FACT SHEET

The United States Environmental Protection Agency (EPA)
proposes to issue a National Pollutant Discharge Elimination System (NPDES)
Permit to discharge pollutants pursuant to the provisions of the Clean Water Act to:

Chief Joseph Dam

Public Comment Start Date: January 13, 2022
Public Comment Expiration Date: February 28, 2022

Technical Contact: Martin Merz
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1-800-424-4372 ext 0205 (within Alaska, Idaho, Oregon and Washington)

EPA Proposes to Issue a NPDES Permit

EPA proposes to issue a NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the facility to waters of the United States. To ensure the protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge locations
- technical material supporting the conditions in the permit

Clean Water Act §401 Certification

EPA requested final Clean Water Act (CWA) 401 certification from the Confederated Tribes of the Colville Reservation (Colville Tribes) and the Washington Department of Ecology (Ecology) on January 13, 2022. Comments regarding Ecology's intent to certify the permit should be directed to Angela Zeigenfuse at azei461@ECY.WA.GOV. Comments regarding the Colville Tribes' intent to certify the permit should be directed to Douglas Marconi at Douglas.Marconi@colvilletribes.com.

Clean Water Act §401(A)(2) Review

CWA Section 401(a)(2) requires that, upon receipt of an application and 401 certification, EPA as the permitting authority notify a neighboring State or Tribe when it is determined that the discharge may affect the quality of the neighboring State/Tribe's waters. 33 U.S.C. § 1341(a)(2). If EPA determines that the discharges may affect those waters, then the neighboring jurisdiction(s) has 60 days from the date of that notification to determine whether the discharges will affect their waters. Upon receipt of the CWA Section 401 certifications from the Colville Tribes and Ecology, EPA will make a determination whether the discharges may affect the waters of the Colville Tribes and Ecology.

Public Comment

Because of the COVID-19 virus, access to the Region 10 EPA building is limited. Therefore, we request that all comments on EPA's draft permits or requests for a public hearing be submitted via email to Martin Merz (merz.martin@epa.gov). If you are unable to submit comments via email, please call 206-553-0205.

Persons wishing to comment on, or request a Public Hearing for, the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described above.

After the Public Notice expires, and all comments have been considered, EPA's regional Director for the Water Division will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, EPA will address the comments and issue the permit. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days pursuant to 40 CFR 124.19.

Documents are Available for Review

The draft permit, fact sheet, and other information can be found by visiting the Region 10 NPDES website at: https://www.epa.gov/npdes-permits/about-region-10s-npdes-permit-program and at https://www.epa.gov/npdes-permits/draft-npdes-permit-chief-joseph-dam-washington. Because of the COVID-19 virus and limited building access, we cannot make hard copies available for viewing at EPA offices.

Tables

Figures

ACRONYMS

BAT	Best Available Technology economically achievable
BCT	Best Conventional pollutant control Technology
BE	Biological Evaluation
BO or BiOp	Biological Opinion
BOD_5	Biochemical oxygen demand, five-day
BMP	Best Management Practices
BPT	Best Practicable
°C	Degrees Celsius
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COD	Chemical Oxygen Demand
CWA	Clean Water Act
CWIS	Cooling Water Intake Structure
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
LA	Load Allocation
mg/L	Milligrams per liter
ML	Minimum Level
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OC	On-Center Spacing
O&M	Operations and Maintenance
QAP	Quality Assurance Plan
SPCC	Spill Prevention and Control and Countermeasure
s.u.	Standard Units
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TSD	Technical Support Document for Water Quality-based Toxics Control

	(EPA/505/2-90-001)
TSS	Total suspended solids
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
WD	Water Division
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards

I. Background Information

A. General Information

This fact sheet provides information on the draft National Pollutant Discharge Elimination System (NPDES) permit for Chief Joseph Dam. Chief Joseph Dam discharges into the Columbia River and is operated by the U.S. Army Corps of Engineers (USACE). Figure 1 includes a map of hydroelectric generating facilities on the Columbia River and Lower Snake River in Washington, highlighting the location of Chief Joseph Dam on the Columbia River. Table 1 includes general facility information.

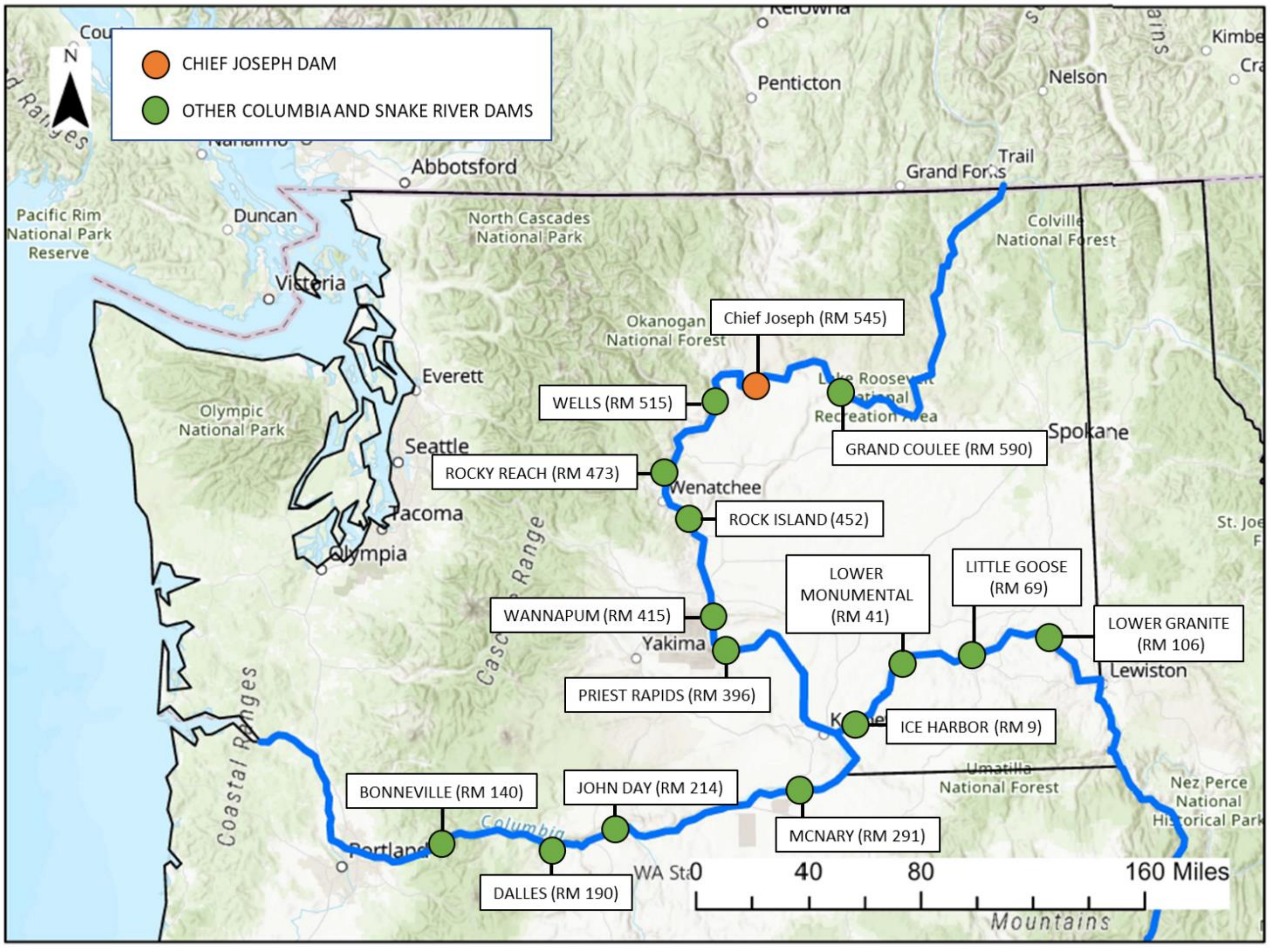

Figure 1. Hydroelectric Generating Facilities on the Columbia River and Lower Snake River

Table 1. General Facility Information for Chief Joseph Dam

NPDES Permit #:	**WA0026891**
Applicant:	Chief Joseph Dam
Type of Ownership	Federal – United States Army Corps of Engineers (USACE)
Physical Address:	Highway 17 & Pearl Hill Road Bridgeport, WA 98813
Mailing Address:	P.O. Box 1120 Bridgeport, Washington 98813
Facility Contact:	Richard Werner Chief Joseph Dam Operations Project Manager 509-686-5501
Facility Location:	Latitude: 47º 59’ 44” N Longitude: 119º 38’ 15” W
Receiving Water	Columbia River, Washington Foster Creek, Washington (Outfall 45 only)
Facility Outfalls	001 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 15” W 002 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 16” W 003 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 17” W 004 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 18” W 005 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 19” W 006 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 20” W 007 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 21” W 008 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 22” W 009 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 23” W 010 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 24” W 011 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 25” W 012 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 26” W 013 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 30” W 014 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 31” W 015 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 32” W 016 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 33” W 017 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 34” W 018 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 35” W 019 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 36” W 020 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 37” W 021 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 38” W 022 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 39” W 023 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 40” W 024 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 41” W 025 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 42” W 026 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 43” W 027 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 44” W 028 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 29” W 029 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 29” W 030 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 17” W 031 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 21” W 032 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 25” W 033 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 31” W 034 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 42” W 035 Latitude: 47º 59’ 44” N Longitude: 119º 38’ 28” W

	036	Latitude: 47º 59' 41" N	Longitude: 119º 38' 27" W
	037	Latitude: 47º 59' 42" N	Longitude: 119º 38' 04" W
	038	Latitude: 47º 59' 53" N	Longitude: 119º 38' 57" W
	039	Latitude: 47º 59' 44" N	Longitude: 119º 38' 27" W
	040	Latitude: 47º 59' 44" N	Longitude: 119º 38' 37" W
	041	Latitude: 47º 59' 47" N	Longitude: 119º 38' 03" W
	042	Latitude: 47º 59' 47" N	Longitude: 119º 38' 03" W
	045	Latitude: 47º 59' 48" N	Longitude: 119º 38' 49" W (to Foster Creek)

B. Permit History

This will be the first NPDES permit issued for point source discharges from Chief Joseph Dam. On April 15, 2019, Columbia Riverkeeper filed a complaint in the U.S. District Court for the Eastern District of Washington against the USACE for discharges of oil and grease from Chief Joseph Dam without a NPDES permit in violation of the CWA. In November 2019, Columbia Riverkeeper and the USACE entered into a Settlement Agreement where, among other things, the USACE agreed to submit a NPDES permit application for the discharge of pollutants from Chief Joseph Dam.

