PUBLIC NOTICE

Date posted: 11/5/2024

DEQ Requests Comments on Proposed City of Vernonia Water Quality Permit Renewal

HOW TO PROVIDE PUBLIC COMMENT

Facility name: City of Vernonia sewage treatment plant

Permit type: National Pollutant Discharge Elimination System permit

Comments due by: Tuesday, Dec. 10, 2024 at 5 p.m.

Send written comments to:

By mail: Trinh Hansen, Oregon DEQ, Permit Coordinator

4026 Fairview Industrial Drive SE, Salem, OR 97302

By email: trinh.hansen@deq.oregon.gov

The Oregon Department of Environmental Quality invites the public to provide written comments on the conditions of City of Vernonia sewage treatment plant's proposed water quality permit, known officially as a National Pollutant Discharge Elimination System permit.

Summary

Subject to public review and comment, DEQ intends to renew the proposed water quality permit, which allows the City of Vernonia sewage treatment plant to discharge wastewater to the Nehalem River**.**

About the facility

The City of Vernonia has applied for a water quality permit renewal for the city's sewage treatment plant located at 605 California Ave. in Vernonia. DEQ last renewed this permit in November 2007. The facility is a lagoon wastewater treatment system that operates in accordance with DEQ water quality standards. The permit limits the discharge of five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), total residual chlorine, ammonia, pH, *E. coli*, and excess thermal load to the Nehalem River. The permit also limits the discharge of BOD_5, TSS, total residual chlorine, ammonia, pH, *E. coli*, temperature, nitrate and specific conductivity through a subsurface system underneath the Banks-Vernonia State Trail.

The facility discharges to the Nehalem River near Vernonia Lake and to the ground underneath the Banks-Vernonia State Trail. The Nehalem River is listed as impaired (category 4 or 5) for one pollutant, temperature, according to the most recent U.S. Environmental Protection Agency-approved integrated report for Oregon. The proposed permit reflects effluent limits established through reasonable potential analysis, best available technology, or the North Coast Basin Total Maximum Daily Load, or TMDL, for temperature.

The most recent DEQ inspection of the Vernonia plant was on April 18, 2023. DEQ did not identify violations during this inspection. The plant has had seven water quality violations in the past five years. The issues related to these past compliance issues are being addressed and the facility is currently operating in full compliance.

Translation or other formats

Español | 한국어 | 繁體中文 | Русский | Tiếng Việt | العربية

800-452-4011 | TTY: 711 | deqinfo@deq.oregon.gov

State of Oregon DEQ Department of Environmental Quality

The facility holds no other permits from DEQ.

What types of pollutants does the permit regulate?

This permit sets conditions for how the facility deals with the following pollutants: Temperature, *E. coli*, BOD_5, TSS, Chlorine, pH, and Ammonia.

DEQ also requires the permittee to maintain a biosolids management and land application plan. This plan will be updated separately from this permit renewal and are not part of this public notice.

Would the draft permit change the amount of pollution the facility is allowed to release?

Yes. The permittee is now allowed a limited discharge during the period of May 16 through November 14 provided that the flow of the Nehalem River is greater than 33 cubic feet per second. All limits that previously applied to the winter discharge also apply to the summer, with a few changes. The changes are described below.

Pollutant	Change
Ammonia as N	New summer limit
pH	More stringent lower limit
Temperature	New summer limit

The permittee is also now allowed to discharge subsurface under the Banks-Vernonia State Trail when the groundwater level is at least one foot below the subsurface pipes. The limits are described below.

Pollutant	Change
TSS	New limit
BOD_5	New limit
Nitrate as N	New limit
E. Coli	New limit
Ammonia as N	New limit
Total Residual Chlorine	New limit
Specific Conductivity	New limit
pH	New limit
Temperature	New limit

How did DEQ determine permit requirements?

DEQ evaluates types and amounts of pollutants and the water quality of the surface water or groundwater where the pollutants are proposed to be discharged and determines permit requirements to ensure the proposed discharges will meet applicable statutes, rules, regulations and effluent guidelines of Oregon and the Clean Water Act.

DEQ relied solely on these documents and made no other discretionary decisions for the permit action.

How does DEQ monitor compliance with the permit requirements?

This permit will require the facility to monitor pollutants discharged using approved monitoring practices and standards. DEQ reviews the facility's discharge monitoring reports to check for compliance with permit limits.

What happens next?

Submit comments by sending an email or using mail service addressed to the permit coordinator listed in the "how to provide public comment" box above.

DEQ will hold a public hearing if it receives written requests for a hearing during the public comment period from at least 10 people or from an organization representing at least 10 people.

DEQ will consider and respond to all comments received and may modify the proposed permit based on comments.

For more information

Find more information by reviewing draft permit documents attached to this notice or contact Trinh Hansen at (503) 804-6594 or trinh.hansen@deq.oregon.gov with questions or to view documents in person at a DEQ office.

Non-discrimination statement

DEQ does not discriminate on the basis of race, color, national origin, disability, age or sex in administration of its programs or activities. Visit DEQ's Civil Rights and Environmental Justice page.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM WASTE DISCHARGE PERMIT

Oregon Department of Environmental Quality
Northwest Region – Portland Office
700 NE Multnomah St., Suite 600
Portland, OR 97232
Telephone: 503-229-5263

Issued pursuant to ORS 468B.050 and the federal Clean Water Act.

ISSUED TO:

City of Vernonia
1001 Bridge St.
Vernonia, OR 97064

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Treated Municipal Effluent	001	45.854115/-123.187162
	003	45.853766/-123.186516
Biosolids	N/A	Specified in Biosolids Management/Land Application Plan

FACILITY LOCATION:

Vernonia STP
605 California Ave.
Vernonia, OR 97064
County: Columbia
EPA Permit Type: Minor

RECEIVING STREAM INFORMATION:

WRD Basin: North Coast
USGS Sub-Basin: Nehalem
Receiving Stream name: Nehalem River
NHD Reach Code: 17100202000146 (83.43)
LLID: 1238951456889-92.2

Issued in response to Application No. 968051 received April 19, 2017. This permit is issued based on the land use findings in the permit record.

DRAFT	DRAFT	DRAFT
Tiffany Yelton-Bram, Water Quality Source Control Section Manager Northwest Region	Issuance Date	Effective Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to: 1) operate a wastewater collection, treatment, control and disposal system; and 2) discharge treated wastewater to waters of the state only from the authorized discharge point or points in Schedule A in conformance with the requirements, limits, and conditions set forth in this permit.

Unless specifically authorized by this permit, by another NPDES or Water Pollution Control Facility permit, or by Oregon statute or administrative rule, any other direct or indirect discharge of pollutants to waters of the state is prohibited.

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Note: Schedule E (Pretreatment Activities) is not part of this permit.

LIST OF TABLES

SCHEDULE A: WASTE DISCHARGE LIMITS

1. Permit Limits Outfall 001 and 003

During the term of this permit, the permittee must comply with the limits in the following tables:

Table A1: Outfall 001 Permit Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum	
Effluent Flow (May 16 to Nov 14)	MGD	If daily minimum river flow is > 33 cfs (See note a.)		Option A	0.2
				Option B	Q_e=(0.6463*Q_r)/106 (See note b.)
		If daily minimum river flow is ≤ 33 cfs (See note a.)		0.0	
BOD_5 (Nov. 15 to May 15) (See note c.)	mg/L	30	45	-	
	lb/day	140	210	280	
	% removal	65	-	-	
TSS (Nov. 15 to May 15) (See note c.)	mg/L	50	80	-	
	lb/day	230	350	460	
	% removal	65	-	-	
BOD_5 (May 16-Nov. 14)	mg/L	30	45	-	
	lb/day	140	210	280	
	% removal	65	-	-	
TSS (May 16-Nov. 14)	mg/L	50	80	-	
	lb/day	230	350	460	
	% removal	65	-	-	
Chlorine, Total Residual (See note d.)	mg/L	0.01	-	0.03	
Final Ammonia as N (see note e.) (May 16 – Nov. 14)	mg/L	10	-	20	
pH	SU	Instantaneous limit between a daily minimum of 6.3 and a daily maximum of 9.0			
E. coli (See note f.)	#/100 mL	Must not exceed a monthly geometric mean of 126, no single sample may exceed 406			
Excess Thermal Load (Sept. 1 – May 15) (See note g.)	million kcal/day	Option A	8.99 as a 7-day rolling average		
		Option B	ETLL = 0.08 (Q_e + Q_r 0.646) x 3.785 as a 7-day rolling average		
Excess Thermal Load (May 16-Aug. 31) (See note h.)	million kcal/day	Option A	8.97 as a 7-day rolling average		
		Option B	ETLL = 0.11 (Q_e + Q_r 0.646) x 3.785 as a 7-day rolling average		

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum

Notes:

a. Nehalem River flow is the sum of the flow measurements taken at UGSG gauge 14299800 (Nehalem River Near Vernonia, OR) and OWRD gauge 14300100 (Rock Creek at Vernonia, OR).

b. When the Nehalem River flow is greater than 33 cfs the permittee may have a max daily flow up to the amount specified in the equation. Q_e = Daily Average Effluent Flow (MGD) and Q_r = Daily Average River Flow (cfs). The permittee must use the sum of river flow data from the USGS stream flow gauge number 14299800 (Nehalem River Near Vernonia, OR) and OWRD gauge 14300100 (Rock Creek at Vernonia, OR) or another DEQ-approved data source for the river flow.

c. When the daily flow exceeds the lesser hydraulic capacity of the secondary treatment portion of the facility or twice the design average dry weather flow, the daily mass load limit does not apply.

d. DEQ has established a Quantitation Limit of 0.05 mg/L for Total Residual Chlorine. Any analysis done for Total Residual Chlorine must have a quantitation limit that is either equal to or less than 0.05 mg/L. In cases where the average monthly or maximum daily limit for Total Residual Chlorine is lower than the Quantitation Limit, DEQ will use the reported Quantitation Limit as the compliance evaluation level.

e. The final ammonia limits are effective after completion of the compliance schedule in Schedule C.

f. If a single sample exceeds 406 organisms/100 mL, the permittee may take at least 5 consecutive re-samples at 4-hour intervals beginning within 28 hours after the original sample was taken. A geometric mean of the 5 re-samples that is less than or equal to 126 *E. coli* organisms/100 mL demonstrates compliance with the limit.

g. The permittee must select either Option A or Option B as the applicable 7-day rolling average Excess Thermal Load Limit (ETLL). If the permittee selects Option B, the permittee must calculate the daily ETLL using the above equation. The permittee must then calculate the 7-day rolling average ETLL from the daily ETLLs each day the Option B limit is selected. Q_e = Daily Average Effluent Flow (MGD) and Q_r = Daily Average River Flow (cfs). The minimum river flow value to be used is 26 cfs, the 7Q10 low flow. The permittee must use river flow data from the USGS stream flow gauge number 14299800 (Nehalem River Near Vernonia, OR) or another DEQ-approved data source for the river flow. The calculated ETLL should be rounded to two significant figures (for example, 5.73 should be rounded to 5.7).

h. The permittee must select either Option A or Option B as the applicable 7-day rolling average Excess Thermal Load Limit (ETLL). If the permittee selects Option B, the permittee must calculate the daily ETLL using the above equation. The permittee must then calculate the 7-day rolling average ETLL from the daily ETLLs each day the Option B limit is selected. Q_e = Daily Average Effluent Flow (MGD) and Q_r = Daily Average River Flow (cfs). The minimum river flow value to be used is 33 cfs, the lowest flow at which the permittee may discharge. The permittee must use river flow data from the USGS stream flow gauge number 14299800 (Nehalem River Near Vernonia, OR) or another DEQ-approved data source for the river flow. The calculated ETLL should be rounded to two significant figures (for example, 5.73 should be rounded to 5.7).

Table A2: Outfall 003 Permit Limits

Parameter (Year-Round)	Units	Average Monthly
Effluent Flow Prior to Completion of Compliance Point (See note a.)	MGD	No Discharge (Daily max limit = 0 MGD) (See note b.)

Parameter (Year-Round)	Units	Average Monthly
Effluent Flow Post Completion of Compliance Point (See note a.)	MGD	No Discharge (Daily max limit = 0 MGD) when daily groundwater elevation is above 606 ft.
Final TSS (See note c.)	mg/L	21
	% removal	65
Final BOD_5 (See note c.)	mg/L	2.0
	% removal	65
Final Nitrate-Nitrite as N (See note c.)	mg/L	10
Final *E. coli* (See note c.)	#/100 mL	4.0
Final Ammonia as N (See note c.)	mg/L	0.3
Final Total Residual Chlorine (See note c.)	mg/L	0.05
Final Specific Conductivity (See note c.)	uS/cm	145
Final pH (See note c.)	SU	6.5 – 8.5
Final Temperature Increase (See note c.)	°C	No more than 2.0 °C above background (see note d.)

Notes:

a. No monitoring will be required for this outfall until the conditions in Schedule D.15 are completed and the permittee has received written approval from DEQ.

b. The permittee must complete the conditions in Schedule D.15 and receive written approval from DEQ prior to discharging out of Outfall 003.

c. The final limits are effective after completion of the compliance schedule in Schedule C. The percent removal limits for BOD_5 and TSS are not eligible for a compliance schedule and must be met upon permit issuance.

d. Groundwater background temperature is defined as the average temperature of groundwater at MW-1 and MW-2 during the same month. Temperature increase must be calculated as specified in Table B4 note h.

2. Regulatory Mixing Zone

Pursuant to OAR 340-041-0053, the permittee is granted a regulatory mixing zone for Outfall 001 as described below:

The allowable mixing zone is that portion of the Nehalem River that extends 50 feet from the outfall. The zone of initial dilution is that part of the Nehalem River that extends 5 feet from the outfall.

There is no regulatory mixing zone for Outfall 003.

3. Biosolids

The permittee may land apply biosolids or provide biosolids for sale or distribution, subject to the following conditions:

a. The permittee must manage biosolids in accordance with its DEQ-approved Biosolids Management Plan and Land Application Plan.

b. The permittee must apply biosolids at or below the agronomic rates approved by DEQ in order to minimize potential groundwater degradation.

c. The permittee must obtain written site authorization from DEQ for each land application site prior to land application (see Schedule D) and follow the site-specific management conditions in the DEQ-issued site authorization letter.

d. Prior to application, the permittee must ensure that biosolids meet one of the pathogen reduction standards under 40 CFR 503.32 and one of the vector attraction reduction standards under 40 CFR 503.33.

The permittee must not apply biosolids containing pollutants in excess of the ceiling concentrations shown in the table below. The permittee may apply biosolids containing pollutants in excess of the pollutant concentrations, but below the ceiling concentrations, however, the total quantity of biosolids applied cannot exceed the cumulative pollutant loading rates in the table below.

Table A3: Biosolids Limits

Pollutant (See note a.)	**Ceiling concentrations (mg/kg)**	**Pollutant concentrations (mg/kg)**	**Cumulative pollutant loading rates (kg/ha)**
Arsenic	75	41	41
Cadmium	85	39	39
Copper	4300	1500	1500
Lead	840	300	300
Mercury	57	17	17
Molybdenum	75	–	–
Nickel	420	420	420
Selenium	100	100	100
Zinc	7500	2800	2800

Note:

a. Biosolids pollutant limits are described in 40 CFR 503.13, which uses the terms *ceiling concentrations*, *pollutant concentrations*, and *cumulative pollutant loading rates*.

SCHEDULE B: MINIMUM MONITORING AND REPORTING REQUIREMENTS

1. Reporting Requirements

The permittee must submit to DEQ monitoring results and reports as listed below.

Table B1: Reporting Requirements and Due Dates

Reporting Requirement	Frequency	Due Date (See note a.)	Report Form (See note b.)	Submit To:
Tables B2, B3, B4, and B5 Influent Monitoring, Outfall 001 Effluent Monitoring, Outfall 003 Groundwater Monitoring and Receiving Stream Monitoring	Monthly	By the 15th of the following month	Specified in Schedule B. Section 2 of this permit	Electronic reporting as directed by DEQ
Inflow and infiltration report (see Schedule D)	Annually	February 15	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Mixing Zone Study (see Schedule D)	One time	Submit by XX/15/20XX (Year 4 of the permit)	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Wastewater solids annual report (see Schedule D)	Annually	By February 19 of the following year	Electronic copy in the DEQ-approved format	Attached via electronic reporting as directed by DEQ Electronic copy to DEQ Biosolids Program Coordinator
Biosolids annual report (see Schedule D)	Annually	By February 19 of the following year	Electronic copy in the DEQ-approved form	Attached via electronic reporting as directed by DEQ DEQ Biosolids Program Coordinator
Sludge Depth Survey Report (see Schedule D – Lagoon Solids)	One Time	Submit by XX/15/20XX (the 15th of the month following 24 months after permit effective date.)	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ

Reporting Requirement	Frequency	Due Date (See note a.)	Report Form (See note b.)	Submit To:
Industrial User Survey (see Schedule D)	Once per permit cycle	Submit by no later than 24 months after permit effective date	1 electronic copy and 1 hard copy in a DEQ approved format	• 1 Hard copy to DEQ Pretreatment Coordinator • 1 Electronic copy to Compliance Officer
Outfall Inspection Report (see Schedule D)	Once per permit cycle	Submit by XX/15/20XX In the 3rd year of the permit.	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Groundwater Management Plan	Once per permit cycle	Submit before using Outfall 003 (see note c.)	1 electronic copy and 1 hard copy in a DEQ approved format	1 Electronic and 1 hard copy to Compliance Officer
Outfall 003 Compliance Point Completion Report	One Time	Submit before using Outfall 003 (see note c.)	1 electronic copy and 1 hard copy in a DEQ approved format	1 Electronic and 1 hard copy to Compliance Officer

Notes:

a. For submittals that are provided to DEQ by mail, the postmarked date must not be later than the due date.

b. All reporting requirements are to be submitted in a DEQ-approved format, unless otherwise specified in writing.

c. Permittee must receive written verification and approval from DEQ before being able to use Outfall 003.

