Oregon
Tina Kotek, Governor

Department of Environmental Quality
Northwest Region Portland Office/Water Quality
700 NE Multnomah Street, Suite 600
Portland, OR 97232
(503) 229-5696
FAX (503) 229-6124
TTY 711

February 3, 2025

Missy McBain
USDOD; US Army Corps of Engineers, Bonneville Dam
P. O. Box 150
Cascade Locks, OR 97014-0150

Re: NPDES Permit Applicant Review Period
Comments Due: February 18, 2025, 5 p.m.
File no. 112236
Permit no. 102768
EPA no. OR0034355
Facility: Bonneville Lock and Dam – USACOE, Exit 40 Interstate 84, Cascade Locks
Multnomah County

Enclosed please find the applicant review drafts for your proposed National Pollutant Discharge Elimination System permit including a copy of the public notice, permit, and fact sheet. Please review these documents and submit your comments to:

Trinh Hansen, Water Quality Permit Coordinator
DEQ Western Region
4026 Fairview Industrial Way Dr. SE
Salem, OR 97302
trinh.hansen@deq.oregon.gov

Your comments **must be received by 5 p.m. on February 18, 2025**. DEQ will review your comments and address your concerns to the degree possible; however, we will not prepare a formal written response at this stage. DEQ will provide for additional applicant review if the permit is significantly modified in response to your comments. If there are no significant changes, DEQ will make the permit documents available for interested parties and hold a public hearing. Please be aware that USDOD; US Army Corps of Engineers Bonneville Dam may provide additional comment on the permit during this time. When the public participation period has ended, DEQ will take final action on your application.

Please contact me at 503-378-5055 with any questions about permitting processing. If you have any questions about your current permit, please contact Mike Pinney at 503-229-5310 or mike.pinney@deq.oregon.gov.

Sincerely,

Trinh Hansen

Trinh Hansen
Water Quality Permit Coordinator
Western Region, Salem Office

ec: NPDES Permit Issuance E-File, Water Quality Division, DEQ
Mike Pinney, Portland, DEQ
ORMS

PUBLIC NOTICE

Date posted: X/X/25

Public Hearing and Comments Requested About U.S. Army Corps of Engineers Bonneville Lock and Dam's Proposed Water Quality Permit Renewal

HOW TO PROVIDE PUBLIC COMMENT

Facility name: U.S. Army Corps of Engineers Bonneville Lock and Dam

Permit type: National Pollutant Discharge Elimination System permit

Hearing details: Date, time, location or Zoom link, conference number & passcode

Send written comments to: Trinh Hansen, DEQ Water Quality Permit Coordinator

By mail: 4026 Fairview Industrial Drive SE Salem, OR 97302

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

Comments due by: [Date] at 5 p.m.

The Oregon Department of Environmental Quality invites the public to provide written comments and attend a public hearing to provide verbal comments on the conditions of U.S. Army Corps of Engineers Bonneville Lock and Dam's proposed water quality permit, known officially as a National Pollutant Discharge Elimination System permit. This hearing will be combined for three different proposed U.S. Army Corps of Engineers NPDES permits. Commenters will have the opportunity to comment on all three or just one of the three proposed NPDES permits.

Summary

Subject to public review and comment, DEQ intends to renew the proposed water quality permit, which allows Bonneville Lock and Dam to discharge wastewater to the Columbia River.

About the facility

The U.S. Army Corps of Engineers has applied for a water quality permit renewal for the Bonneville Lock and Dam located in Cascade Locks. DEQ last renewed this permit on Jan. 18, 2008. This facility discharges non-contact cooling water and industrial wastewater from operations at Bonneville Lock and Dam.

The facility discharges to the Columbia River near Cascade Locks, OR. The Columbia River is listed as impaired (category 4 or 5) for several pollutants 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 Columbia and Lower Snake Rivers Total Maximum Daily Load, or TMDL, for temperature.

The most recent DEQ inspection of the Bonneville Lock and Dam was on Nov. 4, 2024. DEQ did not identify violations during this inspection. Bonneville Lock and Dam has had no water quality violations in the past permit term.

The facility holds one other NPDES wastewater permit (#101793) from DEQ for the Tanner Creek Wastewater Treatment Plant that is located on-site at Bonneville Dam.

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

What types of pollutants does the permit regulate?

This permit sets conditions for how the facility deals with the following pollutants: thermal load (temperature), total recoverable copper, pH, and oil and grease.

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

Yes. The draft permit proposes new effluent limits for thermal load (temperature) and total recoverable copper, which are not in the facility's current permit. The draft permit also proposes a more stringent lower limit for pH and for Oil and Grease.

Pollutant	Change
Thermal Load (Temperature)	New
Total Recoverable Copper	New
pH	Lower limit more stringent. Upper limit unchanged.
Oil and Grease	Lower

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.

For this proposed permit action, DEQ reviewed the renewal application, all previous permits and fact sheets and associated administrative records, regional water quality data and research, discharge monitoring reports and attachments submitted by the permittee, all available mixing zone studies and memos, all available compliance and enforcement documents in the administrative record, records of communications with the permittee and other documents contained within the administrative record. 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 attending the hearing or sending an email or using mail service addressed to the permit coordinator listed in the "how to provide public comment" box above.

DEQ will consider and respond to all comments received and may modify the proposed permit based on comments. DEQ gives equal weight to written and verbal comments.

For more information

Find more information by reviewing draft permit documents attached to this notice or contact Trinh Hansen at 503-378-5055 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, sex, religion, sexual orientation, gender identity, or marital status in the administration of its programs and activities. Visit DEQ's Civil Rights and Environmental Justice page.

State of Oregon Department of Environmental Quality

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:

U.S. Army Corps of Engineers

Bonneville Lock and Dam
P.O. Box 150
Cascade Locks, OR 97014

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Main turbine unit and external thrust bearing non-contact cooling water	001a, 001b	45.639444, -121.947500
Main turbine unit and external thrust bearing non-contact cooling water	002a, 002b, 003a, 003b	45.639722, -121.947222
Main turbine unit and external thrust bearing non-contact cooling water	004a, 004b	45.640000, -121.946944
Main turbine unit and external thrust bearing non-contact cooling water	005a, 005b	45.640277, -121.946944
Main turbine unit and external thrust bearing non-contact cooling water	006a, 006b	45.640277, -121.946666
Main turbine unit and external thrust bearing non-contact cooling water	007a, 007b	45.640555, -121.946666
Main turbine unit and external thrust bearing non-contact cooling water	008a, 008b	45.640833, -121.946666
Main turbine unit and external thrust bearing non-contact cooling water	009a, 009b	45.641111, -121.946388
Main turbine unit and external thrust bearing non-contact cooling water	010a, 010b	45.641388, -121.946111
Station service (Unit O) turbine unit and internal thrust bearing non-contact cooling water	011	45.639444, -121.947500
Oil/water separator, south drainage sump, transformer vault drainage, and stormwater runoff	012	45.639634, -121.949585
Emergency oil/water separator outfall	012a	45.639167, -121.949250
HVAC chiller non-contact cooling water	013	45.640833, -121.946666

Powerhouse unwatering sump and north drainage sump	014	45.641388, -121.946388
Spillway drainage sump	015	45.642869, -121.940849
Navigation lock drainage sump (south), non-contact cooling water, stormwater runoff	016	45.636666, -121.949444
Navigation lock drainage sump (north), stormwater runoff	017	45.636666, -121.949722

FACILITY LOCATION:

Bonneville Lock and Dam Project
Exit 40 Interstate 84
Cascade Locks, OR 97014
County: Multnomah
EPA Permit Type: Minor

RECEIVING STREAM INFORMATION:

Receiving stream/NHD name: Columbia River
USGS 12-Digit HUC: 170800010801
OWRD Administrative Basin: Mainstem Columbia River
NHD Reach Code & % along reach: 17080001018860, 82.15%
ODEQ LLID & RM: 1240483462464, RM 141.88
Integrated Report AU ID: OR_SR_1708000108_88_100674

Issued in response to Application No. 958225 received June 28, 2012 and updated on June 29, 2015. This permit is issued based on the land use findings in the permit record.

DRAFT	DRAFT	DRAFT
Tiffany Yelton-Bram, 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.

TABLE OF CONTENTS

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

LIST OF TABLES

SCHEDULE A: WASTE DISCHARGE LIMITS

1. Outfalls 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, 010b, 011, 013, 014, 016, and 017 – Permit Limits

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

Table A1: Outfall 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, 010b, 011, 013, 014, 016, and 017 Permit Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
Oil and Grease	mg/L	-	-	5
pH	SU	Instantaneous limit between a daily minimum of 7.0 and a daily maximum of 8.5		

2. Outfall 012 and 012a – Permit Limits

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

Table A2: Outfall 012 and 012a Permit Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
Copper, Total Recoverable (Final) (see note a. and b.)	µg/L	0.8	-	1.3
Oil and Grease	mg/L	-	-	5
pH	SU	Instantaneous limit between a daily minimum of 7.0 and a daily maximum of 8.5		

Notes:

a. DEQ has established a Quantitation Limit of 2 µg/L for Total Recoverable Copper. Any analysis done for Total Recoverable Copper must have a quantitation limit that is either equal to or less than 2 µg/L. In cases where the average monthly or maximum daily limit for Total Recoverable Copper is lower than the Quantitation Limit, DEQ will use the reported Quantitation Limit as the compliance evaluation level.

b. The final Total Recoverable Copper limit is effective after completion of the compliance schedule in Schedule C.

3. Outfall 015 – Permit Limits

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

Table A3: Outfall 015 Permit Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
pH	SU	Instantaneous limit between a daily minimum of 7.0 and a daily maximum of 8.5		

The permittee is only authorized to discharge effluent from the spillway drainage sump from Outfall 015. The permittee is not authorized to discharge any other process-related waters from Outfall 015, such as non-contact cooling water or other facility operations effluent.

4. Aggregate Outfalls 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, 010b, 011, 012, 012a, 013, 014, 016, and 017 – Permit Limits

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

Table A4: Outfalls 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, 010b, 011, 012, 012a, 013, 014, 016, and 017 Thermal Load Limit

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
Thermal Load (June 1 – October 31) (See note a.)	million kcal/day	2,590 as a monthly average		
a. The aggregate thermal load is the sum of the thermal load discharge for Outfalls 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, 010b, 011, 012, 012a, 013, 014, 016, and 017 (Tables B2 – B4).				

5. Additional Permit Limits

The permittee is prohibited from discharging a visible sheen from any outfall.

6. Regulatory Mixing Zone

There are no regulatory mixing zones for these discharges.

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, B5, B6, B7, and B8 Effluent Monitoring and Thermal Load Monitoring	Monthly	By the 15th of the following month	Specified in Schedule B. Section 2 of this permit	Electronic reporting as directed by DEQ
Table B9: Copper Biotic Ligand Model and Aluminum Sampling Requirements	Monthly for 2 years beginning 10/1/20XX until 24 samples are collected	By the 15th of the following month	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Table B10: Metals	Quarterly for 3 years starting QX of YYYY (permit writer to fill in the start quarter and year before permit issuance) until 12 samples are collected (See note c.)	By the 15th of the month following each quarter	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Mixing Zone Study (see Schedule D)	One time	Submit before requesting a regulatory mixing zone	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
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
pH Criteria Exceedance Report (see Schedule D)	Annually	April 15	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Best Management (BMP) Plan (see Schedule D)	One time	Submit by XX/XX/20XX within 180 days of effective date	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
BMP Annual Report (see Schedule D)	Annually	April 15	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:
Environmentally Acceptable Lubricants (EALs) Annual Report (see Schedule D)	Annually	April 15	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
Cooling Water Intake Structure (CWIS) Operations and Maintenance Manual (see Schedule D)	One time	Submit by XX/XX/2026 within a year of effective date	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ
CWIS Annual Report (see Schedule D)	Annually	April 15	Electronic copy in a DEQ-approved format	Attached via electronic reporting as directed by DEQ

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. Quarters are defined as: Q1: Jan – Mar, Q2: Apr – June, Q3: Jul – Sept, Q4: Oct – Dec. If no discharge occurs during the quarter, collect the sample in the following quarter.

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.

iv. The permittee must develop a receiving water sampling and analysis plan that incorporates QA/QC prior to sampling. This plan must be kept at the facility and made available to DEQ upon request.

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. Chemical Abstracts Service (CAS) Numbers. CAS numbers (where available) must be reported along with monitoring results.

iv. (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.

v. (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).

iii. When concentration data are above the DL, but below the QL: To calculate the mass load from this result, use the DL. Report the mass load as the calculated mass load preceded by "E". For example, if flow is 2 MGD, the DL is 1.0 µg/L, the QL is 5 µg/L and the reported sample result is E3.5 µg/L, report "E0.017 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 effluent for Outfalls 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, and 010b after all wastestreams enter the pipes and before discharge and report results in accordance with Table B1 and the table below:

Table B2: Effluent Monitoring Requirements Outfalls 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, and 010b

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	Measurement/Calculation	1. Monthly Average 2. Daily Maximum
pH (00400)	SU	Year-round for the first year of the permit	1/week	Grab	1. Daily Maximum 2. Daily Minimum
pH (00400)	SU	Year-round for the entire permit term except the first year	1/month	Grab	1. Daily Maximum 2. Daily Minimum
Temperature (00010)	ºC	Year-round	Daily or 1/month	Continuous or Grab (See note c and d.)	1. Daily Maximum 2. Daily Average 3. Monthly Average 4. 7-day Rolling Average of Daily Maximum
Thermal Load Discharge (00015)	million kcal/day	June 1 – October 31	Daily	Calculation (See note e.)	1. Daily Maximum 2. Monthly Average

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
Oil and grease (00556)	mg/L	Year-round for the first year of the permit	1/week	Grab	Daily Maximum
Oil and grease (00556)	mg/L	Year-round for the entire permit term excluding the first year	1/month	Grab	Monthly Maximum
Oil & Grease Sheen (84066)	Y/N	Year-round	1/week (See note f.)	Visual	Presence or Absence
Oil and grease (00556)	mg/L	Year-round	Conditional (See note f.)	Grab	Daily Maximum

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

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 collect one grab sample daily between 12 PM and 5 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. Representative monitoring – The permittee must select two outfalls from each of the following lists for continuous monitoring: 1) 001a, 002a, 003a, 004a, 005a, 006a, 007a, 008a, 009a, 010a and 2) 001b, 002b, 003b, 004b, 005b, 006b, 007b, 008b, 009b, 010b. The four selected outfalls will be representative monitoring locations. The remaining 16 outfalls will be represented monitoring locations. For the represented outfalls, the permittee must perform temperature grab measurements once per month between 12 PM and 5 PM.

d. When determining the daily maximum temperature, the permittee may report the hourly average maximum temperature if continuous monitoring of temperature is performed at less than hourly intervals.

e. The daily thermal load (TL) discharged must be calculated using the daily average effluent temperature and the corresponding estimated daily average effluent flow using the formula below.

   The monthly average is then calculated from the daily TLs.