The USACE submitted a NPDES permit application to the U.S. Environmental Protection Agency Region 10 (EPA) for Chief Joseph Dam on March 20, 2020. EPA determined that the application was complete on June 10, 2020.

C. Tribal Consultation

EPA contacted tribal staff from the Confederated Tribes of the Colville Reservation, the Spokane Tribe of Indians, Nez Perce Tribe, Coeur d'Alene Tribe, Kootenai Tribe, Shoshone-Bannock Tribes, Kalispel Tribe of Indians, Cowlitz Indian Tribe, Confederated Tribes of Warm Springs, Confederated Tribes of Grand Ronde, Yakama Nation, and the Confederated Tribes of the Umatilla Reservation by electronic mail on September 1, 2021 to provide a status update on the permit. EPA electronically mailed letters to each of these tribes on November 5, 2021 to invite them to initiate government-to-government tribal consultation and to request review of a pre-draft copy of the permit and technical fact sheet. As of the publication of this fact sheet on January 13, 2022, no Tribes have requested informal or formal consultation regarding this permitting action. EPA will continue to engage with Tribes throughout the remainder of the permitting process.

II. Facility Information

A. Geographic Area

The USACE owns and operates the Chief Joseph Dam. The facility discharges into river mile 545 of the Columbia River near Bridgeport, Washington. The jurisdictional line between the Colville Tribes and Washington is in the middle of the Columbia River, and thus, the facility outfalls discharge to both Washington state waters and Colville tribal waters. EPA is the permitting authority for Indian Country and for federal facilities in Washington.[1]

Appendix A includes a map of the facility.

[1] NPDES Memorandum of Agreement Between the State of Washington and United States Environmental Protection Agency Region 10, July 2018.

B. Facility Operations and Types of Discharges

Chief Joseph Dam is a "run of the river" hydroelectric generating facility on the Columbia River, which produces electricity through the use of falling or flowing water from the upstream impounded reservoir (Rufus Woods Lake) through Francis turbines and generators in the dam (See Figure 2). This hydroelectric generating facility includes 16 virtually identical generating units (Generator – Westinghouse; Nameplate Rating 88 MW) in one continuous powerhouse, and another 11 mostly identical generating units (Generator – General Electric; Nameplate Rating 109 MW) in a different powerhouse. There are two identical station service generating units that generate on site power (Generator – Elliot; Nameplate Rating – 3 MW). There are no sanitary wastes associated with outfalls covered by this permit.

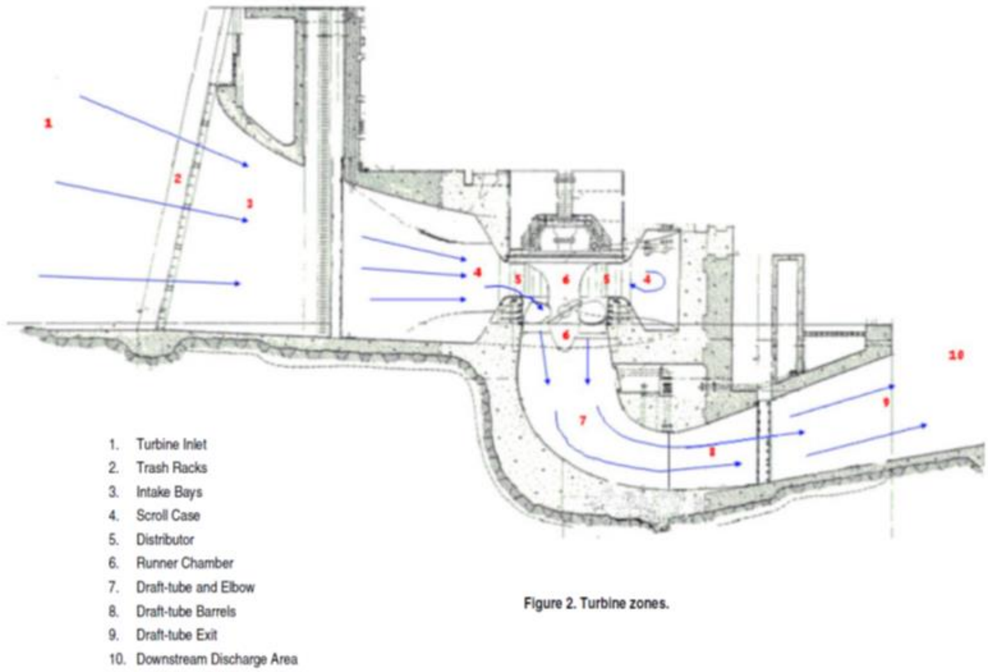

Figure 2. Cross-section of turbine zones in hydroelectric generating facility process.

Cooling Water Discharges, and Cooling Water Intake Structures (Outfalls 1-38)

Cooling water is used to cool down warm equipment such as generating units, air conditioning units and to cool transformers. Since the power generating units described above create excess heat, each individual generating unit has non-contact air-housing cooling water and non-contact thrust bearing cooling water associated with it ("cooling water"). These two types of cooling water are routed through (adjacent to) a given generating unit before combining and being discharged through a discrete outfall in the tailrace associated with that generating unit. 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)).

To keep the powerhouse temperature warm (consistent temperature) during the winter months, this warmed cooling water is sometimes re-routed through the central air conditioning system before being discharged (See Figure 8). To keep the powerhouse temperature cool (consistent temperature) during the summer, relatively cool raw river water is routed through the same central air conditioning system.

There is also cooling water associated with transformer banks. When transformer cooling water runs adjacent to equipment containing oil, a double-wall tube design is utilized which minimizes the likelihood of oil being discharged through the cooling water. When all other cooling water runs adjacent to equipment containing oil, a single wall tube design is utilized which also minimizes the likelihood of oil being discharged through cooling water. Even so, it is possible for holes to form in the pipes of the equipment being cooled, which could result in oil leaking into the cooling water and being discharged. Thus, these permits consider the possibility that all cooling water may include oil and grease discharges in addition to heat.

Related to cooling water discharges are the Cooling Water Intake Structures (CWIS). CWIS are the structures where water is extracted from the turbines scroll case to be used to cool equipment at the facility. At Chief Joseph Dam, river water is pulled from the river into the scroll case for hydroelectric generating purposes, routed internally through a grate with a diameter of approximately 12” with welded in bars that are spaced at 2”, then ultimately through a screen (strainer) with 1/8” openings to remove debris before the water is used as cooling water. Debris from the strainers is removed manually and is not released to the river. It is possible for fish or other organisms to become impinged on these grates and screens, or otherwise be entrained into the facility. CWIS can harm organisms that are entrained into the facility and unable to pass through.

The permit does not address waters that flow over the spillway or pass through the turbines. *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). However, at the point that water is extracted for cooling water, its status moves from pass through water to cooling water, which is addressed in this permit.

Equipment Drainage and Floor Drainage Discharges (Outfalls 39-42)

Chief Joseph Dam has a series of canal systems and tunnels within the dam, and like many hydroelectric generating facilities, there is a tendency for water to leak into and through the dam. Drainage water is collected by floor drains, trench drains, station sumps and spillway sumps and sump pumps are used to discharge this water – along with oil, grease and other water from equipment and floor drains – through discrete outfalls (“equipment and floor drain-related water”). Cooling water is not expected to comingle with these discharges, and therefore temperature is not a concern at outfalls solely affiliated with equipment drainage and floor drain discharges.

Drainage sumps and dewatering sumps are the primary sources of potential oil and grease discharges at Chief Joseph Dam. These sumps have mechanisms to minimize oil and grease discharges, discussed further in Section II.D of this Fact Sheet.

Equipment and Facility Maintenance-Related Water Discharges (Outfalls 39 & 40)

The equipment and facility maintenance-related water discharges include river water collected in a sump pump during periods of equipment, station, and facility maintenance. At Chief Joseph Dam, 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, and dewatering sumps, which may contain residual oil and grease, detritus, or silt.
At some facilities, cooling water may be diverted to the equipment and floor drain water drainage system, resulting in a comingled discharge, which could increase outfall water temperatures. This is

not expected to take place at Chief Joseph Dam, and even at facilities where it does take place, heat increases from commingled discharges are likely to be small or immeasurable since most drainage water is leakage water or other water with temperatures the same as leakage water.

Lubricants (All outfalls)

There are a wide array of structures and other equipment associated with the generation of hydroelectric power, much of which involves the application of oil and grease lubrication. Chief Joseph Dam generates hydroelectric power with Francis turbines, which involve much less oil interfacing with water than the Kaplan turbines used at many other Columbia and Snake River Dams. Francis turbine operations are less likely to involve oil and grease discharges to hydroelectric generation water, but leaks are still possible. Hydroelectric generating water, cooling water, stormwater, and drainage water may be exposed to oil and grease through interfacing with equipment used to generate hydroelectricity, including wicket gates; lubricated wire rope; spillway stop log dogging pins; plug valves; gantry cranes; spillway tainter gates; gear trains; torque tube shafts; hydraulic intake service gates; and other related equipment that can add pollutants when lubricants come into contact with water ("lubricants"). These lubricants can be discharged in the tailrace with equipment and floor drain-related water, equipment and facility maintenance-related water and can even mix with the hydroelectric generating water.

Stormwater (Outfalls 34, 39, 40 & 45)

Being a large concrete structure, Chief Joseph Dam has stormwater associated with its pervious surfaces. In some cases, this water is routed and ultimately discharged through discrete outfalls covered by this NPDES permit ("stormwater"). Stormwater is considered in this permit for the four discrete outfalls that have significant drainage areas associated with them. In one instance an outfall is associated with solely stormwater and no other waste stream (Outfall 45). In two instances stormwater is mixed with other drainage and maintenance-related water (Outfalls 39 and 40), and in one instance stormwater is mixed with cooling water (Outfall 34). Stormwater, especially originating from such a minimal drainage area, is not expected to have a significant temperature impact (Columbia and Snake Rivers Temperature TMDL, Section 6.5.3, August 2021)

C. Types of Pollutants Associated with Facility Discharges

The proposed permit authorizes the discharges described in the section above: non-contact cooling water; equipment and floor drain-related water; equipment and facility maintenance-related water; lubricants; and stormwater. This section and the following section describe in more detail the types of discharges covered by this permit.

This proposed permit addresses wastewater discharged from discrete outfalls at Chief Joseph Dam – discharges that result in an addition of pollutants to the Columbia River or Foster Creek. The permit does not address waters that flow over the spillway or pass through the turbines. *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). The pollutants of concern associated with wastewaters from the above discharges are oil; grease; excess heat (temperature); pH; and polychlorinated biphenyls (PCBs).

