State of Oregon
Department of
Environmental
Quality

National Pollutant Discharge Elimination System
Permit Fact Sheet
Mt. Hood Meadows Ski Resort
Wastewater Treatment Plant

Permittee	Meadows Utilities Co., LLC P. O. Box 470 Mt. Hood Parkdale, Oregon 97041
Existing Permit Information	File Number: 58827 Permit Number: 100681 EPA Reference Number: OR0022829 Category: Domestic Class: Minor Expiration Date: March 31, 2025
Permittee Contact	Patricio Ramos Pino Water Resources Manager 541-399-3721 P. O. Box 470 Mt. Hood Parkdale, Oregon 97041
Receiving Water Information	Receiving stream/NHD name: East Fork Hood River NHD Reach Code & % along reach:17070105000131 40.1% USGS 12-digit HUC: 170701050501 WRD Administrative Basin: Hood River DEQ LLID & River Mile: 121627245574 RM 25.8 Assessment Unit ID: OR_WS_170701050501_02_101996
Proposed Action	Permit Renewal Application Number: 948045 Date Application Received: September 19, 2024
Permit Writer	Mark W. Hynson 503-229-5295 Date Prepared: 1/8/2025

NPDES Permit Fact Sheet
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1. Introduction

The Department of Environmental Quality (DEQ) proposes to renew the National Pollutant Discharge Elimination System (NPDES) wastewater permit for Meadows Utilities Company, LLC which owns and operates a private wastewater collection system and treatment plant located at the Mount Hood Meadows Ski Resort at 14040 Hwy. 35, Mt. Hood Parkdale, Or. 97041 (see Figure 2-1). This permit allows and regulates the discharge of treated domestic wastewater effluent to the East Fork of Hood River. The permit also allows the permittee to beneficially reuse wastewater solids.

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

The permit was last renewed in 2020 and expired on March 31, 2025. The proposed permit contains several substantive changes from the 2020 permit as a result of updated analysis of the facility's discharges. A summary of the major changes is presented below:

- Schedule A: (Waste Discharge Limits)
  - More stringent effluent limit for pH.
  - Updated monitoring and reporting protocols to current format

- Schedule D: (Special Conditions)
  Addition of requirements for:
  - Receiving Water Flow Monitoring Plan
  - Outfall Inspection

2. Facility Description

2.1 Wastewater Facility

Meadows Utilities Company, LLC owns and operates a private wastewater collection system and activated sludge wastewater treatment plant (WTP) that serves the Mt. Hood Meadows Ski Resort. The service area for the WTP includes the ski resort that contains two lodges consisting of six food service establishments, laundry, a day care center, three main restroom areas, offices, ski rental, sales and maintenance shops, and the on-site Providence Hood River Memorial Hospital Mountain Clinic. No overnight lodging facilities are currently included at the ski resort. Presently, the resort is undergoing a two-story addition. The addition includes gear rental and ski instruction areas plus a restaurant/bar. Kitchen waste will be conveyed to a grease interceptor prior to discharge to the collection system. The consultant overseeing the upgrades, Interface Engineering, Inc., indicated that wastewater operations should not expect a significant increase in effluent flow.

Sanitary wastewater is conveyed approximately one mile to a wastewater treatment facility that is located southeast of the ski resort's main parking area (Figure 2-1). Influent flows into a 600 gallon-per-minute sewage grinder. From the grinder, flow is directed into one of two 65,000-gallon sequencing batch reactor tanks (SBR2 and SBR3). The SBR2 and SBR3 alternate filling, mixing, aeration, and decanting on approximately 8-hour cycles. The third chamber (SBR1) is currently used to store and aerate wastewater solids. Secondary treated wastewater discharged from SBR2 and SBR3 is pumped into a 25,000-gallon tank, filtered through a Dynasand filter, disinfected with ultraviolet (UV) radiation, and discharged into the East Fork Hood River. Influent and effluent flows are measured using Fischer & Porter in-line magnetic flow meters.

Figure 2-1: Site Location

The facility produces Class B biosolids from the primary and secondary wastewater treatment processes for beneficial land applications. Solids from SBR1 are lime stabilized, pumped into a tanker truck and transported to an approved agricultural site south of The Dalles. Approximately 26,000 gallons of biosolids are land applied annually. The facility biosolids management plan and land application plan provide additional details and are available for public review upon request.

Primary solids (rags, plastics and other solids) are disposed of in a sanitary landfill. The facility transports such solids to the landfill by truck on a monthly basis.

A general facility treatment process diagram is provided as Appendix A.

2.2 Outfalls

The Mt. Hood Meadows Ski Resort WTP discharges year-round into the East Fork of Hood River at approximate River Mile 25.8. Effluent from the treatment facility is conveyed approximately 300 feet south to the river where is discharged through Outfall 001. The outfall is located on the north side of the river approximately 2 feet from riverbank and at a depth of 2 feet. The average flow rate per discharge is 0.01 MGD. Summary details on Outfall 001 are listed in the table below.

Table 2-1: List of Outfalls

Outfall Number	Type of Waste	Lat/Long
001	Treated Domestic Wastewater	45.321084/-123.652172 W

2.3 Stormwater

Stormwater is not addressed in this permit. A 1200-Z Industrial Stormwater permit is 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 since the sanitary collection system services a small ski resort with only domestic sources of wastewater (e.g., restrooms, food service establishments, laundry, and day care center). There are no industrial facilities or sources within the resort's limited sanitary collection system.