   The daily TL is calculated as follows:

   $$TL = 3.78 * Qe * Te$$

   Where:

   TL = Daily Thermal Load (million kcal/day)

   Qe = Estimated Daily Average Effluent Flow (MGD)

   Te = Daily Average Effluent Temperature (°C)

   For outfalls with representative monitoring (see note c.), the daily average temperature must be calculated using only the continuous temperature monitoring data from representative outfalls and applied to the represented outfalls.

f. The permittee must observe the surface of the receiving water in the vicinity of where the effluent enters the surface water at a minimum of once per week. If a visible sheen is observed, take corrective action to stop the sheen. Sample the effluent for oil and grease once and report the results in the next monthly monitoring report.

b. The permittee must monitor effluent for Outfalls 011, 013, and 014 after all wastestreams enter the pipes and before discharge and report results in accordance with Table B1 and the table below:

Table B3: Effluent Monitoring Requirements Outfalls 011, 013, and 014

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	Measurement/Calculation	1. Monthly Average 2. Daily Maximum
pH (00400)	SU	Year-round for the first year of the permit	1/week	Grab	1. Daily Maximum 2. Daily Minimum
pH (00400)	SU	Year-round for the entire permit term except the first year	1/month	Grab	1. Daily Maximum 2. Daily Minimum
Temperature (00010)	ºC	Year-round	Daily	Continuous (See note c.)	1. Daily Maximum 2. Daily Average 3. Monthly Average 4. 7-day Rolling Average of Daily Maximum
Thermal Load Discharge (00015)	million kcal/day	June 1 – October 31	Daily	Calculation (See note d.)	1. Daily Maximum 2. Monthly Average
Oil and grease (00556)	mg/L	Year-round for the first year of the permit	1/week	Grab	Daily Maximum
Oil and grease (00556)	mg/L	Year-round for the entire permit term excluding the first year	1/month	Grab	Monthly Maximum
Oil & Grease Sheen (84066)	Y/N	Year-round	1/week (See note e.)	Visual	Presence or Absence

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
Oil and grease (00556)	mg/L	Year-round	Conditional (See note e.)	Grab	Daily 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 collect one grab sample daily between 12 PM and 5 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. When determining the daily maximum temperature, the permittee may report the hourly average maximum temperature if continuous monitoring of temperature is performed at less than hourly intervals.

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

   The monthly average is then calculated from the daily TLs.

   The daily TL is calculated as follows:

   $$TL = 3.78 * Qe * Te$$

   Where:

   TL = Daily Thermal Load (million kcal/day)

   Qe = Estimated Daily Average Effluent Flow (MGD)

   Te = Daily Average Effluent Temperature (°C)

e. The permittee must observe the surface of the receiving water in the vicinity of where the effluent enters the surface water at a minimum of once per week. If a visible sheen is observed, take corrective action to stop the sheen. Sample the effluent for oil and grease once and report the results in the next monthly monitoring report.

c. The permittee must monitor effluent at the grab sample basin in the oil/water separator filter building for Outfall 012 and report results in accordance with Table B1 and the table below:

Table B4: Effluent Monitoring Requirements Outfall 012

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	Measurement/Calculation	1. Monthly Average 2. Daily Maximum
pH (00400)	SU	Year-round for the first year of the permit	1/week	Grab	1. Daily Maximum 2. Daily Minimum

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
pH (00400)	SU	Year-round for the entire permit term excluding the first year	1/month	Grab	1. Daily Maximum 2. Daily Minimum
Temperature (00010)	ºC	Year-round	Daily	Continuous (See note c.)	1. Daily Maximum 2. Daily Average 3. Monthly Average 4. 7-day Rolling Average of Daily Maximum
Thermal Load Discharge (00015)	million kcal/day	June 1 – October 31	Daily	Calculation (See note d.)	1. Daily Maximum 2. Monthly Average
Oil and grease (00556)	mg/L	Year-round for the first year of the permit	1/week	Grab	Daily Maximum
Oil and grease (00556)	mg/L	Year-round for the entire permit term excluding the first year	1/month	Grab	Monthly Maximum
Oil & Grease Sheen (84066)	Y/N	Year-round	1/week (See note e.)	Visual	Presence or Absence
Oil and grease (00556)	mg/L	Year-round	Conditional (See note e.)	Grab	Daily Maximum
Copper, Total Recoverable (Final) (01119)	ug/L	Year-round	1/week (See note f.)	24 hr Composite	1. Daily Maximum 2. Monthly Average
Chlorine, Total Residual (50060)	mg/L	Year-round	1/week	Grab	1. Daily Maximum 2. Monthly Average

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

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 collect one grab sample daily between 12 PM and 5 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. When determining the daily maximum temperature, the permittee may report the hourly average maximum temperature if continuous monitoring of temperature is performed at less than hourly intervals.

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

   The monthly average is then calculated from the daily TLs.

   The daily TL is calculated as follows:

   $$TL = 3.78 * Qe * Te$$

   Where:

   TL = Daily Thermal Load (million kcal/day)

   Qe = Estimated Daily Average Effluent Flow (MGD)

   Te = Daily Average Effluent Temperature (°C)

e. The permittee must observe the surface of the receiving water in the vicinity of where the effluent enters the surface water at a minimum of once per week. If a visible sheen is observed, take corrective action to stop the sheen. Sample the effluent for oil and grease once and report the results in the next monthly monitoring report.

f. Total Recoverable Copper monitoring is related to compliance monitoring for the final copper limit and must begin after the completion of the copper compliance schedule in Schedule C1.

d. The permittee must monitor effluent at the grab sample basin in the oil/water separator filter building for Outfall 012a and report results in accordance with Table B1 and the table below:

Table B5: Effluent Monitoring Requirements Outfall 012a

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
Flow (50050)	MGD	Only during discharge	Daily	Measurement/Calculation	1. Monthly Average 2. Daily Maximum
pH (00400)	SU	Only during discharge	Daily	Grab	1. Daily Maximum 2. Daily Minimum

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
Temperature (00010)	ºC	Only during discharge	Daily	Continuous (See note c.)	1. Daily Maximum 2. Daily Average
Thermal Load Discharge (00015)	million kcal/day	Only during discharge	Daily	Calculation (See note d.)	1. Daily Maximum 2. Monthly Average
Oil and grease (00556)	mg/L	Only during discharge	Daily	Grab	Daily Maximum
Copper, Total Recoverable (Final) (01119)	ug/L	Only during discharge	Daily (See note e.)	24 hr Composite	1. Daily Maximum 2. Monthly Average
Chlorine, Total Residual (50060)	mg/L	Only during discharge	Daily	Grab	1. Daily Maximum 2. Monthly Average

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 collect one grab sample daily between 12 PM and 5 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. When determining the daily maximum temperature, the permittee may report the hourly average maximum temperature if continuous monitoring of temperature is performed at less than hourly intervals.

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

The monthly average is then calculated from the daily TLs.

The daily TL is calculated as follows:

$$TL = 3.78 * Qe * Te$$

Where:

TL = Daily Thermal Load (million kcal/day)

Qe = Estimated Daily Average Effluent Flow (MGD)

Te = Daily Average Effluent Temperature (°C)

e. Total Recoverable Copper monitoring is related to compliance monitoring for the final copper limit and must begin after the completion of the copper compliance schedule in Schedule C1.

e. The permittee must monitor effluent for Outfall 015 after all wastestreams enter the sump and before discharge and report results in accordance with Table B1 and the table below:

Table B6: Effluent Monitoring Requirements Outfall 015

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
pH (00400)	SU	Year-round	1/month	Grab	1. Daily Maximum 2. Daily 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, 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.

f. The permittee must monitor effluent at the sump grates on the navigation lock for Outfalls 016 and 017 and report results in accordance with Table B1 and the table below:

Table B7: Effluent Monitoring Requirements Outfalls 016 and 017

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	Measurement/Calculation	1. Monthly Average 2. Daily Maximum
pH (00400)	SU	Year-round for the first year of the permit	1/week	Grab	1. Daily Maximum 2. Daily Minimum
pH (00400)	SU	Year-round for the entire permit term excluding the first year	1/month	Grab	1. Daily Maximum 2. Daily Minimum
Temperature (00010)	ºC	Year-round	Daily	Continuous (See note c.)	1. Daily Maximum 2. Daily Average 3. Monthly Average 4. 7-day Rolling Average of Daily Maximum

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action (See note a.)	Report Statistic (See note b.)
Thermal Load Discharge (00015)	million kcal/day	June 1 – October 31	Daily	Calculation (See note d.)	1. Daily Maximum 2. Monthly Average
Oil and grease (00556)	mg/L	Year-round for the first year of the permit	1/week	Grab	Daily Maximum
Oil and grease (00556)	mg/L	Year-round for the entire permit term excluding the first year	1/month	Grab	Monthly Maximum
Oil & Grease Sheen (84066)	Y/N	Year-round	1/week (See note e.)	Visual	Presence or Absence
Oil and grease (00556)	mg/L	Year-round	Conditional (See note e.)	Grab	Daily 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 collect one grab sample daily between 12 PM and 5 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. When determining the daily maximum temperature, the permittee may report the hourly average maximum temperature if continuous monitoring of temperature is performed at less than hourly intervals.

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

The monthly average is then calculated from the daily TLs.

The daily TL is calculated as follows:

$$TL = 3.78 * Qe * Te$$

Where:

TL = Daily Thermal Load (million kcal/day)

Qe = Estimated Daily Average Effluent Flow (MGD)

Te = Daily Average Effluent Temperature (°C)

e. The permittee must observe the surface of the receiving water in the vicinity of where the effluent enters the surface water at a minimum of once per week. If a visible sheen is observed, take corrective action to stop the sheen. Sample the effluent for oil and grease once and report the results in the next monthly monitoring report.

4. Thermal Load Monitoring

The permittee must monitor the effluent from Outfalls 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, 010b, 011, 012, 012a, 013, 014, 016, and 017 and report the results in accordance with Table B1 and the table below:

Table B8: Outfalls 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, 010b, 011, 012, 012a, 013, 014, 016, and 017 – Thermal Load Effluent Monitoring Requirements

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type / Required Action	Report Statistic (See note a.)
Thermal Load Discharge (00015) (See note b.)	million kcal/day	June 1 – October 31	1/month	Calculation (See note b.)	Monthly Average

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. The aggregate thermal load discharge is the sum of the thermal load discharge values from Outfalls 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, 010b, 011, 012, 012a, 013, 014, 016, and 017, calculated on a monthly basis.

5. Copper Biotic Ligand Model and Aluminum Parameters

The permittee must monitor the Columbia River and Outfalls 012, 016, and 017 for copper biotic ligand model and aluminum parameters per the table below. Samples must be collected according to Table B1. Effluent and ambient monitoring must be conducted concurrently. The permittee must collect upstream samples such that the effluent does not impact the samples (e.g., upstream for riverine discharges). It is the responsibility of the permittee to ensure safe and practical sampling techniques and procedures are used. DEQ recommends that these procedures be included in a sample and analysis plan that can be reviewed by DEQ when necessary.

Table B9: Copper Biotic Ligand Model and Aluminum Sampling Requirements

Parameter (See note a.)	CAS (See note b.)	Units	Sampling Frequency (See note c.)	Sampling Location (See note d.)
Copper, total and dissolved	7440508	µg/L	1/month	Upstream and Effluent
Aluminum, (See note e.)	7429905	µg/L	1/month	Upstream and Effluent
Hardness (as $CaCO_3$)	–	mg/L	1/month	Upstream and Effluent
Dissolved organic carbon	–	mg/L	1/month	Upstream and Effluent
pH (See note f.)	–	S.U.	1/month	Upstream and Effluent
Temperature	–	°C	1/month	Upstream and Effluent
Calcium, dissolved (See note g.)	7440702	mg/L	1/month	Upstream and Effluent
Magnesium, dissolved (See note g.)	7439954	mg/L	1/month	Upstream and Effluent
Sodium, dissolved (See note g.)	7440235	mg/L	1/month	Upstream and Effluent
Potassium, dissolved (See note g.)	7440097	mg/L	1/month	Upstream and Effluent
Sulfate, dissolved (See note g.)	14808798	mg/L	1/month	Upstream and Effluent
Chloride, dissolved (See note g.)	16887006	mg/L	1/month	Upstream and Effluent
Alkalinity, dissolved (See note g.)	–	mg/L	1/month	Upstream and Effluent

Notes:

a. All effluent samples must be 24-hr composite samples except grab samples must be collected for pH, alkalinity and temperature. All receiving stream samples must be grab samples.

b. Chemical Abstract Service

c. Permittee to sample for duration specified in Table B1.

d. Samples must be collected upstream (outside the influence of the effluent) and from the effluent on the same day.

e. Effluent samples must be in Total Recoverable fraction. Upstream samples must be in the Bioavailable fraction.

f. Ambient pH measurements in receiving waters where specific conductivity < 200 uS/cm may require additional sampling practices to achieve accurate measurement. Refer to USGS (2021) "Measurement of pH In Techniques and Methods (Vol. 9)" or another 40 CFR 136 approved method for measuring pH in low ionic strength solutions. The permittee must account for low ionic strength when sampling ambient pH.

g. These analytes may be calculated from specific conductance measurements according to equations outlined in OAR 340-041-8033 Endnote N(1)(b). Specific conductance data may be used as a substitute for monitoring and analysis of these parameters only if it is concurrent with other BLM input parameters. If neither the analytes nor concurrent specific conductance is measured, regional defaults will be used in data analysis according to OAR 340-041-8033 Endnote N(2)(a).

6. Effluent Toxics Characterization Monitoring

The permittee must collect and analyze effluent samples for the parameters listed in the tables below. The permittee must collect effluent samples at the grab sample basin in the oil/water separator filter building for Outfall 012 and at the sump grates on the navigation lock for Outfalls 016 and 017 on the dates in Table B1.

Samples must be 24-hour composites. Sample results must be reported in µg/L unless otherwise specified and submitted to DEQ using approved electronic format.

Table B10: Metals

Pollutant (See note a.)	**CAS** (See note b.)
Lead, total and dissolved	7439921
Zinc, total and dissolved	7440666

Notes:

a. The term "total" used in reference to metals is intended to cover all EPA-accepted standard digestion methods and is considered to be equivalent to the term "total recoverable".

b. Chemical Abstract Service

7. Additional Receiving Stream and Effluent Characterization Monitoring

If additional ambient or effluent monitoring is needed, DEQ will notify the permittee through a request for supplemental information/data.

SCHEDULE C: COMPLIANCE SCHEDULE

1. Compliance Schedule to Meet Final Effluent Limits

The permittee must comply with the following schedule:

Table C1: Total Recoverable Copper Compliance Schedule – Outfall 012 and 012a

Compliance Date:	Requirement:
By XX/XX/2026 Within 12 months of permit effective date	The permittee must submit to DEQ an optimization study outlining feasible operational changes that can be made to the current treatment process at Bonneville Lock and Dam to maximize reductions of total recoverable copper.
By XX/XX/2027 Within 18 months of permit effective date	The permittee must begin implementation of the planned changes outlined in the optimization study and must notify DEQ regarding implementation.
By XX/XX/2027 Within 2 years of permit effective date	The permittee must submit a design memorandum for any necessary facilities upgrades in order to achieve the final effluent limits for total recoverable copper by the date noted below.
By XX/XX/2028 Within 3 years of permit effective date	The permittee must submit to DEQ a written progress report outlining the progress made towards achieving final effluent limitations. The permittee must include in the report a draft plan and timeline for achieving final effluent limits based on the results of the implementation of the optimization study and design memorandum. Permittee must revise the draft plan and timeline in accordance with DEQ comments within 60 days of receiving DEQ comments.
By XX/XX/2029 Within 4 years of permit effective date	The permittee must begin implementation of the final plan for achieving final effluent limits and submit to DEQ a written progress report outlining the progress made towards achieving the final total recoverable copper effluent limitations.
By XX/XX/2030 Within 5 years of permit effective date	The permittee must submit to DEQ a written progress report outlining the progress made towards achieving the final total recoverable copper effluent limitations.
By XX/XX/2031 Within 6 years of permit effective date	The permittee must achieve compliance with the final effluent limits for total recoverable copper 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. Mixing Zone Study

In order to request a regulatory mixing zone for any outfall, the permittee must submit a level 1 mixing zone study. The study must specify which outfalls the permittee wants to be covered by a regulatory mixing zone (Level 1 mixing zone study requirements are described in DEQ's Mixing Zone Internal Management Directive).

