DEQ on September 29, 1996. The current NPDES permit includes federal and state pretreatment requirements.

The city currently permits a total of 5 significant industrial users (SIUs) of which 2 are federally designated categorical industrial users. The City has submitted annual pretreatment program reports including updated industrial waste surveys. DEQ conducted a remote Pretreatment Compliance Audit of the industrial pretreatment program on July 20, and August 3-4, 2021. The primary focus of the audit was to assess the core pretreatment program functions including legal authorities, inter-jurisdictional agreements, industrial waste survey methods, permitting, and compliance oversight activities. Since 2005 DEQ has kept current with the city's pretreatment program through review of annual reports and program modifications.

The city's Hauled Waste Acceptance Plan was submitted and approved in April 2019. The city submitted revisions to local limits in 2022. The local limits were adopted per Resolution No. 22.031 in 2022.

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.

1. Outfall 001 – Permit Limits

- a. BOD₅ and TSS (January-December)
 - i. During the term of this permit, the effluent quality must comply with the limits in the following table:

Table 3-1: Permit Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
BOD ₅ (May 1 – October 31)	mg/L	20	30	--
	lbs/day	700	1000	1400
	% removal	85		--
TSS (May 1 – October 31)	mg/L	20	30	--
	lbs/day	700	1000	1400
	% removal	85		--
BOD ₅ (November 1 – April 30)	mg/L	30	45	
	lbs/day	1000	1600	2100
	% removal	85		--
TSS (November 1 – April 30)	mg/L	30	45	--
	lbs/day	1000	1600	2100
	% removal	85		--
pH	SU	May not be outside the range of 6.0 to 9.0		

<i>E. coli</i> ^a	#/100 ml	Monthly log mean (geometric mean) may not exceed 126 organisms per 100 ml. No single sample may exceed 406 organisms per 100 ml.
Notes: a. No single <i>E. coli</i> sample may exceed 406 organisms per 100 mL; The permittee may take at least 5 consecutive re-samples at 4 hour intervals beginning within 28 hours after the original sample, and the geometric mean of the 5 re-samples is less than or equal to 126 <i>E. coli</i> organisms/100 mL to demonstrate compliance with the limit.		

3.2 Technology-Based Effluent Limit Development

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

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

Parameter	Federal Secondary Treatment Standards		Mainstem Columbia River Basin-Specific Design Criteria (OAR 340-041-0104)
	30-Day Average	7-Day Average	Monthly Average
BOD ₅ (mg/L)	30	45	20 during summer months (May 1 – October 31)
TSS (mg/L)	30	45	20 during summer months (May 1 – October 31)
pH (S.U.)	6.0 – 9.0. (instantaneous)		Not applicable
BOD ₅ and TSS % Removal	85%	Not applicable	Not applicable

The limits for BOD₅ and TSS shown in the table above are concentration-based limits. Mass-based limits are required in addition to the concentration-based limits per OAR 340-041-0061(9). For any new facility or any facility that has expanded its dry weather treatment capacity after June 30, 1992, OAR 340-041-0061(9)(b) requires that the mass load limits be calculated based on the proposed treatment facility capabilities and the highest and best practicable treatment to

minimize the discharge of pollutants. The permittee's facility has been engineered to achieve BOD₅ 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 maximum monthly design flow to calculate the mass load limits as shown below for the dry and wet weather seasons.

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

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

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

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

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	4.1	20	20
Wet Weather	6.8 (2037 max month wet weather flow)	30	30
Design flow comments: Average Dry Weather Flow (2018 WWTP Upgrade Drawings)			

Mass Load Calculations:

The Dalles' summer mass load limits for BOD₅ and TSS are based on the flow of 4.1 MGD and a concentration of 20 mg/L. The summer calculations are:

Monthly Average: 4.1 MGD x 20 mg/L x 8.34 = 683.88 expressed as 700 lbs/day

Weekly Average: 680 lbs/day monthly average x 1.5 = 1020 expressed as 1000 lbs/day

Daily Maximum: 680 lbs/day monthly average x 2 = 1360 expressed as 1400 lbs/day

The facility's winter mass limits (monthly and weekly average and daily maximum) for BOD₅ and TSS are based on the flow of 6.8 MGD and a concentration of 30 mg/L. The winter calculations are:

Monthly Average: 6.8 MGD x 30 mg/L x 8.34 = 1701 lbs/day (rounded to 1700 lbs/day)

Weekly Average: 1700 lbs/day x 1.5 = 2550 expressed as 2600 lbs/day

Daily Maximum: 1700 lbs/day monthly x 2 = 3400 lbs/day

All mass load limitations are rounded to two significant figures, consistent with the number of significant figures associated with flow measurements with this facility, and with the accuracy of BOD measurements of 10 or greater.