2. Monitoring and Reporting Protocols

a. Electronic Submissions

The permittee must submit to DEQ the results of monitoring indicated in Schedule B in an electronic format as specified below.

i. The permittee must submit monitoring results required by this permit via DEQ-approved web-based Discharge Monitoring Report (DMR) forms to DEQ via electronic reporting. Any data used to calculate summary statistics must be submitted as a separate attachment approved by DEQ via electronic reporting.

ii. The reporting period is the calendar month.

iii. The permittee must submit monitoring data and other information required by this permit for all compliance points by the 15th day of the month following the reporting period unless specified otherwise in this permit or as specified in writing by DEQ.

b. Test Methods

The permittee must conduct monitoring according to test procedures in 40 CFR 136 and 40 CFR 503 for biosolids or other approved procedures as per Schedule F.

c. Detection and Quantitation Limits

i. Detection Level (DL) – The DL is defined as the minimum measured concentration of a substance that can be distinguished from method blank results with 99% confidence. The DL is derived using the procedure in 40 CFR 136 Appendix B and evaluated for reasonableness relative to method blank concentrations to ensure results reported above the DL are not a result of routine background contamination. The DL is also known as the Method Detection Limit (MDL) or Limit of Detection (LOD).

ii. Quantitation Limits (QLs) – The QL is the minimum level, concentration or quantity of a target analyte that can be reported with a specified degree of confidence. It is the lowest level at which the entire analytical system gives a recognizable signal and acceptable calibration for the analyte. It is normally equivalent to the concentration of the lowest calibration standard adjusted for sample weights, volumes, preparation, and cleanup procedures employed. The QL as reported by a laboratory is also sometimes referred to as the Method Reporting Limit (MRL) or Limit of Quantitation (LOQ).

d. Sufficient Sensitivity of Quantitation Limits

i. The Laboratory QLs (adjusted for any dilutions) for analyses performed to demonstrate compliance with permit limits or as part of effluent characterization, must meet at least one of the requirements below:

(A) The QL is at or below the level of the water quality criterion for the measured parameter.

(B) The QL is above the water quality criterion but the amount of the pollutant in a facility's discharge is high enough that the method detects and quantifies the level of the parameter in the discharge.

(C) The QL has the lowest sensitivity of the analytical methods procedure specified in 40 CFR 136.

(D) The QL is at or below those defined in Oregon DEQ list of quantitation limits posted online at DEQ permitting website.

e. Quality Assurance and Quality Control

i. Quality Assurance Plan – The permittee must develop and implement a written Quality Assurance Plan that details the facility sampling procedures, equipment calibration and maintenance, analytical methods, quality control activities and laboratory data handling and reporting. The QA/QC program must conform to the requirements of 40 CFR 136.7.

ii. If QA/QC requirements are not met for any analysis, the permittee must re-analyze the sample. If the sample cannot be re-analyzed, the permittee must re-sample and analyze at the earliest opportunity. If the permittee is unable to collect a sample that meets QA/QC requirements, then the permittee must include the result in the discharge monitoring report (DMR) along with a notation (data qualifier). In addition, the permittee must explain how the sample does not meet QA/QC requirements. With the exception of BOD_5/$CBOD_5$, the permittee may not use the result that failed the QA/QC requirements in any calculation required by the permit unless authorized in writing by DEQ. For BOD_5/$CBOD_5$, the permittee may not use the result that failed the QA/QC requirement in any calculation except as follows:

(A) When the glucose-glutamic acid, dilution water, and/or seed control check are not met, the values are reported with the "e" (estimate) data qualifier. The estimated values are not used in the calculations.

(B) When the minimum DO depletion or the minimum residual DO is not met, the values are reported with the "<" or ">" data qualifiers as appropriate. The data must be used in the calculations. It is not acceptable to report "non-detect" on the discharge monitoring report. The data qualifiers carry to the summary statistic. For example, when calculating the loading, the data qualifiers are added to the value.

iii. Flow measurement, field measurement, and continuous monitoring devices - The permittee must:

(A) Establish verification and calibration frequency for each device or instrument in the quality assurance plan that conforms to the frequencies recommended by the manufacturer.

(B) Verify at least once per year that flow-monitoring devices are functioning properly according to manufacturer's recommendation. Calibrate as needed according to manufacturer's recommendations.

(C) Verify at least weekly that the continuous monitoring instruments are functioning properly according to manufacturer's recommendation unless the permittee demonstrates a longer period is sufficient and such longer period is approved by DEQ in writing.

f. Reporting Sample Results

i. The permittee must report the laboratory DL and QL as defined above for each analyte, with the following exceptions: pH, temperature, BOD, CBOD, TSS, Oil & Grease, hardness, alkalinity, bacteria, and nitrate-nitrite. For temperature and pH, neither the QL nor the DL need to be reported. For the other parameters listed above, the permittee is only required to report the QL and only when the result is ND.

ii. The permittee must report the same number of significant digits as the permit limit for a given parameter.

iii. (For Discharge Monitoring Reports) If a sample result is above the DL but below the QL, the permittee must report the result as the DL preceded by DEQ's data code "E". For example, if the DL is 1.0 µg/l, the QL is 3.0 µg/L and the result is estimated to be between the DL and QL, the permittee must report "E1.0 µg/L" on the DMR. This requirement does not apply in the case of parameters for which the DL does not have to be reported.

iv. (For Discharge Monitoring Reports) If the sample result is below the DL, the permittee must report the result as less than the specified DL. For example, if the DL is 1.0 µg/L and the result is ND, report "<1.0" on the discharge monitoring report (DMR). This requirement does not apply in the case of parameters for which the DL does not have to be reported.

g. Calculating and Reporting Mass Loads

The permittee must calculate mass loads on each day the parameter is monitored using the following equation:

Example calculation: Flow (in MGD) X Concentration (in mg/L) X 8.34 = Pounds per day

i. Mass load limits all have two significant figures unless otherwise noted.

ii. When concentration data are below the DL: To calculate the mass load from this result, use the DL. Report the mass load as less than the calculated mass load. For example, if flow is 2 MGD and the reported sample result is <1.0 µg/L, report "<0.017 lb/day" for mass load on the DMR (1.0 µg/L x 2 MGD x conversion factor = 0.017 lb/day).

3. Monitoring and Reporting Requirements

a. The permittee must monitor influent at the headworks and report results in accordance with the table below.

Table B2: Influent Monitoring Requirements

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type / Required Action (See note a.)	Report Statistic (See note b.)
Flow (50050)	MGD	Year-round	Daily	Metered	1. Monthly Average 2. Daily Maximum
BOD_5 (00310)	mg/L	Year-round	1/week	24-hour composite	Monthly Average
TSS (00530)	mg/L	Year-round	1/week	24-hour composite	Monthly Average
pH (00400)	SU	Year-round	3/week	Grab	1. Monthly Maximum 2. Monthly Minimum

Notes:

a. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must perform grab measurements.

b. When submitting DMRs electronically, the permittee must submit all data used to determine summary statistics in a DEQ-approved format as a spreadsheet via electronic reporting unless otherwise directed by DEQ.

b. The permittee must monitor effluent at Outfall 001 prior to the discharge from Cell #3 to the Nehalem River and report results in accordance with Table B1 and the table below:

Table B3: Effluent Monitoring Requirements

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
Flow (50050)	MGD	Year-round	Daily	Metered	1. Monthly Average 2. Daily Maximum
BOD_5 (00310)	mg/L	Year-round	1/week	24-hour composite	1. Monthly Average 2. Maximum Weekly Average
BOD_5 (00310)	lb/day	Year-round	1/week	Calculation	1. Daily Maximum 2. Monthly Average 3. Maximum Weekly Average
BOD_5 percent removal (81010) (See note c.)	%	Year-round	1/month	Calculation based on monthly average BOD_5 concentration values	Monthly Average

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
TSS (00530)	mg/L	Year-round	1/week	24-hour composite	1. Monthly Average 2. Maximum Weekly Average
TSS (00530)	lb/day	Year-round	1/week	Calculation	1. Daily Maximum 2. Monthly Average 3. Maximum Weekly Average
TSS percent removal (81011) (See note c.)	%	Year-round	1/month	Calculation based on monthly average TSS concentration values	Monthly Average
pH (00400)	SU	Year-round	3/week	Grab	1. Daily Maximum 2. Daily Minimum
Chlorine, Total Residual (50060)	mg/L	Year-round	Daily	Grab	1. Daily Maximum 2. Monthly Average
Temperature (00010)	ºC	Year-round	Daily	Grab	1. Daily Maximum 2. Monthly Average 3. 7-day Rolling Average of Daily Maximum
Excess Thermal Load (51405)	Million kcal/day	Year-round	Daily	Calculation (See note d.)	Maximum 7-day Rolling Average
Excess Thermal Load Limit	Million kcal/day	Year-round	Daily	Calculation (See note e.)	7-day Rolling Average
E. coli (see note f.) (51040)	#/100 mL	Year-round	1/month	Grab	a. Daily Maximum b. Monthly Geometric Mean
Total ammonia (as N) (00610)	mg/L	May-Nov.	1/week	24-hour composite	1. Monthly Average 2. Monthly Maximum
Total ammonia (as N) (00610)	mg/L	Dec.-Apr.	1/month	24-hour composite	Monthly Maximum
Alkalinity as $CaCO_3$ (00410)	mg/L	Year-round	Quarterly	24-hour composite	Quarterly Maximum
Chlorine used	lb/day	Year-round	Daily	Scale reading	Monthly Average
Dissolved Oxygen (00300)	mg/L	Third year of permit cycle [year]	Quarterly	24-hour composite (See note g.)	Quarterly Minimum
Total Kjeldahl Nitrogen (TKN) (00625)	mg/L	Third year of permit cycle [year]	Quarterly	24-hour composite	Quarterly Maximum

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
Nitrate (NO_3) Plus Nitrite (NO_2) Nitrogen (00630)	mg/L	Third year of permit cycle [year]	Quarterly	24-hour composite	Quarterly Maximum
Oil and Grease (00556)	mg/L	Third year of permit cycle [year]	Quarterly	Grab	Quarterly Maximum
Total Phosphorus (00665)	mg/L	Third year of permit cycle [year]	Quarterly	24-hour composite	Quarterly Maximum
Total Dissolved Solids (70295)	mg/L	Third year of permit cycle [year]	Quarterly	24-hour composite	Quarterly Maximum

Notes:

a. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must perform grab measurements. If the failure or loss is for continuous temperature monitoring equipment, the permittee must perform grab measurements daily between 2 PM and 4 PM until continuous monitoring equipment is redeployed.

b. When submitting DMRs electronically, all data used to determine summary statistics must be submitted in a DEQ-approved format as a spreadsheet via electronic reporting unless otherwise directed by DEQ.

c. Percent Removal must be calculated on a monthly basis using the following formula:

$$Percent\ Removal = \frac{[Influent\ Concentration] - [Effluent\ Concentration]}{[Influent\ Concentration]} \times 100$$

Where:

Influent Concentration = Corresponding Monthly average influent concentration based on the analytical results of the reporting period.

Effluent Concentration = Corresponding Monthly average effluent concentration based on the analytical results of the reporting period.

d. The daily excess thermal load (ETL) discharged must be calculated using the daily maximum effluent temperature and the corresponding daily average effluent flow using the formula below.

The 7-day rolling average is then calculated from the daily ETLs.

The daily ETL is calculated as follows: ETL= 3.785 * Qe *ΔT

Where:

ETL = Excess Thermal Load (million kcal/day)

Q_e = Daily Average Effluent flow (MGD)

ΔT = Daily Maximum Effluent temperature (°C) minus ambient criterion (16 °C between May 16-Aug 31, 13 °C between Sept 1-May 15)

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
e. If the permittee selects Excess Thermal Load Limit (ETLL) Option B from Table A1, then the permittee must calculate the ETLL (million kcal/day) each day the permittee uses this option. The permittee must use the equation and procedure noted in Table A1. f. The compliance point for bacteria is after dechlorination before the effluent enters Cell #3. g. For Dissolved Oxygen, the permittee must collect and analyze at least four discrete grab samples over the operating day with samples collected no less than one hour apart. The analytical results for all samples in a day must be averaged for reporting purposes.					

c. The permittee must monitor the groundwater at monitoring wells TE-102, TE-104-B, and TE-105-B or other DEQ approved downgradient groundwater monitoring wells and report results in accordance with Table B1 and the table below:

Table B4: Outfall 003 Groundwater Monitoring

Item or Parameter	Units	Time Period	Minimum Frequency (See note a.)	Sample Type / Required Action (see note b.)	Report Statistic (See note c. and d.)
Effluent Flow (50050)	MGD	Year-round	Daily	Metered	1. Monthly Average 2. Daily Maximum
Groundwater Level (51482) (See note e.)	ft	Year-round	Daily	Measurement	Daily Maximum
BOD_5 (00310) (see note f.)	mg/L	Year-round	1/month	Grab	Monthly Average
BOD_5 percent removal (81010) (See note f and g.)	%	Year-round	1/month	Calculation based on monthly average BOD_5 concentration values	Monthly Average
TSS (00530) (See note e.)	mg/L	Year-round	1/month	Grab	Monthly Average
TSS percent removal (81011) (See note f and g.)	%	Year-round	1/month	Calculation based on monthly average TSS concentration values	Monthly Average
pH (00400)	SU	Year-round	1/month	Grab	1. Daily Maximum 2. Daily Minimum
Chlorine, Total Residual (50060)	mg/L	Year-round	1/month	Grab	Monthly Average
Temperature (00010)	ºC	Year-round	Daily	Grab	Daily Maximum

Item or Parameter	**Units**	**Time Period**	**Minimum Frequency** (See note a.)	**Sample Type / Required Action** (see note b.)	**Report Statistic** (See note c. and d.)
Temperature Increase (51542)	ºC	Year-round	Daily	Calculation (See note h.)	Daily Maximum
E. coli (51040)	#/100 mL	Year-round	1/month	Grab	Monthly Geometric Mean
Total ammonia (as N) (00610)	mg/L	Year-round	1/month	Grab	Monthly Average
Nitrate (NO_3) Plus Nitrite (NO_2) Nitrogen (00630)	mg/L	Year-round	1/month	Grab	Monthly Average
Specific Conductivity (00094)	uS/cm	Year-round	1/month	Grab	Monthly Average

Item or Parameter	Units	Time Period	Minimum Frequency (See note a.)	Sample Type / Required Action (see note b.)	Report Statistic (See note c. and d.)

Notes:

a. Monthly monitoring is only required during months when Outfall 003 is in use. Daily monitoring is required only on days when permittee is discharging from Outfall 003.

b. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must perform grab measurements. If the failure or loss is for continuous temperature monitoring equipment, the permittee must perform grab measurements daily between 2 PM and 4 PM until continuous monitoring equipment is redeployed.

c. When submitting DMRs electronically, all data used to determine summary statistics must be submitted in a DEQ-approved format as a spreadsheet via electronic reporting unless otherwise directed by DEQ.

d. The statistic reported must be the average of the TE-102, TE-104-B, and TE-105-B (or other DEQ approved downgradient groundwater monitoring wells) values collected on the same day.

e. Groundwater Level must be measured at the manholes used to access Outfall 003, not TE-102, TE-104-B, and TE-105-B.

f. A BOD_5 and TSS sample must be collected at both the groundwater monitoring wells and at Outfall 003 prior to the discharge from Cell #3. The BOD_5 and TSS samples collected at the groundwater monitoring wells will be used to assess compliance with the BOD_5 and TSS concentration limits in Table A2. The BOD_5 and TSS samples collected prior to discharge from Cell #3 will be used as the effluent concentration to assess percent removal.

g. Percent Removal must be calculated on a monthly basis using the following formula:

$$Percent\ Removal = \frac{[Influent\ Concentration] - [Effluent\ Concentration]}{[Influent\ Concentration]} \times 100$$

Where:
Influent Concentration = Corresponding Monthly- average influent concentration based on the analytical results of the reporting period.
Effluent Concentration = Corresponding Monthly average effluent concentration based on the analytical results of the reporting period.

h. Temperature increase is to be calculated using the equation $\Delta T = T_m - T_g$ where T_m is the average of the daily temperature sampled at TE-102, TE-104-B, and TE-105-B (or other DEQ approved downgradient groundwater monitoring wells) and T_g is the average of the daily temperature sampled at MW-1 and MW-2.

d. The permittee must monitor the Nehalem River and report the results in accordance with Table B1 and the table below.