2. 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 7 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.

3. Spill/Emergency Response Plan

The permittee must have an up-to-date spill response plan for prevention and handling of spills and unplanned discharges. This plan must be available for review during a DEQ inspection. The spill response plan must include all of the following:

a. A description of the reporting system that will be used to alert responsible managers and legal authorities in the event of a spill.

b. A description of preventive measures and facilities (including an overall facility plot showing drainage patterns) to prevent, contain, or treat spills.

c. A description of the permittee's training program to ensure that employees are properly trained at all times to respond to unplanned and emergency incidents.

d. A description of the applicable reporting requirements. These must be consistent with the reporting requirements found in Schedule F, condition D.5.

4. Outfall Inspection

The permittee must inspect Outfalls 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, 010b, 011, 012, 013, 014, 015, 016, and 017 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 all ports are intact, clear and fully functional. The inspection must verify the latitude and longitude of the outfall end pipe and/or diffuser ports. 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.

5. pH Criteria Exceedance Report

The permittee must submit an annual pH Criteria Exceedance report by the date specified in Table B1. This report must document all pH criteria exceedances from all outfalls, the pH value in the impoundment on the same day of the exceedance to document whether the impoundment was the cause of the

exceedance, and the practicable measures the permittee is taking in the impoundment to ensure compliance with the pH criteria in OAR 340-041-0104.

6. Best Management Practices (BMP) Plan

a. The permittee shall develop and implement a BMP Plan which incorporates practices that achieve the objectives and specific requirements listed below. The permittee must operate the hydroelectric generating facility in accordance with this BMP Plan and with subsequent amendments to the Plan. The BMP Plan shall be prepared in accordance with good engineering practices.

i. Pollution Prevention Team

The BMP Plan shall identify a specific individual or individuals within the facility organization as members of the Pollution Prevention Team who are responsible for developing the BMP Plan and for assisting the facility manager in the implementing, maintaining, and revising of this plan. The responsibilities of each team member must be listed. The activities and responsibilities of the Pollution Prevention Team shall address all aspects of the facility's BMP Plan.

ii. Prevention and Minimization of Oil and Wastewater Discharges

The BMP Plan shall establish specific best management practices or other measures that prevent and minimize oil, grease, and hydraulic fluids from all sources from entering the river, including at a minimum, the following:

1. Maintain protective seals on all equipment with oil-to-water interfaces in good operating order to minimize the leaking of hydraulic oil or other oils
2. Minimize lubricants for all facility equipment that come in contact with river water such as spill gate mechanisms, turbine gate mechanisms, etc.
3. Use lubricants, paint, and caulk that are free of PCBs, unless technically infeasible.
4. Use preventative maintenance and cleaning programs for turbine and wicket gate parts.
5. Regularly inspect fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc. to prevent drips or leaks.
6. Use proper operation of the oil/water separators through inspections at appropriate intervals, regularly scheduled maintenance, and by review of sampling data.
7. A preventive maintenance program for internal facility drainage water management devices (e.g., cleaning oil/water separators, pits, sumps) that includes inspection and testing to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters and ensuring appropriate maintenance of such equipment and systems.
8. Good housekeeping practices that require the maintenance of areas, which may contribute pollutants to internal facility drainage water discharges, to be clean and orderly.

9. Site-specific spill prevention and response procedures in areas where potential spills, which can contribute pollutants to internal facility drainage water discharges, can occur and their accompanying drainage points shall be identified clearly in the BMP Plan. When containment is impracticable, the procedures should outline site-specific contingency plans to prevent oil releases. Procedures and site-specific BMPs shall be developed and implemented to eliminate and/or minimize the opportunity for oil leakage to enter the drainage system at the facility. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment in the BMP Plan should be considered. Procedures for cleaning up spills shall be identified in the BMP Plan and made available to the appropriate personnel. The necessary equipment to implement a clean-up should be available to personnel.

10. Inspections with qualified personnel for designated equipment and areas of the facility at appropriate intervals specified in the BMP Plan. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspection shall be maintained.

11. Employee training programs to inform personnel responsible for implementing activities identified in the BMP Plan or otherwise responsible for internal facility drainage water management, at all levels of responsibility, of the components and goals of the BMP Plan.

12. Record-keeping and internal reporting procedures with a description of incidents (such as spills, or other discharges), along with other information describing the quality and quantity of internal facility drainage water discharges shall be included in the BMP Plan. Inspections and maintenance activities shall be documented, and records of such activities shall be incorporated into the BMP Plan.

iii. Prevention and Minimization of HVAC Refrigerant Discharges.

The BMP Plan shall establish specific best management practices or other measures that prevent and minimize refrigerant from HVAC units from entering the river, including at a minimum, the following:

1. Regularly inspect HVAC units and lines for leaks.

2. Use proper operation of HVAC units through inspections at appropriate intervals and regularly scheduled maintenance.

3. Inspections with qualified personnel for designated equipment and areas of the facility at appropriate intervals specified in the BMP Plan. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspection shall be maintained.

4. Employee training programs to inform personnel responsible for implementing activities identified in the BMP Plan or otherwise responsible for internal facility drainage water management, at all levels of responsibility, of the components and goals of the BMP Plan.

5. Record-keeping and internal reporting procedures with a description of incidents (such as leaks, or other discharges), along with other information describing the quality and quantity of internal facility drainage water discharges shall be included in the BMP Plan. Inspections and maintenance activities shall be documented, and records of such activities shall be incorporated into the BMP Plan.

iv. Oil Accountability, Tracking, and Reporting. The BMP Plan will describe the quantity and type of all oil products used on-site and how they are monitored and tracked using guidelines from the facility's Oil Accountability Plan. If the Oil Accountability Plan covers all elements of this permit requirement, the BMP Plan may reference the Oil Accountability Plan. Records are to be kept on-site and available for inspection by DEQ. Oil gauges should be used that provide appropriate level of markings to ensure operators and maintenance personnel can easily identify an unusual condition. The permittee must notify DEQ if there is an unaccounted oil release into the environment consistent with the facility's Oil Accountability Plan.

v. Drainage: The BMP plan shall include the following:

1. All facility-specific activities and significant materials which may be potentially significant pollutant sources.

2. Other potential sources which may reasonably be expected to add significant amounts of pollutants to internal facility drainage water discharges. Factors to consider include the toxicity of pollutants; quantity of pollutants used; the likelihood of contact with internal facility drainage water discharges; and history of significant leaks or spills.

3. A plot of the floor drainage of the facility's interior including sumps and oil/water separators and locations where major spills or leaks have occurred.

vi. Inventory of Exposed Materials.

The BMP Plan shall include an inventory of the types of materials handled at the facility that potentially may be inadvertently spilled. Such inventory shall include a narrative description of significant materials (quantities over 55 gallons) that are or have been handled, treated, stored or disposed in a manner to allow exposure to internal facility drainage water between the time of three years before the effective date of the permit coverage and the present; method and location of on-site storage or disposal; materials management practices employed to minimize contact of materials with internal facility drainage water; the location and description of existing structural and non-structural control measures to reduce pollutants in the internal facility drainage water discharges; and a description of any treatment these discharges receive.

vii. Spills and Leaks.

The BMP Plan shall include a list of significant spills and significant leaks of toxic or hazardous pollutants that occurred, during the three-year period prior to the active date of permit coverage, at areas that drain to an outfall associated with floor drains. Such a list shall be updated as appropriate during the term of the permit. The spill and leak documentation should also document why the spill occurred, the volume of the spill, and how the spill was addressed. This should be part of the BMP Annual Report if a spill occurs during the permit term.

viii. Risk Identification and Summary of Potential Pollutant Sources.

A narrative description of the potential pollutant sources from the following activities: loading and unloading operations; maintenance programs; and on-site waste disposal practices. The description shall specifically list any significant potential source of pollutants at the facility and for each potential source, any pollutant or pollutant parameter (e.g. biochemical oxygen demand, etc.) of concern shall be identified.

ix. Trash Racks, Strainers, or Intake Screens.

The permittee shall develop and implement procedures to remove solid materials from the trash racks, strainers or intake screens. The solid materials exclude naturally occurring materials such as leaves, branches, grass, and so forth. Inspections and maintenance of the trash racks and intake screens shall be scheduled and documented with the record-keeping included with the BMP Plan and summarized in the Annual Report required under Schedule D, condition 6.e. The permittee shall amend the removal procedures whenever there is a change in the design, construction, operation, or maintenance which has a significant effect on the deposition of solid material on the trash racks or intake screens.

The trash removal activities are to be performed where it is reasonable and feasible at the facility. These trash removal procedures are to include appropriate safety practices because the permittee is responsible for employee safety at the facility.

x. Backwash Strainer.

The permittee shall develop and implement inspection and maintenance procedures at appropriate intervals specified in the BMP Plan to insure proper operation of the backwash strainer. Qualified facility personnel shall be identified to inspect this equipment. Records of the inspections and maintenance shall be maintained and summarized in the Annual Report required under Schedule D, condition 6.e.

xi. Flood/High Water Discharges.

Identify potential for flood/high water discharges. Develop and implement specific flood/high water practices and procedures to eliminate pollutants from areas of the facility that would be inundated during flood/high water events and that would reasonably be expected to add significant amounts of pollutants to the identified flood/high water discharges at the facility. Areas of the facility inundated by flood or high waters should be maintained to prevent pollutants from entering the surrounding surface waters during flood or high-water events.

b. The BMP Plan must be consistent with the objectives listed in the general guidance contained in the publication entitled Guidance Manual for Developing Best Management Practices (BMPs) (EPA-833-93-004, 1993) and any subsequent revisions to this guidance document.

c. Deadlines for BMP Plan Preparation and Compliance

i. The BMP Plan for this facility shall be prepared, and except as provided elsewhere in this permit, shall provide for compliance with the terms of the permit and the BMP Plan, no later than the date specified in Table B1.

ii. The permittee must submit a BMP Plan to DEQ for review and approval by the date specified in Table B1. The permittee may submit the BMP Plan as an electronic attachment to the DMR. The file name of the electronic attachment must be as follows: YYYY_MM_DD_ OR0034355_BMP_102768, where YYYY_MM_DD is the date that the permittee submits the BMP Plan.

d. Signature and BMP Plan Review

i. The BMP Plan shall be signed in accordance with Schedule F, condition D.8 and be retained onsite at the facility in accordance with Schedule F, condition C.8.

ii. DEQ may notify the permittee at any time that the BMP Plan does not meet one or more of the minimum requirements of this Part. Such notification shall identify those provisions of the permit which are not being met by the BMP Plan and identify which provisions of the BMP Plan require modifications in order to meet the minimum requirements of this Part. Within 30 days of such notification from DEQ, (or as otherwise provided by DEQ), the permittee shall make the required changes to the BMP Plan and shall submit to DEQ a revised BMP Plan with the requested changes for review and approval.

e. BMP Plan Modification

i. The permittee shall amend the BMP Plan whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to the waters of the United States or if the BMP Plan proves to be ineffective in eliminating or significantly minimizing pollutants, or in otherwise achieving the general objectives of controlling pollutants in the internal facility drainage water discharges. Any changes to the BMP Plan must be consistent with the objectives and specific requirements listed above. The permittee must submit the revised BMP plan to DEQ for review and approval.

ii. The permittee must prepare a BMP Annual Report documenting the effectiveness of all BMPs implemented onsite, including the measures that were effective or ineffective, and the adaptive management that has occurred as a result.

iii. The BMP Annual Report must report sampling data that is designed in a way to quantify source identification and reductions in order to substantiate the adaptive management process. The sample and design and data analysis including methods and method reporting levels, must be included in the quality assurance plan (Schedule B, condition 2.e) and updated as necessary.

iv. The BMP Annual Report must include the adaptive management procedures implemented based on the results of all monitoring used to evaluate BMPs.

v. The permittee must submit the BMP Annual Report by the date specified in Table B1.

vi. The permittee may submit the Report as an electronic attachment to the DMR. The file name of the electronic attachment must be as follows: YYYY_MM_DD_OR0034355_BMP_102768, where YYYY_MM_DD is the date that the permittee submits the Report.

f. Reporting of BMP incidents. Prepare and submit a written report to DEQ after the incident has been successfully addressed, describing the circumstances leading to the incident, corrective actions taken, and recommended changes to operation and maintenance practices and procedures to prevent incident recurrence.

g. The permittee must maintain a copy of the BMP Plan on-site at the facility and make it available to DEQ upon request.

7. Environmentally Acceptable Lubricants (EALs)

a. The permittee must select EALs for all oil to water interfaces including wicket gates, bearings, lubricated wire ropes, Kaplan runners and other in-line equipment, unless technically infeasible. EALs should be consistent with the definition of EPA's 2011 report, Environmentally Acceptable Lubricants. For purposes of requirements related to EALs, technically infeasible means that no EAL products are approved for use in a given application that meet manufacturer specifications for that equipment; products which come pre-lubricated (e.g., wire ropes) and have no available alternatives manufactured with EALs; or products meeting a manufacturer's specifications are not available.

b. The permittee must prepare an EAL Annual Report on equipment under Schedule D, condition 7a. and describe the implementation and feasibility of EALs.

c. The EAL Annual Report shall include:

   i. A list of all equipment that have oil to water interfaces;

   ii. An evaluation of the technical feasibility for using EALs for each equipment;

   iii. Timeline for using EALs for equipment, where technically feasible; and

   iv. An annual update on progress towards implementing EALs.

   The EAL Annual Report may use other EAL reports and studies that have been completed or will be completed to satisfy all or part of the EAL Annual Report requirement so long as the items listed above in this section are included. If other reports satisfy part of the items listed above, the permittee must supplement these reports with additional information to satisfy the EAL Annual Report requirement.

d. The permittee must submit the EAL Annual Reports by the date specified in Table B1 to DEQ for review and approval. The EAL Annual Reports must be comprehensive, complete, accurate, and concur with the state's interpretation of technical feasibility. Annual EAL reports must be signed in accordance with Schedule F, condition D.8.

e. The permittee may submit the EAL Annual Report as an electronic attachment to the DMR. The file name of the electronic attachment must be as follows: YYYY_MM_DD_OR0034355_EAL_102768, where YYYY_MM_DD is the date that the permittee submits the EAL Annual Report.