Note: The current permit winter mass load limitations are retained because the permittee has not requested a mass load limit increase. The permittee has the option to request a mass load increase. In order for DEQ to consider this, the permittee would need to submit an anti-degradation review.

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

Table 3-4: BOD₅ and TSS Technology Based Effluent Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
BOD ₅ (May 1 – October 31)	mg/L	20	30	NA
	lbs/day	700	1000	1400
	% removal	85	NA	NA
TSS (May 1 – October 31)	mg/L	20	30	NA
	lbs/day	700	1000	1400
	% removal	85	NA	NA
BOD ₅ (November 1 – April 30)	mg/L	30	45	NA
	lbs/day	1000	1600	2100
	% removal	85	NA	NA
TSS (November 1 – April 30)	mg/L	30	45	NA
	lbs/day	1000	1600	2100
	% removal	85	NA	NA

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 Columbia River. These uses are listed in OAR-340-041-0101 for the Main Stem Columbia River 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
- Hydro power
- 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_LK_1707010504_88_100137
AU Name:	Columbia River
AU Status:	Impaired
Year Listed	1998
Year Last Assessed	2022
303d Parameters (Category 5)	pH, Methylmercury, PCBs
TMDL Parameters (Category 4)	
Total Dissolved Gas, Dioxin, Temperature	

Although the Integrated Report lists pH as water quality limited, an analysis was done during the last permit renewal that indicated the assessment unit was meeting the pH WQ criteria and assimilative capacity is available. DEQ plans to delist the Assessment Unit for pH in the 2024 Integrated Report. Methylmercury and PCBs are addressed in the toxics pollutants sections (3.3.9).

3.3.3 TMDL Wasteload Allocations

DEQ has developed Total Dissolved Gas and Dioxin Total Maximum Daily Loads (TMDLs) for the Columbia River. These TMDLs do not indicate The Dalles WWTP as a source of total

dissolved gas or dioxin. EPA issued a Temperature TMDL for the Columbia River. The WLA from this TMDL that is applicable to the permittee is listed in the following table.

Table 3-6: Applicable WLAs

Parameter	WLA	Time Period
Thermal Load	4.23 x 10 ⁸ kcal/day	June 1 – 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.
- Previous effluent limits (see section 3.1).
- Applicable TMDLs or 303(d) list (see section 3.3.2).
- Applicable TBELs (see section 3.2).

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

Table 3-7: Domestic Pollutants of Concern

≥ 1.0 mgd	Bacteria, pH, Temperature, Total Residual Chlorine, Total Ammonia Nitrogen, Metals, Volatile Organic Compounds, Acid Extractable Compounds, Base Neutral Compounds, and Any Other Pollutants Which Have State Water Quality Criteria
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The following sections outline the analyses conducted for the pollutants of concern to determine whether water quality based effluent limits are necessary for the facility's effluent to be protective of applicable water quality standards.

3.3.5 Regulatory Mixing Zone

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

The mixing zone is that portion of the Columbia River within a 100 foot radius of the point of discharge. The Zone of Immediate Dilution (ZID) is that portion of the mixing zone within a 10 foot radius of the point of discharge.

The proposed permit contains an updated regulatory mixing zone description which is described as follows. The description was updated to a boundary only downstream of the point of discharge, rather than a radius both upstream and downstream, as there is no tidal influence at this site. The boundary distance remains the same.

The Regulatory Mixing Zone (RMZ) is that portion of the Columbia River which extends 100-feet downstream of the point of discharge (end of pipe). The Zone of Immediate Dilution (ZID) is that portion of the Columbia River which extends 10-feet downstream of the point of discharge (end of pipe).