Table B5: Receiving Stream Monitoring Nehalem River

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type / Required Action	Report Statistic (See note a.)
Flow, stream (00056) (See note b.)	cfs	May-Nov.	Daily (See note c.)	Calculation	Monthly Minimum

Notes:

a. When submitting DMRs electronically, all data used to determine summary statistics must be submitted in a DEQ-approved format as a spreadsheet via electronic reporting unless otherwise directed by DEQ.

b. Nehalem River flow is the sum of the flow measurements taken at UGSG gauge 14299800 (Nehalem River Near Vernonia, OR) and OWRD gauge 14300100 (Rock Creek at Vernonia, OR). The permittee may use provisional data when reporting the river flow data. The use of provisional data must be noted in DMRs.

c. Daily monitoring is required only when permittee is discharging from Outfall 001.

4. Biosolids Monitoring Requirements

The permittee must monitor biosolids land applied or produced for sale or distribution as listed below. The samples must be representative of the quality and quantity of biosolids generated and undergo the same treatment process used to prepare the biosolids. Results must be reported as required in the biosolids management plan described in Schedule D.

Table B6: Biosolids Monitoring

Item or Parameter	Minimum Frequency	Sample Type
Nutrient and conventional parameters (% dry weight unless otherwise specified): Total Kjeldahl Nitrogen (TKN) Nitrate-Nitrogen (NO_3-N) Total Ammoniacal Nitrogen (NH_3-N) Total Phosphorus (P) Potassium (K) pH (S.U.) Total Solids Volatile Solids	As described in the DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B7.	As described in the DEQ-approved Biosolids Management Plan
Pollutants: As, Cd, Cu, Hg, Pb, Mo, Ni, Se, Zn, mg/kg dry weight	As described in the DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B7.	As described in the DEQ-approved Biosolids Management Plan
Pathogen reduction	As described in the DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B7.	As described in the DEQ-approved Biosolids Management Plan

Item or Parameter	Minimum Frequency	Sample Type
Vector attraction reduction	As described in the DEQ-approved Biosolids Management Plan, but not less than the frequency in Table B7.	As described in the DEQ-approved Biosolids Management Plan
Record of biosolids land application: date, quantity, location.	Each event	Record the date, quantity, and location of biosolids land applied on site location map or equivalent electronic system, such as GIS.

Table B7: Biosolids Minimum Monitoring Frequency

Quantity of biosolids land applied or produced for sale or distribution per calendar year		Minimum Sampling Frequency
(dry metric tons)	(dry U.S. tons)	
Less than 290	Less than 320	Once per year
290 to 1,500	320 to 1,653	Once per quarter (4x/year)
1,500 to 15,000	1,653 to 16,535	Once per 60 days (6x/year)
15,000 or more	16,535 or more	Once per month (12x/year)

SCHEDULE C: COMPLIANCE SCHEDULE

1. Compliance Schedule to Meet Final Effluent Limits

The permittee must comply with the following schedules:

Table C1: Outfall 001 Compliance Schedule

Compliance Date:	Requirement:
By XX/XX/XXXX Within 12 months of permit effective date	The permittee must submit to DEQ a study outlining changes needed in treatment to meet the final effluent limit for ammonia, the cost of the treatment, and a plan for procurement of funding.
By XX/XX/XXXX Within 18 months of permit effective date	The permittee must submit written report of progress made toward achieving final effluent limits
By XX/XX/XXXX Within 24 months of permit effective date	The permittee must begin implementation of treatment changes identified as needed to meet final effluent limits
By XX/XX/XXXX Within 36 months of permit effective date	The permittee must achieve compliance with the final effluent limits for Ammonia in Schedule A of this permit.

Table C2: Outfall 003 Groundwater Compliance Schedule

Compliance Date:	Requirement:
Within 1 year of approval of Outfall 003 groundwater monitoring well compliance points	The permittee must submit a written report of progress made toward achieving final effluent limits
Within 2 years of approval of Outfall 003 groundwater monitoring well compliance points	The permittee must achieve compliance with the final effluent limits for BOD_5, TSS, pH, Total Residual Chlorine, Ammonia, Nitrate-Nitrite, E. *coli*, Temperature, and Specific Conductivity specified in Schedule A of this permit.

2. Responsibility to Meet Compliance Dates

No later than 14 days following each compliance date listed in the table above, the permittee must notify DEQ in writing of its compliance or noncompliance with the requirements. Any reports of noncompliance must include the cause of noncompliance, any remedial actions taken, and a discussion of the likelihood of meeting the next scheduled requirement(s).

SCHEDULE D: SPECIAL CONDITIONS

1. Inflow and Infiltration

The permittee must submit to DEQ an annual inflow and infiltration report on a DEQ-approved form as directed in Table B1. The report must include the following:

a. An assessment of the facility's I/I issues based on a comparison of summer and winter flows to the plant.

b. Details of activities performed in the previous year to identify and reduce inflow and infiltration.

c. Details of activities planned for the following year to identify and reduce inflow and infiltration.

d. A summary of sanitary sewer overflows that occurred during the previous year. This should include the following: date of the SSO, location, estimated volume, cause, follow-up actions and if performed, the results of receiving stream monitoring.

2. Mixing Zone Study

By the date listed in Table B1, the permittee must submit a leve1 2 mixing zone study. (Level 2 mixing zone study requirements are described in DEQ's Mixing Zone Internal Management Directive).

3. Emergency Response and Public Notification Plan

The permittee must develop an Emergency Response and Public Notification Plan ("plan") or ensure the facility's existing plan is current and accurate, per Schedule F, Section B, and Condition 8 within 6 months of permit effective date. The permittee must update the plan annually to ensure all information contained in the plan, including telephone and email contact information for applicable public agencies, is current and accurate. An updated copy of the plan must be kept on file at the facility for DEQ review. The latest plan revision date must be listed on the plan cover along with the reviewer's initials or signature.

4. Exempt Wastewater Reuse at the Treatment System

Recycled water used for landscape irrigation within the property boundary or in-plant processes at the wastewater treatment system is exempt from the requirements of OAR 340-055 if all of the following conditions are met:

a. The recycled water is an oxidized and disinfected wastewater.

b. The recycled water is used at the wastewater treatment system site where it is generated or at an auxiliary wastewater or sludge treatment facility that is subject to the same NPDES or WPCF permit as the wastewater treatment system.

c. Spray and/or drift from the use does not migrate off the site.

d. Public access to the site is restricted.

5. Wastewater Solids Annual Report

The permittee must submit a Wastewater Solids Annual Report by February 19 each year documenting removal of wastewater solids from the facility during the previous calendar year. The permittee must use the DEQ-approved wastewater solids annual report form. This report must include the volume of material removed and the name of the permitted facility that received the solids.

6. Biosolids Management Plan

Prior to distributing biosolids to the public, the permittee must develop and maintain a Biosolids Management Plan and Land Application Plan meeting the requirements in OAR 340-050-0031. The permittee must submit these plans and any significant modification of these plans to DEQ for review and approval with sufficient time to clear DEQ review and a public notice period prior to removing biosolids from the facility. The permittee must keep the plans updated. All plan revisions require written authorization from DEQ and are effective upon permittee's receipt of DEQ written approval. No significant modifications can be made to a plan for an administratively extended permit (after the permit expiration date). Conditions in the plans are enforceable requirements under this permit.

7. Wastewater Solids Transfers

a. *Within state.* The permittee may transfer wastewater solids including Class A and Class B biosolids, to another facility permitted to process or dispose of wastewater solids, including but not limited to: another wastewater treatment facility, landfill, or incinerator. The permittee must satisfy the requirements of the receiving facility. The permittee must report the name of the receiving facility and the quantity of material transferred in the wastewater solids or biosolids annual report identified in Schedule B.

b. *Out of state.* If wastewater solids, including Class A and Class B biosolids, are transferred out of state for use or disposal, the permittee must obtain written authorization from DEQ, meet Oregon requirements for the use or disposal of wastewater solids, notify in writing the receiving state of the proposed use or disposal of wastewater solids, and satisfy the requirements of the receiving state.

8. Hauled Waste Control Plan

The permittee may accept hauled wastes at discharge points designated by the POTW after receiving written DEQ-approval of a Hauled Waste Control Plan. Hauled wastes may include wastewater solids from another wastewater treatment facility, septage, grease trap wastes, portable and chemical toilet wastes, landfill leachate, groundwater remediation wastewaters and commercial/industrial wastewaters. A Hauled Waste Control Plan is not required in the event biological seed must be added to the process at the POTW to facilitate effective wastewater treatment.

9. Lagoon Solids

By the date listed in Table B1, the permittee must submit to DEQ a sludge depth survey and report. The report must include the sludge depths throughout the lagoons and an evaluation of the impact of sludge on treatment efficiency and odors. If the evaluation finds that the sludge is impacting the treatment efficiency and causing odors, the permittee must submit a plan to reduce or remove the sludge. See Schedule D, conditions 6, 7, and 8 for sludge removal requirements.

10. Operator Certification

a. Definitions

i. "Supervise" means to have full and active responsibility for the daily on site technical operation of a wastewater treatment system or wastewater collection system.

ii. "Supervisor" or "designated operator", means the operator delegated authority by the permittee for establishing and executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system in accordance with the policies of the owner of the system and any permit requirements.

iii. "Shift Supervisor" means the operator delegated authority by the permittee for executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system when the system is operated on more than one daily shift.

iv. "System" includes both the collection system and the treatment systems.

b. The permittee must comply with OAR Chapter 340, Division 49, "Regulations Pertaining to Certification of Wastewater System Operator Personnel" and designate a supervisor whose certification corresponds with the classification of the collection and/or treatment system as specified in the DEQ Supervisory Wastewater Operator Status Report. DEQ may revise the permittee's classification in writing at any time to reflect changes in the collection or treatment system. This reclassification is not considered a permit modification and may be made after the permit expiration date provided the permit has been administratively extended by DEQ. If a facility is re-classified, a certified letter will be mailed to the system owner from the DEQ Operator Certification Program. Current system classifications are publicized on the DEQ Supervisory Wastewater Operator Status Report found on the DEQ Wastewater Operator Certification Homepage.

c. The permittee must have its system supervised full-time by one or more operators who hold a valid certificate for the type of wastewater treatment or wastewater collection system, and at a grade equal to or greater than the wastewater system's classification.

d. The permittee's wastewater system may be without the designated supervisor for up to 30 consecutive days if another person supervises the system, who is certified at no more than one grade lower than the classification of the wastewater system. The permittee must delegate authority to this operator to supervise the operation of the system.

e. If the wastewater system has more than one daily shift, the permittee must have another properly certified operator available to supervise operation of the system. Each shift supervisor must be certified at no more than one grade lower than the system classification.

f. The permittee is not required to have a supervisor on site at all times; however, the supervisor must be available to the permittee and operator at all times.

g. The permittee must notify DEQ in writing of the name of the system supervisor by completing and submitting the Supervisory Wastewater System Operator Designation Form. The most recent version of this form may be found on the DEQ Wastewater Operator Certification homepage *NOTE: This form is different from the Delegated Authority form. The permittee may replace or re-designate the system supervisor with another properly certified operator at any time and must notify DEQ in writing within 30 days of replacement or re-designation of the operator in charge. As of this writing, the notice of replacement or re-designation must be sent to Water Quality Division, Operator Certification Program, 700 NE Multnomah St, Suite 600, Portland, OR 97232-4100. This address may be updated in writing by DEQ during the term of this permit.

h. When compliance with item (d) of this section is not possible or practicable because the system supervisor is not available or the position is vacated unexpectedly, and another certified operator is not qualified to assume supervisory responsibility, the Director may grant a time extension for compliance with the requirements in response to a written request from the system owner. The Director will not grant an extension longer than 120 days unless the system owner documents the existence of extraordinary circumstances.

11. Industrial User Survey

a. By the date listed in Table B1, the permittee must conduct an industrial user survey as described in 40CFR 403.8(f)(2)(i-iii) to determine the presence of any industrial users discharging wastewaters subject to pretreatment and submit a report on the findings to DEQ. The purpose of the survey is to identify whether there are any industrial users discharging to the POTW and ensure regulatory oversight of these discharges to state waters.

b. Should the DEQ determine that a pretreatment program is required, the permit must be reopened and modified in accordance with 40 CFR 403.8(e)(1) to incorporate a compliance schedule for development of a pretreatment program. The compliance schedule must be developed in accordance with the provisions of 40 CFR 403.12(k), and must not exceed twelve (12) months.

12. Outfall Inspection

The permittee must inspect Outfall 001 including the submerged portion of the outfall line and diffuser to document its integrity and to determine whether it is functioning as designed. The inspection must determine whether diffuser ports are intact, clear, and fully functional. The inspection must verify the latitude and longitude of the diffuser. The permittee must submit a written report to DEQ regarding the results of the outfall inspection by the date in Table B1. The report must include a description of the outfall as originally constructed, the condition of the current outfall and identify any repairs needed to return the outfall to satisfactory condition.

13. Groundwater Management Plan

Before the permittee begins use of Outfall 003, the permittee must submit a groundwater monitoring plan that meets requirements in OAR 340-040-0030. The groundwater monitoring plan must be written in accordance with the Water Resources Department Oregon Administrative Rules, Chapter 690, Division 240, and with the Department's guidance "Groundwater Monitoring Well Drilling, Construction, and Decommissioning" (August 22, 1992). All monitoring well installations must be documented in a report prepared by an Oregon registered geologist.

14. Groundwater Monitoring Well Maintenance

a. The permittee must protect and maintain each groundwater monitoring well at the site.

b. All monitoring well abandonment, replacement, and installation must be completed in compliance with the Oregon Water Resources Department Rules OAR Chapter 690, Division 240, and with the DEQ's "Guidelines for Groundwater Monitoring Well Drilling, Construction, and Decommissioning." All monitoring well repair, abandonment, replacement, and installation must be documented in a report prepared by a State of Oregon registered geologist.

c. If a monitoring well becomes damaged or inoperable, the permittee shall notify the Department in writing 14 days of discovery. The written report shall describe what has occurred, the remedial measures that have been or will be taken to correct the problem, and the measures taken to prevent its recurrence. The Department may require the replacement of inoperable monitoring wells.

d. New or replacement monitoring well placement or design must be approved by the Department prior to installation. Well logs and a well completion report must be submitted to the Department within 30 days of installation of the well. The report must include a survey drawing showing the location of all monitoring wells, adjacent structures, and water bodies.

e. An abandonment plan for existing wells deemed unsuitable for groundwater monitoring must be submitted for Department approval prior to abandonment.

15. Outfall 003 Compliance Point Construction

In order for the permittee to use Outfall 003, monitoring wells TE-102, TE-104-B, and TE-105-B must be converted so that the full suite of parameters for which Outfall 003 has limits can be measured. The permittee may propose alternate groundwater monitoring locations, but they must be pre-approved by DEQ prior to construction. Monitoring well installation must be completed in compliance with the Oregon Water Resources Department Rules OAR Chapter 690, Division 240, and with the DEQ's "Guidelines for Groundwater Monitoring Well Drilling, Construction, and Decommissioning." Installation must be documented in a report prepared by a State of Oregon registered geologist. The permittee will not be able to use Outfall 003 until verification has been received from DEQ that the wells have been constructed properly and can be used as compliance points for Outfall 003.

SCHEDULE E: PRETREATMENT ACTIVITIES

A pretreatment program is not part of this permit.

SCHEDULE F: NPDES GENERAL CONDITIONS

DOMESTIC FACILITIES
October 1, 2015 Version

SECTION A. STANDARD CONDITIONS

A1. Duty to Comply with Permit

The permittee must comply with all conditions of this permit. Failure to comply with any permit condition is a violation of Oregon Revised Statutes (ORS) 468B.025 and the federal Clean Water Act and is grounds for an enforcement action. Failure to comply is also grounds for DEQ to terminate, modify and reissue, revoke, or deny renewal of a permit.

A2. Penalties for Water Pollution and Permit Condition Violations

The permit is enforceable by DEQ or EPA, and in some circumstances also by third-parties under the citizen suit provisions of 33 USC § 1365. DEQ enforcement is generally based on provisions of state statutes and Environmental Quality Commission (EQC) rules, and EPA enforcement is generally based on provisions of federal statutes and EPA regulations.

ORS 468.140 allows DEQ to impose civil penalties up to $25,000 per day for violation of a term, condition, or requirement of a permit.

Under ORS 468.943, unlawful water pollution in the second degree, is a Class A misdemeanor and is punishable by a fine of up to $25,000, imprisonment for not more than one year, or both. Each day on which a violation occurs or continues is a separately punishable offense.

Under ORS 468.946, unlawful water pollution in the first degree is a Class B felony and is punishable by a fine of up to $250,000, imprisonment for not more than 10 years, or both.

The Clean Water Act provides that any person who violates permit condition, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation.

The Clean Water Act provides that any person who negligently violates any condition, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than 1 year, or both.

In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than 2 years, or both.

Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both.

In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

Any person who knowingly violates section any permit condition, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both.

In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both.

An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

Any person may be assessed an administrative penalty by the Administrator for violating any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act.

Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000.

Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

A3. Duty to Mitigate

The permittee must take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit. In addition, upon request of DEQ, the permittee must correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

A4. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and have the permit renewed. The application must be submitted at least 180 days before the expiration date of this permit.