Most discharges from Chief Joseph Dam with the potential to affect water quality are ancillary to the direct process of generating electricity and would result mostly from oil spills, equipment leaks, and improper waste storage. For cooling water related discharges, this NPDES permit proposes permit limits and monitoring requirements for oil and grease, pH, and temperature. For discharges that are not related to cooling water, this NPDES permit proposes permit limits and monitoring requirements for oil and grease and pH. The permit also requires the development and implementation of a Best Management Practices (BMP) Plan and Annual Reports, Environmentally Acceptable Lubricants (EAL) Annual Reports, PCB Management Plan and Annual Reports, and CWIS Annual Report.

The BMP Plan establishes practices and procedures to prevent, minimize or eliminate the discharge of oil and grease. The BMP Annual Report requires an update of BMPs installed, an evaluation of their effectiveness, and a description of how BMPs will be optimized to address oil and grease discharges. The USACE has developed oil spill prevention plans, oil tracking accountability plans, analysis, and evaluation reports to comply with other environmental regulations. These plans may be used to comply with part or all of the BMP Plan, so long as the conditions required in the BMP Plan are met, and USACE provides documentation and references to how other reports meet the permit conditions.

EALs are biodegradable lubricants. For equipment that use non-EAL lubricants, have an oil-water interface, or have a high likelihood that lubricants would enter into water, the permit requires the use of EALs, unless technically infeasible. The draft permit also requires an EAL Annual Report, which is an inventory of equipment that must be considered for EALs, a technical feasibility evaluation of the equipment, and annual updates of EAL implementation on equipment. The USACE has conducted numerous EAL analyses as part of its internal efforts to move towards EALs and as part of its settlement agreement with Columbia Riverkeeper. These reports may be used to meet part or all of the EAL Annual Report requirements as long as the permit conditions are met, and the USACE provides documentation and references to how other reports meet the permit conditions.

Section 316(b) of the CWA seeks to minimize adverse environmental effects from CWIS on fish. The permit requires best technology available (BTA) to be used to ensure that these effects are minimized. The permit also requires CWIS Annual Certification, which is a status report of the BTA and any studies and optimization related to the use and effectiveness of the BTA on fish mortality. This will be accomplished both by calculating the efficiency of the dams use of cooling water, which is a function of river flow relative to the amount of cooling water used per day, and by certifying that CWIS BTA has been properly operated and maintained. If the facility’s cooling water efficiency is above the 5% threshold and CWIS BTA has been properly operated and maintained, the facility meets the BTA requirement under Section 316(b) of the CWA.

D. Outfall Description and Type of Treatment

Chief Joseph Dam uses planning, tracking, and monitoring protocols as a means of preventing and detecting oil and grease releases.

The main drainage and unwatering sumps at Chief Joseph Dam operate like gravity type oil water separators, with sump pump intakes that are located near the bottom of the sumps. During normal operations, the water level in the drainage sump is at least 9 feet above the pump intakes and the water level in the unwatering sump is at least 6 feet higher than the pump intakes. The lower density oil rises to the surface of the water and is subsequently removed from the sump.

The main drainage sump has an oil skimmer continuously operating to remove oil and reduce the potential for any discharge of oil to the river. Recovered oil is automatically decanted to a storage vessel. The main unwatering sump consists of multiple chambers. An oil trap separates the main (influent) chamber from the chamber where the sump pump inlets are located. Any oil discovered in the main chamber is manually recovered using a portable skimmer. The sump configuration acts as an oil water separator and reduces the potential for a discharge of oil to the river.

An online oil-in-water monitor (TD-4100) continuously monitors the combined effluent from the main drainage and unwatering sumps and provides a measurement of hydrocarbons in the wastewater.

One outfall associated with solely stormwater (outfall 45) from a 2,100 sq-ft fueling area catch basin has a 1,000-gallon gravity type oil-water seperator. There is only discharge from this outfall into Foster Creek during significant storm events. There is a 1,500-gallon aboveground double-wall fuel tank within this catch basin. The aboveground tank has leak detection and audible/visual alarms, and fueling (ie of vehicles, vessels) takes place in accordance with detailed facility fuel transfer procedures, but oil and grease are still pollutants of concern for this outfall.

Below are brief descriptions of Chief Joseph Dam outfalls that discharge in Washington and Colville Tribe’s waters. Appendix A provides the process diagrams for some outfalls.

Table 2. Chief Joseph Dam Outfall Description. Source: Chief Joseph Dam NPDES Permit Application (March 20, 2020)

Outfall	Outfall Description	Type of Discharge	Maximum Daily Discharge (MGD)*	Discharge Frequency	Receiving Water and Jurisdiction
001	Generator U1 - Generator air-housing cooling water & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
002	Generator U2 - Generator air-housing cooling water & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
003	Generator U3 - Generator air-housing cooling water & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
004	Generator U4 - Generator air-housing cooling water & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
005	Generator U5 - Generator air-housing cooling water & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
006	Generator U6 - Generator air-housing cooling water & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
007	Generator U7 - Generator air-housing cooling water & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
008	Generator U8 - Generator air-housing cooling water & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
009	Generator U9 - Generator air-housing cooling water & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
010	Generator U10 - Generator air-housing cooling water & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
011	Generator U11 - Generator air-housing cooling water & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
012	Generator U12 - Generator air-housing cooling water & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
013	Generator U13 - Generator air-housing cooling water & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
014	Generator U14 - Generator air-housing & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
015	Generator U15 - Generator air-housing & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)

016	Generator U16 - Generator air-housing & thrust bearing cooling water	Non-contact cooling water	2.4 MGD	Operates 53% of the time	Columbia River (Washington)
017	Generator U17 - Generator air-housing, thrust bearing and turbine guide bearing cooling water	Non-contact cooling water	2.0 MGD	Operates 53% of the time	Columbia River (Washington)
018	Generator U18 - Generator air-housing, thrust bearing and turbine guide bearing cooling water	Non-contact cooling water	2.0 MGD	Operates 53% of the time	Columbia River (Washington)
019	Generator U19 - Generator air-housing, thrust bearing and turbine guide bearing cooling water	Non-contact cooling water	2.0 MGD	Operates 53% of the time	Columbia River (Washington)
020	Generator U20 - Generator air-housing, thrust bearing and turbine guide bearing cooling water	Non-contact cooling water	2.0 MGD	Operates 53% of the time	Columbia River (Washington)
021	Generator U21 - Generator air-housing, thrust bearing and turbine guide bearing cooling water	Non-contact cooling water	2.0 MGD	Operates 53% of the time	Columbia River (Washington)
022	Generator U22 - Generator air-housing, thrust bearing and turbine guide bearing cooling water	Non-contact cooling water	2.0 MGD	Operates 53% of the time	Columbia River (Washington)
023	Generator U23 - Generator air-housing, thrust bearing and turbine guide bearing cooling water	Non-contact cooling water	2.0 MGD	Operates 53% of the time	Columbia River (Washington)
024	Generator U24 - Generator air-housing, thrust bearing and turbine guide bearing cooling water	Non-contact cooling water	2.0 MGD	Operates 53% of the time	Columbia River (Washington)
025	Generator U25 - Generator air-housing, thrust bearing and turbine guide bearing cooling water	Non-contact cooling water	2.0 MGD	Operates 53% of the time	Columbia River (Washington)
026	Generator U26 - Generator air-housing, thrust bearing and turbine guide bearing cooling water	Non-contact cooling water	2.0 MGD	Operates 53% of the time	Columbia River (Washington)
027	Generator U27 - Generator air-housing, thrust bearing and turbine guide bearing cooling water	Non-contact cooling water	2.0 MGD	Operates 53% of the time	Columbia River (Washington)
028	Station Service Generator U28 - Generator air-housing, thrust and upper guide bearing and turbine bearings cooling water	Non-contact cooling water	0.3 MGD	Operates 53% of the time	Columbia River (Washington)
029	Station Service Generator U29 - Generator air-housing, thrust and upper guide bearing and turbine bearings cooling water	Non-contact cooling water	0.3 MGD	Operates 53% of the time	Columbia River (Washington)
030	Transformer Bank T1 - Transformer shell and double-wall tube type heat exchanger cooling water	Non-contact cooling water	0.4 MGD	Operates continuously during normal operations	Columbia River (Washington)
031	Transformer Bank T2 - Transformer shell and double-wall tube type heat exchanger cooling water	Non-contact cooling water	0.4 MGD	Operates continuously during normal operations	Columbia River (Washington)

032	Transformer Bank T3 - Transformer shell and double-wall tube type heat exchanger cooling water	Non-contact cooling water	0.4 MGD	Operates continuously during normal operations	Columbia River (Washington)
033	Transformer Bank T4 - Transformer shell and double-wall tube type heat exchanger cooling water	Non-contact cooling water	0.4 MGD	Operates continuously during normal operations	Columbia River (Washington)
034	Central Air Conditioning Room 4 CAC-4 - Air conditioning and precipitron cooling water (including 3,500 SF stormwater drainage)	Non-contact cooling water; stormwater	0.7 MGD	Operates continuously from Apr-Oct	Columbia River (Washington)
035	Central HVAC System Powerhouse control structure HVAC non-contact cooling water	Non-contact cooling water	0.2 MGD	Operates continuously	Columbia River (Washington)
036	Intake Structure HVAC System - Intake structure HVAC cooling water	Non-contact cooling water	0.5 MGD	Operates continuously	Columbia River (Washington)
037	Spillway Standby Generator - Spillway standby diesel generator cooling water	Non-contact cooling water	0.1 MGD	Operates 30 min/month for 11 months; 8 hours on twelfth month	Columbia River (Washington)
038	Main Warehouse AC - Warehouse AC cooling water	Non-contact cooling water	0.2 MGD	Operates continuously from Apr-Oct	Columbia River (Washington)
039	Powerhouse and Intake Structure Drainage Sump Pump - Unwatering and drainage sump pump discharges (including 266,000 SF stormwater drainage)	equipment and floor drain-related water; equipment and facility maintenance-related water; stormwater	5.8 MGD	Operates 25-50% of the time	Columbia River (Washington)
040	Unwatering tunnel and drainage sump pump water (including 85,000 SF stormwater drainage)	equipment and floor drain-related water; equipment and facility maintenance-related water; stormwater	2.9 MGD	Operates 5% of the time, more during maintenance	Columbia River (Washington)
041	Common Spillway Sump Pump – Upper Discharge Pipe - River water leakage sump pump	equipment and floor drain-related water	3.5 MGD	Operates continuously at varying flows	Columbia River (Colville)
042	Common Spillway Sump Pump – Lower Discharge Pipe - River water leakage sump pump	equipment and floor drain-related water	3.5 MGD	Operates continuously at varying flows	Columbia River (Colville)

045	Oil-Water Separator Stormwater - Maintenance/Fueling Area Stormwater – 1,000 gallon gravity type oil water separator	Stormwater	0.1 MGD	Discharges only during significant storm events	Foster Creek (Washington)
*Note: assumption of running at full capacity consistently. In majority of cases, outfalls discharge at fraction of design flow intermittently depending on a variety of factors.					