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(s) below show the limits contained in the existing permit. The limits of Tables 3-1 and 3-2 vary seasonally depending upon dilution values.

Table 3-1:Existing Effluent Limits (May 1–October 31: effluent flow, BOD_5 and TSS)

Parameter	Units	Statistic	Dilution (Qr/Qe) See Note a.		
			≥ 20	≥ 10 and < 20	< 10
Flow	MGD	Daily maximum	0.01875	0.0375	Discharge prohibited
BOD_5	mg/L	Monthly average	20	10	
	mg/L	Weekly average	20	10	
	lb/day	Monthly average	3.1	3.1	
	lb/day	Weekly average	4.7	4.7	
	lb/day	Daily maximum	6.2	6.2	
TSS	mg/L	Monthly average	20	10	
	mg/L	Weekly average	20	10	
	lb/day	Monthly average	3.1	3.1	
	lb/day	Weekly average	4.7	4.7	
	lb/day	Daily maximum	6.2	6.2	
Note: The dilution value is equal to the daily receiving stream flow (Qr) divided by daily effluent flow (Qe).					

Table 3-2: Existing Effluent Limits (November 1 – April 30: effluent flow, BOD_5 and TSS)

Parameter	Units	Statistic	Dilution (Qr/Qe) See Note a.		
			≥ 20	≥ 10 and < 20	< 10
Flow	MGD	Daily maximum	0.0375	0.0375	Discharge prohibited
BOD_5	mg/L	Monthly average	20	10	
	mg/L	Weekly average	20	10	
	lb/day	Monthly average	6.3	3.1	
	lb/day	Weekly average	9.5	4.7	
	lb/day	Daily maximum	13	6.2	
TSS	mg/L	Monthly average	20	10	
	mg/L	Weekly average	20	10	
	lb/day	Monthly average	6.3	3.1	
	lb/day	Weekly average	9.5	4.7	
	lb/day	Daily maximum	13	6.2	
Note: The dilution value is equal to the daily receiving stream flow (Qr) divided by daily effluent flow (Qe).					

Table 3-3: Permit Limits (Percent removal, pH, E. coli, temperature, and thermal load)

Parameter	Units	Limits
BOD_5 percent removal (Year-Round)	% removal	85 as a monthly average
TSS percent removal (Year-Round)	% removal	85 as a monthly average
pH (Year-Round)	SU	Instantaneous limit between a daily minimum of 6.0 and a daily maximum of 9.0
E. coli (Year-Round) See note a.	#/100 mL	Must not exceed a monthly geometric mean of 126, no single sample may exceed 406
Excess Thermal Load (May 1–Sep 30)	million kcal/day	3.0 as a 7-day rolling average
Discharge limitation (effluent flow) (Year-Round)	MGD	Discharge prohibited any time effluent temperature exceeds 20°C
Discharge limitation (effluent flow) (January 1–April 30)	MGD	Discharge prohibited any time the temperature of the EF Hood R exceeds 12.8°C (measured at the downstream edge of the mixing zone)
Discharge limitation (effluent flow) (October 1–December 31)	MGD	Discharge prohibited any time the temperature of the EF Hood R exceeds 17.8°C (measured at the downstream edge of the mixing zone)

Notes:

a. The permittee may take at least 5 consecutive re-samples at 4-hour intervals beginning within 28 hours after the original sample was taken and the geometric mean of the 5 re-samples is less than or equal to 126 E. coli organisms/100 mL to demonstrate compliance with the limit.

3.2 Technology-Based Effluent Limit Development

40 CFR 122.44(a)(1) requires that all NPDES permits include technology-based effluent limits (TBELS). DEQ also uses best professional judgement, as allowed under federal rule (40 CFR 125.3), to apply the secondary treatment standards as TBELS for domestic wastewater treatment facilities that are not publicly-owned. Publicly-owned treatment works (POTWs) are required to meet specific TBELS 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 Hood River basin.

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

Parameter	Federal Secondary Treatment Standards		Hood Basin-Specific Design Criteria (OAR 340-041-0165)
	30-Day Average	7-Day Average	Monthly Average
BOD_5 (mg/L)	30	45	Low stream flow (approximately May 1 - October 31; 10 mg/L for BOD and TSS High stream flow (approximately November 1 – April 30): minimum of secondary treatment or equivalent control
TSS (mg/L)	30	45	
pH (S.U.)	6.0 – 9.0. (instantaneous)		Not applicable
BOD_5 and TSS % Removal	85%	Not applicable	Not applicable

The limits for 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). In 1988, during design of the current facility, the DEQ plan review engineer determined the appropriate dilution factors (e.g., daily receiving stream flow divided by the daily effluent flows) and corresponding effluent concentration limits to comply with these criteria. For the summer low stream flow period (May 1 – October 31), it was determined that an effluent concentration limit of 10 mg/L for both BOD and TSS was necessary along with a minimum stream flow/effluent flow dilution ratio of 10:1 and maximum daily effluent flow of 0.0375 MGD was necessary to comply with the basin criterion. The 0.0375 MGD is the facility's monthly average effluent design flow. In addition, it was determined that an effluent concentration of 20 mg/L for both BOD and TSS with effluent flows at or below one-half the design flow (a monthly average effluent flow 0.01875 MGD) and a stream/effluent flow dilution ratio of at least 20:1 would result in control equivalent.