DEQ may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

A5. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any term, condition, or requirement of this permit, a rule, or a statute.
b. Obtaining this permit by misrepresentation or failure to disclose fully all material facts.
c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
d. The permittee is identified as a Designated Management Agency or allocated a wasteload under a total maximum daily load (TMDL).
e. New information or regulations.
f. Modification of compliance schedules.
g. Requirements of permit reopener conditions
h. Correction of technical mistakes made in determining permit conditions.
i. Determination that the permitted activity endangers human health or the environment.
j. Other causes as specified in 40 CFR §§ 122.62, 122.64, and 124.5.
k. For communities with combined sewer overflows (CSOs):
    (1) To comply with any state or federal law regulation for CSOs that is adopted or promulgated subsequent to the effective date of this permit.

(2) If new information that was not available at the time of permit issuance indicates that CSO controls imposed under this permit have failed to ensure attainment of water quality standards, including protection of designated uses.
(3) Resulting from implementation of the permittee's long-term control plan and/or permit conditions related to CSOs.

The filing of a request by the permittee for a permit modification, revocation or reissuance, termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

A6. Toxic Pollutants
The permittee must comply with any applicable effluent standards or prohibitions established under Oregon Administrative Rule (OAR) 340-041-0033 and section 307(a) of the federal Clean Water Act for toxic pollutants, and with standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

A7. Property Rights and Other Legal Requirements
The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege, or authorize any injury to persons or property or invasion of any other private rights, or any infringement of federal, tribal, state, or local laws or regulations.

A8. Permit References
Except for effluent standards or prohibitions established under section 307(a) of the federal Clean Water Act and OAR 340-041-0033 for toxic pollutants, and standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

A9. Permit Fees
The permittee must pay the fees required by OAR.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

B1. Proper Operation and Maintenance
The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

B2. Need to Halt or Reduce Activity Not a Defense
For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee must, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It is not a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

B3. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means intentional diversion of waste streams from any portion of the treatment facility. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, provided the diversion is to allow essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs b and c of this section.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Prohibition of bypass.

(1) Bypass is prohibited and DEQ may take enforcement action against a permittee for bypass unless:

i. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

ii. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventative maintenance; and

iii. The permittee submitted notices and requests as required under General Condition B3.c.

(2) DEQ may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, if DEQ determines that it will meet the three conditions listed above in General Condition B3.b.(1).

c. Notice and request for bypass.

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, a written notice must be submitted to DEQ at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee must submit notice of an unanticipated bypass as required in General Condition D5.

B4. Upset

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of General Condition B4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the causes(s) of the upset;

(2) The permitted facility was at the time being properly operated;

(3) The permittee submitted notice of the upset as required in General Condition D5, hereof (24-hour notice); and

(4) The permittee complied with any remedial measures required under General Condition A3 hereof.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

B5. Treatment of Single Operational Upset

For purposes of this permit, a single operational upset that leads to simultaneous violations of more than one pollutant parameter will be treated as a single violation. A single operational upset is an exceptional incident that causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one federal Clean Water Act effluent discharge pollutant parameter. A single operational upset does not include federal Clean Water Act violations involving discharge without a NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational upset is a violation.

B6. Overflows from Wastewater Conveyance Systems and Associated Pump Stations

a. Definition. "Overflow" means any spill, release or diversion of sewage including:
   (1) An overflow that results in a discharge to waters of the United States; and
   (2) An overflow of wastewater, including a wastewater backup into a building (other than a backup caused solely by a blockage or other malfunction in a privately owned sewer or building lateral), even if that overflow does not reach waters of the United States.

b. Reporting required. All overflows must be reported orally to DEQ within 24 hours from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in General Condition D5.

B7. Public Notification of Effluent Violation or Overflow

If effluent limitations specified in this permit are exceeded or an overflow occurs that threatens public health, the permittee must take such steps as are necessary to alert the public, health agencies and other affected entities (for example, public water systems) about the extent and nature of the discharge in accordance with the notification procedures developed under General Condition B8. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

B8. Emergency Response and Public Notification Plan

The permittee must develop and implement an emergency response and public notification plan that identifies measures to protect public health from overflows, bypasses, or upsets that may endanger public health. At a minimum the plan must include mechanisms to:

a. Ensure that the permittee is aware (to the greatest extent possible) of such events;
b. Ensure notification of appropriate personnel and ensure that they are immediately dispatched for investigation and response;
c. Ensure immediate notification to the public, health agencies, and other affected public entities (including public water systems). The overflow response plan must identify the public health and other officials who will receive immediate notification;
d. Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained;
e. Provide emergency operations; and
f. Ensure that DEQ is notified of the public notification steps taken.

B9. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must be disposed of in such a manner as to prevent any pollutant from such materials from entering waters of the state, causing nuisance conditions, or creating a public health hazard.

SECTION C. MONITORING AND RECORDS

C1. Representative Sampling

Sampling and measurements taken as required herein must be representative of the volume and nature of the monitored discharge. All samples must be taken at the monitoring points specified in this permit, and must be taken, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points must not be changed without notification to and the approval of DEQ. Samples must be collected in accordance with requirements in 40 CFR part 122.21 and 40 CFR part 403 Appendix E.

C2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices must be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices must be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected must be capable of measuring flows with a maximum deviation of less than ± 10 percent from true discharge rates throughout the range of expected discharge volumes.

C3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503 unless other test procedures have been specified in this permit.

For monitoring of recycled water with no discharge to waters of the state, monitoring must be conducted according to test procedures approved under 40 CFR part 136 or as specified in the most recent edition of Standard Methods for the Examination of Water and Wastewater unless other test procedures have been specified in this permit or approved in writing by DEQ.

C4. Penalties for Tampering

The federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit may, upon conviction, be punished by a fine of not more than $10,000 per violation, imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person, punishment is a fine not more than $20,000 per day of violation, or by imprisonment of not more than four years, or both.

C5. Reporting of Monitoring Results

Monitoring results must be summarized each month on a discharge monitoring report form approved by DEQ. The reports must be submitted monthly and are to be mailed, delivered or otherwise transmitted by the 15th day of the following month unless specifically approved otherwise in Schedule B of this permit.

C6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503, or as specified in this permit, the results of this monitoring must be included in the calculation and reporting of the data submitted in the discharge monitoring report. Such increased frequency must also be indicated. For a pollutant parameter that may be sampled more than once per day (for example, total residual chlorine), only the average daily value must be recorded unless otherwise specified in this permit.

C7. Averaging of Measurements

Calculations for all limitations that require averaging of measurements must utilize an arithmetic mean, except for bacteria which must be averaged as specified in this permit.

C8. Retention of Records

Records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities must be retained for a period of at least 5 years (or longer as required by 40 CFR part 503). Records of all monitoring information including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit and records of all data used to complete the application for this permit must be retained for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of DEQ at any time.

C9. Records Contents

Records of monitoring information must include:

a. The date, exact place, time, and methods of sampling or measurements;
b. The individual(s) who performed the sampling or measurements;
c. The date(s) analyses were performed;
d. The individual(s) who performed the analyses;
e. The analytical techniques or methods used; and
f. The results of such analyses.

C10. Inspection and Entry

The permittee must allow DEQ or EPA upon the presentation of credentials to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

C11. Confidentiality of Information

Any information relating to this permit that is submitted to or obtained by DEQ is available to the public unless classified as confidential by the Director of DEQ under ORS 468.095. The permittee may request that information be classified as confidential if it is a trade secret as defined by that statute. The name and address of the permittee, permit applications, permits, effluent data, and information required by NPDES application forms under 40 CFR § 122.21 are not classified as confidential [40 CFR § 122.7(b)].

SECTION D. REPORTING REQUIREMENTS

D1. Planned Changes

The permittee must comply with OAR 340-052, "Review of Plans and Specifications" and 40 CFR § 122.41(l)(1). Except where exempted under OAR 340-052, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers may be commenced until the plans and specifications are submitted to and approved by DEQ. The permittee must give notice to DEQ as soon as possible of any planned physical alternations or additions to the permitted facility.

D2. Anticipated Noncompliance

The permittee must give advance notice to DEQ of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

D3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and EQC rules. No permit may be transferred to a third party without prior written approval from DEQ. DEQ may require modification, revocation, and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under 40 CFR § 122.61. The permittee must notify DEQ when a transfer of property interest takes place.

D4. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date. Any reports of noncompliance must include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

D5. Twenty-Four Hour Reporting

The permittee must report any noncompliance that may endanger health or the environment. Any information must be provided orally (by telephone) to the DEQ regional office or Oregon Emergency Response System (1-800-452-0311) as specified below within 24 hours from the time the permittee becomes aware of the circumstances.

a. Overflows.
   (1) Oral Reporting within 24 hours.
      i. For overflows other than basement backups, the following information must be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311. For basement backups, this information should be reported directly to the DEQ regional office.
         (a) The location of the overflow;
         (b) The receiving water (if there is one);
         (c) An estimate of the volume of the overflow;
         (d) A description of the sewer system component from which the release occurred (for example, manhole, constructed overflow pipe, crack in pipe); and
         (e) The estimated date and time when the overflow began and stopped or will be stopped.
      ii. The following information must be reported to the DEQ regional office within 24 hours, or during normal business hours, whichever is earlier:
         (a) The OERS incident number (if applicable); and
         (b) A brief description of the event.
   (2) Written reporting postmarked within 5 days.
      i. The following information must be provided in writing to the DEQ regional office within 5 days of the time the permittee becomes aware of the overflow:
         (a) The OERS incident number (if applicable);
         (b) The cause or suspected cause of the overflow;
         (c) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
         (d) Steps taken or planned to mitigate the impact(s) of the overflow and a schedule of major milestones for those steps; and
         (e) For storm-related overflows, the rainfall intensity (inches/hour) and duration of the storm associated with the overflow.

      DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

b. Other instances of noncompliance.
   (1) The following instances of noncompliance must be reported:
      i. Any unanticipated bypass that exceeds any effluent limitation in this permit;
      ii. Any upset that exceeds any effluent limitation in this permit;

iii. Violation of maximum daily discharge limitation for any of the pollutants listed by DEQ in this permit; and
iv. Any noncompliance that may endanger human health or the environment.

(2) During normal business hours, the DEQ regional office must be called. Outside of normal business hours, DEQ must be contacted at 1-800-452-0311 (Oregon Emergency Response System).

(3) A written submission must be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission must contain:
i. A description of the noncompliance and its cause;
ii. The period of noncompliance, including exact dates and times;
iii. The estimated time noncompliance is expected to continue if it has not been corrected;
iv. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and
v. Public notification steps taken, pursuant to General Condition B**7.**

(4) DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

D6. Other Noncompliance

The permittee must report all instances of noncompliance not reported under General Condition D4 or D5 at the time monitoring reports are submitted. The reports must contain:
a. A description of the noncompliance and its cause;
b. The period of noncompliance, including exact dates and times;
c. The estimated time noncompliance is expected to continue if it has not been corrected; and
d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

D7. Duty to Provide Information

The permittee must furnish to DEQ within a reasonable time any information that DEQ may request to determine compliance with the permit or to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit. The permittee must also furnish to DEQ, upon request, copies of records required to be kept by this permit.

Other Information: When the permittee becomes aware that it has failed to submit any relevant facts or has submitted incorrect information in a permit application or any report to DEQ, it must promptly submit such facts or information.

D8. Signatory Requirements

All applications, reports or information submitted to DEQ must be signed and certified in accordance with 40 CFR § 122.22.

D9. Falsification of Information

Under ORS 468.953, any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, is subject to a Class C felony punishable by a fine not to exceed $125,000 per violation and up to 5 years in prison per ORS chapter 161. Additionally, according to 40 CFR § 122.41(k)(2), any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit including monitoring reports or reports of compliance or non-compliance will, upon conviction, be punished by a federal civil penalty not to exceed $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

D10. Changes to Indirect Dischargers

The permittee must provide adequate notice to DEQ of the following:

a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the federal Clean Water Act if it were directly discharging those pollutants and;
b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
c. For the purposes of this paragraph, adequate notice must include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

SECTION E. DEFINITIONS

E1. *BOD* or *BOD_5* means five-day biochemical oxygen demand.
E2. *CBOD* or *$CBOD_5$* means five-day carbonaceous biochemical oxygen demand.
E3. *TSS* means total suspended solids.
E4. *Bacteria* means but is not limited to fecal coliform bacteria, total coliform bacteria, *Escherichia coli* (*E. coli*) bacteria, and *Enterococcus* bacteria.
E5. *FC* means fecal coliform bacteria.
E6. *Total residual chlorine* means combined chlorine forms plus free residual chlorine
E7. *Technology based permit effluent limitations* means technology-based treatment requirements as defined in 40 CFR § 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-041.
E8. *mg/l* means milligrams per liter.
E9. *µg/l* means microgram per liter.
E10. *kg* means kilograms.
E11. *m^3/d* means cubic meters per day.
E12. *MGD* means million gallons per day.
E13. *Average monthly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
E14. *Average weekly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.
E15. *Daily discharge* as defined at 40 CFR § 122.2 means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge must be calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge must be calculated as the average measurement of the pollutant over the day.
E16. *24-hour composite sample* means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.
E17. *Grab sample* means an individual discrete sample collected over a period of time not to exceed 15 minutes.
E18. *Quarter* means January through March, April through June, July through September, or October through December.
E19. *Month* means calendar month.
E20. *Week* means a calendar week of Sunday through Saturday.
E21. *POTW* means a publicly-owned treatment works.

State of Oregon
Department of
Environmental
Quality

National Pollutant Discharge Elimination System
Permit Fact Sheet
City of Vernonia STP

Permittee	City of Vernonia Vernonia STP 605 California Avenue Vernonia, OR 97064
Existing Permit Information	File Number: 92773 Permit Number: 101094 EPA Reference Number: OR0022560 Category: Domestic Class: Minor Expiration Date: May 31, 2011
Permittee Contact	Jeff Burch Public Works Foreman (503) 429-5291 101 Bridge St Vernonia, OR 97064
Receiving Water Information	Water Body Name: Nehalem River River Mile: 91.7 Assessment Unit ID: OR_SR_1710020201_05_106441 Sub Basin Name: Nehalem Basin Name: North Coast
Proposed Action	Permit Renewal Application Number: 968051 Date Application Received: April 19, 2017
Permit Writer	Aliana Britson 503 229-6044 Date Prepared: October 31, 2024

NPDES Permit Fact Sheet
City of Vernonia

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NPDES Permit Renewal Fact Sheet
City of Vernonia

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:

- Addition of Outfall 003 to permit with limits
- Updated BOD_5 and TSS limits and mass loads
- Updated lower pH limit to 6.3
- Updated temperature ETLL in permit Nov 15th-May 15th
- Allow permittee to discharge during May 16th-Nov 14th time period if river is above minimum of 33 cfs, with limits for BOD_5, TSS, pH, *E. coli*, chlorine, temperature, and ammonia
- Removed Outfall 002 and Cell 3 exfiltration from permitted features
- Removed groundwater wells MW-3 and MW-4 from permitted features

2. Facility Description

2.1 Wastewater Facility

The City of Vernonia operates a lagoon treatment system located in Vernonia, Oregon. Influent to the plant flows from the influent manhole to the headworks, which consists of a fine screen with a manual bar screen bypass. From the headworks, wastewater flows through two facultative lagoons cells (No. 1 and No. 2) in series, followed by a third facultative lagoon (No. 3) for storage. Effluent is disinfected via a chlorine contact tank as it flows from Cell No. 2 to Cell No. 3. Dechlorination is achieved through dissipation in Cell No. 3. During the winter, flow from Cell No. 3 is discharged to the Nehalem River at river mile 91.7 through Outfall 001. Flow from Cell No.3 can also be diverted to a transfer pump station that pumps the lagoon effluent to the circular DAF/filter system to remove additional solids from the lagoon effluent if needed.

Effluent that has been treated by the DAF/filter system can either be discharged through Outfall 001 during the winter, or the hyporheic discharge system during the summer.

Cells No. 2 and 3 were constructed in 1960 while Cell No. 1 was added in 1984. Cell No. 3 was intended to serve as an exfiltration pond but was insufficient to meet system demand due to infiltration and inflow. In 1994 the city completed further improvements which included chlorine disinfection, an influent structure with Parshall flume for flow measurement, an effluent measuring Parshall flume, and a submerged outfall with a single port diffuser (Outfall 001). Since the most recent permit renewal (2007) the facility has undergone further upgrades. These include lining Cell No. 3 to prevent leakage, a DAF/filter system, insertion of a flow meter, raising the lagoon berms to prevent flooding, removing emergency Outfall 002, and a subsurface discharge system (Outfall 003) that runs 700 ft parallel to the Nehalem River 8 ft underneath the Banks-Vernonia Trail (17- 36 m from the banks of the Nehalem).

The Outfall 003 consists of 3 parallel 8" diameter pipes perforated with 3/8" diameter holes at the crown of the pipe in 7 ft intervals. The system is designed to discharge to the vadose zone with an infiltration rate of 200 gpd/ft. The wastewater then percolates into the groundwater, which flows towards the Nehalem River. The Outfall 003 is classified as a UIC under OAR Division 44 rules and therefore will need to meet UIC regulations (see Appendix A). Further groundwater studies will be needed to establish limits in accordance with groundwater regulations (see Schedule D). Therefore, no discharge will be allowed out of Outfall 003 until the necessary studies are completed and the permit is either modified or renewed.

Because Cell No. 3 has been lined and additional studies will be required to use Outfall 003 the groundwater wells MW-3 and MW-4 and the groundwater monitoring plan will be removed from this permit.