E. Effluent Characterization

To characterize the effluent, EPA evaluated the facility's application form and additional data provided. Table 3 summarizes information from the permit application. Data are limited, and in all but a few outfalls, there is one sample point per outfall. At locations where outfall water could not be sampled, composite samples were taken just above the outfall location. In lieu of sampling each identical outfall, certain outfalls used representative sampling from a subset of outfalls. All data are provided in Appendix B.

Table 3. Summary of Pollutants Detected in Outfalls

Chief Joseph Dam	
Pollutant	**Concentration range**
Oil & Grease	ND – 6.2 mg/L
Total Suspended Solids (TSS)	ND
Biological Oxygen Demand (BOD5)	ND – 5.8 mg/L
Chemical Oxygen Demand (COD)	ND – 33 mg/L
Total organic carbon (TOC)	ND – 2.2 mg/L
Ammonia	ND – 1.7 mg/L
Temperature (summer)	18-38^{o}C
pH	7.1 – 8.2 s.u.
Source: Chief Joseph Dam NPDES Permit Application (March 20, 2020)	

In addition to data provided as part of the facility's permit application, additional historical data was provided for PCBs. Chief Joseph Dam has replaced all of their transformers in recent years, so PCBs are not expected in the cooling water associated with transformers that are currently in operation. One spare transformer on site may discharge legacy PCBs during storm events if exposed. If it were added to the system, it would not have the potential to interact with cooling water since it is an air-cooled transformer. In 2012, the USACE conducted testing on their transformer oil at Chief Joseph Dam. The majority of samples were non-detectable (<1 ppm) for PCBs with the exception of one detectable result on the spare transformer described above. This spare was retested in 2013 and again in 2019, rendering results of 3 ppm and non-detect, respectively. The likelihood of PCB releases from Chief Joseph Dam are minimal, but to be conservative this permit will require the permittee to develop a PCB Management Plan (PMP).

F. Compliance History

The proposed permit is new so there are no past permit violations.

III. Receiving Water

In drafting permit conditions, EPA must analyze the effect of the facility's discharge on the receiving water. The details of that analyses are provided in this Fact Sheet. This section summarizes characteristics of the receiving water that impact that analysis.

A. Receiving Water

Chief Joseph Dam discharges near river mile 545 of the Columbia River near the city of Bridgeport, Washington and into the mouth of Foster Creek.

The Columbia River flows at Chief Joseph Dam change depending on the time of year. The 2011-2016 average Columbia River hydrograph at Chief Joseph Dam, illustrated in black in Figure 3 below, peaks at over 160 kilo cubic feet per second (kcfs) in June and runs as low as 50 kcfs on average in September. The lowest ambient river flows throughout the system generally occur between September and November. Just as there is tremendous flow variation throughout a given year, there is also tremendous variation in flow between years, illustrated in Figure 3 by the individual years in color.

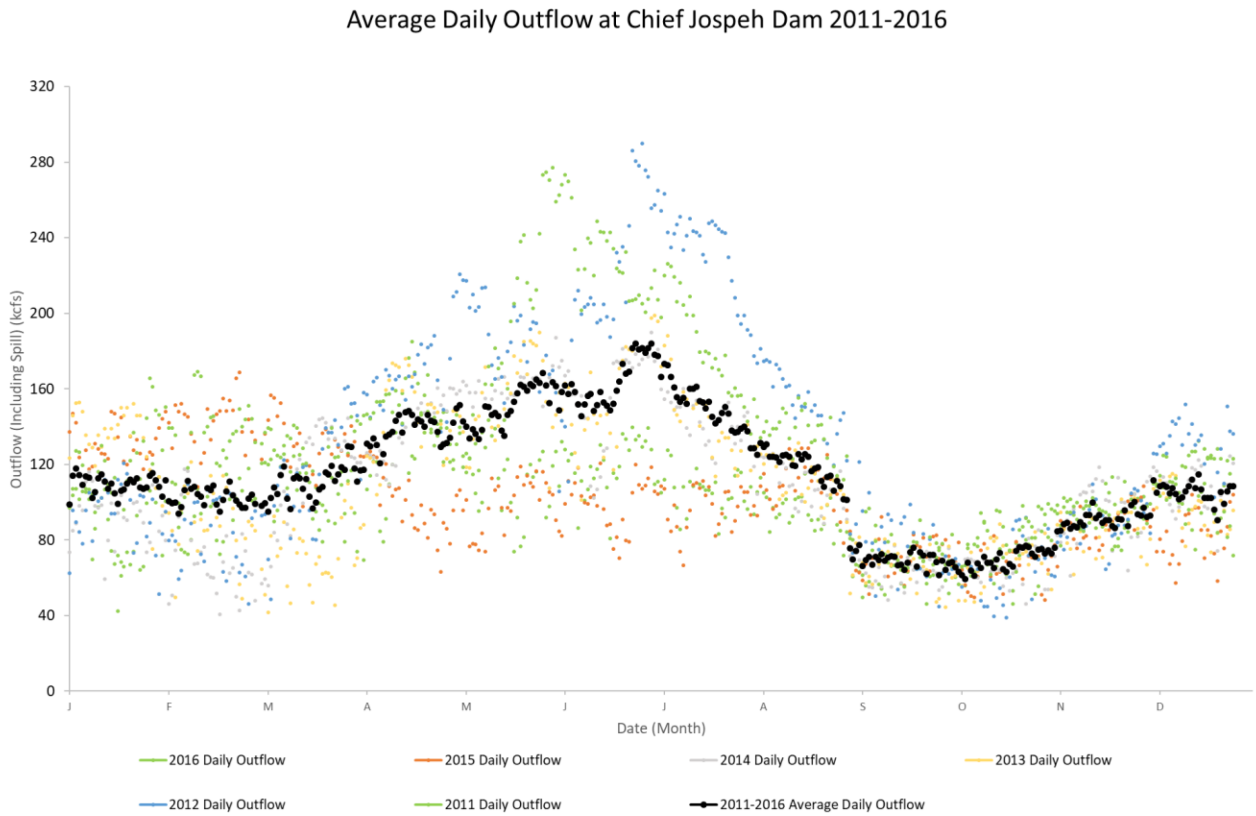

Figure 3. Average daily outflow, including spill, at Chief Joseph Dam between 2011-2016 (black), with each year plotted in color to illustrate variation between years. Data source: Columbia River DART

B. Water Quality Standards

Overview

Section 301(b)(1)(C) of the Clean Water Act (CWA) requires the development of limitations in permits necessary to meet water quality standards. 40 CFR 122.4(d) requires that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States and Tribes. Chief Joseph Dam has outfalls that discharge to Colville waters and has outfalls that discharge to Washington waters. A State's or Tribe's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria and an anti-degradation policy.

The use classification system designates the beneficial uses that each water body is expected to achieve, such as drinking water supply, contact recreation, and aquatic life. The numeric and narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

EPA promulgated water quality standards for the Colville Tribes on July 6, 1989 (40 CFR 131.35). The water quality standards at 40 CFR 131.35 are in effect for Clean Water Act purposes for waters of the Colville Tribes, including the northern side of the Columbia River, where Chief Joseph Dam discharges. On May 2, 2018, EPA approved the Colville Tribes' application for treatment in a similar manner as a state (TAS) which allows the Tribe to administer the water quality standards and water quality certification programs under CWA Sections 303(c) and 401. The Colville Tribes adopted tribally promulgated water quality standards on August 6, 1984 and amended them on January 18, 1985 (Colville Tribal Law and Order Code, Section 4-8), but these are not in effect for CWA purposes. The federally promulgated WQS for the Tribe are similar to the tribally adopted WQS, thus, the designated uses identified in the tribally adopted WQS are also protected through the application of the federally promulgated WQS.

Washington also has numeric and narrative criteria applicable to all fresh waters of the State, found in WAC 173-201A-200 (Fresh water designated uses and criteria) and WAC 173-201A-260 (Natural conditions and other water quality criteria and applications). Criteria for toxics can be found at WAC 173-201A-240.

Designated Beneficial Uses

Chief Joseph Dam discharges to the Mid-Columbia River at river mile 545. At the points of discharge, the Columbia River is protected for the following designated uses in Washington (WAC 173-201A-602, Table 602): core summer habitat, primary contact, domestic water, industrial water, agricultural water, stock water, wildlife habitat, harvesting, commerce/navigation, boating, and aesthetics. One outfall at Chief Joseph Dam, Outfall 45, discharges to Foster Creek. At the point of discharge, Foster Creek is protected for the following designated uses: Salmonid spawning, rearing, and migration; primary contact recreation; domestic, industrial, and agricultural water supply; stock watering; wildlife habitat; harvesting; commerce and navigation; boating; and aesthetic values (WAC 173-201A-600).

The Columbia River where the Chief Joseph Dam discharges into waters of the Colville Tribes is undesignated under 40 CFR 131.35, and therefore, the default is a Class II designation. Under this designation, the Columbia River is protected for the following designated uses in the Colville Tribes waters: water supply: domestic, industrial, agricultural; stock watering; fish and shellfish: salmonid migration, rearing, spawning, and harvesting; other fish migration: rearing, spawning, and harvesting; crayfish rearing, spawning, and harvesting; wildlife habitat; ceremonial and religious water use; recreation: primary contact recreation, sport fishing, boating, and aesthetic enjoyment; and commerce and navigation.

The Colville Tribes' tribally promulgated water quality standards designate the Columbia River where the Chief Joseph Dam discharges as Class II waters (Colville Tribal Law and Order Code, Section 4-8-8). Though not in effect for CWA purposes, the Colville Tribes' tribally promulgated water quality standards have similar designated uses for the Columbia River. Therefore, application of the federally-promulgated WQS will ensure that the tribally promulgated WQS are met.

EPA has established effluent limitations and other requirements in the permit to maintain the most stringent possible water quality criteria. Given that the facility discharges into Washington and Colville Tribes' waters, EPA has established effluent limitations and other requirements in the permits to ensure that both the Washington and federally promulgated Colville Tribes' water quality standards are met. In this manner, the permit will be protective of all receiving water uses in the waters of the Colville Tribes and Washington.