For the Nov. 1 to April 30 period, it was determined that an effluent concentration of 20 mg/L for both BOD and TSS at a monthly average effluent flow 0.0375 MGD and a stream/effluent flow dilution ratio of 20:1 would provide equivalent to secondary treatment (the high stream flow period criterion). For dilution ratio below 20:1, the allowable effluent concentrations would need to be reduced (with concentrations of 10 mg/L at a dilution ratio of 10:1).

The following equation is used to develop the BOD5 and TSS monthly average mass load limits from the concentration limits described above. The limits are rounded to two significant figures.

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 average dry weather flow (ADWF) or average wet weather flow (ADWWF)

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

Table 3-5: Design Flows and Concentrations Limits

Season	Design Flow (mgd)	Monthly TSS Concentration Limit (mg/L)	Monthly BOD_5 Concentration Limit (mg/L)
Dry Weather (See note a.)	0.0187	20	20
Dry Weather (See note b.)	0.0375	10	10
Wet Weather	0.0375	20	20
Notes: a). Monthly average design flows and concentrations when stream/effluent flow dilution ratios are greater than 20:1. b.) Monthly average design flows and concentrations when stream/effluent flow dilution ratios are ≥10:1 and <20:1.			

Dry Weather Mass Load Calculations (stream/effluent flow dilution ratios are greater than 20:1:

Monthly Average: 0.0187 MGD x 20 mg/L x 8.34 = 3.1 lbs/day

Weekly Average: 3.1 lbs/day monthly average x 1.5 = 4.7 lbs/day

Daily Maximum: 3.1 lbs/day monthly average x 2 = 6.2 lbs/day

Dry Weather Mass Load Calculations (stream/effluent flow dilution ratios are ≥10:1 and < 20:1):

Monthly Average: 0.0375 MGD x 10 mg/L x 8.34 = 3.1 lbs/day

Weekly Average: 3.1 lbs/day monthly average x 1.5 = 4.7 lbs/day

Daily Maximum: 3.1 lbs/day monthly average x 2 = 6.2 lbs/day

Wet Weather Mass Load Calculations:

Monthly Average: 0.0375 MGD x 20 mg/L x 8.34 = 6.3 lbs/day

Weekly Average: 6.3 lbs/day monthly average x 1.5 = 9.4 lbs/day

Daily Maximum: 6.3 lbs/day monthly average x 2 = 12.6 lbs/day (rounded to 13 lbs/day, two significant figures)

The proposed BOD_5 and TSS concentration, mass limits and percent removal efficiencies are listed in the following table.

Table 3-6: BOD5 and TSS Technology Based Effluent Limits

Parameter	Receiving Stream Dilution (Q_R/Q_E) (See Note a.)	Units	Average Monthly	Average Weekly	Daily Maximum
Effluent Flow	<10 (Year-round)	MGD	**No discharge (Daily Max Limit = 0 MGD)**		
	≥10 and <20 (Year-round)	MGD	-	-	0.0375
	≥20 (May 1 – October 31)	MGD	-	-	0.01875
	≥20 (Nov 1 – April 30)	MGD	-	-	0.0375
BOD_5 (Year-round)	≥10 and <20	mg/L	10	10	-
		lb/day	3.1	4.7	6.2
TSS (Year-round)	≥10 and <20	mg/L	10	10	-
		lb/day	3.1	4.7	6.2
BOD_5 (May 1 - Oct. 31)	≥20	mg/L	20	20	-
		lb/day	3.1	4.7	6.2
TSS (May 1 – Oct. 31)	≥20	mg/L	20	20	-
		lb/day	3.1	4.7	6.2
BOD (Nov. 1 – April 30)	≥20	mg/L	20	20	-
		lb/day	6.3	9.5	13
TSS (Nov. 1 – April 30)	≥20	mg/L	20	20	-
		lb/day	6.3	9.5	13
BOD and TSS Percent Removal (Year – round)	N/A (All dilutions)	% Removal	85	-	-
Notes:					

Parameter	Receiving Stream Dilution (Q_R/Q_E) (See Note a.)	Units	Average Monthly	Average Weekly	Daily Maximum
a.) The dilution value is equal to the maximum daily receiving stream flow (Q_R-MGD) divided by the maximum daily effluent flow (Q_E-MGD).					

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 Upper East Fork Hood River. These uses are listed in OAR-340-041-0160 for the Mid Columbia/Hood 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, and
- Hydro Power

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 This category constitutes the Section 303(d) list that EPA will approve or disapprove under the Clean Water Act. The table also lists any parameters with an TMDL wasteload allocation assigned to the facility (Category 4).

Table 3-7: 303(d) and TMDL Parameters

Water Quality Limited Parameters (Category 5)	
AU ID:	OR_WS_170701050501_02_101996

AU Name:	Upper East Fork Hood River
AU Status:	Impaired (See Note a.)
Year Listed	2002
Year Last Assessed	2022
Category 5 Parameters	Temperature – Year-round, Zinc – Aquatic Life Toxics
TMDL Parameters	
Temperature	
Notes: a.) The impaired status designation is for the Upper East Fork Hood River assessment unit.	