The current permit only allows for the permittee to discharge from Outfall 001 between the dates of Nov 15-May 15, with any summer discharges allowed at the discretion of DEQ. In the past, the Vernonia has requested and been granted summer discharges in 2014, 2015, and 2022. Because Outfall 003 cannot generally be used until July due to high groundwater elevation, discharging effluent can only be done at the discretion of DEQ during this time period, especially during wet years. To allow for the facility to discharge as needed during the summer during wet years, a permit condition will be added so that between May 16 and Nov 14 the facility will be able to discharge when the river is at or above 33 cfs. Due to the higher river flow, the effluent will have a de minimis impact on the Nehalem River (see section 3.5). The facility also has a known Inflow and Infiltration issue (see section 3.2) which will be required to be managed through a Schedule D requirement (see section 7.1).

The Vernonia WWTP currently manages all of its wastewater solids in its facultative lagoons until they need to be removed from the lagoons to maintain treatment capacity and performance of the lagoons. During 2013, the WWTP's lagoons were cleaned of backlogged wastewater solids and these solids were treated and land applied as Class B biosolids on farmland in eastern Oregon. Based on current knowledge, it is doubtful that the WWTP will need to remove any solids from the facility's lagoons in the next five or more years. At this time, the permittee does not land apply or irrigate any Recycled Water and is not authorized to accept hauled waste.

Figure 2-1: Vernonia STP Site Map

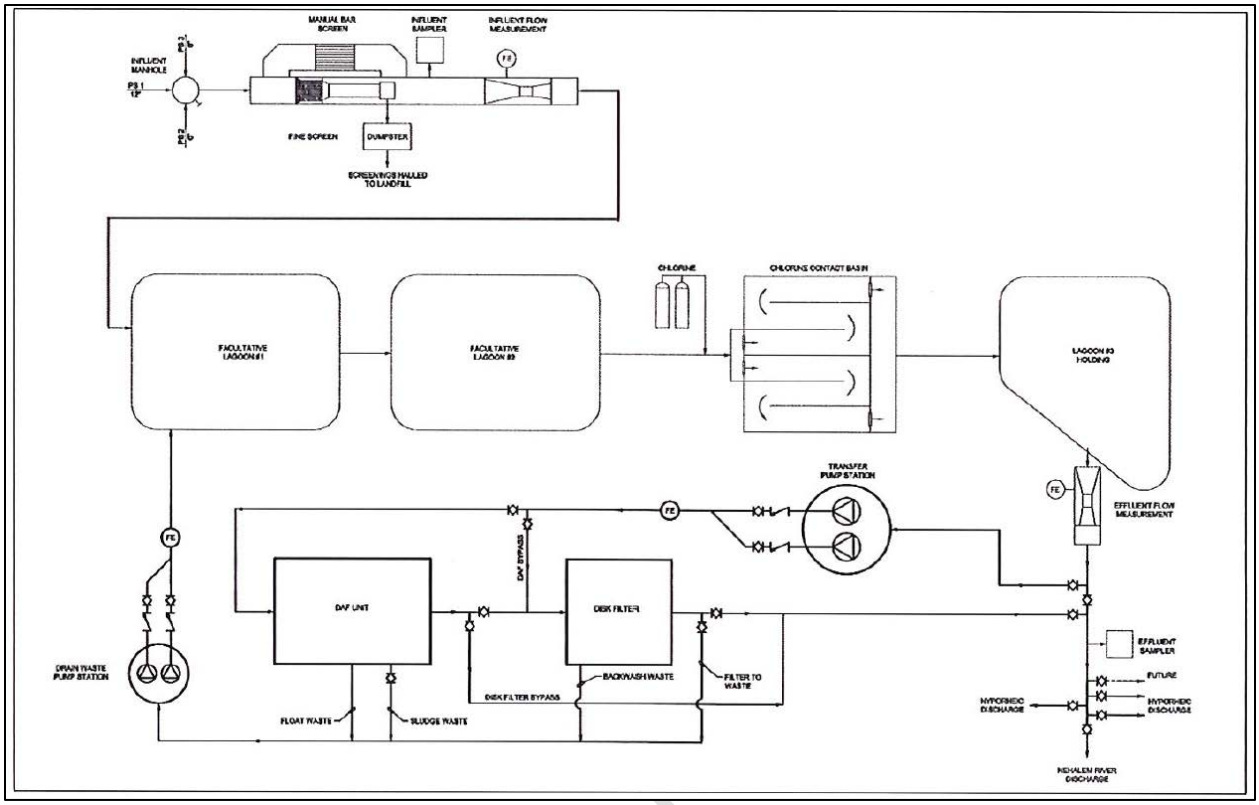

Figure 2-2: Vernonia Treatment System Line Drawing

Table 2-1: List of Outfalls

Outfall Number	Type of Waste	Lat/Long	Design Flow[1] (mgd)	Existing Flow[2] (mgd)
001 – to Nehalem River	Treated Effluent	45.854115/-123.187162	0.56	0.92
003 – to Subsurface	Treated Effluent	45.853766/-123.186516	0.28	Unknown

1. Design Flow = design average dry weather flow
2. Existing Flow = existing average flow per discharge (based on permit renewal application)

2.2 Compliance History

The facility was last inspected on April 18, 2023. No violations were found. Within the last 5 years the facility has received the following letters for compliance issues:

- A pre-enforcement notice on January 28, 2022 relating to a sanitary sewer overflow and included a class I violation for causing pollution to waters of the state, a class II violation for failure to submit a report of an SSO, and a class II violation for the sanitary sewer overflow.
- A warning letter with opportunity to correct on March 30, 2022 for failing to meet BOD and TSS limits in November 2021; December 2021; and January, 2022 (class II and III violations).

- A warning letter on January 20, 2023 for failing to report monitoring data required in Schedule B of the permit (class I violation).

2.3 Stormwater

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

2.4 Industrial Pretreatment

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

2.5 Wastewater Classification

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

3. Schedule A: Effluent Limit Development

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

3.1 Existing Effluent Limits

The table and notes below show the limits contained in the existing permit.

Table 3-1: Existing Effluent Limits Outfall 001

Outfall 001 (See note 1.)

Parameter	Units	Average* Monthly	Average* Weekly	Daily* Maximum
Effluent Flow (May 16 to Nov 14)	MGD	No discharge to waters of the state (unless approved in writing by the Department)		

Parameter	Units	Average* Monthly	Average* Weekly	Daily* Maximum
BOD_5 (November 15 to May 15)	mg/L	30	45	
	lb/day	140	210	280
	% removal	85, except when avg monthly BOD influent is less than 133 mg/L the percent removal shall not apply	-	-
TSS (November 15 to May 15)	mg/L	50	80	
	lb/day	230	350	470
	% removal	85, except when the average monthly TSS influent is less than 133 mg/L then the percent removal shall not apply	-	-
Chlorine, Total Residual	mg/L	0.01	-	0.03
pH	SU	Instantaneous limit between a daily minimum of 6.0 and a daily maximum of 9.0		
E. coli (See note 2.)	#/100 mL	Must not exceed a monthly geometric mean of 126, no single sample may exceed 406		
Human Use Allowance Maximum Change in Temperature (Max Δ T °C)	°C	Shall not exceed 0.08 °C (See note 3.)		

*Mass load limits have been individually assigned and are based upon the previous permit discharge flow of 0.56 MGD.

Emergency Overflow Outfall 002:

1. No wastes shall be discharged from the outfall except as allowed in Schedule F, Section B, Condition 6 of this permit. If an overflow occurs between May 22 and June 1, and if the permittee demonstrates to the Department's satisfaction that no increase in risk to beneficial uses occurred because of the overflow, no violation shall be triggered if the storm associated with the overflow was greater than the one-in-five-year, 24-hour duration storm.

2. No wastes shall be discharged from the outfall except as allowed in Schedule F, Section B, Condition 6 of this permit. If an overflow occurs between May 22 and June 1, and if the permittee demonstrates to the Department's satisfaction that no increase in risk to beneficial uses occurred because of the overflow, no violation shall be triggered if the storm associated with the overflow was greater than the one-in-five-year, 24-hour duration storm.

All wastewater and process related residuals shall be managed and discharged and/or disposed of in a manner that will prevent:

a) A violation of the Department's Groundwater Quality Protection Rules (OAR 340-040); and,

b) A violation of any permit-specific groundwater concentration limits, established pursuant to OAR 340-040-0030.

Groundwater

1. Groundwater concentration limits not to be exceeded at the compliance point(s) after permit issuance:

Parameter	Concentration Limit	Compliance Point*
Nitrate-N (NO_3-N)	No two consecutive samples to exceed 2 mg/L No single sample to exceed 5 mg/L	Monitoring wells MW-3 and MW-4*

*Note: The locations of the groundwater compliance points are shown in the City of Vernonia, Wastewater Facilities Plan Addendum, Volume 2 of 2, Environmental Assessment, dated August 1992.

Notes:

1. The city is required to gather water quality data and Nehalem River data for the period of discharge (November 15-May 15). Per Schedule C 2. Of the permit, the permit will be reopened to include an ammonia limit, as necessary, based on the results of a reasonable potential analysis.
2. If a single sample exceeds 406 organisms per 100 mL, then five consecutive re-samples may be taken at four-hour intervals beginning within 28 hours after the original sample was taken. If the log mean of the five re-samples is less than or equal to 126 organisms per 100 mL, a violation shall not be triggered.

3. The calculation for Human Use Allowance (Max Δ T °C) shall be as follows:

Solve for Equation 1: (Qe x Te) + (Qr x Ta)

Where Qe = is a measurement of effluent flow (mgd) x conversion factor of 1.548 cfs/mgd
Qr = is a measurement of Nehalem River flow cfs

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Ta = 13°C
Te = 7 day moving average of the effluent temperature °C

Solve for Equation 2: (Qe + Qr)

Where: Qe = is a measurement of effluent flow (mgd) x conversion factor of 1.548 cfs/mgd
Qr = is a measurement of Nehalem River flow cfs

Max. ΔT °C. = (result of Equation 1 / result of Equation 2) –Ta.

Where: Ta = 13°C

3.2 Technology-Based Effluent Limit Development

40 CFR 122.44(a)(1) requires publicly owned treatment works (POTW) to meet technology-based effluent limits, for five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS) and pH (i.e., federal secondary treatment standards). Substitution of 5-day carbonaceous oxygen demand ($CBOD_5$) for BOD_5 is allowed. The numeric standards for these pollutants are contained in 40 CFR 133.102. In addition, DEQ has developed minimum design criteria for BOD_5 and TSS that apply to specific watershed basins in Oregon. These are listed in the basin-specific criteria sections under OAR 340-041-0101 to 0350. During the summer low flow months as defined by OAR, these design criteria are more stringent than the federal secondary treatment standards. The basin-specific criteria are not effluent limits but are implemented as design criteria for new or expanded wastewater treatment plants. The table below shows a comparison of the federal secondary treatment standards and the basin-specific design criteria for the North Coast basin.

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

Parameter	Federal Secondary Treatment Standards		North Coast Basin-Specific Design Criteria (OAR 340-041-0235)
	30-Day Average	7-Day Average	Monthly Average
BOD_5 (mg/L)	30	45	20 mg/L April 1 to October 31
TSS (mg/L)	30	45	20 mg/L April 1 to October 31
pH (S.U.)	6.0 – 9.0. (instantaneous)		Not applicable
BOD_5 and TSS % Removal	85%	Not applicable	Not applicable

The basin-specific design criteria included in the table above apply to new or expanded facilities (after June 30, 1992). This facility is not new or expanded, so these criteria do not apply.

40 CFR 133.105(g) allows less stringent effluent limits for POTWs using waste stabilization ponds or trickling filters as their method of treatment. These facilities are required to achieve a monthly average BOD_5 and TSS concentrations of 45 mg/L, a weekly average limit of 65 mg/L and a removal efficiency of 65%. To be eligible for discharge limitations based on equivalent to secondary standards, a POTW must meet all three of the following criteria:

1. The effluent must consistently exceed secondary treatment standards;
2. The principal treatment process must be a trickling filter or a waste stabilization pond; and
3. The POTW must provide significant biological treatment of the wastewater.

DEQ has evaluated these criteria for BOD_5 and TSS. According to 40 CFR 133.101(f), effluent concentrations considered to be consistently achievable through proper operation and maintenance are defined as the 95th percentile of the 30-day average effluent quality achieved by treatment works in a period of at least two years (excluding upsets and errors) and the 95th percentile of the 30-day average value multiplied by 1.5. These values were determined and are shown in the table below.

Table 3-3: Consistently Achievable Effluent Concentrations

Parameter	Effluent Concentrations Consistently Achievable	
	30-Day Average	7-Day Average
BOD_5 (mg/L)	29	54
TSS (mg/L)	23	46

Because the 7-day average effluent concentrations consistently achievable for BOD_5 and TSS exceed the federal secondary treatment standards of 45mg/L, the principal treatment process is a

waste stabilization pond, and because the POTW provides significant biological treatment of the wastewater (average influent BOD_5 and TSS values are an order of magnitude larger than effluent values), DEQ has determined that the facility meets all three criteria for TSS and BOD_5. The previous permit also contained an adjustment to percent removal requirements allowing the permittee to not meet the 85% removal limit if the average monthly influent BOD_5 or TSS was lower than 133 mg/L. This provision will be removed, as the permittee already qualifies for a lower percent removal requirement.

Special considerations for TSS limits from waste stabilization ponds are described in 40 CFR 133.103(c). These allow less stringent TSS limits for waste stabilization ponds. In the early 1980s, DEQ determined that waste stabilization ponds west of the Cascade Mountains are capable of achieving a monthly average concentration of 50 mg/L and east of the Cascade Mountains a monthly average of 85 mg/L. EPA published these approved alternate TSS requirements in 49 Federal Register (FR) 37005, September 20, 1984. DEQ is proposing to maintain the monthly average TSS limit of 50 mg/L and the weekly limit of 80 mg/L.

The limits for BOD_5 and TSS shown in table 3-2 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 facility that has not expanded their average dry weather treatment capacity after June 30, 1992, OAR 340-041-0061(9)(a) requires that the mass load limits be calculated using the following equations:

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

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

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

* Design flow is the design average dry weather flow (DADWF) or the design average wet weather flow (DAWWF)

OAR 340-041-0061(9)(a)(C) allows an exception to the daily maximum mass load when the daily flow exceeds the lesser hydraulic capacity of the secondary treatment portion of the facility or twice the design average dry weather flow, the daily mass load limit does not apply. Though Vernonia STP has undergone upgrades, the average dry weather treatment capacity has not been expanded and therefore the OAR 340-041-0061(9)(a) equations apply.

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

Table 3-4: Design Flows and Concentrations Limits

Season	Design Flow (mgd)	Monthly TSS Concentration Limit (mg/L)	Monthly BOD_5 Concentration Limit (mg/L)
Dry Weather	0.56	50	45
Wet Weather	0.94	50	45

In 2023, the facility provided DEQ with wet weather design flows. The previous BOD_5 and TSS limits were calculated using the dry weather design flow. Because the permittee will now be permitted to discharge during the summer through Outfall 001 when the Nehalem River is above 33 cfs, the concentration limits for BOD_5 and TSS will apply during the summer.

Dry Weather Mass Load Calculations BOD_5:

Monthly Average: 0.56 mgd x 45 mg/L x 8.34 = 210 lbs/day (Two significant figures)

Weekly Average: 210 lbs/day monthly average x 1.5 =320 lbs/day (Two significant figures)

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

Dry Weather Mass Load Calculations TSS:

Monthly Average: 0.56 mgd x 50 mg/L x 8.34 = 230 lbs/day (Two significant figures)

Weekly Average: 230 lbs/day monthly average x 1.5 = 350 lbs/day (Two significant figures)

Daily Maximum: 230 lbs/day monthly x 2 = 460 lbs/day (Two significant figures)

Wet Weather Mass Load Calculations BOD_5:

Monthly Average: 0.94 mgd x 45 mg/L x 8.34 = 350 lbs/day (Two significant figures)

Weekly Average: 350 lbs/day monthly average x 1.5 =530 lbs/day

Daily Maximum: 350 lbs/day monthly x 2 = 700 lbs/day

Wet Weather Mass Load Calculations TSS:

Monthly Average: 0.94 mgd x 50 mg/L x 8.34 = 390 lbs/day (Two significant figures)

Weekly Average: 390 lbs/day monthly average x 1.5 = 585 lbs/day (Two significant figures)

Daily Maximum: 390 lbs/day monthly x 2 = 780 lbs/day (Two significant figures)

The permittee has not requested a mass load increase and therefore the current limits based on the dry weather design flow of 0.56 are retained for wet weather discharge. The previous BOD_5 monthly average limit of 30 mg/L, weekly average limit of 45 mg/L, and existing mass loads will be retained to satisfy antibacksliding and antidegradation. The permittee will need to perform an antidegradation analysis to apply for increased concentration limits and mass loads. However, the percent removal efficiency is not subject to antidegradation as it does not increase the amount of BOD_5 allowed to be discharged either by concentration or mass. The percent removal

efficiency of 65% will replace the 85% removal limits for both BOD_5 and TSS in the current permit (see Section 3.4 for antibacksliding).

The proposed BOD_5 and TSS limits are listed in the following table and will be applied year-round.