C. Surface Water Quality Criteria

The criteria are found in the following sections of the Washington water quality standards and Colville Tribes federally promulgated water quality standards:

- The numeric and narrative criteria applicable to all fresh waters of the State are found in WAC 173- 201A-200 (Fresh water designated uses and criteria) and WAC 173-201A-260 (Natural conditions and other water quality criteria and applications). The federally promulgated water quality standards for the Colville Tribes where the Chief Joseph Dam discharges can be found at 40 CFR 131.35(2).
- The numeric and narrative criteria for toxic substances for the protection of aquatic life and primary contact recreation are found at WAC 173-201A-240 and 40 CFR 131.35(e)(ii)(G).
- Water quality criteria for agricultural water supply can be found in EPA's Water Quality Criteria 1972, also referred to as the "Blue Book" (EPA R3-73-033)

The permit contains language for the following narrative criteria:

<u>Toxic Substances</u>. Toxic substances shall not be introduced above natural background levels in waters of the state which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department (WAC 173-201A-240).

Toxic, radioactive, nonconventional or deleterious material concentrations shall be less than those of public health significance, or which may cause acute or chronic conditions to the aquatic biota, or which may adversely affect designated uses (40 CFR 131.35(e)(ii)(G)).

<u>Deleterious, floating, suspended, submerged matter, aesthetics, visible oil sheen.</u> Toxic, radioactive, or deleterious material concentrations must be below those which have the potential, either singularly or cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent upon those waters, or adversely affect public health (WAC 173-201A-260(2)(a)).

All waters within the Reservation, including those within mixing zones shall be free from substances, attributable to wastewater discharges or other pollutant sources, that:

(i) Settle to form objectionable deposits;

(ii) Float as debris, scum, oil, or other matter forming nuisances;

(iii) Produce objectionable color, odor, taste, or turbidity;

(iv) Cause injury to, are toxic to, or produce adverse physiological responses in humans, animals, or plants; or

(v) Produce undesirable or nuisance aquatic life.

(40 CFR 131.35(e)(3))

Though not in effect for CWA purposes, the Colville Tribes' tribally promulgated water quality standards have similar designated uses for the Columbia River to the federally promulgated WQS. Therefore, application of the federally promulgated WQS will ensure that the tribally promulgated WQS are met.

D. Impaired Waters/TMDLs

Section 303(d) of the CWA requires states and eligible Indian Tribes to identify specific water bodies where water quality standards are not met. For all 303(d)-listed water bodies and pollutants, the state or Tribe, where applicable, must develop and adopt total maximum daily loads (TMDLs) that will specify wasteload allocations (WLAs) for point sources and load allocations (LAs) for non-point sources of pollutants, as appropriate. WLAs for point sources are implemented through limitations incorporated into NPDES permits that are consistent with the assumptions of the WLAs in the TMDL (40 CFR 122.44(d)(1)(vii)(B)).

Dioxins

In 1991, EPA issued a TMDL for dioxins that applied to the Columbia River in Washington. The TMDL identified the major sources of dioxin as pulp mills that were operating during the development of the TMDL. Dioxins are usually a result of chemical processes at high temperatures. Since no chemical processes at high temperatures occur at hydroelectric generating facilities, dioxins are not expected to be present in the discharges from Chief Joseph Dam. In 2009, EPA issued a report on toxics in the Columbia River Basin. The report states that in 1991, there were 13 paper mills that were sources of dioxin. These facilities changed their leaching processes to reduce dioxin releases, and there have been significant reductions of dioxin in fish. The waters just upstream from Chief Joseph Dam in Rufus Woods Lake are still listed as impaired for dioxin, but there are no dioxin impairments immediately downstream of the dam. Since the facility does not discharge to waters impaired for dioxin and because dioxin is not expected in the discharge from hydroelectric generating facilities, EPA has not included specific limitations or monitoring requirements for dioxin, aside from the general prohibition of discharging toxic substances in concentrations that impair beneficial uses, found in Part I.B.2 of the permit.

Total Dissolved Gas

In 2004, Ecology and EPA issued a TMDL for total dissolved gas in the Mid-Columbia River. 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). Total dissolved gas is not a pollutant found in the discharges covered under the permits. Therefore, total dissolved gas is not a pollutant of concern for the discharges authorized by these permits.

PCBs

The Columbia River is listed as impaired for PCBs on Ecology’s CWA Section 303(d) list at a number of locations in Washington. As indicated in Figure 4, it is not listed as impaired at the points of discharge for Chief Joseph Dam.

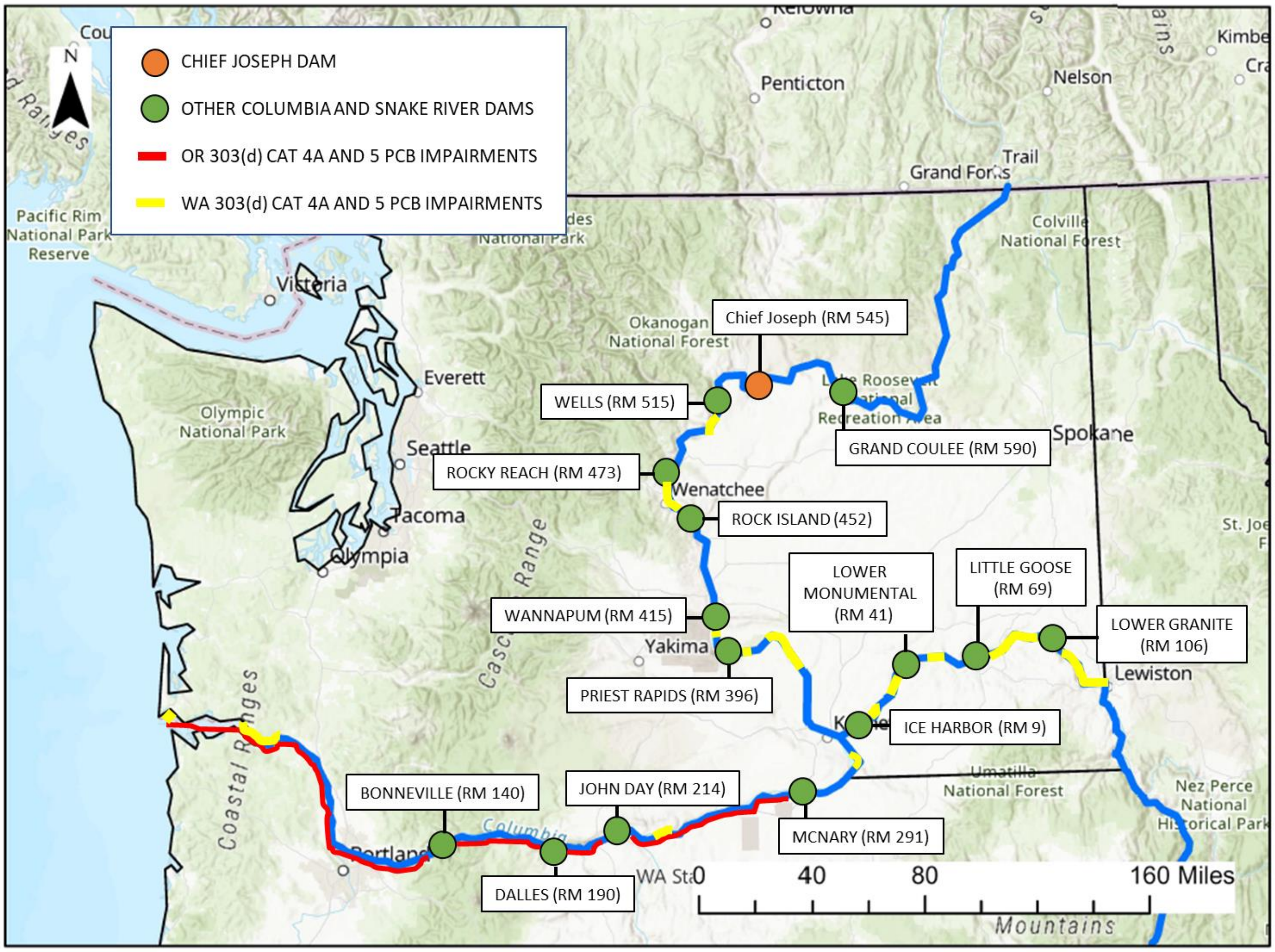

Figure 4. PCB Impairments on the Lower Columbia and Lower Snake Rivers

When equipment or oils potentially containing PCBs come into contact with water, it is possible to have discharges of PCBs into the Columbia River. As described in Section II.E of this Fact Sheet, Chief Joseph Dam has replaced all of their transformers in recent years, and although these transformers use cooling water, PCBs are not expected in the cooling water associated with transformers. One spare transformer on site, but not in operation, may have legacy PCBs. If it were added to the system, it would not have the potential to interact with cooling water since it is an air-cooled transformer. There is potential for stormwater-related PCB releases from this spare transformer whether it is stored as a spare or if it were added to the system if needed.

To address the unlikely but potential discharge of PCBs, the permit requires a PCB Management Plan (PMP) and PCB Annual Report. The PMP must describe PCB monitoring that has been completed and the PCB sources that could come into contact with water and be discharged. The PMP must also identify the actions USACE is taking to prevent, track, and address PCB releases. The PCB Annual Report must describe how the permittee is implementing the PMP, evaluate the effectiveness of actions, and propose any new steps that must be taken to optimize effectiveness.

EPA has also taken a conservative approach and included provisions in the permits that prohibit the discharge of PCBs and the discharge of toxic substances in concentrations that impair the beneficial uses of the receiving water (see Part I.B.2). The permit also requires the permittee to use lubricants, paint and caulk that do not contain PCBs, unless technically infeasible.

Temperature

The Columbia River is listed as impaired for temperature on Ecology's CWA Section 303(d) list at various locations. As indicated in Figure 5, it is listed as impaired at the points of discharge for Chief Joseph Dam.