The Zinc-Aquatic Life Toxics impairment listing is from data collected in other drainages in the watershed that are several miles downstream of the Mount Hood Meadows WTP. In general, the Mount Hood Meadows WTP only receives and treats wastewater from domestic sources within the ski resort. Such minor domestic sources of sanitary wastewater are considered by the USEPA to be de minimis sources of zinc and is therefore not considered a pollutant of concern for the facility. As such, the Mount Hood Meadows WTP is not considered to be a contributing factor to the zinc impairment in the watershed.

3.3.3 TMDL Wasteload Allocations

Although the Upper East Fork Hood River is not currently listed as impaired for temperature, other drainages in the Hood River Valley are listed. As such, a Total Maximum Daily Load (TMDL)[1] for temperature in the Western Hood Subbasin (WHS) was developed by DEQ in 2001 and approved by USEPA in 2002. The 2001 TMDL was revised by DEQ in 2018 and approved by USEPA in 2018. A TMDL can be thought of as an estimate of the total amount of pollution a waterbody can assimilate without exceeding water quality standards.

The TMDL addresses the temperature listing for the Western Hood Subbasin which includes the Upper East Fork Hood River. The 2018 TMDL specifies a waste load allocation (WLA) for temperature for the Mount Hood Meadows WTP. A discussion of the temperature issues associated with the discharge and the relationship to the 2018 WHS TMDL is presented in Section 2.8.7.

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.

[1] Section 303(d) of the Clean Water Act requires each state to develop a list (the "303(d)" list) of water bodies that do not meet state surface water quality standards after implementation of technology-based controls. Each state is then required to complete a Total Maximum Daily Load (TMDL) for water bodies on the 303(d) list. The TMDL must address water quality on a basin-wide scale to ensure overall water quality standards will be met. The Western Hood Subbasin TMDL is available online at: https://www.oregon.gov/deq/wq/tmdls/Pages/midcolumbiahood.aspx

- 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 3-8: 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

Total Residual Chlorine is not a pollutant of concern for the Mount Hood Meadows WTP because the facility uses ultraviolet (UV) light for disinfection. Based upon effluent monitoring in the existing permit term, the DEQ has identified the following pollutants of concern for this facility:

Table 3-9: 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 regulatory mixing zone from the existing permit is described as:

The mixing zone is defined as 50 percent of the East Fork Hood River flow and no more than 100 feet downstream from the outfall. The zone of initial dilution is defined as 10 percent of the East Fork Hood River flow and no more than 10 feet downstream from the outlet into the river.

The proposed permit contains the same regulatory mixing zone boundaries which is described below. The description was updated to including current description conventions.

The Regulatory Mixing Zone (RMZ) is defined as 50 percent of the East Fork Hood River flow and no more than 100 feet downstream from the outfall. The Zone of Initial Dilution (ZID) is defined as 10 percent of the East Fork Hood River flow and no more than 10 feet downstream from the outlet into the river.

The outfall is located at 45.321084, -121.652172 (WGS 1984) and was located during a 2009 outfall survey by DEQ.

Figure 3-1: Outfall Location

The dilution factors at the edge of the Regulatory Mixing Zone and Zone of Initial Dilution are shown in Table 3-10. These dilutions are based on a September 4, 2024 mixing zone study by DEQ which is part of the administrative record. For this memo, the flow data from June 1, 2020 through July 31, 2024 collected by the permittee at an upstream flow gauge was used to determine the 1Q10, 7Q10, and 30Q5 at the outfall. The low flow statistics were determined using USGS Hydrologic Toolbox 1.1.0.[2] The dilution was calculated using the most stringent effluent flow limit, and the percentage of stream flow from the mixing zone description. The formula for calculating the dilution is

$$Dilution\ Factor\ = \frac{(Percentage\ of\ Stream\ Flow)(Qa) + Qe}{Qe}$$

Where Qa is the appropriate ambient flow statistic, and Qe is the appropriate effluent flow.

[2] Barlow, P.M., McHugh, A.R., Kiang, J.E., Zhai, T., Hummel, P., Duda, P., and Hinz, S., 2022, U.S. Geological Survey Hydrologic Toolbox — A graphical and mapping interface for analysis of hydrologic data: U.S. Geological Survey Techniques and Methods, book 4, chap. D3, 23 p., https://doi.org/10.3133/tm4D3.