Outfall 001 is buried from the length of the wastewater treatment plant to the riverbank, where it then emerges from the riverbank on the south shoreline. The portion of the outfall extending into the Columbia River is a 39-inch internal diameter reinforced concrete pipe that extends 220 feet from the riverbank. The outfall is pile supported above the riverbed for its entire length. The submerged outfall pipe has a 21-inch port at 10 feet below the normal river level and it is angled 15 degrees downward and perpendicular to the river flow. The outfall pipe also includes a high-water flow relief port (standpipe structure) for use during peak river and wastewater flow conditions, and it is located approximately 30 feet inshore from the outfall terminus and it consists of a 24-inch submerged discharge directed downstream. The relief port may be used during high flow conditions and no study has been conducted to determine dilutions under those conditions. It is assumed that the same or better dilution would be achieved if the river flow was at high stage and the relief port was active.

The dilution factors at the edge of the Regulatory Mixing Zone and Zone of Initial Dilution are shown in Table 3-8. These dilutions are based on a 2013 mixing zone study reviewed by DEQ. The mixing zone memo documenting this review is in a March 5, 2024 Mixing Zone Memo which is part of the administrative record. The same dilution factors outlined in the table below were used in the 2013 renewal of Oregon Cherry Growers – Downtown (101593) and in the 2018 renewal of The Dalles STP (101728) because they share the same outfall to the river.

Table 3-8: Dilution Summary

Dilution Summary – Outfall 001 – Year-Round					
Water Quality Standard	Stream Flow (cfs)		Effluent Flow (mgd)		Dilution Factor
	Statistic	Flow	Statistic	Flow	

Aquatic Life, Acute	1Q10	63,535	☐ ADWDF x PF ☐ Max Daily Avg ☒ Other	5.21	3	ZID (10 ft)
Aquatic Life, Chronic	7Q10	77,809	☐ ADWDF ☐ Max Monthly Avg ☒ Other	3.37	47	RMZ (100 ft)
Human Health, Non-Carcinogen	30Q5	89,882	☐ ADWDF ☐ Max Monthly Avg ☒ Other	3.37	71	RMZ (100 ft)
Human Health, Carcinogen	Harmonic Mean	152,057	☐ Annual Avg Design ☐ Annual Avg ☒ Other	2.77	59	RMZ (100 ft)
<i>ADWDF = Average dry weather design flow</i> <i>PF = Peaking factor (1.5)</i>						
Comments: For stream flow, USGS gauge # 14105700 (1982-2011) was used, calculated using DFLOW 3.1b or earlier. For effluent flows, the values used are combined flows of both the Dalles WWTP and Oregon Cherry Growers Downtown (permit #101593). The dilutions calculated are using combined flow and temperature from both facilities.						

3.3.6 pH

The pH criterion for this basin is 7.0 – 8.5 per OAR 340-041-0104. DEQ determined there is reasonable potential for the discharge to exceed the pH criterion at the edge of the mixing zone. The lower proposed pH limit is 6.1 and is a WQBEL. The upper proposed pH limit is 9.0 and is a TBEL. The following provides a summary of the data used for the analysis.

Table 3-9: pH Reasonable Potential Analysis

INPUT	Lower pH Criteria	Upper pH Criteria
1. Dilution at mixing zone boundary	47.0	47.0
2. Upstream characteristics		
a. Temperature (deg C)	22.1	8.8
b. pH	7.6	8.0
c. Alkalinity (mg CaCO ₃ /L)	48.7	48.7
3. Effluent characteristics		
a. Temperature (°C)	24.1	14.6
b. pH (S.U.)	6.0	9.0
c. Alkalinity (mg CaCO ₃ /L)	243.2	243.2
4. Applicable pH criteria	7.0	8.5
pH at mixing zone boundary	6.9	8.0
Is there reasonable potential?	Yes	No
Proposed effluent limits	6.1	9.0
Effluent data source: DMRs 2019-2023		
Ambient data source: Station ORDEQ-35594 & The Dalles Ambient Data Collection		

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 3-10: Temperature Criteria Information

Applicable Temperature Criterion	Migration Corridor 20°C (OAR 340-041-0028(4)(d))
Applicable dates: Year-Round	
Salmon/Steelhead Spawning 13 °C? OAR 340-041-0028(4)(a)	☐ Yes ☒ No
Applicable dates: N/A	
WQ-limited?	☒ Yes ☐ No
TMDL wasteload allocation assigned?	☒ Yes ☐ No
Applicable dates: June 1 – October 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 Columbia and Lower Snake Rivers Temperature Total Maximum Daily Load assigns a wasteload allocation to the facility, which applies to their discharge. This allocation is addressed in the proposed permit by including an effluent limit of 423 million kcal/day thermal load, expressed as a monthly average, from June through October.