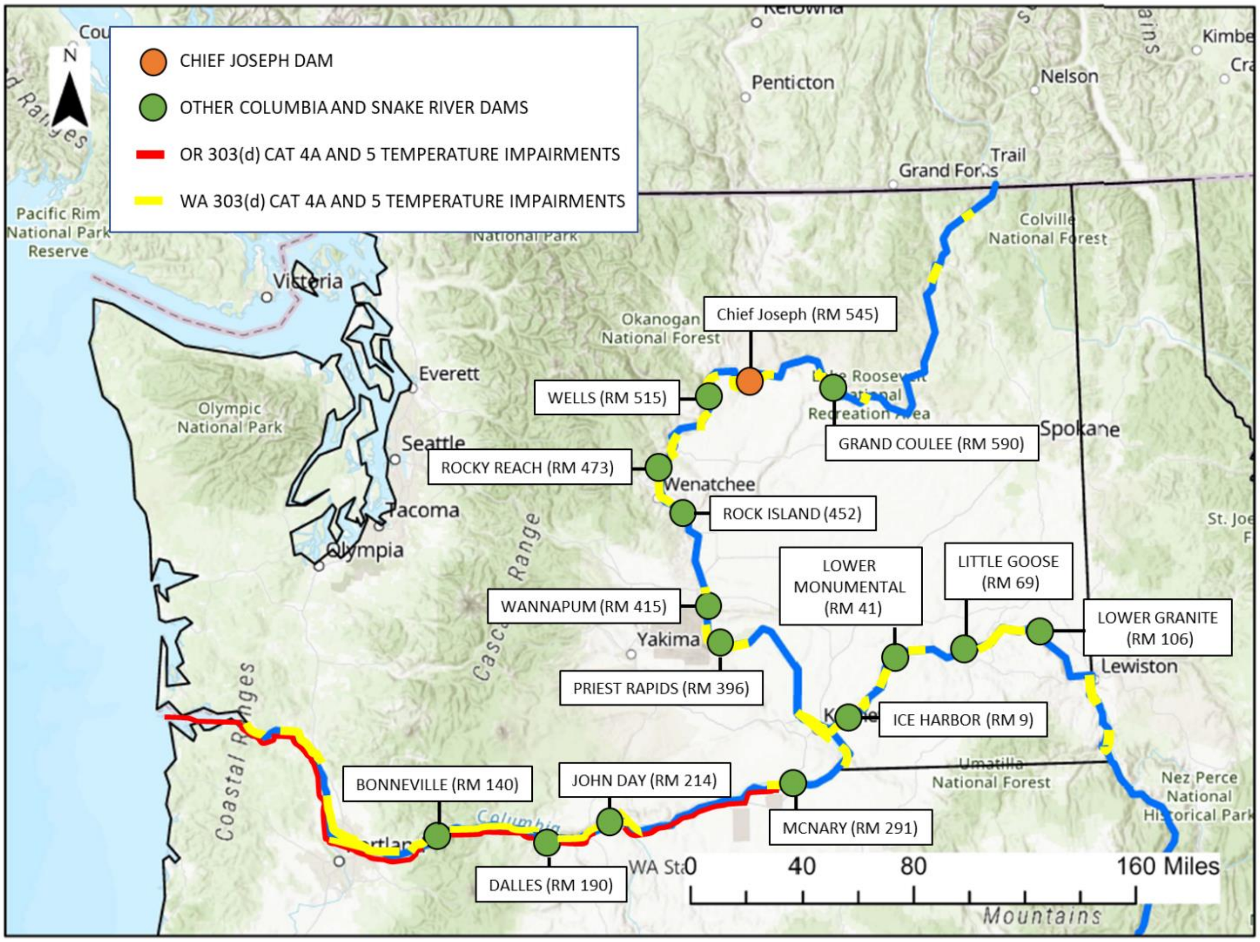

Figure 5. Temperature Impairments on the Lower Columbia River and Lower Snake River

On August 13, 2021, EPA issued a TMDL for temperature in the Columbia River and Lower Snake River (Columbia River Temperature TMDL). The TMDL details the changing environmental dynamics across the Pacific Northwest, including weather patterns, air temperatures, river flow timing, flow source (snowpack or rainfed) and magnitude, wildfire prevalence and river temperature. Temperatures in the Columbia River have increased from climate change and are projected to continue to increase if no actions are taken to decrease or mitigate these effects (Columbia and Lower Snake Rivers Temperature Total Maximum Daily Load, Appendix G, 2021). The Columbia River Temperature TMDL determined that if all point sources discharged at their current heat load (design flow and maximum temperature), the TMDL target for point sources would be attained. The Columbia River Temperature TMDL established facility-wide heat load wasteload allocations for all point sources in the TMDL area, including for point source discharges from Chief Joseph Dam. The heat wasteload allocation (WLA) from the TMDL, shown below in Table 4, is applied to Chief Joseph Dam in this proposed permit, expressed as a facility-wide monthly average heat limit. The TMDL states that monthly average is an appropriate timeframe for heat load limits because of TMDL modeling assumptions. The permit also requires continuous temperature monitoring at representative outfalls discharging cooling water and monthly grab samples for other cooling water outfalls.

Table 4. Proposed Heat Load Effluent Limit for Chief Joseph Dam

Facility	Facility-wide heat load effluent limit (kcals/day)
Chief Joseph Dam	6.36E+09

IV. Effluent Limitations and Monitoring

Table 5, Table 6 and Table 7 show the proposed effluent limits and monitoring requirements for Chief Joseph Dam.

Table 5. Effluent Limitations and Monitoring Requirements for all Non-Contact Cooling Water related outfalls (Outfalls 1-38)

Parameter	Units	Effluent Limitations	Monitoring Requirements		
			Sample Location	Sample Frequency	Sample Type
Parameters With Effluent Limits					
pH	std units	Between 6.5 – 8.5	Effluent	1/week or 1/month[1]	Grab
Oil and grease	mg/L	5 (daily maximum[2])	Effluent	1/week or 1/month[1]	Grab
Heat (June 1 – October 31)	kcal/day	See Paragraph I.B.12	See Paragraph I.B.10	See Paragraph I.B.12	Measurement/ Calculation
Report Parameters					
Flow	mgd	Report	Effluent	1/month	Measurement
Temperature	^{o}C	Report 7DADM[3], daily maximum, and daily average.	See Paragraph I.B.10.	Continuous or 1/month[4]	Measurement/Calculation
Visible Oil Sheen, Floating, Suspended, or Submerged Matter	--	See Paragraph I.B.4 and III.G. of this permit.			Visual Observation

Parameter	Units	Effluent Limitations	Monitoring Requirements		
			Sample Location	Sample Frequency	Sample Type

Notes

1. In the first year of the permit, if there are no exceedances of the pH limit or detection of oil and grease in an outfall, the required monitoring frequency for that pollutant is reduced to 1/month for that outfall. If there are exceedances/detections in the first year of the permit in an outfall, the frequency will remain 1/week for the remainder of the permit term for that outfall.
2. Maximum daily effluent limit is the highest allowable daily discharge. The daily discharge is the average discharge of a pollutant measured during a calendar day.
3. 7-day average daily maximum. This is a rolling 7-day average calculated by taking the average of the daily maximum temperatures. The 7-day average daily maximum for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days prior and the three days after that date.
4. See Paragraphs I.B.10 and I.B.11. In the first six months of the effective date of the permit, monthly sampling is required. Continuous monitoring is required after the first six months of the effective date of the permit.

Table 6. Effluent Limitations and Monitoring Requirements for all outfalls not related to non-contact cooling water, except Outfall 45 (Outfalls 39, 40, 41 and 42)

Parameter	Units	Effluent Limitations	Monitoring Requirements		
			Sample Location	Sample Frequency	Sample Type
Parameters With Effluent Limits					
pH	std units	Between 6.5 – 8.5	Effluent	1/week or 1/month[1]	Grab
Oil and grease	mg/L	5 (daily maximum[2])	Effluent	1/week or 1/month[1]	Grab
Report Parameters					
Flow	mgd	Report	Effluent	1/month	Measurement
Visible Oil Sheen, Floating, Suspended, or Submerged Matter	--	See Paragraph I.B.4 and III.G. of the permit.			Visual Observation

Notes

1. In the first year of the permit, if there are no exceedances of the pH limit or detection of oil and grease in an outfall, the required monitoring frequency for that pollutant is reduced to 1/month for that outfall. If there are exceedances/detections in the first year of the permit in an outfall, the frequency will remain 1/week for the remainder of the permit term for that outfall.
2. Maximum daily effluent limit is the highest allowable daily discharge. The daily discharge is the average discharge of a pollutant measured during a calendar day.

Table 7. Effluent Limitations and Monitoring Requirements for Outfalls related only to stormwater (Outfall 45)

Parameter	Units	Effluent Limitations	Monitoring Requirements		
			Sample Location	Sample Frequency	Sample Type
Parameters With Effluent Limits					
Oil and grease	mg/L	5 (daily maximum[2])	Effluent	1/week or 1/month[1]	Grab
Report Parameters					
Visible Oil Sheen, Floating, Suspended, or Submerged Matter	--	See Paragraph I.B.4 and III.G. of the permit.			Visual Observation
Stormwater Best Management Practices	--	See Paragraph I.B.13 of the permit			

Notes
1. In the first year of the permit, if there is no detection of oil and grease in an outfall, the required monitoring frequency for that pollutant is reduced to 1/month for that outfall. If there are detections in the first year of the permit in an outfall, the frequency will remain 1/week for the remainder of the permit term for that outfall.
2. Maximum daily effluent limit is the highest allowable daily discharge. The daily discharge is the average discharge of a pollutant measured during a calendar day.

A. Statutory Requirements for Determining Effluent Limitations

Section 301(a) of the CWA prohibits the discharge of pollutants to waters of the United States unless the discharge is authorized pursuant to an NPDES permit. Section 402 of the CWA authorizes EPA, or an approved state NPDES program, to issue NPDES permits that authorize discharges subject to limitations and requirements imposed pursuant to CWA Sections 301, 304, 306, 401 and 403. Accordingly, NPDES permits typically include effluent limits and requirements that require the permittee to (1) meet national standards that reflect levels of currently available treatment technologies; (2) comply with EPA-approved state water quality standards in state waters; and (3) prevent unreasonable degradation of the surface water quality.

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based effluent limits or water quality-based effluent limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

EPA first determines which technology-based effluent limits apply to a discharge in accordance with applicable national effluent limitation guidelines and standards (ELGs). Where ELGs have not been promulgated for a specific category of discharge, case-by-case technology-based effluent limits based on best professional judgment (BPJ) are developed. EPA further determines which water quality-based effluent limits apply to a discharge based upon an assessment of the pollutants discharged and a review of state water quality standards. Monitoring requirements must also be included in the permit to determine compliance with effluent limitations. Effluent and ambient monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality.

B. Pollutants of Concern

Pollutants of concern are those that either have technology-based effluent limits or may need water quality-based limits. EPA identifies pollutants of concern for the discharge based on those which:

- Have a technology-based limit
- Have an assigned WLA from a TMDL
- Had an effluent limit in the previous permit
- Are present in the effluent monitoring. Monitoring data are reported in the application and DMR and any special studies
- Are expected to be in the discharge based on the nature of the discharge

A review of the discharges of hydroelectric generating facilities permitted by other states and information gathered from the permit applications, facilities, and other sources reveal that the pollutants of concern are as follows:

- pH
- oxygen demanding pollutants (BOD and COD)
- oil and grease
- toxics
- temperature
- total suspended solids (TSS)

C. Technology-based Effluent Limitations

Section 301(b) of the CWA requires technology-based controls on effluents. All NPDES permits must contain effluent limitations which: (a) control toxic pollutants and nonconventional pollutants through the use of "best available technology economically achievable" (BAT), and (b) control conventional pollutants through the use of "best conventional pollutant control technology" (BCT). In no case may BAT or BCT be less stringent than the "best practical control technology currently achievable" (BPT), which is the minimum level of control required by Section 301(b)(1)(A) of the CWA.