Table 3-10: Outfall 001 Dilution Summary

Dilution Summary – Outfall 001 - 05-01 to 10-31 (Dry Weather)						
Water Quality Standard	**Stream Flow (cfs)**		**Effluent Flow (mgd)**		**Dilution Factor**	**Location**
	Statistic	**Flow**	**Statistic**	**Flow**		
Aquatic Life, Acute	1Q10	1.34	☐ ADWDF x PF ☐ Max Daily Avg ☒ Other: Flow limit	0.01875	5.6	ZID (10%)
Aquatic Life, Chronic	7Q10	1.34	☐ ADWDF ☐ Max Monthly Avg ☒ Other	0.01875	24	RMZ (50%)
Human Health, Non-Carcinogen	30Q5	1.83	☐ ADWDF ☐ Max Monthly Avg ☒ Other	0.01875	33	RMZ (50%)
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 – Outfall 001 - 11-01 to 04-30 (Wet Weather)						
Water Quality Standard	**Stream Flow (cfs)**		**Effluent Flow (mgd)**		**Dilution Factor**	**Location**
	Statistic	**Flow**	**Statistic**	**Flow**		
Aquatic Life, Acute	1Q10	2.65	☐ ADWDF x PF ☐ Max Daily Avg ☒ Other: Flow limit	0.0375	5.6	ZID (10%)
Aquatic Life, Chronic	7Q10	3.14	☐ ADWDF ☐ Max Monthly Avg ☒ Other	0.0375	28	RMZ (50%)
Human Health, Non-Carcinogen	30Q5	5.69	☐ ADWDF ☐ Max Monthly Avg ☒ Other	0.0375	50	RMZ (50%)
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 340-041-0165. Using the existing permit limits of 6.0 – 9.0, DEQ determined there is reasonable potential for the discharge to exceed the pH criterion at the edge of the mixing zone. As such, the proposed permit modifies the existing pH limits from 6.0 to 9.0 S.U. to 6.2 to 9.0 S.U. The lower limit of 6.2 is a WQBEL and the upper limit of 9.0 is a TBEL. The permittee has indicated that their facility will have no issues in meeting the more stringent pH limits. In addition, a review of effluent data during the existing permit term showed that the permittee will be able to meet the revised lower pH limit upon permit issuance. As such, no compliance schedule is required. The following table provides a summary of the data used for the analysis.

Table 3-11: pH Reasonable Potential Analysis

INPUT	Lower pH Criteria	Upper pH Criteria
1. Dilution at mixing zone boundary	24	24
2. Upstream characteristics		
a. Temperature (deg C)	14.2	2.9
b. pH	6.8	7.0
c. Alkalinity (mg CaCO3/L)	34.6	34.6
3. Effluent characteristics		
a. Temperature (°C)	16.3	9.3
b. pH (S.U.)	6.0	9.0
c. Alkalinity (mg CaCO3/L)	345.2	345.2
4. Applicable pH criteria	6.5	8.5
pH at mixing zone boundary	**6.4**	**7.2**
Is there reasonable potential?	**Yes**	**No**
Proposed effluent limits	**6.2**	**9.0**
Effluent data source: Mt. Hood Meadows WTP Discharge Monitoring Reports June 2020 through July 2024. Alkalinity and temperature data from January 2022 through December 2023.		
Ambient data source: Mt Hood Meadows WTP Discharge Monitoring Reports June 2020 through July 2024. Facility monitors receiving stream (East Fork Hood River).		

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 3-12: 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: N/A	
WQ-limited?	☐Yes ☒No
TMDL wasteload allocation assigned?	☒Yes ☐No
Applicable dates: May 1 – September 30	
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 section of the Upper East Fork Hood River into which the facility discharges is not designated for salmon/steelhead spawning. Designated salmon and steelhead spawning areas begin approximately 0.70 mile downstream of facility discharge (below Hwy 35 bridge).	

3.3.7.2 Temperature Criteria Analysis

During the development of the 2018 Western Hood Sub-basin TMDL, DEQ conducted a reasonable potential analysis for temperature based upon the salmon rearing and migration criterion of 18° C. Based upon the result of this analysis, the TMDL gave the Mt. Hood Meadows WTP a waste load allocation (WLA) of 3.0 gigacalories per day (Gcals/day) during the critical period of May 1 – September 30. Outside of this critical period (October 1 to April 30), the TMDL concluded that there was no reasonable potential for the temperature criteria to be exceeded, and the facility was assigned its current WLA which is included in the existing permit as an Excess Thermal Load Limit (ETTL).

In 2023, the fish use designation for the Upper East Fork Hood River was revised within Oregon Administrative Rules to core cold-water habitat with a criterion of 16° C. This criterion is applicable year-round. This change to the beneficial use is still awaiting EPA approval. However, since this use has been identified as an existing use, it is considered in this assessment

as required under DEQ's antidegradation rule and DEQ conducted a temperature reasonable potential analysis for the core cold water criterion. The analysis used the maximum effluent temperature (19.7 °C) reported by the WTP from June 2020 through July 2024. The results of this analysis indicate that there is no potential for the facility's discharge to exceed the core cold water temperature standard (see Appendix B – Attachment B-1).

While the segment of the river where the discharge occurs is not designated for spawning use, an analysis was completed to ensure the discharge will not lead to exceedances of the spawning criterion in the downstream segment where spawning is a listed beneficial use (Oct 1 – June 15). The applicable temperature criterion is 13 ºC. Since this section of the Upper East Fork Hood River is not listed as impaired for temperature during the spawning season, the analysis is based on ensuring that applicable criterion is met downstream where spawning occurs. The effluent temperature value used in this analysis is 18 °C which was recorded in June 2021. This value represents the maximum effluent temperature recorded on the facility's DMRs during the spawning seasons from 2020 through 2024. The results of this RPA indicate that there is no potential for the facility's discharge to exceed the 13 ºC criterion during the spawning season (see Appendix B – Attachment B-2).

3.3.7.3 Other Existing Permit Temperature Limitations

The existing permit includes several discharge prohibitions should effluent temperatures and ambient receiving stream temperatures exceed certain thresholds. For example, no effluent discharges are permitted at any time of the year should effluent temperatures exceed 20 °C. Two discharge prohibitions related to ambient stream temperatures apply from October 1 through April 30, which is the portion of the year when the WLA does not apply. These limitations prohibit discharge if ambient river temperatures exceed 17.8 °C from October 1 - December 31 and 12.8 °C from January 1 – April 30. Due to anti-backsliding concerns, these prohibitions will be retained in the proposed permit.