Table 3-5: Technology Based Effluent Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
BOD_5 (Nov. 15- May 15)	mg/L	30	45	NA
	lbs/day	140	210	280
	% removal	65	NA	NA
TSS (Nov. 15- May 15)	mg/L	50	80	NA
	lbs/day	230	350	460
	% removal	65	NA	NA
BOD_5 (May 16-Nov. 14)	mg/L	30	45	NA
	lbs/day	140	210	280
	% removal	65	NA	NA
TSS (May 16-Nov. 14)	mg/L	50	80	NA
	lbs/day	230	350	460
	% removal	65	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 Nehalem River These uses are listed in OAR-340-041-0230 for the North Coast 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

3.3.2 303d 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 3-6: 303d and TMDL Parameters

Water Quality Limited Parameters (Category 5)	
AU ID:	OR_SR_1710020201_05_106441
AU Name:	Nehalem River
AU Status:	Impaired
Year Listed	2004
Year Last Assessed	2022
303d Parameters (Category 5)	None
TMDL Parameters (Category 4)	
Temperature-year round; Temperature-spawn	

3.3.3 TMDL Wasteload Allocations

DEQ issued a TMDL for the North Coast Basin in 2003. In November 2006 modifications were made to the TMDL (Addendum #1: Modifications to North Coast Basin Temperature Waste Load and Load Allocations) due to a modification in the temperature standard. Vernonia's WLA was modified as part of this addendum. WLAs from the TMDL addendum that are applicable to the permittee are listed in the following table.

Table 3-7: Applicable WLAs

Parameter	WLA	Time Period
Temperature	8.99 x10^6 kcal/day	Sept 1- May 15
Temperature	8.97 x 10^6 kcal/day	May 16- Aug 31

The Nehalem River is designated as both Core Cold Water and spawning habitat for salmon. A Temperature WLA was developed to address the spawning habitat use and will be applied as an excess thermal load limit in the permit. A reserve capacity request was granted to address the Core Cold Water use and a temperature WLA will be applied as an excess thermal load limit in the permit.

The TMDL also addressed bacteria, but specifically mentioned that the discharges from the City of Vernonia did not need additional limitations to the existing wastewater treatment plant beyond the *E. coli* recreational contact criteria as a result of the loading model.

3.3.4 Pollutants of Concern

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

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

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

Table 3-8: Domestic Toxic Pollutants of Concern

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

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

Table 3-9: Pollutants of Concern

Pollutant	How was pollutant identified?
pH	Effluent Monitoring
Temperature	Effluent Monitoring
E. coli	Effluent Monitoring
Total Residual Chlorine	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 proposed mixing zone is described as follows:

> *The allowable mixing zone is that portion of the Nehalem River that extends 50 feet from the outfall. The zone of initial dilution is that part of the Nehalem River that extends 5 feet from the outfall.*

The dilutions at the edge of the zone of initial dilution and mixing zone are shown in the table below. These dilutions are based on a 2023 mixing zone analysis conducted by DEQ.

Table 3-10: Outfall 001 Dilution Summary

Dilution Summary for Nov 15 – May 15						
Water Quality Standard	**Stream Flow (cfs)**		**Effluent Flow (mgd)**		**Dilution**	**Location**
	Statistic	**Flow**	**Statistic**	**Flow**		
Aquatic Life, Acute	1Q10	24	☐ ADWDF x PF ☒ Max Daily Avg ☐ Other	1.95	2	ZID
Aquatic Life, Chronic	7Q10	26	☐ ADWDF ☒ Max Monthly Avg ☐ Other	1.3	12	MZ
Human Health, Non-Carcinogen	30Q5	58	☐ ADWDF ☒ Max Monthly Avg ☐ Other	1.3	12	MZ
ADWDF = Average dry weather design flow *PF = Peaking factor*						
Comments: CORMIX predicted centerline dilutions at the edge of the mixing zone for the 7Q10 and 30Q5 cases. A factor of 1.7 was applied to these dilutions to estimate the average dilution per guidance in the CORMIX Users Manual. Dilution at 600 feet downstream is 19.						

Dilution Summary – 33 cfs						
Water Quality Standard	**Stream Flow (cfs)**		**Effluent Flow (mgd)**		**Dilution**	**Location**
	Statistic	**Flow**	**Statistic**	**Flow**		
Aquatic Life, Acute	Minimum summer flow	33	☐ ADWDF x PF ☐ Max Daily Avg ☒ Other	0.20	4.3	ZID
Aquatic Life, Chronic	Minimum summer flow	33	☒ ADWDF ☐ Max Monthly Avg ☐ Other	0.20	21	MZ
Human Health, Non-Carcinogen	Minimum summer flow	33	☒ ADWDF ☐ Max Monthly Avg ☒ Other	0.20	21	MZ
AWWDF = Average wet weather design flow *PF = Peaking factor*						
Comments: CORMIX predicted centerline dilutions at the edge of the mixing zone for the 7Q10 and 30Q5 cases. A factor of 1.7 was applied to these dilutions to estimate the average dilution per guidance in the CORMIX User's Manual. Dilution at 600 feet downstream is 71.						

3.3.6 pH

The pH criterion for this basin is 6.5 – 8.5 per OAR 340-041-0235. DEQ determined there is reasonable potential for the discharge to exceed the lower pH criterion at the edge of the mixing zone. The lower proposed limit is 6.3 and is a WQBEL. The upper proposed limit is 9.0 and is a TBEL. This limit will cover both the winter and summer discharge periods. The DMR data provided by the permittee from 2020-2023 shows a tenth percentile minimum pH of 6.3, therefore the permittee is expected to be able to meet the limit upon permit issuance and no compliance schedule is needed. The following provides a summary of the data used for the analysis.

Table 3-11: pH Reasonable Potential Analysis

INPUT	Lower pH Criteria	Upper pH Criteria
1. Dilution at mixing zone boundary	12.0	12.0
2. Upstream characteristics		
a. Temperature (deg C)	19.8	5.7
b. pH	6.9	7.7
c. Alkalinity (mg CaCO3/L)	12.8	12.8
3. Effluent characteristics		
a. Temperature (° C)	15.1	5.9
b. pH (S.U.)	6.0	9.0
c. Alkalinity (mg CaCO3/L)	117.0	117.0
4. Applicable pH criteria	6.5	8.5
pH at mixing zone boundary	**6.3**	**7.9**
Is there reasonable potential?	**Yes**	**No**
Proposed effluent limits	**6.3**	**9.0**
Effluent data source: DMR data Jan 2020-May 2023		
Ambient data source: AWQMS 2013-2023. pH and alkalinity from stations 23273-ORDEQ and 24299-ORDEQ. Temperature data from station 34019-ORDEQ which is downstream (no upstream temperature data during discharge period).		

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	Core Cold Water 16ºC (OAR 340-041-0028(4)(b)
Applicable dates: May 16 – Aug 31	
Salmon/Steelhead Spawning 13°C? OAR 340-041-0028(4)(a)	☒Yes ☐No
Applicable dates: September 1-May 15	
WQ-limited?	☒Yes ☐No
TMDL wasteload allocation assigned?	☒Yes ☐No
Applicable dates: September 1- May 15 for spawning, May 16-Aug 31 for core cold water	
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 Nehalem River is covered under the North Coast Subbasins TMDL. The TMDL gave a WLA to Vernonia WWTP of 8.99 $x10^6$ kcal/day during the spawning time period of Sept 1st- May 15th. No WLA was assigned during the core cold water time period of May 16th- August 31st because the permit did not allow Vernonia to discharge during this time period. A request to use Reserve Capacity was granted and a WLA of 8.97 $x10^6$ kcal/day was granted to Vernonia for the May 16th-August 31st time period (Appendix B). Each WLA may also be expressed as a flow-based equation as noted in the table below.

Final effluent limits are based on the WLAs and listed in the following table.

Table 3-13: Temperature Criterion Effluent Limits

Effluent limit needed? ☒Yes ☐No
TMDL WLA Limit: Option A: 8.99 $x10^6$ kcal/day (as a 7-day rolling average) Option B: $0.08 \cdot (Q_e + Q_r \cdot 0.646) \cdot 3.785$ million kcal per day (as a 7-day rolling average)
Applicable time period: Sept 1st-May 15th
TMDL WLA Limit: Option A: 8.97 X 10^6 kcal/day (as a 7-day rolling average) Option B: $0.11 \cdot (Q_e + Q_r \cdot 0.646) \cdot 3.785$ million kcal per day (as a 7-day rolling average)
Applicable time period: May 16th-August 31st

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 13ºC or more for salmon and steelhead, and 9ºC or more for bull trout.

  ODFW staff confirmed that the streambed around the outfall and immediately downstream is bedrock and therefore unsuitable for spawning redds. DEQ performed an analysis of the discharge related to the spawning criterion. The result of this analysis indicates that the discharge does not have a reasonable potential to heat the receiving stream above the spawning criterion by more than an insignificant amount within 600 ft downstream of the outfall. Since the likely location of any active salmonid spawning areas has been confirmed to be outside of this range by ODFW staff, the impairment of an active spawning area is prevented or minimized.

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

  Since the maximum effluent temperature is below 32 ºC, acute impairment or instantaneous lethality is prevented or minimized.

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

  Since the maximum effluent temperature is below 25°C, thermal shock caused by the discharge is prevented or minimized.

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

  Since the maximum effluent temperature is below 21.0°C, migration blockage caused by the discharge is prevented or minimized.

There are no effluent limits needed to comply with the thermal plume requirements as shown in the following table.

Table 3-14: Thermal Plume Effluent Limit

Effluent limit needed? ☐Yes ☒No
Calculated limit: NA
Applicable timeframe: NA
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 3-15: 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 Residual Chlorine

The existing permit contains chlorine limits. The existing chlorine limits of 0.01 mg/L AML and 0.03 mg/L MDL were evaluated to ensure they remained protective of water quality based on updated information. The analysis showed that the current limits were protective of water quality and remain unchanged in the new permit. These limits will now apply year-round when the permittee is discharging. The permittee was able to meet these limits in the previous permit and will not require a compliance schedule for chlorine.

3.3.9.2 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. A winter RPA was run using winter ambient and effluent data (Nov-May). No winter temperature data was found upstream of the permittee, and so downstream winter temperature data was used. The winter RPA resulted in no reasonable potential for the permittee to exceed the ammonia water quality criteria during the winter discharge period. The summer RPA showed reasonable potential to exceed the ammonia criteria. An average monthly limit of 10 mg/L and a maximum daily limit of 20 mg/L (rounded to two significant figures) will be added to the permit for the summer discharge period of May 16 - Nov 14. Current data indicates that the permittee will not be able to meet these limits upon permit issuance. Therefore, a compliance schedule will be included in the permit (Section 6).

Table 3-16: Ammonia Analysis Information - Summer

	Acute	Chronic	
		4-day	30-day
Dilution	4.3	21	21
Ammonia Criteria	4.7	2.6	1.1
Effluent Data Used			
Ammonia (mg/L)	26.0	26.0	
pH (SU)	8.0	8.0	
Temperature (ºC)	23.0	23.0	
Alkalinity (mg/L CaCO3)	134.6	134.6	
Receiving Stream Data Used			
Ammonia (mg/L)	0.0	0.0	
pH (SU)	7.7	7.7	
Temperature (ºC)	21.1	21.1	
Alkalinity (mg/L CaCO3)	23.2	23.2	
Ammonia Limit Needed?	**Yes**		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	10.4	20.1	
Effluent data source			
DMR Data January 2020-May 2023 for Ammonia, pH, and Alkalinity. Summer temperature data collected from records of effluent temperature entering the subsurface discharge system.			
Ambient data source			
AWQMS 2013-2023. Stations 23273-ORDEQ and 24299-ORDEQ.			

Table 3-17: Ammonia Analysis Information - Winter

	Acute	Chronic	
		4-day	30-day
Dilution	2	12	12
Ammonia Criteria	17.5	7.1	2.8
Effluent Data Used			
Ammonia (mg/L)	26.0	26.0	
pH (SU)	7.2	7.2	
Temperature (ºC)	15.1	15.1	
Alkalinity (mg/L CaCO3)	51.8	51.8	
Receiving Stream Data Used			
Ammonia (mg/L)	0.0	0.0	
pH (SU)	7.5	7.5	
Temperature (ºC)	9.1	9.1	
Alkalinity (mg/L CaCO3)	13.8	13.8	
Ammonia Limit Needed?	**No**		
Calculated Limits	AML	MDL	
Ammonia (mg/L)	N/A	N/A	
Effluent data source			
DMR data January 2020-May 2023			
Ambient data source			
AWQMS 2013-2023. Stations 23273-ORDEQ and 24299-ORDEQ. No Winter temperature data at these stations. Using downstream temperature data from Station 34019-ORDEQ for winter data.			

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 with the exception of BOD_5 and TSS percent removal. The changes in BOD_5 and TSS percent removal were based on updated information not available at the time of issuance of the current permit (40 CFR 122.44(l) and 40 CFR 122.62(a)(2)) and therefore satisfy the exception to antibacksliding. In the past, when DEQ approved summer discharges from the permittee the existing effluent limitations still applied to the discharge. Since the proposed summer limits are the same or more stringent than the existing permit's limits, the antibacksliding provision remains satisfied for the new summer discharge period outlined in the permit.

3.5 Antidegradation

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

The previous permit allowed for summer discharges with DEQ's approval. Because proposed summer limits are the same or more stringent than the existing permit limits the permit complies with Oregon's antidegradation policy. However, since the new permit allows the permittee to discharge on a regular basis during the summer without special approval from DEQ, an antidegradation analysis was performed for this discharge. To ensure that the summer discharge complies with the antidegradation policy it was determined that BOD_5 load within the discharge would not result in a reduction in water quality to the Nehalem River if the river flow was 22 cfs or greater (this conclusion is based on OAR 34-0141-0041(3)(c)). DEQ also determined that the summer discharge would have a de minimis TSS impact if the minimum river flow was 33 cfs or greater. The permittee was given TMDL reserve capacity for temperature within the human use allowance of 0.3 °C. As long as the permittee meets the temperature limit, the effluent will be compliant with the antidegradation policy related to temperature (OAR 34-0141-0041(3)(d)). Impacts from chlorine, pH, and ammonia are considered de minimis as long as the criteria is met at the edge of the mixing zone since these pollutants are not conservative. It was determined that the new pH limits of 6.3-9.0 and chlorine limit of 0.01 mg/L MDL and 0.03 mg/L AML would not result in an exceedance of the criteria beyond the edge of the mixing zone with a river flow of 33 cfs or greater. The permittee will be given ammonia limits of 10 mg/L AML and 20 mg/L MDL during the summer discharge to be able to meet water quality criteria at the edge of the mixing zone. Thus, the lowest river flows the permittee was allowed to discharge at was determined to be 33 cfs and the ammonia limits were included in the permit during the summer to ensure that the ammonia criteria were not exceeded beyond the edge of the mixing zone. The permittee requested that the summer effluent discharge limit be scalable with the river flow. It was determined that as long as the effluent flow was not greater than (0.6463*Qr)/106 (with Qr being the river flow in cfs) then the summer discharge would have a de minimis impact. Therefore, the summer discharge does not result in a lowering of water quality consistent with Oregon's antidegradation policy.

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

While the permittee previously had a groundwater quality protection program and monitoring limits related to Cell No. 3. This cell has been lined and no longer requires a groundwater management plan or monitoring limits for this particular discharge. An evaluation was performed on previously collected groundwater data (2011-2023) from the permittee to determine average summer background groundwater concentrations, as shown in Table 3-18. These parameters will be included as average monthly limits in the proposed permit. Before the permittee is allowed to discharge, the current temperature monitoring wells downgradient of Outfall 003 (identified as TE-102, TE-104-B, and TE-105-B in Figure 3-1) will need to be converted or the permittee will need to construct other DEQ approved groundwater monitoring wells downgradient of Outfall 003 so that the full suite of parameters can be measured. This condition will be included in Schedule D. Once the wells are converted, they will become the compliance point at which the limits will need to be met.

Because OAR 340-044-0015(2)(f) does not allow direct discharge of municipal effluent to groundwater, a condition will be included that requires the permittee to measure groundwater levels and only discharge when the groundwater is at least 1 foot or more below Outfall 003. Temperature limits will also be included that prevent the permittee from raising the groundwater temperature above background by more than 2.0 °C. This background temperature was chosen as it was the standard deviation of the background groundwater temperature data and allows for some natural variation of groundwater temperature between the background monitoring wells and compliance point while not allowing a substantial increase in temperature. Background temperature will be determined at MW-1 and MW-2 (see Figure 3-1). Nitrate-nitrite limits will be set at 10 mg/L, the groundwater reference level defined in OAR 340-040-0030 Table 1. A groundwater management plan will also be included as a Schedule D condition.

Table 3-18: Background Groundwater Concentrations

Parameter	Background Groundwater Concentration	Unit
TSS	21	mg/L
BOD_5	2	mg/L
E. *coli*	4	MPN/100
Ammonia	0.3	mg/L
Total Residual Chlorine	No Data – Assumed to be Non-Detect	mg/L
Specific Conductivity	145	uS/cm
pH	No Data – OAR 340-040-0030 Table 3 specifies range of 6.5-8.5	SU

Figure 3-1: Vernonia Monitoring Wells

3.8 Functional Equivalent Analysis

Due to the proximity of Outfall 003 to the Nehalem River the discharge was evaluated for the likelihood of a functional equivalent discharge under the Maui Decision using DEQ guidance "Determining if a WPCF permit should be a NPDES permit under the Maui Supreme Court Decision" (referred to as DEQ FE guidance)**.** The full analysis is documented in a Functional Equivalent Worksheet which is part of the administrative record. A summary of the analysis of the seven factors outlined in the Maui Decision are as follows:

Factor 1: Transit Time
Data from a 2011 hydrogeological assessment submitted by the permittee indicated that the groundwater flows in a south-southeast direction from the facility toward the river at a velocity that ranges from 0.6 ft/day to 2.8 ft/day. Given the distance of 120 ft to 520 ft it was estimated that the transit time varied from between 43 days to 867 days. Using the DEQ FE guidance, these transit times indicate that Outfall 003 is a likely functional equivalent discharge given the most rapid transit time of 43 days.