To demonstrate compliance with the thermal load limit, the daily thermal load discharged is calculated by multiplying the daily effluent flow by the average daily effluent temperature and a standard conversion factor.

The following formula is to be used to calculate the thermal loading of the effluent:

$$TL_e = T_e \times Q_e \times c$$

Where,

TL_e = Daily Thermal Load (million kcal/day)

T_e = Daily average effluent temperature (°C).

Q_e = Daily Effluent Flow (million gallon per day (MGD))

c = Conversion factor = 3.78

The daily thermal load values are then averaged over the month to give the monthly thermal load discharged, which must be equal to or less than 423 million kcal/day for the June through October period. The TMDL requires no limitation for the remainder of the year.

The final effluent limit is listed in the following table and is included in the proposed permit.

Table 3-11: Temperature Criterion Effluent Limits

Effluent limit needed? ☒ Yes ☐ No
TMDL WLA Limit: 423 million kcal/day
Applicable time period: June 1 – October 31
Temperature Criterion Limit: N/A
Applicable time period: ☒ NA
Comments:

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°C or more for salmon and steelhead, and 9 °C or more for bull trout

OAR 340-041-0101 does not list spawning as a beneficial use for this section of the river, and thus, this rule does not apply.

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

The facility's maximum daily effluent temperature is 26.2 °C, which is well below the lethal criterion of 32 °C, thus acute impairment or instantaneous lethality are prevented.

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

An analysis related to thermal shock, included in Appendix A, 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 not be above 25 °C. 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 °C or greater, migration blockage is prevented or minimized by limiting potential fish exposure to temperatures of

21 °C or more to less than 25% of the cross-section of 100% of the 7Q10 flow of the water body.

The migration blockage portion of the rule is based primarily on the USEPA guidance document, EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards (April 2003). Section V.3. of the document gives guidance on protecting salmonids from thermal plume impacts and provides this discussion on migration blockage:

Adult migration blockage conditions can occur at 21 °C ... Therefore, EPA suggests that the cross-sectional area of a river at or above 21 °C be limited to less than 25% or, if upstream temperature exceeds 21 °C, the thermal plume be limited such that 75% of the cross-sectional area of the river has less than a de minimis (e.g., 0.25 °C) temperature increase.

The maximum recorded receiving water temperature upstream of the discharge location is 24.5 °C. An analysis related to migration blockage, included in Appendix A, indicates that when the receiving water temperature is 21.0 °C and the effluent temperature is at the maximum recorded value 26.2 °C, the effluent plume when it reaches 25% of the receiving stream's cross-sectional area will be 21.0 °C. This represents an increase of less than 0.1 °C over the upstream temperature and is considered a de minimis increase which prevents or minimizes migration blockage.

Table 3-12: 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 28 hours after the original sample was taken. The following table includes the proposed permit limits and apply year round.

Table 3-13: 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 table provides a summary of the data used for the ammonia analysis and the results of the analysis. The ammonia analysis included a characterization of the effluent and ambient data – pH, temperature and ammonia. The reasonable potential analysis did show a potential to exceed the ammonia criteria. As a result permit limits are proposed in the following tables.

Table 3-14: Ammonia Analysis Information - Summer

	Acute	Chronic	
		4-day	30-day
Dilution	3	47	71
Ammonia Criteria	6.2	1.4	0.5
Effluent Data Used			
Ammonia (mg/L)	20.0	20.0	
pH (SU)	7.4	7.4	
Temperature (°C)	25.1	25.1	
Alkalinity (mg/L CaCO3)	217.0	217.0	
Receiving Stream Data Used			
Ammonia (mg/L)	0.4	0.4	
pH (SU)	8.2	8.2	
Temperature (°C)	22.7	22.7	
Alkalinity (mg/L CaCO3)	61.6	61.6	
Ammonia Limit Needed?	Yes		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	6.1	18.0	
Effluent data source			
The Dalles DMRs 2019-2024			
Ambient data source			
35594-ORDEQ & The Dalles Ambient Data Collection			