3.3.7.4 Proposed Temperature Effluent Limits

Based upon the results of analyses summarized above, the proposed permit will retain the TMDL WLA of 3.0 Gcal/day. The WLA will be expressed as an Excess Thermal Load Limit (ETLL) of 3.0 million kcal/day (which is equivalent to 3.0 Gcal/day) that is applicable from May 1 through September 30. This is a static limit based upon fixed critical effluent and ambient receiving stream flows.

The TMDL also allows for a flow-based WLA[3] which is also applicable during the critical period of May 1-September 30. This equation is presented below.

$$WLA = (HUA_{PS})(Q_E + Q_R)(C_F)$$

Where,

[3] The flow-based WLA is presented as Equation 3 on Page 41 in Section 7.1 (Wasteload Allocations) of the *Western Hood Sub-basin Total Maximum Daily Load (Revision to the 2001 Western Hood Subbasin TMDL)*. Oregon Department of Environmental Quality. February 2018.

HUA_{PS} = Human Use Allowance - 0.18°C
Q_E = effluent flow (cfs)
Q_R = upstream river flow (cfs)
C_F = conversion factor for calculating Gcals/day from °C-ft^3: (2.44665 Gcal-s/°C-ft3-day)

These WLAs are expressed as Excess Thermal Load Limits in the permit. As noted above, the TMDL included two implementation options for determining the applicable ETL Limit. The first option is a static limit based on critical river and effluent flows. The second option is based on the actual (measured) river and effluent flows. These two options are included in the proposed permit and are listed in the table below. (The flow-based equation has been modified to use effluent flow values in million gallons per day [mgd] and river flow values in cubic feet per second [cfs]).

The proposed permit will also retain the existing discharge prohibitions for certain effluent and ambient receiving stream thresholds. Proposed temperature limitations are presented below:

Table 3-13: Temperature Limits

Effluent limit needed? ☒Yes ☐No
TMDL Static WLA Limit (Option A): 3.0 million kcal/day as a 7-day rolling average (See note a.)
Applicable time period: May 1 – September 30
TMDL Flow-based WLA Limit (Option B): ETL Limit (ETLL) = (0.18)*(Q_E + Q_R *0.646) * 3.785 million kcal/day as a 7-day rolling average (See notes a., b. and c.).
Applicable time period: May 1 – September 30
Effluent Temperature Limit: 20 °C
Applicable time period: Year-Round
Ambient Temperature Discharge Prohibitions and Applicable Time Periods:
17.8 °C: October 1 – December 31 (No Discharge Permitted) (See note d.)
12.8 °C: January 1 – April 30 (No Discharge Permitted) (See note d.)
Notes: a.) The seven-day rolling average for any specific day is the average of the daily values for that day and the preceding six days. b.) Q_E = Daily Mean Effluent Flow (mgd); Q_R= Daily Mean River Flow (cfs) as recorded by permittee at facility. c.) This option is also applied as a seven-day rolling average ETL limit for each day that Option B limit is selected by the permittee. d.) Ambient temperatures as measured at the downstream edge of the mixing zone.

The TMDL WLA limit will be expressed as an ETTL in Schedule A of the permit. The permittee will be required to use the following formula for calculating the facility's ETL to determine compliance with the ETLL. Schedule B provides the permittee with instructions for reporting compliance with the ETL limit.

$$ETL = 3.785 * Q_E * \Delta T$$

Where:

Q_E = Daily Average Effluent Flow (MGD)
ΔT = Daily Maximum Effluent Temperature (°C) minus the ambient criterion from the TMDL (18 °C)

3.3.7.5 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.

  Mt. Hood Meadows Discharge: Based on the Hood Basin fish use and salmonid spawning use map contained in OAR 340-041-0028 Figure 160B, this segment of the Upper East Fork Hood River is not designated as spawning habitat. The nearest river segment designated as salmonid spawning habitat is approximately 0.7 miles downstream from the facility's point of discharge. Therefore, the discharge will not cause impairment of an active salmonid spawning area.

- 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.

  Mt. Hood Meadows Discharge: Based on a review of effluent temperatures recorded from June 2020 through July 2024, the maximum effluent temperature at Outfall 001 was 19.7 ºC in August 2020. Thus, anticipated peak temperatures are expected to be well below 32 ºC and are not expected to cause an 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.

  Mt. Hood Meadows Discharge: Based on a review of effluent temperatures recorded from June 2020 through July 2024, the maximum effluent temperature at Outfall 001 was 19.7 ºC in August 2020. Thus, anticipated peak temperatures are expected to be below 25 ºC which will prevent or minimize thermal shock due to the thermal plume.

- 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.

  Mt. Hood Meadows Discharge: Discharge monitoring reports from June 2020 through July 2024, reported a maximum effluent temperature of 19.7 ºC. Since the maximum effluent temperature is below 21 ºC, migration blockage caused by the discharges from Outfall 001 is prevented or minimized.

  In summary, the analysis indicates that the discharge from the Mt. Hood Meadows WTP meets the temperature thermal plume limits in OAR 340-041-0053(2)(d).