8. Cooling Water Intake Structure (CWIS) Requirements

a. Best Technology Available. The design, location, construction, and capacity of the permittee's CWIS shall reflect the best technology available (BTA) for minimizing adverse environmental impacts from the impingement and entrainment of various life stages of fish (e.g., eggs, larvae, juveniles, adults) by the CWIS.

b. EPA has determined, and DEQ has agreed, that the following existing requirements are sufficient to satisfy the BTA requirement to minimize entrainment and to minimize impingement mortality:

   i. Conduct spill releases over dam spillways according to schedules and guidelines in the most recent Fish Operating Plans and Fish Passage Plan.

   ii. Keep juvenile fish passage structures, submersible traveling screens, vertical bar screens, and trash racks free of debris or other material through regular and preventive maintenance and inspections.

iii. Operate turbines within +/- 1% peak efficiency, or as specified in the most recent Fish Passage Plan, including the most recent Fish Operations Plan and in-season Technical Management Team meetings.

iv. Operate turbines in priority order to maximize fish passage as described in the most recent Fish Passage Plan, including the most recent Fish Operations Plan and in-season Technical Management Team meetings.

v. Maintain a physical screening or exclusion technology that is consistent with the objectives of National Marine Fisheries Service (NMFS) guidelines found in NMFS Northwest Region's Anadromous Salmonid Passage Facility Design, Chapter 11: Fish Screen and Bypass Facilities.

c. The permittee must properly operate and maintain the technologies identified above as described in the most recent Fish Passage Plan, including the most recent Fish Operations Plan and in-season Technical Management Team meetings.

d. The permittee must conduct regular visual inspections at a frequency specified in the most recent Fish Passage Plan, including the most recent Fish Operations Plan and in-season Technical Management Team meetings or employ remote monitoring devices to ensure that the technologies listed above are maintained and operated to function as designed.

e. The permittee must maintain a copy of the most recent Fish Passage Plan, including the most recent Fish Operations Plan on-site at the facility and make it available to DEQ upon request.

f. The permittee must prepare a CWIS Annual Report. The first annual report must include information on all cooling water intake structures that address the missing application submittal requirements of 40 CFR 122.21(r)(2) and (3) and applicable provisions of paragraphs (4), (5), (6), (7) and (8). The permittee must submit the CWIS Annual Reports by the date specified in Table B1 to DEQ for review and approval. The CWIS Annual Reports must document implementation, operations, and maintenance of the listed technologies. The Reports must include a certification statement that the facility has been properly operated and maintained and that no changes to the facility have been made unless documented. The permittee may submit the report as an electronic attachment to the DMR. The file name of the electronic attachment must be as follows: YYYY_MM_DD_ OR0034355_CWIS_102768, where YYYY_MM_DD is the date that the permittee submits the report.

g. The permittee must develop a CWIS operations and maintenance manual that includes procedures for evaluating both impingement and entrainment related to the CWIS by the date specified in Table B1. This does not include the intake for hydroelectric generating waters. The permittee must maintain a copy of the manual on-site at the facility and make it available to DEQ upon request.

h. Within 30 days of making any substantial modifications to the intake structure that impact cooling water withdrawals or operation of the intake structure, the permittee must notify DEQ in writing of the modification.

i. Nothing in this permit authorizes take for the purposes of a facility's compliance with the Endangered Species Act.

SCHEDULE E: PRETREATMENT ACTIVITIES

A pretreatment program is not part of this permit.

SCHEDULE F: NPDES GENERAL CONDITIONS

INDUSTRIAL FACILITIES

July 31, 2016, 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.

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 Rules (OAR) 340-041-0033 and 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, when 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. Public Notification of Effluent Violation

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 B7. 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.

B7. 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 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 entities (including public water systems). The 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.

B8. 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 or 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) within 24 hours from the time the permittee becomes aware of the circumstances, unless a shorter time is specified in the permit. 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).

a. The following must be included as information that must be reported within 24 hours under this paragraph:
   (1) Any unanticipated bypass that exceeds any effluent limitation in this permit;
   (2) Any upset that exceeds any effluent limitation in this permit;
   (3) Violation of maximum daily discharge limitation for any of the pollutants listed by DEQ in this permit; and
   (4) Any noncompliance that may endanger human health or the environment.

b. A written submission must also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission must contain:
   (1) A description of noncompliance and its cause;
   (2) The period of noncompliance, including exact dates and times;
   (3) The estimated time noncompliance is expected to continue if it has not been corrected;
   (4) Steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and
   (5) Public notification steps taken, pursuant to General Condition B7.

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 Discharges of Toxic Pollutant
The permittee must notify DEQ as soon as it knows or has reason to believe the following:
a. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:
   (1) One hundred micrograms per liter (100 µg/l);

(2) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
(4) The level established by DEQ in accordance with 40 CFR § 122.44(f).

b. That any activity has occurred or will occur that would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant that is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
(1) Five hundred micrograms per liter (500 µg/l);
(2) One milligram per liter (1 mg/l) for antimony;
(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR § 122.21(g)(7); or
(4) The level established by DEQ in accordance with 40 CFR § 122.44(f).

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.
Week means a calendar week of Sunday through Saturday.

State of Oregon
Department of
Environmental
Quality

National Pollutant Discharge Elimination System
Permit Fact Sheet
USACE Bonneville Lock and Dam Project

Permittee	U.S. Army Corps of Engineers Bonneville Lock and Dam Project Exit 40 Interstate 84 Cascade Locks, OR 97014
Existing Permit Information	File Number: 112236 Permit Number: 102768 EPA Reference Number: OR0034355 Category: Industrial Class: Minor Expiration Date: 12/31/2012
Permittee Contact	Courtney Krause Environmental Compliance Coordinator 541-374-3859 P.O. Box 150 Cascade Locks, OR 97014
Receiving Water Information	Receiving stream/NHD name: Columbia River NHD Reach Code & % along reach: 17080001000233, 82.15% USGS 12-digit HUC: 170800010801 OWRD Administrative Basin: Main Stem Columbia River ODEQ LLID & River Mile: 1240483462464, RM 141.88 Assessment Unit ID: OR_SR_1708000108_88_100674
Proposed Action	Permit Renewal Application Number: 958225 Date Application Received: 6/28/2012, updated on 6/29/2015
Permit Writer	Olivia Stoken 971-867-1077 Date Prepared: (final date prior to PN)

NPDES Permit Fact Sheet
USACE Bonneville Lock and Dam Project

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NPDES Permit Renewal Fact Sheet
USACE Bonneville Lock and Dam Project

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

Below is a summary of the major changes to the permit:

- Outfalls 001a/b through 017 added in Schedule A and Schedule B.
- Outfall 001 in current permit changed to 012 in proposed permit.

Schedule A:

- Outfalls 001a/b through 010a/b, 011, 013, 014, 016, and 017 – thermal load, pH, and oil and grease limits added.
- Outfall 012 – thermal load and total recoverable copper limits added. pH and oil and grease limits updated. Stormwater benchmarks and stormwater pollution control plan requirements have been removed.
- Outfall 012a – thermal load, pH, oil and grease, and total recoverable copper limits added.
- Outfall 015 – pH and narrative limits added.

Schedule B:

- Outfalls 001a/b through 010a/b, 011, 013, and 014– thermal load, pH, and oil and grease monitoring added.
- Outfall 012 – thermal load, copper biotic ligand model, aluminum, total residual chlorine, and visual monitoring added. Metals (stormwater) monitoring has been updated for total lead and total zinc. pH monitoring has been updated.
- Outfall 012a – emergency monitoring added for temperature, pH, oil and grease, total residual chlorine, and total recoverable copper.
- Outfall 015 – pH monitoring added.
- Outfall 016 - thermal load, pH, oil and grease, stormwater metals (total lead and total zinc), copper biotic ligand model, aluminum, and visual monitoring added.
- Outfall 017 - thermal load, pH, oil and grease, stormwater metals (total lead and total zinc), copper biotic ligand model, aluminum, and visual monitoring added.

Schedule C:

- Outfall 012 – total recoverable copper compliance schedule added.

Schedule D:

- Special conditions added: Mixing Zone Study, Emergency Response and Public Notification Plan, Spill/Emergency Response Plan, Outfall Inspection, pH Criteria Exceedance Report, Best Management Practices Plan, Environmentally Acceptable Lubricants, and Cooling Water Intake Structure Requirements.

Schedule F:

- Updated to current format

2. Facility Description

2.1 Wastewater Facility

Bonneville Lock and Dam is a run-of-the-river hydroelectric power generation facility operated by the U.S. Army Corps of Engineers (USACE) on the Columbia River at river mile 141.88 (DEQ LLID). Previous permits located this facility at river mile 146.1 using the NOAA charts. The facility was authorized by Congress for power generation and navigation in the 1935 Rivers and Harbors Act. The first powerhouse, spillway, and navigation lock were completed in 1938, the second powerhouse in 1981, and the lock was expanded in 1993. Powerhouse #1 and lock, the navigation lock, and part of the spillway are in Oregon, while the remaining portion of the spillway and Powerhouse #2 are in Washington (Figure 2-1). Wastewater from the USACE workforce facilities, visitor centers, and the Bonneville Fish Hatchery is treated in Oregon at the Tanner Creek Wastewater Treatment Plant and discharged under the separate NPDES permit #101793.

The facility produces electricity using falling or flowing water to drive turbines and generators. Bonneville Dam has 18 turbine units with a total power generating capacity of over 1,200 megawatts. In Oregon, Powerhouse #1 contains 10 turbine units with a 518-megawatt power generating capacity and 136,000 cfs hydraulic capacity. The spillway has 18 gates with a maximum hydraulic capacity of 106,000 cfs.

2.1.1 Types of Discharges

2.1.1.1 Cooling Water

Bonneville Dam uses river water to cool equipment resulting in discharges of non-contact cooling water to the Columbia River. Non-contact cooling water is defined as "water used for cooling which does not come into direct contact with any raw material, intermediate product, waste product or finished product" (40 CFR 401.11(n)). Non-contact cooling water is used to cool the turbine bearings, guide bearings, air compressors, generators, and HVAC chillers. The facility may divert certain equipment-related cooling waters to the equipment and floor drain water drainage system. Hydroelectric generating facilities that use cooling water transfer heat from the equipment to cooling water. If there are holes in the pipes of the equipment being

cooled, oil may enter the cooling water and be discharged. Thus, cooling water may include heat as well as oil and grease discharges.

Cooling water intake structures (CWIS) are the structures where water is extracted for equipment cooling use in the facility. CWIS in this facility are the points where water is diverted from the scroll cases to be used for cooling. Screens on the CWIS remove debris and can impinge or entrain fish. Bonneville Dam has screens with sensor operated strainers. When material accumulates on a strainer at a set point, a sensor is activated which flushes the material into the scroll case. This operation produces backwash water discharges back into the scroll case during cleaning of river debris and silt from the strainer's screens, which may concentrate total suspended solids (TSS) in the turbine tail race discharges.

2.1.1.2 Equipment Drainage and Floor Drain Discharges

Equipment drainage and floor drain discharges collect various points of internal station drainage discharges. Drainage is collected by floor drains, trench drains, wheel pit drains, station sumps, spillway sumps, and navigation lock sumps. These drainage collection systems drain water from compressor blowdowns, leakage from turbines and penstocks, grout gallery leakage, navigation lock leakage, housing leakage, packing boxes leakage, lower guide bearing and other bearing-related discharges, equipment and seal leakage, gate stems, turbine and scroll case access doors, tunnel pumpage, and water from ground water infiltration and surface water seepage. Drainage sumps and dewatering sumps are the primary sources of potential oil and grease discharges in the hydroelectric facilities in the Lower Columbia River.

2.1.1.3 Equipment and Facility Maintenance-Related Discharges

The equipment and facility maintenance-related water discharges include river water pumped from the facility during periods of equipment, station, and facility maintenance. In the Lower Columbia River hydroelectric generating facilities, maintenance operations are generally continuous, and maintenance-related waters from unwatering sumps are discharged on a regular basis. During equipment maintenance operation, discharges occur from the dewatering of equipment containing river water such as the turbine, penstock, navigation locks, and dewatering sumps, which may contain residual oil and grease, detritus, or silt.

2.1.1.4 Lubricants

Various equipments in the hydroelectric generating facilities are lubricated with grease. This includes turbine oil used to operate and lubricate turbines. The Kaplan runner is part of the turbine in the Lower Columbia River hydroelectric generating facilities that extends into the draft tube. The runner contains oil and can release oil in a similar manner to a controlled pitch propeller in vessels. Wicket gates, which control the amount of flow entering the scroll case to the turbine, and other equipment such as bearings, blocks, trucks and guides are also lubricated. Oil or grease that comes into contact with water may be released in the tailrace. Lubricated wire rope may also come into contact with water during rainfall, which can then exit the facility as stormwater runoff.

2.1.2 Outfalls

2.1.2.1 Powerhouse #1 Outfalls

Outfalls 001-010 are located at Powerhouse #1 and each are designated with either an “a” for main turbine unit non-contact cooling water, or “b” for external thrust bearing non-contact cooling water. 001a-010a discharge an average of 1.58 mgd, while 001b-010b discharge an average of 0.43 mgd. Main turbine unit operations are determined by power generation requirements, water passage, preventative maintenance schedules, and seasonal requirements.

Outfall 011 discharges non-contact cooling water from the station service (Unit O) turbine unit and the internal thrust bearing cooler. This turbine provides electricity solely for the facility and can be used to restart the facility in the event of a full power outage. Unit O has not been operational for the past several years and the timeline for when it will return to service is currently unknown. When operating, this turbine runs most of the year but is taken offline during preventative maintenance. When discharging, Outfall 011 averages 0.22 mgd.

Outfall 012 discharges process water treated by an oil/water separator (OWS). This is the only currently permitted outfall (formerly Outfall 001). This outfall is located downstream of Powerhouse #1 and receives water from the Powerhouse south sump via a piping system that intermittently pumps at a maximum flow rate of 1,000 gallons per minute. The South sump receives water from turbine top plate leakage pumps, powerhouse floor drains, powerhouse compressor cooling water drains, and chlorinated water from the powerhouse main turbine unit shaft packing assemblies. During substantial rainfall events (>2 inches per day), the OWS also receives water in the same pipeline via gravity drain from the Powerhouse Intake Deck transformer containment drains. The OWS discharges through a pipe into the turbulent tail water below the powerhouse and averages 0.63 mgd.

The treatment system for Outfall 012 includes an oil-coalescing screen, an oil/water separator system, baffles, an in-line TD-4100 hydrocarbon detector, and an emergency filtration system. The oil-coalescing screen is cleaned monthly. Oily water removed from the screen is collected in barrels and stored in a nearby vault before eventually being transported to the facility hazardous materials pad for disposal off-site. The TD-4100 monitoring system continuously monitors discharge to the river. If petroleum hydrocarbons are detected, the system diverts water from the normal bypass mode to the first filter (filtration mode) and sends a signal to the control room indicating that the filter has been activated and oil is being removed prior to discharge to the river. If petroleum hydrocarbons are detected a second time, the flow is diverted through a second filter and an alarm is sent to the control room indicating the first filter is fouled and needs to be replaced. If petroleum is detected a third time, before the first filter is changed, a second alarm is sent to the control room, and the flow is diverted via an automatic valve to the original discharge pipe (Outfall 012a) that discharges to the old navigation lock channel. Remediation of discharged oil is possible in the less turbulent waters of the old channel. Filters in this system can reduce the concentration of petroleum hydrocarbons to 1 mg/L.

Outfall 012a is an emergency outfall for the oil/water separator system. The outfall is a 10-inch steel pipe that discharges into the old navigation lock channel below the water surface at an elevation of approximately 4 feet.