Table 3-15: Ammonia Analysis Information - Winter

	Acute	Chronic	
		4-day	30-day
Dilution	3	47	71
Ammonia Criteria	10.3	2.3	0.9
Effluent Data Used			
Ammonia (mg/L)	19.0	19.0	
pH (SU)	7.4	7.4	
Temperature (°C)	18.3	18.3	
Alkalinity (mg/L CaCO3)	172.4	172.4	
Receiving Stream Data Used			
Ammonia (mg/L)	0.0	0.0	
pH (SU)	8.3	8.3	
Temperature (°C)	11.9	11.9	
Alkalinity (mg/L CaCO3)	77.4	77.4	
Ammonia Limit Needed?	Yes		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	10.5	30.9	
Effluent data source			
The Dalles DMRs 2019-2024			
Ambient data source			
35594-ORDEQ & The Dalles Ambient Data Collection			

3.3.9.2 Priority Pollutant Toxics

DEQ conducted a reasonable potential analysis for the groups of toxics listed in the following table. A complete list of pollutants for each toxic group can be found in 40 CFR 122 Appendix J. A complete list of analytes with state Water Quality Criteria can be found in OAR 340-041-8033 Tables 30 and 40.

Table 3-16: Toxic Pollutants Analyzed

Toxic Group
Metals
Volatile Organic Compounds
Acid Extractable Compounds
Base-Neutral Compounds

Pesticides
Effluent data source: DMRs 2019-2022
Receiving water data source: Columbia River & Portland Airport (for Arsenic and Cyanide)

There was no reasonable potential for any of the toxic pollutants analyzed to exceed criteria; therefore, no limits are included in the proposed permit for priority pollutants. Information for toxic pollutants without limits for this permit renewal is included in the permit file.

3.3.9.3 Copper Biotic Ligand Model

Monthly paired effluent and ambient copper BLM input data was collected by The Dalles STP staff and analyzed by various labs starting in February 2019 through September 2020, resulting in 20 samples. For the RPAs, the mixed concentration of each input parameter were then entered into the BLM model to calculate the instantaneous water quality criteria (IWQC) for each paired data set. Each IWQC was compared to the corresponding copper concentration of the effluent or the calculated value at complete mix. Table 3-20 below shows the sample date, calculated criterion, calculated copper value, and toxic unit (copper concentration divided by the instantaneous criterion). A toxic unit greater than one, indicates there is a potential for the discharge to exceed the criterion. A toxic unit of NA indicates that either the effluent data was below the calculated criteria, the effluent data was non-detect, or the copper data was in the total recoverable instead of dissolved fraction. There is no reasonable potential to exceed the copper criterion because there were not any toxic units that exceeded 1.0.

Table 3-17: Copper Results

Date	Effluent Cu ug/L	Ambient Cu ug/L	ZID	BLM CMC	Toxic Units	RMZ	BLM CCC	Toxic Units	100% mix	BLM CCC	Toxic Units
			Cu ug/L	ug/L		Cu ug/L	ug/L		Cu ug/L	Cu ug/L	
2019-02-27	2.4	0.00	0.80	14.51	0.06	0.05	3.76	0.01	0.00	3.27	0.00
2019-03-07	0.00	0.00	0.00	22.27	NA	0.00	6.27	NA	0.00	5.88	NA
2019-04-03	2.3	0.00	0.77	25.81	0.03	0.05	8.35	0.01	0.00	10.79	0.00
2019-05-08	2.4	0.00	0.80	19.16	0.04	0.05	8.92	0.01	0.00	10.90	0.00
2019-06-12	0.00	0.00	0.00	13.75	NA	0.00	7.69	NA	0.00	8.74	NA
2019-07-10	2.6	0.00	0.87	16.62	0.05	0.06	8.46	0.01	0.00	10.48	0.00
2019-08-08	0.00	0.00	0.00	20.46	NA	0.00	10.07	NA	0.00	10.75	NA
2019-09-04	0.00	0.00	0.00	16.07	NA	0.00	9.03	NA	0.00	11.80	NA
2019-10-09	2.6	0.00	0.87	14.73	0.06	0.06	6.70	0.01	0.00	6.67	0.00
2019-11-06	2.8	0.00	0.93	7.66	0.12	0.06	4.96	0.01	0.00	6.17	0.00
2019-12-18	2.3	0.00	0.77	10.90	0.07	0.05	4.89	0.01	0.00	5.60	0.00
2020-01-22	2.9	0.00	0.97	12.60	0.08	0.06	6.11	0.01	0.00	6.64	0.00
2020-02-05	0.00	0.00	0.00	11.17	NA	0.00	5.81	NA	0.00	6.07	NA
2020-03-04	3	0.00	1.00	12.13	0.08	0.06	5.54	0.01	0.00	5.89	0.00
2020-04-08	0.00	0.00	0.00	10.38	NA	0.00	8.03	NA	0.00	10.21	NA
2020-05-13	0.00	0.00	0.00	24.70	NA	0.00	7.37	NA	0.00	7.53	NA
2020-06-03	1.5	0.00	0.50	16.82	0.03	0.03	7.42	0.00	0.00	7.07	0.00
2020-07-08	2.4	0.00	0.80	29.83	0.03	0.05	4.59	0.01	0.00	3.60	0.00
2020-08-12	0.00	0.00	0.00	21.86	NA	0.00	8.34	NA	0.00	8.67	NA
2020-09-16	0.00	0.00	0.00	23.85	NA	0.00	9.91	NA	0.00	11.71	NA