Factor 2: Distance
The Outfall 003 UIC is located 120 ft to 520 ft away from the river The DEQ FE guidance indicates that discharges within this distance are more likely to be functional equivalent discharges.

Factor 3: Nature of the Material Through Which the Pollutant Travels

The 2011 hydrogeologic study did multiple well borings. The logs showed there was a heterogeneous mixture of silt, gravel, and sand in the surface down to 4-9ft. Below this was a fine to course grained alluvium consisting of silt to clayey silt with variable amounts of sand and gravel. Below this was dense siltstone bedrock at an approximate elevation of 595 ft (about 19 ft below ground surface). Given the heterogeneous nature of the material, this is an ambiguous indicator of whether a functional equivalent is present.

Factor 4: The Extent to which the Pollutant is Diluted or Chemically Changed as it Travels
A 2013 memo from Tetra Tech examined the possibility of temperature from outfall 003 to impact the Nehalem River. This modeling showed that even if outfall 003 was operating at full capacity, temperature was attenuated before reaching the river. However, no other analytes were examined in this analysis. As a result, factor 4 is an ambiguous indicator of whether a functional equivalent is present.

Factor 5: Amount of Pollutant Entering the Navigable Waters Relative to the Amount of Pollution that Leaves the Point Source
It is estimated that all of the wastewater eventually reaches the Nehalem River since the effluent is discharged subsurface and has no other travel pathway in groundwater except towards the river. Therefore, factor 5 is a likely indicator of a functional equivalent discharge.

Factor 6: The Manner by or Area in which the Pollutant Enters the Navigable Waters
There are no known discrete channels through which the effluent can travel. Any pollutants would enter the groundwater and enter the river through travel with the groundwater through the soil, which will likely attenuate any pollutants. Therefore factor 6 is an unlikely indicator of a functional equivalent discharge.

Factor 7 The Degree to which the Pollution (at that point) has Maintained its Specific Identity.
Data was unavailable to assess factor 7.

Final Determination
Overall, the close proximity of the UIC to the river, the rapid transit time, and the likelihood that all of the effluent eventually reaches surface water all indicate that Outfall 003 is a likely functional equivalent of a direct discharge. DEQ determined that it is appropriate to evaluate Outfall 003 to ensure any subsurface discharges will be protective of surface water quality. This approach is expected to have limited impact on facility operations and will limit the need for additional studies at this time.

Outfall 003 will be included in the NPDES permit, with limits for flow, BOD_5, TSS, pH, Nitrate as N, *E. coli*, Ammonia as N, Total Residual Chlorine, specific conductivity, and temperature in accordance with groundwater regulations (See section 3.7). Further evaluation is required to determine whether these limits meet federal and state requirements for surface water. The pollutants of concern for this facility have been identified as BOD_5, TSS, pH, temperature, bacteria, nitrate, and ammonia. The nearby assessment unit is OR_SR_1710020201_05_106441 (Nehalem River) which is listed as impaired for Temperature-Year-Round, and Temperature-spawn in the 2022 Integrated Report (See Temperature section below).

Mixing Zone
Because it is uncertain exactly where the effluent reaches the surface water, and it is likely that it reaches the surface water at multiple points, no regulatory mixing zone will be assigned to this discharge.

Compliance Point
To be protective of surface water, the water quality criteria are expected to be met by the time the effluent reaches the surface water. The soil and the groundwater through which the effluent travels are expected to have an effect on the effluent, especially for non-conservative parameters such as pH and temperature. The permittee will be required to install monitoring wells in order to use Outfall 003, and these will be the compliance points for the limits outlined below.

BOD_5 and TSS
The proposed permit contains average monthly BOD_5 limit of 2 mg/L and an average monthly TSS limit of 21 mg/L. These requirements were put in place to meet UIC rules. These limits are lower than the 30 mg/L monthly average required by federal secondary treatment standards and therefore already meet the required criteria. Federal Secondary Treatment standards require that a percent removal limit is added to the permit. The percent removal will be set at 65% in accordance with 40 CFR 133.105(g) (See section 3.2). The compliance point for percent removal will be at Outfall 003 prior to the discharge from Cell #3. OAR 340-041-0061(9)(c) states that "mass load limits as defined in this rule may be replaced by more stringent limits...if required to prevent or eliminate violations of water quality standards". Since the groundwater limits prevent violations of water quality standards, no mass loads are required for BOD_5 and TSS.

pH
The pH criteria are 6.5 to 8.5 for the Nehalem River. The proposed pH limits in the permit are 6.5-8.5 to meet groundwater reference levels. Since these limits equal the criteria the pH criteria will be met by the time the effluent reaches the surface water.

Temperature
The Nehalem River is designated as Core Cold Water (criteria of 16 °C). The proposed temperature limits in the permit do not allow the discharge from the UIC to exceed groundwater temperature values by more than 2.0 °C to allow for natural groundwater temperature variations. Background groundwater values averaged 12.0 °C based on previously collected groundwater data. Therefore, these limits are protective of the temperature criteria and also protective of any thermal plume limitations.

Bacteria
The proposed permit contains an *E. coli* limit of 4 #/100 mL. OAR 340-041-0009(6)(b) requires discharges of bacteria into freshwater meet a monthly geometric mean of 126 *E. coli* organisms per 100 mL, with no more single sample exceeding 406 *E. coli* organisms per 100 mL. The limits in the proposed permit are lower and therefore stringent enough to protect surface water criteria.

Nitrate and Ammonia

The proposed permit contains a 10 mg/L average monthly limit for nitrate and a limit of 0.3 mg/L for ammonia. These limits either are equal to or lower than the water quality criteria for nitrate and ammonia (see section 3.3.9.2) and therefore are stringent enough to protect surface water criteria.

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 WWTP currently manages all of its wastewater solids in the facility's facultative lagoons until the solids need to be removed from the lagoons to keep the lagoons properly functioning. During the term of this permit, the permit holder may transfer these wastewater solids or sewage sludges to other DEQ-approved facilities permitted to process or manage the solids or treat and land apply these solids as biosolids.

If during the term of this permit the WWTP decides that it wants to treat and land apply their wastewater solids as biosolids, the facility will need to develop a new or updated Biosolids Management Plan to replace the facility's outdated 2013 Biosolids Management Plan. At a minimum, this plan will need to detail that the facility's wastewater solids will meet biosolids pollutant limits defined in OAR 340-050 and 40 CFR Part 503 and will be treated to meet state and federal criteria for pathogen reduction (Class A or Class B biosolids) and vector attraction reduction. The plan will also be subject to public review and comment before it may be implemented.

For all Class B biosolids to be land applied under this permit, Schedule A of the permit requires the facility to apply biosolids according to their Biosolids Management Plan. In addition, Schedule A requires the following:

- The biosolids must be land applied 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 and one of the vector attraction reduction standards under 40 CFR 503.33.
- 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.

It should be noted that the facility will not need to develop a Biosolids Management Plan for transfer of its wastewater solids or sewage sludge to other DEQ-approved facilities permitted to process, manage, or dispose of these types of residuals.

5. Schedule B: Monitoring and Reporting Requirements

Schedule B of the permit describes the minimum monitoring and reporting necessary to demonstrate compliance with the proposed effluent limits. In addition, monitoring for other parameters is required to better characterize the effluent quality and the receiving stream. This data will be used during the next permit renewal. Detailed monitoring frequency and reporting requirements are in Schedule B of the proposed permit. The required monitoring, reporting and frequency for many of the parameters are based on DEQ's monitoring and reporting matrix guidelines, permit writer judgment, and to ensure the needed data is available for the next permit renewal. The permittee requested a monitoring reduction for bacteria. DEQ evaluated the request in accordance with the 1996 EPA memo "Interim Guidance for Performance -Based Reductions of NPDES Permit Monitoring Frequencies" and found that the permittee was eligible for bacteria monitoring to be reduced from the 2/week frequency found in the DEQ monitoring guidelines to a 1/month frequency.

6. Schedule C: Compliance Schedule

6.1 Outfall 001

The proposed permit contains a new water quality based effluent limit for ammonia at Outfall 001. 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 for ammonia when discharging from Outfall 001. 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 proposed compliance schedule requires the permittee to meet the final limits as soon as possible.

6.2 Outfall 003

The proposed permit contains new groundwater quality based effluent limits for BOD_5, TSS, pH, ammonia, nitrate, total residual chlorine, e. *coli*, and specific conductivity as specified under OAR 340-040-0030. It is unclear whether the permittee will be able to meet these limits upon permit issuance. A compliance schedule is allowed according to OAR 340-040-0020(10). Because this discharge is also a likely functional equivalent 40 CFR 122.47 and OAR 340-041-0061(12) also apply. The compliance schedule allows time for the permittee to evaluate facility operations to ensure compliance with the new limits. The compliance schedule requires that the permittee meet the final limits within two calendar years after the construction and approval of the groundwater monitoring compliance points. Annual reports on progress towards meeting limits will be required. Two calendar years were allowed because the permittee only discharges into the subsurface system during a few months in the summer, thus making the actual window during which the permittee can test the system far less than two years. The proposed compliance schedule requires the permittee to meet the final limits as soon as possible.

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 plan in order to reduce groundwater and stormwater from entering the collection system.

7.2 Mixing Zone Study

A requirement to submit a mixing zone study.

7.3 Emergency Response and Public Notification Plan

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

7.4 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.

7.5 Wastewater Solids Annual Report

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

7.6 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.

7.7 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.

7.8 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.

7.9 Lagoon Solids

A condition requiring the permittee to submit a sludge depth survey report to ensure lagoon solids are maintained within design standards and accumulations do not negatively affect treatment capabilities.

7.10 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.

7.11 Industrial User Survey

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

7.12 Outfall Inspection

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

7.13 Groundwater Management Plan

A condition that requires the permittee to submit a groundwater monitoring plan.

7.14 Groundwater Monitoring Well Maintenance

A condition that requires the permittee to maintain monitoring wells and requires an abandonment plan should the permittee decide to abandon a groundwater monitoring well. This is included to address the presence of groundwater monitoring wells related to previous permitted activity at the site.

7.15 Outfall 003 Compliance Point Construction

A condition that requires the permittee to either convert monitoring wells TE-102, TE-104-B, and TE-105-B or construct new groundwater monitoring wells downgradient of Outfall 003 at a DEQ approved located to be compliance points prior to the use of Outfall 003.

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: UIC Memo

State of Oregon
DEQ Department of Environmental Quality

Internal Memorandum

To: NPDES Pemit Group

From: Kevin D. Weberling, RG, Senior UIC Hydrogeologist; Derek Sandoz, UIC Program Coordinator

Date: 11/07/2023

Subject: Review of Hyporheic Discharge to UIC, City of Vernonia Wastewater Treatment Plant, Columbia County

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BACKGROUND

- **Description of City of Vernonia Current Wastewater Infiltration and Injection System**

The City of Vernonia operates a municipal wastewater lagoon treatment system located along the Nehalem River in Columbia County, Oregon. The system has been in use since 1960 and has undergone various design improvements, including a subsurface infiltration trench in 1994. Wastewater disinfection occurs by influent flow through three onsite lagoons via solids settling, chlorination, and solids filtration. Chlorination occurs between lagoons two and three, with de-chlorination occurring via dissipation in lagoon three prior to effluent discharge. Currently treated effluent travels either to the Nehalem River via surface outfall in the winter months, or by discharge into the subsurface hyporheic zone during the summer months.

The subsurface discharge system consists of three 700 ft long parallel 8" diameter pipes, perforated with 3/8" diameter holes at the crown of the pipe in 7 ft intervals. The system is emplaced along the Banks-Vernonia Trail and is designed to discharge to the vadose zone with an infiltration rate of 200 gpd/linear ft. The wastewater then percolates into hyporheic groundwater that normally flows towards the Nehalem River during the summer dry season. The subsurface discharge system is classified as a UIC under OAR Division 44 rules and therefore must be permitted under a WPCF UIC permit if the current design configuration is deemed permissible under current OARs discussed below in Section 1.

- **Description of Hydrogeologic Setting**

The City of Vernonia three-tiered lagoon wastewater treatment effluent system is situated approximately 100ft north of the of the Nehalem River on the southeastern side of the facility and 500ft north of the river on the northwestern end of the facility (Figure 1). The shallow subsurface lithology underlying the facility has been characterized in borings and well logs as interbedded gravels, sands, silts, and clays associated with modern Nehalem River floodplain deposits. These deposits contain hyporheic zone waters that interchange with the surface waters in the Nehalem River and the local shallow groundwater water table.
The monitoring wells shown in Figure 1 indicate that during February and March of 1991, the static water level varied between 5 ft and 11 ft below ground surface around the lagoons. The water table fluctuates seasonally based on precipitation and flow in the adjacent Nehalem River. The historic static groundwater levels at the facility indicate the subsurface discharge UIC system buried at 8 ft below ground surface likely intersects the seasonal water table and has potential to discharge directly to groundwater.

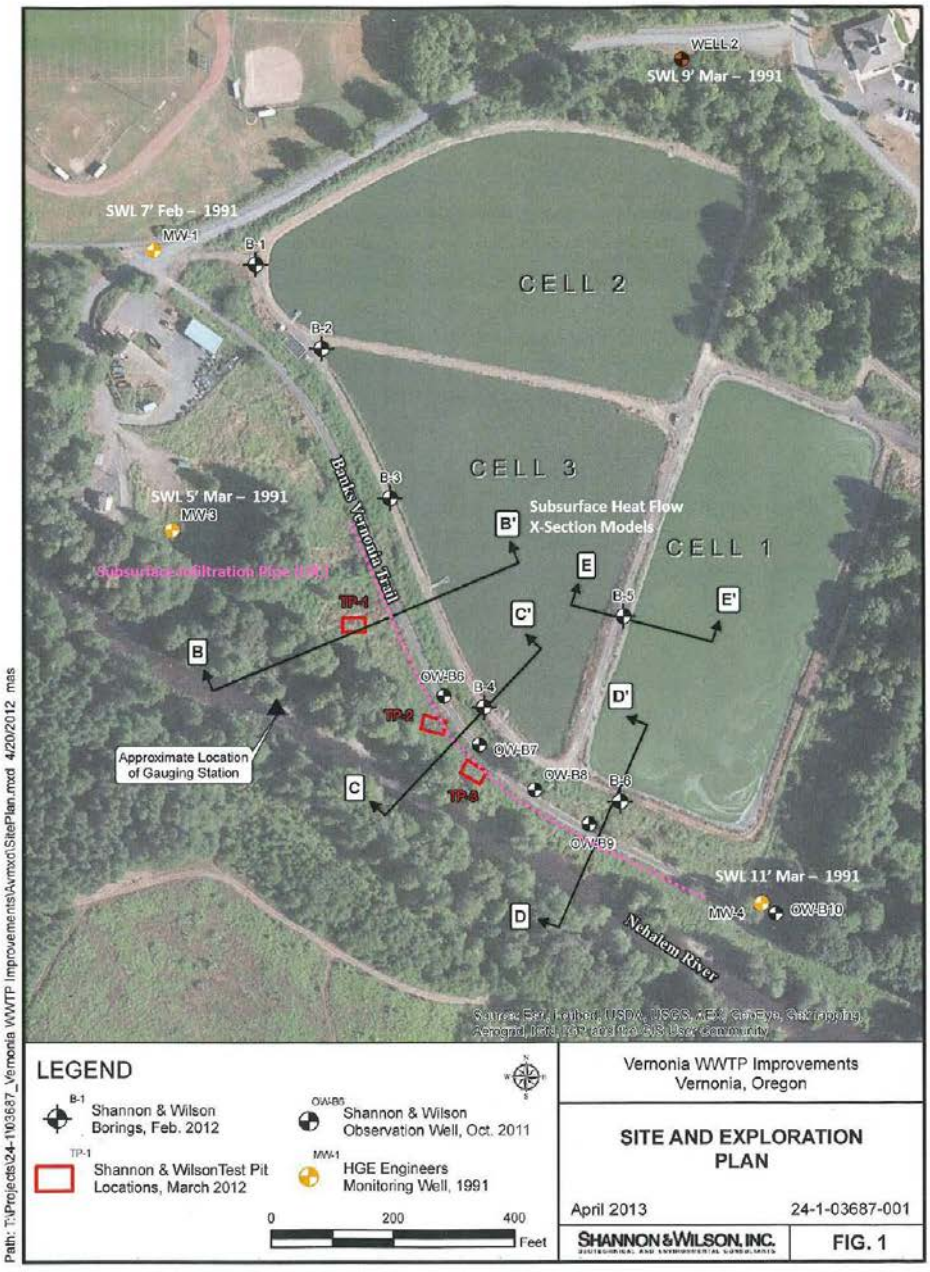

FIGURE 1

DEQ's ... water.