ELGs have not yet been developed by EPA for hydroelectric generating facility discharges.

D. Water Quality-based Effluent Limitations

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet WQS. Discharges to State or Tribal waters must also comply with conditions imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. 40 CFR 122.44(d)(1) requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal water quality standard, including narrative criteria for water quality. Effluent limits must also meet the applicable water quality requirements of affected States other than the State in which the discharge originates, which may include downstream States (40 CFR 122.4(d), 122.44(d)(4), see also CWA Section 401(a)(2)).

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met and must be consistent with any available WLA for the discharge in an approved TMDL. If there are no approved TMDLs that specify WLAs for this discharge, all of the water quality-based effluent limits are calculated directly from the applicable water quality standards.

Reasonable Potential Analysis and Need for Water Quality-Based Effluent Limits

EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (*TSD*) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, EPA compares the maximum projected receiving water concentration to the water quality criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit.

In some cases, a dilution allowance or mixing zone is permitted. A mixing zone is a limited area or volume of water where initial dilution of a discharge takes place and within which certain water quality criteria may be exceeded (EPA, 2014). While the criteria may be exceeded within the mixing zone, the use and size of the mixing zone must be limited such that the waterbody as a whole will not be impaired, all designated uses are maintained and acutely toxic conditions are prevented.

The Washington Water Quality Standards at WAC 173-201A-400 and federally promulgated water quality standards for the Colville Tribes at 40 CFR 131.35(c)(2) provide mixing zone policies for point source discharges. This permit does not authorize a mixing zone.

pH

The effluent limitation for Hydrogen Ion (pH) proposed in the draft permit for cooling water, sumps, drainage, and dewatering discharges is established to meet the federally promulgated Colville Tribes water quality standards and State of Washington's water quality standards for the protection of aquatic life. The water quality criterion for pH is found in WAC 173-201A-200 1(g) and states that for salmonid spawning, rearing and migration, pH shall be within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units. The federally promulgated water quality standards for the Colville Tribes is also that pH shall be within the range of 6.5 to 8.5 with a human-caused variation of less than 0.5 units (40 CFR 131.35(f)(2)(ii)(E)).

Effluent pH data from Chief Joseph Dam was compared to the water quality criteria. The measured range of pH from the facility's outfalls is 7.1-8.2. which falls within the range of Washington and the federally promulgated Colville Tribal WQS.

The draft permit proposes pH limits not less than 6.5 and not more than 8.5 standard units to ensure that surface waters do not fall outside of this range due to discharges from Chief Joseph Dam. This limit meets Washington and the federally promulgated Colville Tribal pH water quality criteria.

Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD)

BOD and COD are measures of the amount of degradable material that may deplete oxygen. The federally promulgated water quality standards for Colville Tribes, and the Washington water quality standard for dissolved oxygen for salmon spawning, rearing and migration is 8.0 mg/L (40 CFR 131.35(f)(2)(ii)(B), WAC 173-201A-200 1(d)). There are no water quality standards for BOD or COD for waters of Washington or the Colville Tribes. Oil and grease are oxygen-demanding substances. Sumps may also concentrate oxygen-demanding substances that may be present in pass through water. Therefore, BOD and COD could be present in sump discharges, and to a lesser degree, dewatering and cooling water discharges. BOD and COD is also present in influent water, so may be part of the pass through and leakage water. The permit does not address the pass through water. (See II.C.)

BOD and COD concentrations at Chief Joseph Dam are relatively low. Chief Joseph Dam had four detections of BOD that were all between 5-6 mg/L. There were nine detections of COD. The four most significant detections were one of 33 mg/L at Outfall 036, one of 29 mg/L at Outfall 038, one of 23 mg/L at Outfall 015, and one of 22 mg/L at Outfall 037.

Concentrations of BOD and COD are relatively low, and operations from the facility are not expected to add significant amounts of oxygen-demanding substances that would require permit effluent limitations. The Columbia River receiving water has significantly higher flows compared to discharges from outfalls. In addition, Chief Joseph Dam generates oxygen when water flows over the spillways to the tailrace, which then combines with discharge waters. Oxygen-demanding substances from the operations may arise from oil and grease, for which the permit has effluent limitations, monitoring, tracking, and minimization requirements. The permit also requires total suspended solids or detritus, to be minimized.

As a result, EPA has determined there is no reasonable potential for oxygen-demanding substances in the Chief Joseph Dam discharges to impact dissolved oxygen in the Columbia River and is not proposing limits for oxygen-demanding substances.

Oil and Grease

The oil and grease limits are derived from the narrative water quality criteria in the state and tribal water quality standards. State water quality standards state that “toxic, radioactive or deleterious material concentrations must be below those which have the potential either singularly or cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent on the waters, or adversely affect public health” (WAC 173-201A-260-2(a)); “Aesthetic values must not be impaired by the presence of materials of their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste” (WAC 173-201A-260-2(b). The federally promulgated tribal water quality standards state that “All waters within the Reservation, including those within mixing zones, shall be free from substances, attributable to wastewater discharges or other pollutant sources that: (i) Settle to form objectionable deposits; (ii) Float as debris, scum, oil, or other matter forming nuisances; (iii) Produce objectionable color, odor, taste, or turbidity; (iv) Cause injury to, are toxic to, or produce adverse physiological responses in humans, animals or plants; or (v) produce undesirable or nuisance aquatic life” (40 CFR 131.35(e)(3)).

EPA interprets these narrative criteria as prohibiting a discharge to these waters that would cause an oil sheen. Although effluent concentrations are low for oil and grease, these are the primary pollutants introduced by facility operations and could be present in discharges from sumps, dewatering, and cooling water. There were two detected oil and grease measurements at Chief Joseph Dam: one with a concentration of 5.6 mg/L at Outfall 32, which was resampled rendering non-detects, and another with a concentration of 6.2 mg/L at Outfall 34. EPA has established daily maximum oil and grease limitations of 5 mg/L to represent the concentration at which there is an oil sheen on surface waters. This limit is consistent with several NPDES permits for other federal dams in Washington that EPA issued. (see https://www.epa.gov/npdes-permits/discharge-permits-federal-hydroelectric-projects-lower-snake-river). In addition, the State of Washington has included this limit in permits issued to shipyards where a 5 mg/L limit was established to control for no visible oil sheen. [2] This concentration was based on best professional judgment and on the detection limit for oil and grease, which is 5 mg/L. A daily maximum effluent limit of 5 mg/L will ensure the narrative WQS for deleterious, aesthetic, and no visible oil sheen are met. EPA believes that this limit is a reasonable standard for facilities that have a reasonable potential for oil and grease discharges.

In addition, the permit requires the permittee to develop and implement a BMP Plan and BMP Annual Reports, which includes 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. The permit also requires a 24-hour notification of any oil spills or visible oil sheen that require emergency action or notification under the facility's Spill Prevention Control and Countermeasure (SPCC) plan. For lubricants such as oil and grease, the permit requires the use of EALs to replace oil and grease, unless technically infeasible, to reduce the potential of oil and grease entering the river. The permit also requires an EAL Annual Report to track the progress of implementation.

Toxics

The narrative criteria in Washington and the federally promulgated water quality standards at WAC 173-201A-240 and 40 CFR 131.35(f)(ii)(G) prohibit toxic discharges in concentrations that impair designated beneficial uses. Noncontact cooling water discharges do not contain or come into contact with raw materials, intermediate products, finished products, or process wastes. There is no information on whether discharges from the hydroelectric projects contain toxic or hazardous pollutants other than oil and grease.

To ensure that discharges do not occur, the permit establishes narrative effluent limitations for toxic pollutants in Part I.B.2 of the permit. The permit does not allow for the addition of toxic materials or chemicals and prohibits the discharge of PCBs. The permit also requires the use of paints, caulk, and lubricants free of PCBs, unless technically infeasible. Further, additives used to control biological growth in such cooling systems are prohibited due to their inherent toxicity to aquatic life. The permit requires a PCB Management Plan and PCB Annual Reports to prevent, track and address PCB discharges.

Total Suspended Solids (TSS)

The narrative criteria in Washington and the federally promulgated Colville Tribe water quality standards for TSS are the same and are described above in the oil and grease section. These can be found at WAC 173-201A-260 and 40 CFR 131.35(e)(3).

[2] Barnacle Point Shipyards WA-003099-6, Dakota Creek Industries WA-003141-1, Vigor Shipyards, Incorporated WA-000261-5, Everett Shipyard, Piers 1, 3 and Adjacent Areas WA-003200-0.

Suspended solids in water can cause turbidity and interfere with salmonid migration and growth. At Chief Joseph Dam, water originates from the upstream river which may contain solids that pass through the operation. TSS is most likely present in sumps and floor drains, where they may accumulate. Cooling water intakes have strainers which help to remove most sediment. TSS was not detected in any effluent samples at Chief Joseph Dam.

The BMP Plan requires facilities to clean intake screens and racks to reduce sediment in the influent. EPA has determined that TSS limits and monitoring are not needed because TSS was not detected and because of the BMP Plan permit requirement that will minimize sediment intake from influent to maintain low TSS.

Temperature

The Washington water quality standards for temperature where Chief Joseph Dam discharges in the Columbia River is 17.5°C (WAC 183-201A-602.) The federally promulgated water quality standards for Colville Tribes is 18°C (40 CFR 131.35(f)(ii)(2)(D)). Cooling water receives heat from equipment that is being cooled, and through this exchange, heat is added to cooling water from hydroelectric generating facilities. Heat from cooling water may also be present in drainage sumps that receive cooling water, though temperature effects are likely to be minimal given the amount of cooling water compared to drainage water.

Influent temperature measurements at Chief Joseph Dam, which were collected between September and December, 2019, ranged from 7.8-19.9 °C. Effluent temperatures ranged between 14.1-37.6 °C at Chief Joseph Dam. The 37.6 °C measurement is from Outfall 37, which discharges the cooling water from the standby diesel generator. Under normal circumstances, this generator runs for approximately 30 minutes per month for 11 months out of the year, then for 8 hours during the twelfth month for preventative maintenance. Other outfalls with high temperatures were generally associated with low or infrequent discharges.