3.3.9.4 Aluminum

Monthly paired effluent and ambient aluminum criteria input data was collected by The Dalles STP staff and analyzed by various labs starting in February 2019 through September 2020 resulting in 20 samples. For the RPAs, the mixed concentration of each input parameter were then entered into the aluminum criteria model to calculate the instantaneous water quality criteria (IWQC) for each paired data set. Each IWQC was compared to the corresponding aluminum concentration of the effluent or the calculated value at the ZID boundary, the MZ boundary, and at complete mix. Table 3-21 below shows the sample date, calculated criterion, calculated aluminum value, and toxic unit (aluminum concentration divided by the instantaneous criterion). A toxic unit greater than one, indicates there is a concern that the discharge may have the potential to cause or contribute to an exceedance of the criterion. A toxic unit of NA indicates that either the effluent data was below the calculated criteria or the effluent data was non-detect. There is no reasonable potential to exceed the aluminum criterion because there were not any toxic units that exceeded 1.0.

Table 3-18: Aluminum Results

Date	Ambient Al ug/L	Effluent Al ug/L	ZID	CMC	Toxic Units	RMZ	CCC	Toxic Units	100% mix	CCC	Toxic Units
			Al ug/L	ug/L		Al ug/L	ug/L		Al ug/L	Al ug/L	
2019-02-27	87	70	76	2300	0.03	70	690	0.10	70	700	0.10
2019-03-07	120	94	103	2900	0.04	95	1200	0.08	94	1400	0.07
2019-04-03	110	460	343	3000	0.11	453	980	0.46	460	1500	0.31
2019-05-08	51	640	444	2500	0.18	627	1100	0.57	640	1500	0.43
2019-06-12	36	350	245	2300	0.11	343	980	0.35	350	1200	0.29
2019-07-10	76	180	145	2300	0.06	178	1100	0.16	180	1500	0.12
2019-08-08	93	100	98	2700	0.04	100	1100	0.09	100	1400	0.07
2019-09-04	46	140	109	2500	0.04	138	1300	0.11	140	1400	0.10
2019-10-09	140	130	133	2300	0.06	130	950	0.14	130	1100	0.12
2019-11-06	45	110	88	1700	0.05	109	950	0.11	110	1200	0.09
2019-12-18	56	72	67	1900	0.04	72	880	0.08	72	1000	0.07
2020-01-22	140	110	120	2000	0.06	111	1100	0.10	110	1400	0.08
2020-02-05	66	250	189	2100	0.09	246	1000	0.25	250	1200	0.21
2020-03-04	53	450	318	2100	0.15	442	960	0.46	450	1200	0.37
2020-04-08	62	200	154	2000	0.08	197	1300	0.15	200	1500	0.13
2020-05-13	38	260	186	2700	0.07	255	900	0.28	260	950	0.27
2020-06-03	35	260	185	2400	0.08	255	840	0.30	260	880	0.30
2020-07-08	120	170	153	3000	0.05	169	620	0.27	170	590	0.29
2020-08-12	46	79	68	2600	0.03	78	1200	0.07	79	1300	0.06
2020-09-16	37	84	68	2700	0.03	83	1300	0.06	84	1600	0.05

3.3.9.5 Mercury – Human Health Criterion

Oregon's human health water quality criterion for mercury is expressed in terms of a fish tissue concentration rather than a water column concentration. Because of this, DEQ's approach to performing the reasonable potential analysis for mercury is different from that for other

parameters. This approach is described in DEQ's "Implementation of Methylmercury in NPDES Permits" internal management directive.