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 3-14: 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 analysis utilized effluent and receiving stream monitoring data reported by the facility in their monthly discharge monitoring reports from June 2020 through July 2024. The analysis indicated that the facility's discharge has no reasonable potential to exceed water quality criteria for ammonia and a limit for ammonia is not currently required for the discharge. The following table provides a summary of the data used for the ammonia analysis and the results of the analysis.

Table 3-15: Ammonia Analysis Information – Year-Round

	Acute	Chronic	
		4-day	30-day
Dilution	5.6	24	33
Ammonia Criteria	14.0	6.5	2.6
Effluent Data Used			
Ammonia (mg/L)	1.0	1.0	
pH (SU)	8.4	8.4	
Temperature (ºC)	18.6	18.6	
Alkalinity (mg/L CaCO3)	345.2	345.2	
Receiving Stream Data Used			
Ammonia (mg/L)	0.1	0.1	
pH (SU)	7.0	7.0	
Temperature (ºC)	14.2	14.2	
Alkalinity (mg/L CaCO3)	34.4	34.4	
Ammonia Limit Needed?	**No**		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	N/A	N/A	
Effluent data source			
Mt. Hood Meadows WTP Discharge Monitoring Reports June 2020 through July 2024.			
Ambient data source			
Discharge Monitoring Reports June 2020 through July 2024. Facility monitors ambient stream conditions. Ammonia and alkalinity data monitoring from January to December 2022.			

3.3.9.2 Mercury – Human Health Criterion

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

3.4 Antibacksliding

The proposed permit complies with the antibacksliding provisions of CWA sections 402(o) and 303(d)(4) and 40 CFR 122.44(l). The proposed limits are the same or more stringent than the existing permit or were prepared in accordance with Hood River Sub-basin TMDL 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. The proposed permit also includes an excess thermal load limit that is consistent with the Western Hood Sub-basin TMDL. Permit renewals with the same or more stringent discharge loadings as the previous permit are not considered to lower water quality from the existing condition. DEQ is not aware of any information that existing limits are not protecting the receiving stream's designated beneficial uses. DEQ is also not aware of any existing uses present within the water body that are not currently protected by standards developed to protect the designated uses. Therefore, DEQ has determined that the proposed discharge complies with DEQ's antidegradation policy. DEQ's antidegradation worksheet for this permit renewal is available upon request.

3.6 Whole Effluent Toxicity

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

3.7 Groundwater

The treatment facility does not have any basins, ponds or lagoons that have the potential to leach into the groundwater 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 permittee currently produces Class B biosolids for land application by distribution or sale and anticipates continuing to do so. 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 Recycled Water

The permittee does not currently operate a recycled water program nor anticipates initiating a recycled water program during the next permit cycle.

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:

7.1 Receiving Water Flow Monitoring Plan

A requirement for the permittee to develop a plan that describes the methods and standard operating procedures to measure stream flow in the Upper East Fork Hood River near the point of discharge.

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 permittee 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. The permittee will be required to update the biosolids management plan in the next permit term.

7.5 Wastewater Solids Transfers

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

7.6 Hauled Waste Control Plan

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

7.7 Hauled Waste Annual Report

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

7.8 Operator Certification

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

7.9 Outfall Inspection

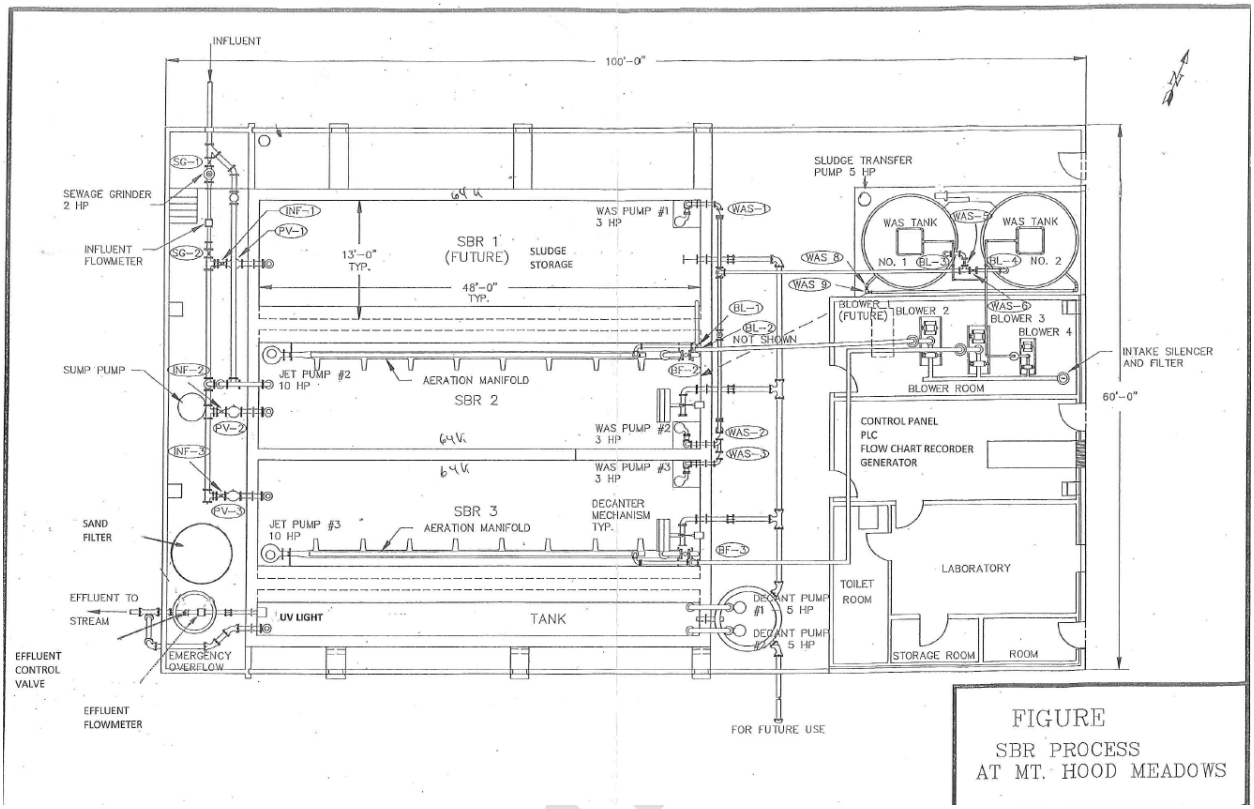
A condition that requires the permittee to inspect the outfall and submit a report regarding its condition.