Outfall 013 intermittently discharges non-contact cooling water from the powerhouse HVAC chiller. Cooling water is circulated in pipes contained in the HVAC unit refrigerant (see section 3.3.9.6). When cooling water reaches 29 °C, a thermostat is activated which opens the outfall for discharge.

Outfall 014 drains the North Cell sump which receives water from dam leakage and main turbine unit maintenance unwatering. The facility schedules maintenance for approximately two main turbine units per year, with additional units being unwatered for maintenance as needed. Sump pumps operate automatically based on water level limit settings and will operate more frequently during main turbine unit maintenance unwatering. A BilgMon 488 system monitors petroleum hydrocarbons and will send an alarm to the control room if oil or grease are detected in the sump. This outfall discharge averages 0.80 mgd.

2.1.2.2 Spillway Outfalls

Outfall 015 drains the main dam and spillway sump which receives water from dam leakage. This outfall averages 0.095 mgd and only discharges river water that has infiltrated through the dam and spillway. Because of the depth of this sump in the spillway (below the Columbia River), water is typically cooled prior to discharge. Sump pumps operate automatically based on water level limit settings.

2.1.2.3 Navigation Lock Outfalls

Outfalls 016 and 017 drain (via gravity) the navigation lock south and north sumps, respectively. These outfalls receive river water from lock joint leakage and rainwater and average 0.014 mgd. The navigation lock south sump (Outfall 016) also receives non-contact cooling water from heat pumps and chlorinated potable water from air compressors in the navigation lock building.

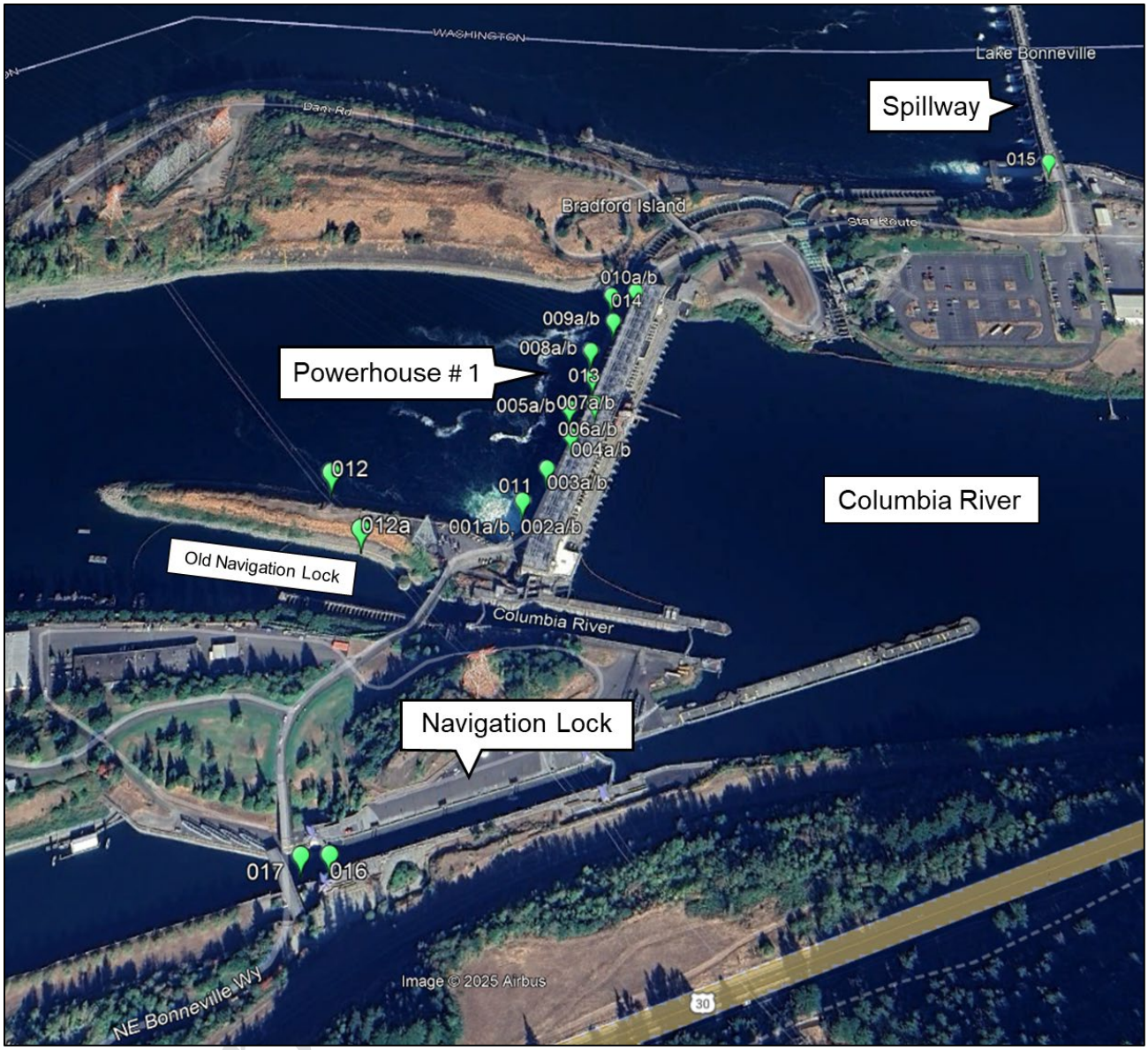

Figure 2-1: Facility Site Map

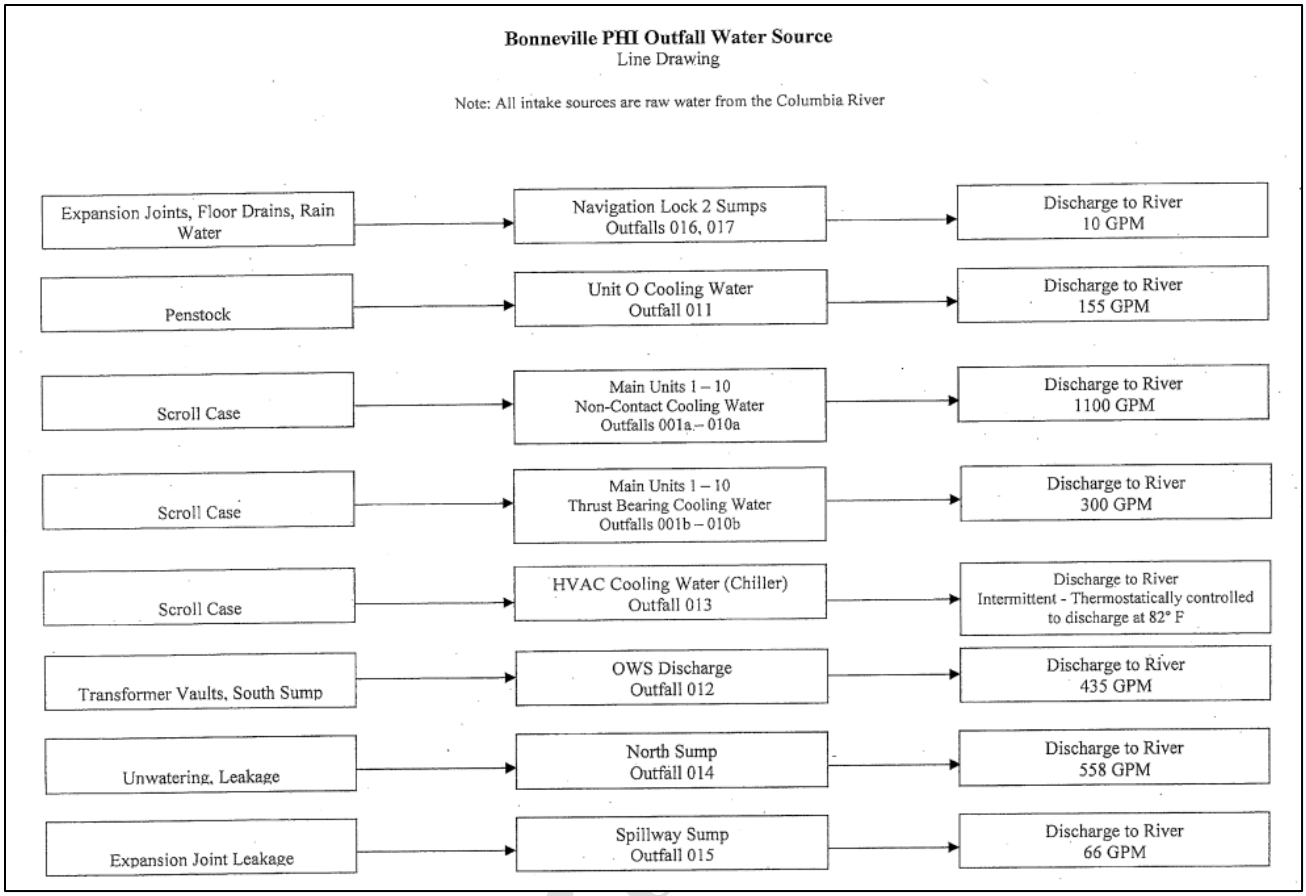

Figure 2-2: Facility Line Drawing

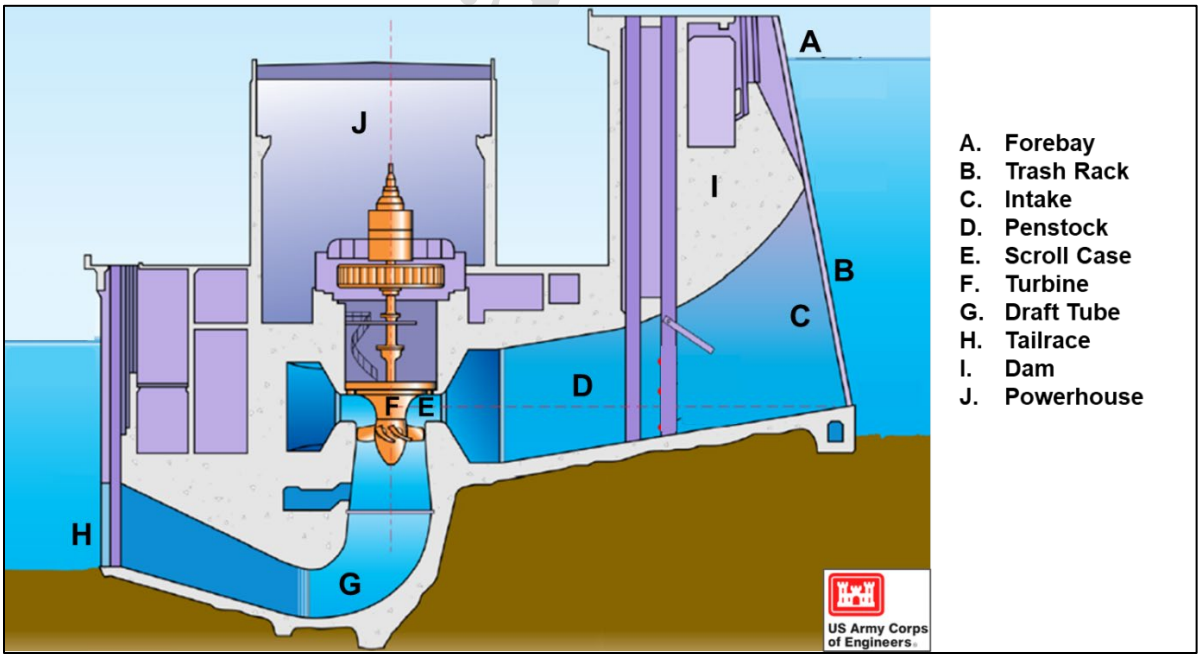

Figure 2-3: Dam Cross Section Diagram

Table 2-1: List of Outfalls

Outfall Number	Type of Waste	Lat/Long
001a, 001b	Main turbine unit and external thrust bearing non-contact cooling water	45.639444, -121.947500
002a, 002b, 003a, 003b	Main turbine unit and external thrust bearing non-contact cooling water	45.639722, -121.947222
004a, 004b	Main turbine unit and external thrust bearing non-contact cooling water	45.640000, -121.946944
005a, 005b	Main turbine unit and external thrust bearing non-contact cooling water	45.640277, -121.946944
006a, 006b	Main turbine unit and external thrust bearing non-contact cooling water	45.640277, -121.946666
007a, 007b	Main turbine unit and external thrust bearing non-contact cooling water	45.640555, -121.946666
008a, 008b	Main turbine unit and external thrust bearing non-contact cooling water	45.640833, -121.946666
009a, 009b	Main turbine unit and external thrust bearing non-contact cooling water	45.641111, -121.946388
010a, 010b	Main turbine unit and external thrust bearing non-contact cooling water	45.641388, -121.946111
012	Oil water separator, south drainage sump, transformer vault drainage, chlorinated water, stormwater runoff	45.639634, -121.949585
012a	Emergency oil/water separator outfall	45.639167, -121.949250
011	Station service (Unit O) turbine unit and internal thrust bearing non-contact cooling water	45.639444, -121.947500
013	HVAC chiller non-contact cooling water	45.640833, -121.946666
014	Powerhouse unwatering sump and north drainage sump	45.641388, -121.946388
015	Spillway drainage sump	45.642869, -121.940849
016	Navigation lock drainage sump (south), non-contact cooling water, stormwater runoff	45.636666, -121.949444
017	Navigation lock drainage sump (north), stormwater runoff	45.636666, -121.949722

2.2 Stormwater

During storm events, rainwater collects in the Powerhouse #1 south sump. From the sump, it is directed to the oil/water separator for treatment. It is then combined with other wastewater sources and discharged via Outfall 012. Rainwater also collects in the navigation lock north and south sumps and is discharged with other wastewater sources via Outfalls 016 and 017. Stormwater monitoring of copper, lead, and zinc is required in the proposed permit for all outfalls with commingled stormwater discharges. There are no separate storm water discharges to surface waters from the facility that are covered under this permit.

2.3 Industrial Rating

DEQ uses EPA's non-municipal rating system to classify a permittee as a major or a minor facility. EPA developed a rating worksheet that considers factors such as type of facility, relative flow rate, potential to impact human health, and other water quality factors. DEQ completed the rating worksheet and determined the permittee is a minor facility. The rating sheet is part of the administrative record.

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 are based on both the available technology to control the pollutants and the water quality standards applicable to 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 water, DEQ must include a WQBEL in the permit.

3.1 Existing Effluent Limits

The tables below show the limits contained in the existing permit.

Table 3-1: Existing Effluent Limits Outfall 012 (formerly 001)

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum
Oil and Grease	mg/L	-	-	10
pH	SU	Instantaneous limit between a daily minimum of 6.5 and a daily maximum of 8.5		

Table 3-2: Existing Stormwater Benchmarks Outfall 012 (formerly 001)

Parameter	Units	Benchmark
pH	SU	Between 5.5 and 9.0
Total Copper	mg/L	0.1
Total Lead	mg/L	0.4

Parameter	Units	Benchmark
Total Zinc	mg/L	0.6
Total Suspended Solids	mg/L	130
Oil & Grease	mg/L	10
Floating Solids	-	No Visible Discharge
Oil & Grease Sheen	-	No Visible Sheen

3.2 Technology-Based Effluent Limit Development

EPA is required to develop technology-based effluent limits for categories of industrial facilities. These limits are called effluent limitation guidelines (ELGs). EPA established these based on available treatment technologies for facilities within an industrial category or subcategory.