- **Data Limitations and Needs**

It is unclear if the historic groundwater monitoring wells are still active. Currently the City of Vernonia facility only distributes effluent to the subsurface during the summer months, however accurate static groundwater levels will need to be continuously monitored during planned injection periods for consideration of UIC WPCF permit issuance and compliance. Emplacement of fluid via UIC into the subsurface may degrade background groundwater quality and direct injection of municipal wastewater via UIC to an underground source of drinking water is prohibited via the OARs listed below. It is unclear if background groundwater quality levels were determined prior to subsurface infiltration via the UIC perforated pipe system that was emplaced along the Banks-Vernonia Trail or if they can be determined in the future given previous unregistered UIC discharge.

1) Applicable OREGON ADMINISTRATIVE RULES (OARs) - UICs and DISPOSAL of TREATED WASTEWATER

UIC Definitions 340-044-0005

(23) "Injection" or "Underground Injection" means the emplacement or discharge of fluids into the subsurface.

(24) "Injection System" or "Underground Injection System" means a well, improved sinkhole, sewage drain hole, subsurface fluid distribution system or other system or groundwater point source used for the subsurface emplacement or discharge of fluids.

(42) "Subsurface Fluid Distribution System" means an assemblage of perforated pipes, drain tiles or other mechanisms intended to distribute fluids below the surface of the ground.

(46) "Underground Source of Drinking Water" means an aquifer or groundwater source that supplies or potentially could supply drinking water for human consumption.
(51) "Well" means a bored, drilled, driven or dug hole whose depth is greater than its largest surface dimension, an improved sinkhole, a sewage drain hole, or a subsurface fluid distribution system.

(52) "WPCF Permit" means a Water Pollution Control Facilities permit as defined in OAR 340-045 to construct and operate a disposal system with no discharge to navigable waters.

COMMENTS ON UIC DEFINITIONS

The City of Vernonia currently discharges seasonally into the subsurface via buried perforated pipe. This facility is an Underground Injection Control system per the definitions listed above in the OARs and will need to be permitted through the UIC program.

The definition of a "WPCF Permit" brings into question the ability to permit the subsurface discharge portion of this facility through the UIC program as discharge to navigable waters (Nehalem River) is not allowed per current OARs.

DEQ Underground Injection Control Program
700 NE Multnomah Street, Suite 600, Portland, OR 97232
503-229-5263, Toll-free in Oregon: 800-452-4011

DEQ's mission is to be a leader in restoring, maintaining, and enhancing the quality of Oregon's air, land and water.

2) Classification of Underground Injection Systems 340-044-0011

(5) Class V. Injection systems not included in Classes I, II, III or IV that inject fluids other than hazardous waste or radioactive waste into the subsurface. Types of Class V injection systems include, but are not limited to, the following:

(a) Sanitary waste injection systems that inject sanitary waste fluids into subsurface fluid distribution or injection systems such as septic systems, drain fields, disposal trenches, seepage pits, cesspools, or sewage drain holes or drill holes

COMMENTS on UIC CLASSIFICATION

The City of Vernonia's subsurface discharge system via buried perforated pipe meets the definition of a Class V UIC per the OAR rules listed above.

3) Prohibition of Groundwater Contamination 340-044-0014

(1) No person shall construct, operate, maintain, convert, plug or abandon any injection system or conduct any injection activity that allows the direct or indirect movement of fluids containing contaminants into groundwater if the presence of that contaminant may cause a violation of any primary drinking water regulation under the federal Safe Drinking Water Act, or fails to comply with groundwater quality protection requirements specified in OAR 340-040. The person owning or operating an injection system shall have the burden of showing that these requirements are met.

(2) If an injection activity has the potential to cause or causes a violation of primary drinking water regulations, adversely impacts groundwater quality or otherwise adversely affects human health or the environment, the owner or operator of the injection system shall:

(a) Take all appropriate action including closure of the injection system if necessary to prevent the violation

(b) Apply for and obtain a permit if the injection activity was previously authorized by rule; and

(c) Be subject to enforcement action if appropriate

COMMENTS ON PROHIBITION of GROUNDWATER CONTAMINATION

It is unclear if data exists that demonstrates original background groundwater quality prior to construction of the existing subsurface discharge system to determine if the underlying aquifer is potentially an underground source of drinking water (USDW). Further water quality testing may be needed to determine background groundwater quality at this site, and if it would be considered an USDW. Treatment of effluent at surface may be required to meet background groundwater quality to continue injection activities prior to UIC WPCF permit approval.

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503-229-5263, Toll-free in Oregon: 800-452-4011

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4) Authorization of Underground Injection 340-044-0012

(2) Permits shall not be issued for construction, maintenance, or use of an underground injection system where any other treatment or disposal method that affords better protection of public health or water resources is reasonably available or possible.

COMMENTS ON AUTHORIZATION

It is unclear if there are other methods of treatment and/or disposal that afford better protection to public health or water resources than the current subsurface injection system (UIC). It is also unclear if the current surface outfall system can handle all effluent discharge should discharge via UIC need to be discontinued.

5) Prohibited Underground Injection 340-044-0015

(2) No person shall cause or allow the following types of Class V injection systems injecting:

(f) Industrial or municipal wastewater directly into an underground source of drinking water.

COMMENTS on PROHIBITED UNDERGROUND INJECTION

It is unclear if there is data demonstrating original background groundwater quality prior to construction of the subsurface discharge system (UIC) to determine if the underlying aquifer is/was a potential underground source of drinking water (USDW). Further water quality testing may be needed to determine background groundwater quality at this site, and if it would be considered an USDW. Effluent may need to be treated at surface to meet background groundwater quality prior to injection to meet UIC WPCF permit requirements.

SUMMARY and UIC OPTIONS

The City of Vernonia municipal wastewater treatment plant discharges treated wastewater effluent via surface outfall into the Nehalem River during the winter and then discharges to the subsurface via a buried, perforated pipe system to the hyporheic zone during the dry summer months. By definitions outlined in **OAR 340-044-0005** this portion of the system is considered a UIC. The UIC is currently unregistered and may need an approved DEQ WPCF UIC Permit to continue operation. If DEQ determines that the discharge is the functional equivalent of a direct discharge, then an NPDES permit would be required to cover this discharge. Discharging to the hyporheic zone implies that, at times, there will be direct discharge to navigable waterways at this facility (the Nehalem River).

DEQ Underground Injection Control Program
700 NE Multnomah Street, Suite 600, Portland, OR 97232
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During subsurface discharge during the dry season, the base of the of the infiltration pipe for effluent discharge may be in the vadose zone above the technical definition of the saturated, hyporheic zone. It may be possible during these periods to discharge effluent into the vadose zone; however, it would be necessary to demonstrate through vertical fate-transport modeling that the effluent from the municipal wastewater treatment facility does not degrade background groundwater quality during these discharge periods. This will also require continuous monitoring of groundwater levels to determine the potential intersection with the water table and the base of the perforated pipe (UIC). Discharge would not be allowed to UIC during the intersection of groundwater and the base of UIC, or if vertical fate and transport modeling indicates that background groundwater quality would be degraded during discharge.

DEQ
State of Oregon Department of Environmental Quality

Kevin D. Weberling, RG
UIC Senior Hydrogeologist
Northwest Region - Water Quality
Oregon Department of Environmental Quality
700 NE Multnomah St. Ste 600
Portland, OR 97232
Office: 503-229-6371
Cell: 503-701-9336

Appendix B: Reserve Capacity Memo

State of Oregon
DEQ Department of Environmental Quality

Memorandum

To: Permit #101094 Vernonia WWTP File

From: DEQ Water Quality Permitting and TMDL Programs

Date: 05/10/2024

Subject: TMDL Reserve Capacity Request for City of Vernonia WWTP Permit #101094

DEQ did not allocate a temperature Waste Load Allocation (WLA) for the Vernonia WWTP for the period of May 16th- August 31st under the 2006 North Coast Basin Temperature TMDL modification, which revised the waste load and load allocations included in the 2003 North Coast Basin Temperature TMDL. At the time of TMDL development and during the modification, DEQ's permit prohibited discharge to the Nehalem River between May 15th and Nov 15th. During permit renewal in 2023, DEQ and the permittee determined that growth and increased loading at Vernonia's WWTP will require effluent discharge of up to 0.2 MGD during the summer May 15th – Nov 14th timeframe. Therefore, DEQ's permitting program made a reserve capacity request to DEQ's TMDL program.

The 2006 North Coast Basin Temperature TMDL modification allocated point sources up 0.2°C of the human use allowance and set aside up to 0.05 °C for reserve capacity. The TMDL also states that if the maximum point source allocation is not used, the remainder would be added to the reserve capacity for future uses. Based on this, DEQ determined there is up to 0.25 °C of available reserve capacity at Vernonia WWTP's point of discharge located on the Nehalem River at approximately river mile 92. There are no point sources upstream. Downstream, RSG Forest Products discharges at Nehalem River mile 70. RSG did not have a NPDES wastewater discharge permit at the time the TMDL was developed and therefore was not provided an allocation. The NPDES permit evaluation report, dated February 2006, conducted a reasonable potential analysis and concluded that RSG's operations had no reasonable potential to exceed temperature standards. Fishhawk Lake Recreation Club discharges to Fishhawk Creek at river mile 3.8. Fishhawk Creek eventually flows to the Nahalem River at approximately river mile 67. The Fishhawk facility was allocated a portion of the human use allowance equal to approximately 0.08 °C (0.075 °C). Accounting for any potential cumulative warming from discharges downstream, DEQ estimates there is at least 0.17 °C of available reserve capacity available downstream of Fishhawk Creek. This assumes there is no heat dissipation between Vernonia WWTP's outfall moving downstream and no heat dissipation between Fishhawk Lake Recreation Club outfall on Fishhawk Creek and where Fishawk Creek flows into the Nehalem River (0.25 °C – 0.08 °C = 0.17 °C).

To estimate the amount of reserve capacity Vernonia WWTP would require, DEQ calculated the potential warming using the critical low river flow and an estimated maximum effluent temperature and flow. DEQ typically uses 7Q10 as the critical low flow. The estimated 7Q10 river flow near Vernonia is 2.3 cfs. However, in order to not violate anti-degradation rules, the permit will only authorize discharge when river flows are 33 cfs and higher and restrict effluent flows to a maximum 0.2 MGD between May 15th and November 15th. For this reason, DEQ used 33 cfs as the critical low flow estimate and 0.2 MGD as the maximum effluent flow. DEQ considered two maximum effluent temperature scenarios: a "Worst Case" and a "Probable Case". For the "Worst Case" scenario, DEQ used the 33 cfs critical low flow

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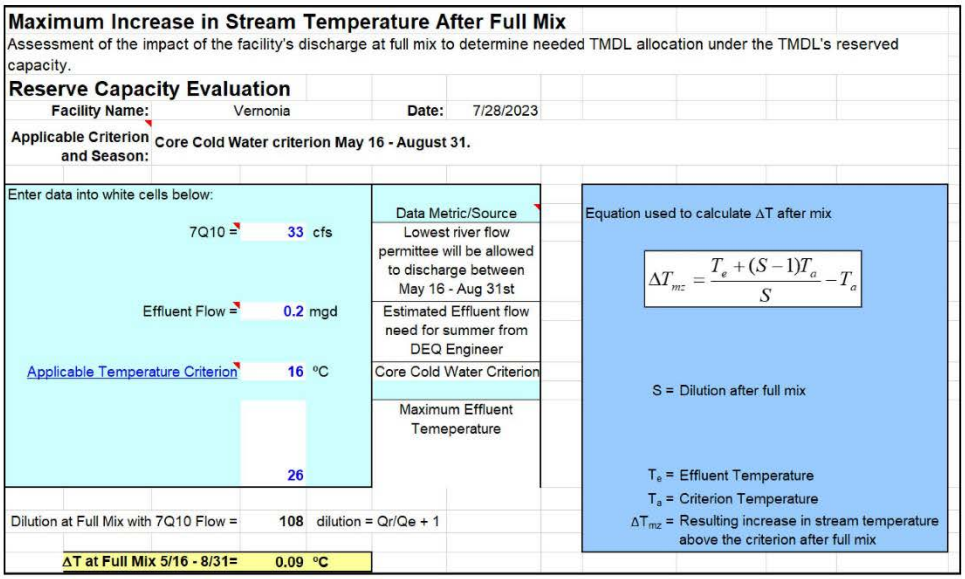
estimate, the max effluent flow of 0.2 MGD for the effluent flow, the applicable temperature criterion of 16 °C, and the maximum recorded effluent temperature of 26 °C. For the "Probable Case" scenario, DEQ used the 33 cfs critical low flow estimate, a max effluent flow of 0.2 MGD, the applicable temperature criterion of 16 °C, and the 90th percentile of the effluent temperature during the May 16th- August 31st timeframe (23.9 °C). DEQ considered the two scenarios because it is rare for the maximum discharge and the maximum effluent temperature to occur at the same time. From these analyses, DEQ determined that the effluent from Vernonia would raise the river temperature above the applicable criterion by 0.09 °C for the "Worst Case" and 0.07 °C for the "Probable Case" at full mix during critical conditions (see Figs 1 and 2).



Maximum Increase in Stream Temperature After Full Mix

Assessment of the impact of the facility's discharge at full mix to determine needed TMDL allocation under the TMDL's reserved capacity.

Reserve Capacity Evaluation

Facility Name: Vernonia **Date:** 7/28/2023

Applicable Criterion and Season: **Core Cold Water criterion May 16 - August 31.**

Enter data into white cells below:

			Data Metric/Source
7Q10 =	33	cfs	Lowest river flow permittee will be allowed to discharge between May 16 - Aug 31st
Effluent Flow =	0.2	mgd	Estimated Effluent flow need for summer from DEQ Engineer
Applicable Temperature Criterion	16	°C	Core Cold Water Criterion
	26		Maximum Effluent Temeperature

Dilution at Full Mix with 7Q10 Flow = 108 dilution = Qr/Qe + 1

ΔT at Full Mix 5/16 - 8/31= 0.09 °C

Equation used to calculate ΔT after mix

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

S = Dilution after full mix

T_e = Effluent Temperature

T_a = Criterion Temperature

ΔT_{mz} = Resulting increase in stream temperature above the criterion after full mix

Figure 1. "Worse Case" Temperature Analysis

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	23.9		90th percentile Effluent Temperature
Dilution at Full Mix with 7Q10 Flow =	108	dilution = Qr/Qe + 1	
ΔT at Full Mix 5/16 - 8/31=	**0.07**	**°C**	

Equation used to calculate ΔT after mix

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

S = Dilution after full mix

T_e = Effluent Temperature

T_a = Criterion Temperature

ΔT_{mz} = Resulting increase in stream temperature above the criterion after full mix

Figure 2. "Probable Case" Temperature Analysis

Allocation

Based on these analyses, DEQ is providing reserve capacity of 0.11 °C to the Vernonia WWTP between May 16th-Aug 31st. An allocation of 0.11 °C was selected to account for uncertainty in the effluent temperature estimate. DEQ calculated the thermal waste load allocation and allowable effluent limit for Vernonia (Table 1) using Equation 1 and Equation 2 from the 2006 TMDL modification (shown below). The values in Table 1 replaces the information in Table 12, page 12 of the 2006 TMDL modification.

The allocation is based on the maximum 0.2 MGD (0.31 cfs) effluent discharge and 33 cfs river flows. When river flows are greater than 33 cfs, the wasteload allocation and allowable effluent temperature may be recalculated using Equation 1 and Equation 2. If a future NPDES permit authorizes discharge at flows less than 33 cfs. The permit will incorporate the lower river flow when calculating the thermal limits.

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Table 1. Reserve capacity allocation for the Vernonia WWTP facility

River Flow Rate (cfs)	Facility Flow (cfs)	Period	Numeric Criterion (°C)	HUA	Allocation (kcals/day)	Allowable Effluent Temp. (°C)
33	0.31	May 16 - August 31	16	0.11	8.97E+06	27.8

$$T_{WLA} = \frac{[(Q_{PS} + Q_R) \cdot (T_R + MaxΔT)] - (Q_R \cdot T_R)}{Q_{PS}}$$ **Equation 1**

$$H_{WLA} = (Q_{PS} + Q_R) \cdot (MaxΔT) \cdot C_F$$ **Equation 2**

where,

T_{WLA} = Maximum allowable point source effluent temperature (deg-C).

H_{WLA} = Waste load allocation (kilocalories/day).

$MaxΔT$ = The maximum temperature increase (deg-C) above the applicable river temperature criterion using 100% of river flow.

T_R = Upstream river temperature criterion (deg-C).

Q_{PS} = The daily mean effluent discharge (cfs).
Discharge in million gallons per day (MGD) was converted to cfs by multiplying by 1.5472:

$$\frac{1{,}000{,}000\ gallons}{1\ day} \cdot \frac{0.13368 ft^3}{1\ \text{gallon}} \cdot \frac{1\ day}{86{,}400\ sec} = 1.5472$$

Q_R = The daily mean river flow rate, upstream (cfs).

C_F =
Conversion factor using flow in cubic feet per second (cfs): 2,447,592

$$\frac{1\ m^3}{35.3 ft^3} \cdot \frac{1000\ kg}{1\ m^3} \cdot \frac{86400\ sec}{1\ day} \cdot \frac{1\ kcal}{1\ kg \cdot 1°C} = 2{,}447{,}592$$

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