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: Facility Treatment Process Diagram



Appendix B: Reasonable Potential Analysis – Temperature

Appendix B - Attachment B-1

Stream Meets Water Quality Criterion (OAR 340-041-0028(4))

For situations where the criterion is met (the waterbody is not listed as impaired for temperature) - Analysis at Edge of Mixing Zone
Section 5.4 of the Temperature IMD

Facility Name: Mt. Hood Meadows WTP **Date:** 10/7/2024
Applicable Criterion and Season: Core cold-water habitat: Year-Round - 16 C criterion

Enter data into white cells below:			Data Metric/Source
Mixing Zone Dilution =	24		MZ Study
Ambient Temperature =	15.9	°C	Temp set 0.1 C below criterion
Effluent Temperature =	19.7	°C	DMRs from June 2020 - July 2024: max. effluent temp in August 2020
Applicable Temperature Criterion =	16	°C	
Effluent Flow =	0.0375	mgd	Max. daily effluent flow

ΔT at MZ edge=	0.2 °C	No Reasonable Potential
Temperature at MZ edge=	16.1 °C	

Thermal Load Limit =	N/A	Million Kcals (7-day Rolling Avg.)
(relative to the ambient temperature used above)		

Note
This thermal load limit is the excess thermal load needed to increase the ambient temperature up to the criterion temperature. However, if the ambient temperature is less than 0.3°C below the criterion, then the thermal load limit is calculated as the excess thermal load necessary to increase the ambient temperature by 0.3°C (as directed by the IMD). Since the Thermal Load Limit above is the excess thermal load above the ambient temperature, compliance is evaluated using the usual equation to determine the actual load discharged, but using the ambient temperature as opposed to the criterion: ETL discharged = $(T_e - T_a)$*Qe*3.78541, where T_e is effluent temperature and T_a is the ambient temperature used above.

Equation used to calculate ΔT at edge of MZ

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

Equation used to calculate thermal load limit

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

Where:
Qe = Effluent Flow in mgd
S = Dilution
ΔT_{all} = Allowable temperature increase at edge of MZ (°C)
Cp = Specific Heat of Water (1 cal/g °C)
ρ = Density of Water (1 g/cm^3)
3785.41 = Flow conversion from mgd to m^3/day

Appendix B: Attachment B-2

Reasonable Potential Analysis: Spawning use at downstream location outside of mixing zone

Facility Name: Mt. Hood Meadows **Date:** 12/17/2024

Applicable Criterion and Season: Spawning Season October 1 - June 15: Analysis of impact of effluent on spawning criterion, at downstream location where spawning is listed as a beneficial use (0.7 miles downstream of discharge). The analysis is conservative since it doesn't consider additional ambient flows and resulting dilutions that may occur between discharge and spawning use

Enter data into white cells below:

			Data Metric/Source
Percent Mix for Analysis =	100		Effluent plume is expected to be at 100% mix at spawning
7Q10 or other critical ambient flow =	1.34	cfs	MZ study - 7Q10 value
Effluent Flow =	0.0375	mgd	Max. daily effluent flow
Applicable Ambient Temperature =	13	°C	Spawning Criterion
Effluent Temperature =	18	°C	DMRs -June 2020 - July 2024; max. spawning season effluent temp June 2021
Allowable increase =	0.3	°C	

Dilution at 100 % of Stream Flow = **24** dilution = (Qr * % mix)/Qe + 1

ΔT at 100 % of stream flow	**0.2**	**°C**	**No Reasonable Potential**

Thermal Load Limit = N/A Million Kcals (7-day Rolling Avg.)

Equation used to calculate ΔT at edge of MZ

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

Equation used to calculate thermal load limit

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

Where:

- Qe = Effluent Flow in mgd
- S = Dilution
- ΔT_{all} = Allowable temperature increase at edge of MZ (°C)
- Cp = Specific Heat of Water (1 cal/g °C)
- ρ = Density of Water (1 g/cm^3)
- 3785.41 = Flow conversion from mgd to m^3/day