EPA has not developed ELGs for hydroelectric generating facility discharges.

3.3 Water Quality-Based Effluent Limit Development

40 CFR 122.44(d) requires that permits include limitations more stringent than technology-based requirements where necessary to meet water quality standards. Water quality-based effluent limits may be in the form of a wasteload allocation required as part of a Total Maximum Daily Load (TMDL). They may also be required if a site specific analysis indicates the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality criterion. DEQ establishes effluent limits for pollutants that have a reasonable potential to exceed a criterion. The analyses are discussed below.

3.3.1 Designated Beneficial Uses

NPDES permits issued by DEQ must protect the following designated beneficial uses of the Columbia River. These uses are listed in OAR-340-041-0101 for the Main Stem Columbia River.

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

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

The following table lists the parameters that are on the 2022 303(d) list (Category 5) and also parameters with an approved TMDL (Category 4A) within the discharge's stream reach. If a parameter is listed under Category 5, the data in the assessment unit (or nearby assessment unit) indicates a designated use is not supported or a water quality standard is not attained and a TMDL is needed (Category 4A). If a parameter is listed under Category 4A, TMDLs that will result in attainment of water quality standards and support beneficial use have been approved by EPA.

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

Water Quality Limited Parameters (Category 5)	
AU ID:	OR_SR_1708000108_88_100674
AU Name:	Columbia River (upstream from Pierce Island)
AU Status:	Impaired
Year Listed	1998
Year Last Assessed	2012
303d Parameters (Category 5)	DDE 4,4', methylmercury, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs)
TMDL Parameters (Category 4)	
Temperature, total dissolved gas, dioxin (2,3,7,8-TCDD)	

Polychlorinated biphenyls (PCBs) were historically used in the transformers at Bonneville. In 2003, all PCB containing oil was removed from the transformers and disposed. Current transformers are considered non-PCB (40 CFR 761) and analytical results documenting non-PCB transformer oil are part of the permit administrative record. Additionally, transformers at the facility are air-cooled. Therefore, PCBs are not a pollutant of concern for permitted discharges from the facility.

DDE 4,4' is a breakdown product of the insecticide DDT. Polycyclic aromatic hydrocarbons (PAHs) are a class of chemicals that occur naturally in coal, crude oil, and gasoline that are released into the air during combustion of these products. Methylmercury is produced in aquatic environments when anerobic bacteria methylate inorganic mercury. Bonneville is not considered a source for DDE 4,4', PAHs, or methylmercury. Therefore, none of the other water quality limited parameters are pollutants of concern for this facility.

3.3.3 TMDL Wasteload Allocations

DEQ issued TMDLs for the Columbia River in 1991 for 2,3,7,8-TCDD (dioxin) and in 2002 for total dissolved gas, while EPA issued a TMDL in 2021 for temperature. WLAs from these TMDLs that are applicable to the permittee are listed in the following table.

Table 3-4: Applicable WLAs

Parameter	WLA	Time Period
Temperature	2,590 million kilocalories/day	June 1 – October 31
Note: The thermal load WLA is expressed as an average monthly value.		

Bonneville Lock and Dam Project is not considered a source for 2,3,7,8-TCDD (dioxin) was not assigned a WLA in the 1991 TMDL. The temperature WLA is discussed in section 3.3.7.

Elevated total dissolved gas is caused by spill events, when quickly flowing water entrains total dissolved gas at high levels. In the case of hydroelectric generating facilities, these spill events are "pass through" water, which are not regulated by NPDES permits (*See National Wildlife Federation v. Consumers Power Company*, 862 F.2d 580 (6th Cir. 1988); *National Wildlife Federation v. Gorsuch,* 693 F.2d 156 (D.C. Cir. 1982). Therefore, total dissolved gas is not a pollutant of concern for permitted discharges from the facility.

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.

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

Table 3-5: Pollutants of Concern

Pollutant	How was pollutant identified?
pH	Effluent Monitoring
Temperature	Effluent Monitoring
Oil and Grease	Effluent Monitoring
Total Residual Chlorine	Effluent Monitoring
Dissolved Copper	Stormwater Discharge
Dissolved Lead	Stormwater Discharge
Dissolved Zinc	Stormwater Discharge

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 current permit does not contain a mixing zone for Outfall 012 (formerly 001). All other outfalls will be newly permitted based on a 2015 permit renewal application. A monitoring request letter from DEQ to USACOE on April 18, 2022 specified that if the permittee wished to have a mixing zone for any outfall, a level 1 mixing zone study would need to be submitted to DEQ prior to permit development. While the letter was later updated to adjust submission dates and temperature monitoring frequency on May 12, 2022 there were no changes to the mixing zone requirement. No mixing zone study was submitted prior to permit development. Therefore, no regulatory mixing zone will be included in the proposed permit for any outfall. A dilution factor of 1 was used for all reasonable potential analyses. A provision will be included in Schedule D stating that if the permittee wants a mixing zone for a future permit renewal, a level 1 mixing zone study must be submitted. Thermal plumes analysis requires a 7Q10 value regardless of whether a mixing zone is assigned to a permittee. A 7Q10 value of 77,749 cfs for the Columbia River was calculated using data from the USGS gauge 14105700 (Columbia River at the Dalles, OR) from 1972-01-01 to 2024-11-19.

3.3.6 Oil and Grease

Oil and grease are used throughout the facility for various processes (see section 2) and may be discharged through the outfalls. OAR 340-041-0007(12) is a water-quality based narrative criterion that prohibits a visible oily sheen.

3.3.6.1 Discharge Limits

To meet this criterion, the proposed permit includes a narrative limit prohibiting discharge of a visible sheen in Schedule A. Additionally, the maximum daily limit of 10 mg/L oil and grease for Outfall 012 (formerly Outfall 001) from the current permit has been updated to 5 mg/L to align with EPA's 2023 Bonneville permit. A maximum daily limit of 5 mg/L oil and grease has been added in the proposed permit for Outfalls 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, 010b, 011, 012a, 013, 014, 016, and 017. The 5 mg/L oil and grease limit for hydroelectric facilities in the Lower Columbia River was established by EPA in the USACE NPDES permits that became effective July 1, 2023, which included Bonneville, The Dalles, John Day, and McNary. This concentration is expected to prevent a visible sheen on surface waters. Therefore, DEQ believes this limit is a reasonable standard for hydroelectric facilities that have a reasonable potential for oil and grease discharges.

3.3.6.2 Monitoring Requirements

For the first year of the proposed permit term, weekly monitoring of oil and grease concentration in mg/L is required. For the rest of the proposed permit term, monthly monitoring is required. These monitoring frequencies are similar to the EPA-written Bonneville Lock & Dam NPDES permit in Washington, except the conditional requirement to have no oil and grease exceedances in the first year of monitoring. Bonneville USACE staff have reported no issues meeting the oil and grease limits in Washington, so DEQ anticipates these monitoring frequencies will be sufficient for routine compliance and permit renewal purposes. The proposed permit also requires weekly visual inspection of outfalls for visible sheens. If USACE staff document a

visual sheen at any outfall, the proposed permit includes a conditional requirement to collect a sample for oil and grease that must be reported on the next month's DMR.

Additionally, the permittee is required to develop and implement a Best Management Plan (BMP) and BMP Annual Reports, which include tracking and accountability of oil use in the facility, minimization of any oil spills, proper operation and maintenance of all equipment that may release oil, and identification of and contingency planning for site-specific vulnerabilities for oil spills such as lack of secondary containment. For lubricants such as oil and grease, the permit requires the use of Environmentally Acceptable Lubricants (EALs) to replace oil and grease, unless technically infeasible, to reduce the potential of oil and grease entering the river and an EAL Annual Report tracking implementation progress.

3.3.7 pH

The pH criterion for this basin is 7.0 – 8.5 per OAR 340-041-0104. There are no regulatory mixing zones established for this facility. Limits for pH in the current permit at Outfall 012 (formerly 001) were 6.5 – 8.5. The proposed pH limits for Outfalls 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, 010b, 011, 012, 012a, 013, 014, 015, 016, and 017 are 7.0 – 8.5 to match the basin criteria and are WQBELs. The permittee is expected to be able to meet the more stringent lower pH limit for Outfall 012 at permit issuance, and therefore no compliance schedule will be included in the proposed permit for pH.

Additionally, pH exceedances that are caused by dam impoundments existing on January 1, 1996 are not in violation of the standard if DEQ determines that the exceedance would not occur without the impoundment and all practicable measures in the impoundment have been taken to comply with the pH criteria (OAR-340-041-0021(2)). An annual pH criteria exceedance report has been included as a special condition in Schedule D to document exceedances that may be subject to this rule.

3.3.8 Temperature

3.3.8.1 Temperature Criteria OAR 340-041-0028

The following table summarizes the temperature criteria that apply at the discharge location along with whether the receiving 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 3-6: Temperature Criteria Information

Applicable Temperature Criterion	Migration Corridor 20ºC (OAR 340-041-0028(4)(d)
Applicable dates: Year-round	
Salmon/Steelhead Spawning 13 °C? OAR 340-041-0028(4)(a)	☒Yes ☐No
Applicable dates: October 15 – March 31 (RM 141.5 to RM 143.5)	
WQ-limited?	☒Yes ☐No
TMDL wasteload allocation assigned?	☒Yes ☐No
Applicable dates: June 1 – October 31	
TMDL based on natural conditions criterion?	☐Yes ☒No
Cold water summer protection criterion applies?	☐Yes ☒No
Cold water spawning protection applies?	☐Yes ☒No
Comments: The Salmon & Steelhead Spawning through Fry Emergence from October 15 – March 31 is located from Beacon Rock to Upstream of Ives Island (RM 141.5 to 143.5). This is approximately 2.5 miles downstream of the facility.	

The main stem Columbia River has a year-round salmon and steelhead migration criterion of 20 °C. The river segment from Beacon Rock to upstream of Ives Island (RM 141.5 to 143.5) also has a listed beneficial use of Salmon & Steelhead Spawning through Fry Emergence applicable from October 15 – March 31. EPA issued a temperature TMDL addressing these criteria for the entire Columbia River on May 18, 2020, with revisions issued on August 13, 2021. With the issuance of the EPA TMDL a wasteload allocation for the facility of 2,590 million kcal/day (monthly average) applies to the discharges and is included in the proposed permit as an effluent limit for the June 1 – October 31 period. The daily thermal load discharged is calculated by multiplying the estimated daily average effluent flow by the daily average effluent temperature and a standard conversion factor from the TMDL. This calculation is done for each outfall with a thermal load (see Table 3-7). The daily thermal loads for each outfall are averaged for the month and summed. The facility-wide monthly average thermal load must be equal to or less than 2,590 million kcal/day.

Final effluent limits are listed in the following table.

Table 3-7: Temperature Criterion Effluent Limits

Effluent limit needed? ☒Yes ☐No
TMDL WLA Limit: 2,590 million kilocalories/day as a monthly average
Applicable time period: June 1 – October 31
Temperature Criterion Limit: NA
Applicable time period: Dates ☒NA

Effluent limit needed? ☒Yes ☐No
Comments: Includes Outfalls 001a, 001b, 002a, 002b, 003a, 003b, 004a, 004b, 005a, 005b, 006a, 006b, 007a, 007b, 008a, 008b, 009a, 009b, 010a, 010b, 011, 012, 012a, 013, 014, 016, and 017.

3.3.8.2 Thermal Plume OAR 340-041-0053(2)(d)

In addition to compliance with the temperature criteria, OAR 340-041-0053(2)(d) contains thermal plume limitation provisions designed to prevent or minimize adverse effects to salmonids that may result from thermal plumes. The discharge was evaluated for compliance with these provisions as follows:

- OAR 340-041-0053(2)(d)(A): Impairment of an active salmonid spawning area where spawning redds are located or likely to be located. This adverse effect is prevented or minimized by limiting potential fish exposure to temperatures of 13 ºC or more for salmon and steelhead, and 9 ºC or more for bull trout.

  Salmon and steelhead spawning occurs approximately 2.5 miles downstream of the facility at river mile 141.5 to 143.5 from October 15 – March 31. The TMDL wasteload allocation ensures this criterion is met. Therefore, spawning impairment caused by the discharges 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 32 ºC or more to less than 2 seconds.

  The maximum daily effluent temperature recorded at all outfalls between September 2022 and August 2024 was 29.9 °C, below the criterion of 32 °C. Therefore, the discharges are not expected to cause acute impairment to salmonid species.

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

  An analysis related to thermal shock, included in Appendix A, indicates that when the effluent for Outfalls 001a/b through 017 are at their maximum measured or expected values and the upstream receiving water temperature is at the 25 °C criterion, the plume's temperature at 5% of the receiving stream's cross-sectional area will not be above 25 °C. Based on this analysis, thermal shock caused by the discharges is prevented or minimized.

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

An analysis related to migration blockage, included in Appendix A, indicates that when the effluent for Outfalls 001a/b through 017 are at their maximum measured or expected values and the upstream receiving water is at the 21 °C criterion, the plume's temperature at 25% of the receiving stream's cross-sectional area will not be above 21.0 °C, and migration blockage caused by the discharges is therefore prevented or minimized.

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

Table 3-8: Thermal Plume Effluent Limit

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

3.3.8.3 Cold Water Refugia

OAR 340-041-0028(4)(d) requires that water bodies subject to the salmonid migration criterion of 20 °C must also have cold water refugia that are sufficiently distributed to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body. The 2021 EPA Columbia Cold Water Refuges Plan identified Tanner Creek as a tributary with an important salmonid cold water refuge. Tanner Creek is immediately downstream of Bonneville in Oregon. Thermal loads discharged from this facility are spread across the river channel and are small in volume (22 mgd) relative to the Columbia River (41,840 mgd at 7Q10 low flows). Therefore, it is unlikely that the effluent from the facility's permitted discharges would have an impact on the cold water refuge at Tanner Creek.

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 permittee currently discharges chlorinated potable water from the oil water separator (Outfall 012) and the navigation lock south sump (Outfall 016). Chlorinated water discharged from Outfall 012 is utilized at each main turbine unit and the Unit O station service turbine to

provide cooling and lubrication for the turbine main shaft packing assemblies. Water that leaves the shaft packing assemblies is routed to the turbine pits/head cover areas, then pumped to the Powerhouse south sump, and eventually pumped to the Powerhouse #1 oil/water separator prior for discharge through Outfall 012.

Chlorinated water discharged from Outfall 016 is utilized intermittently by the navigation lock tower air compressor for cooling purposes. After process use, this water flows from the navigation lock floor drains to the navigation lock south sump and is discharged via gravity through Outfall 016. This air compressor is anticipated to be decommissioned in March 2025 which will eliminate the discharge of chlorinated water from Outfall 016.

Water discharged via Outfall 012 is typically dechlorinated prior to use in the turbine units, but occasionally a backup system is utilized which does not provide dechlorination. No chlorine monitoring data is available for either outfall, but chlorinated water is only a small proportion of the effluent. Currently there is no evidence that chlorine levels at Outfalls 012 and 016 have a reasonable potential to exceed the chlorine criteria, and no limits are included. Total residual chlorine monitoring is included in the proposed permit for Outfall 012 and 012a (emergency outfall) for use in reasonable potential analyses during permit renewal. No monitoring has been included for Outfall 016 as that discharge is anticipated to cease prior to the permit effective date.