According to the IMD, "Any facility contributing significant and consistent concentrations of total mercury to the receiving water body is considered to have the reasonable potential to exceed the water quality criterion unless a site-specific survey determines otherwise." Because the water quality criterion for mercury is a fish tissue-based concentration rather than a water column concentration, permit limits for mercury cannot be expressed in terms of a concentration. Therefore, when mercury is present in treated effluent on a consistent basis, the permit needs to contain mercury monitoring, plus a narrative effluent limit that consists of a Mercury Minimization Plan (MMP).

This facility has already developed and implemented a mercury minimization plan. Therefore, the proposed permit includes a requirement (in Schedule A) for the facility to review and update the mercury minimization plan during the last year of the permit cycle, and to submit the revisions with their next permit application. The proposed permit also includes (in Schedule B) monitoring associated with the mercury minimization plan.

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

Whole effluent toxicity (WET) tests are used to determine the treated wastewater's aggregate toxic effect on aquatic organisms. Wastewater samples are collected and aquatic organisms are subjected to a range of concentrations in controlled laboratory experiments. EPA recommends that WET tests be used in NPDES permits together with requirements based on chemical-specific water quality criteria.

WET tests are used to determine the percentage of effluent that produces an adverse effect on a group of test organisms. The measured effect may be fertilization, growth, reproduction, or survival. EPA's methodology includes both an acute test and a chronic test. An acute WET test is considered to show toxicity if adverse effects occur at effluent concentrations less than what is found at the edge of the zone of immediate dilution (ZID). A chronic WET test is considered to show toxicity if adverse effects occur at effluent concentration less than what is known to occur at the edge of the mixing zone.

3.7 Groundwater

The treatment facility does not have any basins, ponds or lagoons that have the potential to leach into the groundwater if adequately maintained. 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.

6. Schedule C: Compliance Schedule

The proposed permit contains a new effluent limit for ammonia. The facility is unable to meet this limit upon permit issuance. The proposed permit contains a compliance schedule that allows time for the facility to make facility modifications in order to meet the new limits. This compliance schedule lays out a series of milestones which, upon completion, will require the permittee to meet the permit's water quality-based effluent limits (see 40 CFR 122.47 and OAR 340-041-0061(12)).

The ammonia limits addressed in the schedule are new WQBELs, and it has been determined that the permittee will not be able to meet these limits upon the permit's effective date. DEQ has determined that the proposed compliance schedule requires the permittee to meet the final limits as soon as possible. The milestones required and associated deadlines are documented in the permit.

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 Emergency Response and Public Notification Plan

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

7.3 Exempt Wastewater Reuse at the Treatment System

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

7.4 Biosolids Management Plan

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

7.5 Wastewater Solids Transfers

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

7.6 Whole Effluent Toxicity Testing

The permittee is required to perform WET testing to ensure the aggregate of toxics is not negatively impacting aquatic life. This condition describes the test procedures and requirement for the WET testing. A dilution series has been specified on the basis of the mixing zone analysis.

7.7 Operator Certification

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

7.8 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: Thermal Plumes RPA

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 salmonids (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: The Dalles		Date: 08.14.2024	
OAR 340-041-0053(2)(d)(C): Thermal Shock 25 deg C at 5% of the stream cross section		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:		Enter data into white cells below:	
7Q10 = 77809 cfs	Data Metric/Source	7Q10 = 77809 cfs	Data Metric/Source
Ambient Temperature = 24.5 °C	MZ memo	Ambient Temperature = 21 °C	MZ memo
Effluent Flow = 4.1 mgd	Maximum ambient temperature from	Effluent Flow = 4.1 mgd	Criterion
Max Daily Effluent Temperature = 26.2 °C	WWTP Average Dry Weather Design Flow	Max 7dAM Effluent Temperature = 26.2 °C	WWTP Average Dry Weather Design Flow
	Max effluent temp (2019 - 2023) DMRs		Max effluent temp (2019 - 2023) DMRs
5% of 7Q10 = 3890.5 cfs		25% of 7Q10 = 19452.3 cfs	
5% dilution = 614	dilution = (Qr*0.05)/Qe + 1	25% dilution = 3068	dilution = (Qr*0.25)/Qe + 1
Temperature at 5% cross section = 24.5 °C	No Reasonable Potential	Temperature at 25% cross section = 21.0 °C	No Reasonable Potential
		ΔT at 25% Stream Flow = 0.0 °C	No Reasonable Potential
Notes:			