3.3.9.2 Priority Pollutant Toxics

DEQ conducted a reasonable potential analysis for lead (total and dissolved), zinc (total and dissolved), and chloride for Outfall 012. There was no reasonable potential for any of the toxic pollutants analyzed to exceed criteria; therefore, no limits are included in the proposed permit for priority pollutants. Information for toxic pollutants without limits for this permit renewal is included in the permit file. No lead or zinc data was collected for Outfall 016 and 017. Outfalls 016 and 017 contain stormwater discharge, and therefore lead and zinc are considered pollutants of concern. However, Outfalls 016 and 017 otherwise do not have the same effluent sources (river water leakage and non-contact cooling water) as Outfall 012 (which also receives effluent from other waste streams including an oil/water separator). Therefore, it cannot be assumed that the lead and zinc concentration at Outfall 012 is representative of the lead and zinc concentrations at Outfall 016 and 017, which are likely much lower and closer to ambient river concentrations since most of the effluent from Outfall 016 and 017 is river water leakage. Therefore, currently there is no evidence that lead or zinc levels at Outfalls 016 and 017 have a reasonable potential to exceed the water quality criteria.

Monitoring for stormwater-associated metals will be required at all outfalls with commingled stormwater discharges (012, 016, and 017). Toxics monitoring parameters in the proposed permit include lead (total and dissolved) and zinc (total and dissolved). This monitoring will replace the stormwater monitoring section in the current permit.

3.3.9.3 Copper Biotic Ligand Model

Monthly paired effluent and ambient copper BLM input data was collected by USACE staff for Outfall 012 and analyzed by various labs starting in September 2022 through August 2024 resulting in 24 samples. For the RPA, the concentration of each input parameter at 100% mix were entered into the BLM model to calculate the instantaneous water quality criteria (IWQC) for each paired data set. Because there is no regulatory mixing zone assigned to this permittee, each IWQC was compared to the corresponding copper concentration of the effluent value using a dilution of 1. Table 3-10 below shows the sample date, calculated criterion, calculated copper value, and toxic unit (copper concentration divided by the instantaneous criterion). A toxic unit greater than one, indicates there is a potential for the discharge to exceed the criterion. A toxic unit of NA indicates that either the effluent data was below the calculated criteria, the effluent data was non-detect, or the copper data was in the total recoverable instead of dissolved fraction. There is reasonable potential to exceed the copper criterion because there were toxic units that exceeded 1.0.

Table 3-9: Copper Biotic Ligand Model Analysis – Outfall 012

Date	Effluent Cu µg/L	Ambient Cu µg/L	ZID	BLM CMC	Toxic Units	RMZ	BLM CCC	Toxic Units	100% mix	BLM CCC	Toxic Units
			Cu µg/L	µg/L		Cu µg/L	µg/L		Cu µg/L	Cu µg/L	
2022-09-08	7.20	1.30	7.20	2.61	2.76	7.20	1.62	4.44	1.30	1.62	0.80
2022-10-04	15.40	0.50	15.40	1.56	9.90	15.40	0.97	15.93	0.50	0.97	0.52
2022-11-04	10.50	1.30	10.50	2.00	5.25	10.50	1.24	8.45	1.30	1.24	1.05
2022-12-02	10.60	1.20	10.60	1.43	7.42	10.60	0.89	11.94	1.20	0.89	1.35
2023-01-04	14.60	13.80	14.60	1.72	8.48	14.60	1.07	13.65	13.80	1.07	12.90
2023-02-03	11.40	1.10	11.40	1.50	7.60	11.40	0.93	12.24	1.10	0.93	1.18
2023-03-01	7.50	1.00	7.50	1.43	5.26	7.50	0.89	8.47	1.00	0.89	1.13
2023-04-04	13.30	0.70	13.30	1.27	10.50	13.30	0.79	16.90	0.70	0.79	0.89
2023-05-02	9.70	0.50	9.70	1.73	5.61	9.70	1.07	9.04	0.50	1.07	0.47
2023-06-13	13.30	1.70	13.30	13.02	1.02	13.30	8.09	1.64	1.70	8.09	0.21
2023-07-11	11.00	0.80	11.00	10.67	1.03	11.00	6.63	1.66	0.80	6.63	0.12
2023-08-15	10.40	0.80	10.40	11.85	NA	10.40	7.36	1.41	0.80	7.36	0.11
2023-09-12	12.20	0.70	12.20	14.68	NA	12.20	9.12	1.34	0.70	9.12	0.08
2023-10-03	9.60	0.60	9.60	8.03	1.20	9.60	4.99	1.93	0.60	4.99	0.12
2023-11-07	11.20	0.90	11.20	4.63	2.42	11.20	2.88	3.89	0.90	2.88	0.31
2023-12-05	8.30	0.70	8.30	4.56	1.82	8.30	2.83	2.93	0.70	2.83	0.25
2024-01-09	17.30	0.80	17.30	5.00	3.46	17.30	3.11	5.57	0.80	3.11	0.26
2024-02-13	24.90	0.50	24.90	2.48	10.03	24.90	1.54	16.16	0.50	1.54	0.32
2024-03-05	12.50	0.70	12.50	2.89	4.33	12.50	1.79	6.97	0.70	1.79	0.39
2024-04-09	8.20	1.10	8.20	3.30	2.48	8.20	2.05	4.00	1.10	2.05	0.54
2024-05-07	7.70	0.70	7.70	3.31	2.33	7.70	2.06	3.74	0.70	2.06	0.34
2024-06-04	8.00	0.50	8.00	3.81	2.10	8.00	2.37	3.38	0.50	2.37	0.21
2024-07-02	7.80	0.60	7.80	10.59	NA	7.80	6.58	1.19	0.60	6.58	0.09
2024-08-06	11.50	0.50	11.50	9.73	1.18	11.50	6.04	1.90	0.50	6.04	0.08

No paired data was collected for Outfall 016 and 017. Outfalls 016 and 017 contain stormwater discharge, and therefore Copper is considered a pollutant of concern. However, Outfalls 016 and 017 otherwise do not have the same effluent sources (river water leakage and non-contact cooling water) as Outfall 012 (which also receives effluent from other waste streams including

an oil/water separator). Therefore, it cannot be assumed that the copper concentration at Outfall 012 is representative of the copper concentrations at Outfall 016 and 017, which are likely much lower and closer to ambient river concentrations since much of the effluent from Outfall 016 and 017 is river water leakage. Therefore, currently there is no evidence that copper levels at Outfalls 016 and 017 have a reasonable potential to exceed the copper criteria.

Copper discharge limits

Copper limits are calculated according to the methodology outlined in Sections 5.4 and 5.5 of the EPA Technical Support Document for Water Quality-based Toxics control. Effluent limitations for metals are required to be expressed in the total recoverable fraction according to 40 CFR 122.45(c). To convert dissolved copper criteria into total recoverable limits a site-specific translator may be developed according to the EPA Guidance "The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion". If no site-specific translator is developed, a conservative translator of 1 is used to convert dissolved criteria into total recoverable limits. No site-specific translator was developed, a conservative translator of 1 was used to transform the limits below. The limits below are lower than the current recommended quantitation limit of 2 µg/L for copper. Therefore, a compliance limit of 2 µg/L will be included in the permit for both the average monthly and daily maximum limit. The copper limit will be applied to Outfall 012 and Outfall 012a. Effluent data submitted by the permittee indicates that the permittee will not be able to meet this WQBEL upon permit issuance. Therefore, a compliance schedule will be included in the proposed permit (see Section 6).

Table 3-10: Copper (Total Recoverable) Effluent Limits – Outfall 012 and 012a

Parameter	Units	Average Monthly	Daily Maximum
Copper (Total Recoverable)	µg/L	0.8	1.3

Monitoring Requirements

The proposed permit will include 24 Copper BLM monitoring samples to be collected monthly for two years at Outfalls 012, 016, and 017. This is in order to ensure that accurate criteria will be able to be calculated at the next permit renewal for outfalls with commingled stormwater discharges.

3.3.9.4 Aluminum

Monthly paired effluent and ambient aluminum criteria input data was collected by USACE staff for Outfall 012 and analyzed by various labs starting in September 2022 through August 2024 resulting in 24 samples. For the RPA, the concentration of each input parameter at 100% mix were entered into the aluminum criteria model to calculate the instantaneous water quality criteria (IWQC) for each paired data set. Because there is no regulatory mixing zone assigned to this permittee, each IWQC was compared to the corresponding copper concentration of the effluent value using a dilution of 1. Table 3-12 below shows the sample date, calculated criterion, calculated aluminum value, and toxic unit (aluminum concentration divided by the instantaneous criterion). A toxic unit greater than one, indicates there is a concern that the discharge may have the potential to cause or contribute to an exceedance of the criterion. A toxic unit of NA indicates that either the effluent data was below the calculated criteria, or the effluent

data was non-detect. There is no reasonable potential to exceed the aluminum criterion because there were not any toxic units that exceeded 1.0.

Table 3-11: Aluminum Reasonable Potential Analysis – Outfall 012

Date	Effluent Al µg/L	Ambient Al µg/L	ZID	CMC	Toxic Units	RMZ	CCC	Toxic Units	100% mix	CCC	Toxic Units
			Al µg/L	µg/L		Al µg/L	µg/L		Al µg/L	Al µg/L	
2022-09-08	16.40	5.00	16	970	NA	16	390	NA	5	390	NA
2022-10-04	10.80	5.00	11	820	NA	11	370	NA	5	370	NA
2022-11-04	20.90	5.00	21	850	NA	21	400	NA	5	400	NA
2022-12-02	23.60	5.00	24	710	NA	24	380	NA	5	380	NA
2023-01-04	19.50	54.00	20	860	NA	20	570	NA	54	570	NA
2023-02-03	24.40	5.00	24	810	NA	24	470	NA	5	470	NA
2023-03-01	10.00	5.00	10	800	NA	10	430	NA	5	430	NA
2023-04-04	20.00	20.00	20	720	NA	20	370	NA	20	370	NA
2023-05-02	34.00	20.00	34	860	NA	34	440	NA	20	440	NA
2023-06-13	37.50	32.90	38	2300	NA	38	1100	NA	33	1100	NA
2023-07-11	32.10	22.40	32	2100	NA	32	1000	NA	22	1000	NA
2023-08-15	27.20	200.00	27	2300	NA	27	1200	NA	200	1200	NA
2023-09-12	21.60	20.00	22	2300	NA	22	1300	NA	20	1300	NA
2023-10-03	20.00	20.00	20	1900	NA	20	910	NA	20	910	NA
2023-11-07	42.80	20.00	43	1500	NA	43	730	NA	20	730	NA
2023-12-05	27.50	20.00	28	1400	NA	28	940	NA	20	940	NA
2024-01-09	20.00	20.00	20	1600	NA	20	770	NA	20	770	NA
2024-02-13	28.90	20.00	29	1100	NA	29	640	NA	20	640	NA
2024-03-05	30.90	20.00	31	1200	NA	31	680	NA	20	680	NA
2024-04-09	69.60	20.00	70	1300	NA	70	720	NA	20	720	NA
2024-05-07	60.50	20.00	61	1300	NA	61	740	NA	20	740	NA
2024-06-04	50.80	120.00	51	1300	NA	51	670	NA	120	670	NA
2024-07-02	41.20	32.70	41	2100	NA	41	1200	NA	33	1200	NA
2024-08-06	20.00	20.00	20	2100	NA	20	1200	NA	20	1200	NA

No paired data was collected for outfall 016 and 017. Outfalls 016 and 017 contain stormwater discharge, and therefore aluminum is considered a pollutant of concern. However, Outfalls 016 and 017 otherwise do not have the same effluent sources (river water leakage and non-contact cooling water) as Outfall 012 (which also receives effluent from other waste streams including an oil/water separator). Therefore, it cannot be assumed that the aluminum concentration at Outfall 012 is representative of the aluminum concentrations at Outfall 016 and 017, which are likely much lower and closer to ambient river concentrations since most of the effluent from Outfall 016 and 017 is river water leakage. Therefore, currently there is no evidence that aluminum levels at Outfalls 016 and 017 have a reasonable potential to exceed the aluminum criteria.

Monitoring Requirements

The proposed permit will include 24 Aluminum monitoring samples to be collected monthly for two years at outfalls 012, 016, and 017. This is in order to ensure that accurate criteria will be able to be calculated at the next permit renewal for outfalls with commingled stormwater discharges.

3.3.9.5 Mercury – Human Health Criterion

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

3.3.9.6 HVAC refrigerant (R-134a)

Outfall 013 discharges non-contact cooling water from the Powerhouse #1 HVAC chiller unit. If holes develop in the pipes of the HVAC unit, R-134a refrigerant may enter the cooling water and be discharged. R-134a, also known as 1,1,1,2-tetrafluoroethane, occurs primarily in a gas phase at normal air temperatures and atmospheric pressure, but can occur in a gas or liquid phase within an HVAC unit due to temperature and pressure gradients.

There are no water quality criteria in Oregon for R-134a and it is likely that any refrigerant discharged in the cooling water would quickly volatilize out of solution. Therefore, no monitoring will be required, but an HVAC refrigerant section has been included in Schedule D under the Best Management Plan special condition (Schedule D Item 7.6). This condition requires proper operation and maintenance of HVAC units to prevent refrigerant leaks.

3.4 Antibacksliding

The proposed permit complies with the antibacksliding provisions of CWA sections 402(o) and 303(d)(4) and 40 CFR 122.44(l). The proposed limits are the same or more stringent than the existing permit so the antibacksliding provision is satisfied.

3.5 Antidegradation

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

DEQ has performed an antidegradation review for this discharge. The proposed permit contains the same or more stringent discharge loadings as the existing permit. Permit renewals with the same or more stringent discharge loadings as the previous permit are not considered to lower water quality from the existing condition. DEQ is not aware of any information that existing limits are not protecting the receiving stream's designated beneficial uses. DEQ is also not aware of any existing uses present within the water body that are not currently protected by standards developed to protect the designated uses. Therefore, DEQ has determined that the proposed discharge complies with DEQ's antidegradation policy. DEQ's antidegradation worksheet for this permit renewal is available upon request.

3.6 Whole Effluent Toxicity

DEQ determined that whole effluent toxicity (WET) testing is not warranted due to the low levels of toxics present in the final effluent.

3.7 Groundwater

The treatment facility does not have any basins, ponds or lagoons that have the potential to leach into the groundwater. No groundwater monitoring or limits are required.

3.8 Clean Water Act Section 401(a)(2)

When EPA issued draft Washington side permits for this facility, Oregon DEQ provided objection and comments in response to the 401(a)(2) notification. These comments detailed concerns about water temperature standard exceedances and suggested permit conditions to ensure Oregon temperature standards will be met (see EPA's 2022 Lower Columbia River Hydroelectric Generating Facilities Fact Sheet).

As a result, EPA required USACE to consult with the Washington Dept. of Ecology (ECY) and DEQ when developing a Water Quality Attainment Plan (WQAP) per Schedule D special conditions in the ECY NPDES permits. DEQ acknowledges that USACE shared summary modeling results in the June 2024 draft WQAP scope related to conditions requested in DEQ's October 2021 letter (See USACE's 2024 WQAP section 5.4). DEQ has drafted these permits to be consistent with its comments on the Washington permits.

4. Schedule A: Other Limitations

4.1 Mixing Zone

Schedule A describes the regulatory mixing zone as discussed above in section 3.

5. Schedule B: Monitoring and Reporting Requirements

Schedule B of the permit describes the minimum monitoring and reporting necessary to demonstrate compliance with the proposed effluent limits. In addition, monitoring for other parameters is required to better characterize the effluent quality and the receiving stream. This data will be used during the next permit renewal. Detailed monitoring frequency and reporting requirements are in Schedule B of the proposed permit. The required monitoring, reporting and frequency for many of the parameters are based on DEQ's monitoring and reporting matrix guidelines, permit writer judgment, and to ensure the needed data is available for the next permit renewal.

6. Schedule C: Compliance Schedule

The proposed permit contains new effluent limits for total recoverable copper. The facility is unable to meet these new WQBELs upon permit issuance. The proposed permit contains a compliance schedule that allows time for the facility to make facility modifications in order to meet the new limits. This compliance schedule lays out a series of milestones which, upon completion, will require the permittee to meet the permit's WQBELs (see 40 CFR 122.47 and OAR 340-041-0061(12)). DEQ has determined that the proposed compliance schedule requires

the permittee to meet the final effluent limits as soon as possible. The compliance schedule allows time for the permittee to assess and optimize current operations to maximize reductions of total recoverable copper and upgrade the facility if other actions are not sufficient to meet the final effluent limits.

7. Schedule D: Special Conditions

The proposed permit contains the following special conditions:

7.1 Mixing Zone Study

In order to request a regulatory mixing zone for any outfall, the permittee must submit a level 1 mixing zone study. The study must specify which outfalls the permittee wants to be covered by a regulatory mixing zone. (Level 1 mixing zone study requirements are described in DEQ's Mixing Zone Internal Management Directive).

7.2 Emergency Response and Public Notification Plan

A requirement to develop and submit an emergency and spill response plan or ensure the existing one is current per General Condition B.7 in Schedule F.

7.3 Spill/Emergency Response Plan

The permittee must have an up-to-date spill response plan for prevention and handling of spills and unplanned discharges.

7.4 Outfall Inspection

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

7.5 pH Criteria Exceedance Report

A requirement to submit an annual report documenting pH criteria exceedances from all outfalls and practicable measures the permittee is taking in the impoundment to ensure compliance with the pH criteria.

7.6 Best Management Practices (BMP) Plan

A condition that requires the permittee to develop a BMP Plan to control or abate the discharge of pollutants in accordance with 40 CFR 122.44(k) and submit a BMP Annual Report.

7.7 Environmentally Acceptable Lubricants (EALs)

A condition that requires the permittee to develop an EALs Plan to control or abate the discharge of pollutants in accordance with 40 CFR 122.44(k) and submit an EALs Annual Report.

7.8 Cooling Water Intake Structure (CWIS) Requirements

On July 1, 2023, the EPA-written Lower Columbia River Hydroelectric Projects Washington NPDES permits became effective. In those permits, EPA determined, pursuant to 40 CFR 125.90(b), that all cooling water intake structures at hydroelectric facilities are subject to best professional judgement (BPJ) Section 316(b) CWIS conditions. Section 316(b) requires that facilities with CWIS ensure that the location, design, construction, and capacity of the structure reflect the best technology available (BTA) to minimize adverse impacts on the environment from impingement and entrainment of fish and other aquatic organisms.

EPA developed case-by-case BPJ CWIS conditions for Bonneville Dam based on four factors: 1) efficiency of power generation, 2) cooling water withdrawn relative to waterbody volume or flow, 3) location of the intake structure, and 4) technologies at the facility. Relying on factor four, technologies at the facility, EPA stated that they generally expected that the existing facility controls at Bonneville are technologies that can be determined to satisfy the CWIS BTA requirement.

After review, DEQ agrees with this decision and has included similar case-by-case BPJ Section 316(b) CWIS conditions in the proposed permit. The CWIS section from the 2020 EPA Lower Columbia River Hydroelectric Projects NPDES fact sheet is included in Appendix B.

This condition requires the permittee to comply with Section 316(b) of the Clean Water Act by developing a CWIS operations and maintenance manual and submitting a CWIS annual report. The first CWIS annual report must include information on all cooling water intake structures that address the missing application submittal requirements of 40 CFR 122.21(r)(2) and (3) and applicable provisions of paragraphs (4), (5), (6), (7) and (8).

8. Schedule F: NPDES General Conditions

Schedule F contains the following general conditions that apply to all NPDES permittees. These conditions are reviewed by EPA on a regular basis.

- Section A. Standard Conditions
- Section B. Operation and Maintenance of Pollution Controls
- Section C. Monitoring and Records
- Section D. Reporting Requirements
- Section E. Definitions

Appendix A: Thermal Plumes RPA

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

Sections 5.6 and 6.5 of Temperature IMD

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

Facility Name: Bonneville Lock & Dam **Date: 11/25/2024**

OAR 340-041-0053(2)(d)(C): Thermal Shock
25 deg C at 5% of the stream cross section

Enter data into white cells below:

			Data Metric/Source
7Q10 =	77749	cfs	7Q10 from Bonneville mixing zone memo
Ambient Temperature=	25	°C	Ambient criterion
Effluent Flow =	22.073	mgd	Sum of total flow from outfalls 001a/b through 017
Max Daily Effluent Temperature =	29.9	°C	Maximum effluent temperature outfalls 001a/b - 017 (2022-2024)

5% of 7Q10 = 3887.5 cfs
5% dilution = 115 dilution = (Qr*0.05)/Qe + 1

Temperature at 5% cross section = 25.0 °C — **No Reasonable Potential**

OAR 340-041-0053(2)(d)(D): Migration Blockage
21 deg C at 25% of the stream cross section

Enter data into white cells below:

			Data Metric/Source
7Q10 =	77749	cfs	7Q10 from Bonneville mixing zone memo
Ambient Temperature =	21	°C	Ambient criterion
Effluent Flow =	22.073	mgd	Sum of total flow from outfalls 001a/b through 017
Max 7dAM Effluent Temperature =	29.9	°C	Maximum effluent temperature from outfalls 001a/b - 017 (2022-2024)

25% of 7Q10 = 19437.3 cfs
25% dilution = 570 dilution = (Qr*0.25)/Qe + 1

Temperature at 25% cross section = 21.0 °C
ΔT at 25% Stream Flow= 0.0 °C — **No Reasonable Potential**

Notes:

Equation used to calculate ΔT at edge of MZ

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

Equation used to calculate thermal load limit

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

Where:

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

Appendix B: EPA Cooling Water Intake Structure Best Technology Available Determination

E. **Cooling Water Intake Structure (CWIS) Plan and CWIS Annual Reports**

Section 316(b) of the CWA requires that facilities with CWIS ensure that the location, design, construction, and capacity of the structure reflect the best technology available (BTA) to minimize adverse impacts on the environment from impingement and entrainment of fish and other aquatic organisms.

The 2014 Section 316(b) regulation for cooling water intake structures at existing facilities establishes, among other things, substantive requirements for cooling water intake structures meeting certain thresholds.[1] While the great majority of cooling water intake structures at hydroelectric facilities do not meet these thresholds, the Bonneville Project, The Dalles Lock and Dam, and John Day Project discussed in this fact sheet meet the threshold. The Agency has determined that, in light of the text, structure, history and purpose of the regulation, in the case of hydroelectric facilities, the rule is ambiguous as to application of the substantive requirements and that the EPA never intended that the rule's substantive provisions would apply to them. Rather, pursuant to 40 C.F.R. §125.90(b), all cooling water intake structures at hydroelectric facilities are subject to best professional judgment (BPJ) Section 316(b) cooling water intake structure conditions. This provision provides that a cooling water intake structure not subject to substantive provisions under the existing facility rule (40 C.F.R. §125.94-99) or another 316(b) requirements rule must meet requirements established on a case-by-case, BPJ basis. Consequently, EPA is today proposing to establish case-by-case, BPJ 316(b) conditions for these hydroelectric facilities.

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[1] The final section 316(b) existing facilities rule states that the substantive provisions of the rule apply to any facility that is 1) a point source 2) with a cooling water intake structure with a design intake flow greater than 2 MGD, 3) using 25 percent of the withdrawn water for cooling. 40 C.F.R. § 125.91(a).

To determine if BTA requirements are satisfied, the EPA used the following framework to consider various technologies currently installed at hydroelectric generating facilities to establish case-by-case BPJ conditions.

Hydroelectric Facility Technologies for Consideration by Permitting Authorities in Establishing Case-by-Case, BPJ 316(b) NPDES Permit Conditions

The EPA generally expects that a hydroelectric facilities' existing controls are technologies that can be determined to satisfy the requirements of BTA to minimize entrainment and impingement mortality. The EPA is also aware that many hydroelectric facilities are required to implement measures that reduce the impacts of the dam, including the impacts to passage of aquatic life through the dam, as conditions of a FERC license or a Biological Opinion. While these are not technologies employed at the CWIS, these measures minimize the passage of aquatic life past the intake structures inside the penstocks of the dam and thus minimize the entrainment and impingement mortality.

The following four factors are considered "technologies" that could minimize adverse environmental impacts from the use of a CWIS at hydroelectric facilities. Specific facilities may have technologies other than those identified here that may also address adverse environmental impacts at the intake. The EPA may use any of the four factors below, or other facility-specific factors, in its BPJ analysis to determine whether BTA requirements have been satisfied. Any combination of one or more of the factors below may be used to address entrainment and impingement. In most cases, the EPA expects existing documentation may be used to evaluate these factors.

Factors applicable to all facilities:

1) Efficiency of power generation

- Water use reduction is most commonly associated with closed cycle cooling tower use, but water use reduction through other means provides the same benefit. Looking holistically at power generation and the cooling water used per megawatt generated, hydroelectric facilities are more efficient than a once through steam electric facility as they generate less waste heat.

2) Cooling water withdrawn relative to waterbody volume or flow

- In previous rulemakings, the EPA stated that using a low percentage of the waterbody flow or volume for cooling could be a factor that addresses impacts due to entrainment. In the New Facility Rule, the EPA established "proportional-flow requirements" that were intended to provide protections in addition to those commensurate with closed cycle and velocity requirements. For rivers and streams, the EPA found that,

  "The 5 percent value for rivers and streams reflects an estimate that this would entrain approximately 5 percent of the river or stream's entrainable organisms and a policy judgment that a greater degree of entrainment reflects an inappropriately located facility."

  The cooling water withdrawn at each facility is a small fraction of the water passed through the dam for generating purposes, often less than 1%; EPA expects such withdrawals will be almost always below 5%.
- Proportional flow requirements only address entrainment as most passive floating organisms that are addressed by this factor are not of impingeable size. Impingement rates might be affected by a reduced flow, but in this case, there is no water use reduction, merely an overall minimal withdrawal of water relative to the waterbody flow or volume so credit for impingement reductions is not assumed.

Factors applicable to many facilities:

3) Location of the intake structure
   - The EPA identified that the location of the intake could be a factor that addresses impacts due to both impingement and entrainment. Location of the intake in areas with lower densities of impingeable or entrainable organisms will reduce the adverse impacts associated with the use of the CWIS.
   - For hydroelectric facilities, most of the intakes are located in the dam itself, either in the penstocks or the scroll case of the turbine. Generally, dams are designed such that the location of the penstock openings on the dam face are located at a depth with a lower density of organisms to reduce entrainment through the dam thus minimizing impacts from the operations of the turbine. As the CWIS is within the dam, there is a similar reduction in the density of organisms as compared to an intake on the face of the dam or in the waterbody itself.
   - Some dams do have intakes on the face of the dam or in the waterbody so this may not be applicable to all hydroelectric facilities. Even in these cases, the permitting authority may determine that no further controls are necessary.

4) Technologies at the facility
   - Design of the facility can be a factor that addresses impacts due to impingement. For example, many of the hydroelectric facilities have some form of screen over the intake pipe; generally this was intended for debris protection, but it also provides a level of impingement control compared to open pipe. The EPA considers organisms that would be retained on a certain mesh size to be "impinged" even if there is no comparable screen on the intake pipe and the organism may actually pass through the cooling system.
   - Most hydroelectric facility intakes upon a passive gravity feed which in some cases might lead to a lower intake velocity than a pumped system. Given that water is moving through the system to drive turbines, the velocity may be higher than would be experienced in normal flow velocity in a waterbody. However, this higher velocity results in a higher sweeping velocity past the opening of the intake thus minimizing the time in which an organism can be "impinged." Impinged organisms are often of a size that they have enough motility that when they sense a screen or the opening of the intake, they have an avoidance response and swim away. Combined with the sweeping velocity that carries the organism past the intake rapidly, this can minimize the actual impingement of organisms.

For the Bonneville Project, The Dalles Lock and Dam, and the John Day Project, the EPA relied on factor 4, the technologies at the facility, in its BPJ evaluation for BTA. Existing technologies at t these facilities include measures to deter fish from intakes, encourage fish to travel through fish passage structures or over spillways, and decrease velocities through turbines to minimize impingement and entrainment of aquatic life at cooling water intakes.

Table 18 summarizes the general technologies used at each facility to maximize fish survivability from hydroelectric operations, described in the 2018-2019 Fish Passage Plan and 2016 Biological Opinion Comprehensive Evaluation Report. It also summarizes dam passage survival rates for each project.

Table 18. Hydropower Operations at Bonneville Project, The Dalles Lock and Dam, John Day Project for Fish Survival (2018-2019)

	BTA	Average Fish Survival Rates
Bonneville Project	*Non-turbine routes*: spill to maximize fish passage for juvenile salmonids, fish passage structures, attraction flow to fish passage structures, submersible traveling screens (STS) to deter fish from entering main unit turbines, vertical bar screens (VBS) near intakes, streamlined trashracks, *Turbine routes*: operate turbines at +/- 1% peak efficiency flows, operate turbines in priority order to maximize fish passage	96-98% (2011-2012)
The Dalles Lock and Dam	*Non-turbine routes*: spill to maximize fish passage for juvenile salmonids, fish passage structures via ice trash sluiceway (ITS) *Turbine routes*: operate turbines at +/- 1% peak efficiency flows, operate turbines in priority order to maximize fish passage	94-99% (2010-2012)
John Day Project	*Non-turbine routes*: spill to maximize fish passage for juvenile salmonids, temporary spillway weirs (TSWs) to encourage fish passage over spillway, fish passage structures with juvenile bypass structure (JBS), attraction flow to fish passage structures, STS to deter fish from entering main unit turbines, VBS near intakes, streamlined trashracks, *Turbine routes*: operate turbines at +/- 1% peak efficiency flows, operate turbines in priority order to maximize fish passage	94-99% (2011-2012)

As described above, the EPA generally expects that a hydroelectric facilities' existing controls are technologies that can be determined to satisfy the BTA requirement to minimize entrainment and impingement mortality. For the Bonneville Project, The Dalles Lock and Dam, and the John Day Project, these existing technologies include the requirements in Table 18.

The permits also require the permittee to submit a CWIS Annual Report by December 31 of each year documenting implementation, operations, and maintenance of BTA. The Report must include a certification statement that BTA has been properly operated and maintained and that no changes to the facility have been made unless documented. These permit conditions will help ensure that fish impingement mortality and entrainment at CWIS are minimized and that they are maintained and optimized throughout the permit cycle.