As described in Section III.D., on August 13, 2021, EPA issued a TMDL for temperature in the Columbia River which established facility-wide heat load wasteload allocations for all point sources, including for point source discharges from Chief Joseph Dam. The draft permit proposes a facility-wide heat limit of 6.36E+09 kcal/day wasteload allocation from Table 6-12 of the TMDL, expressed as a monthly average limit. Page 62 and Appendix J of the TMDL state that a monthly average is an appropriate timeframe for heat limits because of TMDL modeling assumptions.

The permittee must calculate the sum of heat loads from all outfalls by multiplying the flow and temperature from each outfall on a monthly average basis and report this in the DMR. The permittee shall use the following equation to calculate the facility-wide monthly average heat load:

Facility-wide monthly average heat load (kcals/day) = ∑outfalls [(monthly average temperature (°C))outfall x (monthly average flow (MGD)) outfall x 3.78E+06 kcals/day/ (°C x MGD)]

In cases where the permittee uses representative continuous temperature monitoring, the permittee must calculate the monthly average temperature using only continuous monitoring data from the representative outfalls. For a set of similar outfalls where representative sampling is allowed, the average of the monthly average temperatures from outfalls with continuous monitoring data must be applied to represented outfalls. For instance, where representative continuous monitoring is allowed for Outfalls 1-16, the average monthly temperature must first be calculated for the six representative outfalls with continuous temperature data. This average of the average monthly temperatures must be applied at each represented outfall. For representative sampling allowed at Outfalls 30-33, the permittee must calculate a different average of the monthly average temperatures from the two representative outfalls and apply this to the represented outfalls.

The permit also includes grab samples for monitoring purposes and not for compliance reporting for the heat limit. The permittee must report grab sample results in a separate field in the DMR.

The facility is also required to submit a Temperature Data Report with the next permit application that includes temperature data from each outfall expressed as 7DADM, monthly average, and daily maximum. EPA believes this additional information is necessary to inform the next permit renewal cycle to better assess the impacts from the permitted discharges on temperature in the Columbia River.

Water Quality Based Effluent Limitations Summary

In summary, the following WQBELs in Table 8 will be applied in this permit.

Table 8. Proposed Water Quality Based Effluent Limitations

Parameter	Units	Effluent Limits	Designated Use in Washington WQS Linked to Specific Water Quality Criteria Used as Basis for Limits
pH	standard units	Not less than 6.5 or greater than 8.5 standard units (s.u.)	Aquatic Life
Oil and Grease	mg/L	5 (daily maximum)	Aquatic Life, Aesthetic Enjoyment, Primary Contact Recreation
Heat	Kcals/day	6.36E+09 (facility-wide monthly average)	Aquatic Life

E. Minimum Levels

All water samples must be analyzed using EPA approved analytical methods and must be analyzed using a sufficiently sensitive method that can achieve a minimum level listed in Table 9.

Table 9. Minimum Levels Applicable for Chief Joseph Dam

Parameter	ML/Interim ML
pH	N/A
Temperature	0.2ºC
Oil and Grease	5 mg/L

F. Anti-degradation

The WQS contain an anti-degradation policy providing three levels of protection to water bodies in Washington (WAC 173-201A-300).

Tier 1 Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing and designated uses of a water body must be maintained and protected (WAC 173-201A-310).

Tier 2 Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (WAC 173-201A-320).

Tier 3 Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters (ORWs) and requires that activities not cause a lowering of water quality (WAC 173-201A-330).

The federally promulgated standards for the Colville Tribes at 40 CFR 131.35(e)(2) also establishes three tiers of waters, similar to Washington's, which must be protected.

- Existing in-stream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

- Where the quality of the waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation … that quality shall be maintained and protected unless the Regional Administrator finds, after full satisfaction of the inter-governmental coordination and public participation provisions of the Tribes' continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the Regional Administrator shall assure water quality adequate to protect existing uses fully. Further, the Regional Administrator shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

- Where high quality waters are identified as constituting an outstanding national or reservation resource, such as waters within areas designated as unique water quality management areas and waters otherwise of exceptional recreational or ecological significance, and are designated as special resource waters, that water quality shall be maintained and protected.

- Where water quality impairment associated with thermal discharge is involved, the antidegradation policy's method shall be consistent with section 316 of the Clean Water Act.

The tribally adopted water quality standards contains an antidegradation policy similar to the State and federally promulgated water quality standards (Colville Tribal Law and Order Code at 4-8-5(g).

EPA is required under Section 301(b)(1)(C) of the Clean Water Act (CWA) and implementing regulations (40 CFR 122.4(d) and 122.44(d)) to establish conditions in NPDES permits that ensure compliance with state and tribal water quality standards. A facility must meet Tier I requirements to ensure that all existing and designated uses are maintained and protected. No degradation may be allowed that would interfere with, or become injurious to, existing or designated uses, except as provided for in Chapter 173-201A WAC and at 40 CFR 131.35(e)(2).
The proposed draft permit contains effluent limits for oil and grease, pH and heat. The draft permit also prohibits discharges of toxic substances, including PCBs, in toxic amounts that may cause or contribute to an impairment of designated uses in violation of the State of Washington water quality standards and federally promulgated Colville Tribes water quality standards.

The effluent limitations and monitoring requirements contained in the draft permit ensure compliance with the narrative and numeric criteria in the water quality standards. Therefore, it was determined that the permit will protect and maintain existing and designated beneficial uses in compliance with the Tier I provisions for all pollutants.

G. Anti-backsliding

Section 402(o)(2) of the Clean Water Act and federal regulations at 40 CFR 122.44 (l) generally prohibit the renewal, reissuance or modification of an existing NPDES permit that contains effluent limits, permit conditions or standards that are less stringent than those established in the previous permit (i.e., anti-backsliding) but provides limited exceptions. This is a new permit, and therefore, backsliding is not an issue.

V. Monitoring and Reporting Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permittee is responsible for conducting the monitoring and for reporting results on DMRs or on the application for renewal, as appropriate, to EPA. The permittee must analyze water samples using sufficiently sensitive EPA-approved analytical methods.

B. Monitoring Locations

Discharges authorized by this permit must be monitored at each outfall identified in the permit. The facility is required to monitor for applicable parameters and pollutants after the last point in the treatment train prior to discharge into the receiving waters for compliance with the permit limitations.

C. Monitoring Frequencies

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. The permittee has the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit.

The monitoring frequency is established for flow at once per month, and for oil and grease, and pH at once per week in the first year for all outfalls (except for no pH or flow monitoring at Outfall 45). If there are no detections in an outfall in the first year, the monitoring frequency is reduced to once per month for oil and grease and for pH. This frequency for these discharges is to provide representative data on the monthly variability of each parameter. The permit requires flow to be reported by measurement or calculation at each outfall. The permittee may report the outfall design flow or measure flows collected by a meter. The permittee may also calculate flow particularly for those outfalls that operate intermittently, such as by multiplying pump rates and operating time.

The monitoring frequency for temperature is once per month during the first six months from the effective date of the permit. Continuous monitoring is required in some outfalls after the first six months from the effective date of the permit. The temperature monitoring frequency for cooling water effluent is every half hour using a continuous monitoring probe or once per month for discharges that are similar to other discharges with continuous monitoring. For example, a subset of cooling water discharges from the identical main units require continuous temperature monitoring, while the remaining discharges require a monthly grab sample for temperature. EPA has determined this to be an appropriate way for representative samples for temperature to be collected where the influent and operations are the same. Where waste streams are different, the permit requires continuous effluent temperature monitoring, and in some cases influent temperature monitoring as well. Continuous monitoring captures variability of water temperature.

The monitoring frequency for PCBs is twice a year for two consecutive years for outfalls that have the potential for a PCB discharge as determined by the permittee in the PCB Management Plan, described in Section II.D. of the draft permit. This sampling is intended to verify that the facility is not discharging PCBs above detectable levels.

D. Submission of Discharge Monitoring Reports

The draft permit requires that the permittee submit DMR data electronically using NetDMR. NetDMR is a national web-based tool that allows DMR data to be submitted electronically via a secure Internet application.

EPA currently conducts free training on the use of NetDMR. Further information about NetDMR, including upcoming trainings and contacts, is provided on the following website: https://netdmr.epa.gov. The permittee may use NetDMR after requesting and receiving permission from EPA Region 10.

Part III.B of the Permit requires that the Permittee submit a copy of the DMRs to Ecology and Colville Tribes. Currently, the permittee may submit a copy to Ecology and Colville Tribes by one of three ways: (1) a paper copy may be mailed, (2) the email address for Ecology and Colville Tribes may be added to the electronic submittal through NetDMR, or (3) the permittee may provide the Ecology and Colville Tribes viewing rights through NetDMR.

VI. Special Conditions

A. Quality Assurance Plan (QAP)

40 CFR 122.41(e) requires the permittee to develop a QAP to ensure that the monitoring data submitted are accurate and to explain data anomalies if they occur. The draft permit proposes that the facility complete and implement a QAP within 180 days of their authorization to discharge from EPA.

The permittee is required to follow specific sampling procedures [i.e., EPA approved quality assurance, quality control, and chain-of-custody procedures described in Requirements for Quality Assurance Project Plans (EPA/QA/R-5)]; and Guidance for Quality Assurance Project Plans (EPA/QA/G-5) throughout all sample collection and analysis activities to ensure that quality data are collected.

The QAP must consist of standard operating procedures that the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. It must be available on-site for inspection at the request of EPA.

40 CFR §122.41(e) requires the permittee to properly operate and maintain the facility, including "adequate laboratory controls and appropriate quality assurance procedures." In order to implement this requirement, the draft permits require that the permittee develop or update a QAP that ensures

that the monitoring data submitted to EPA is complete, accurate, and representative of the environmental or effluent conditions.

B. Best Management Practices (BMP) Plan and BMP Annual Reports

Pursuant to Section 402(a)(1) of the Clean Water Act, development and implementation of a BMP Plan may be included as a condition in NPDES permits. Section 402(a)(1) authorizes EPA to include miscellaneous requirements in permits on a case-by-case basis, which are deemed necessary to carry out the provisions of the Act. BMPs, in addition to effluent limitations, are required to control or abate the discharge of pollutants in accordance with 40 CFR 122.44(k). The BMP Plan requirement has also been incorporated into the permits in accordance with EPA BMP guidance (EPA, 1993).

The permit requires the development and implementation of a site-specific BMP Plan, which prevents or minimizes the generation and potential release of pollutants from the facility to the waters of the United States through BMPs. This includes, but is not limited to, oil accountability tracking; site-specific measures to prevent the escape of grease and heavy oils used for lubrication and hydraulics; identification of site-specific vulnerabilities, ways to address these vulnerabilities, and contingency planning for potential oil releases from these vulnerabilities; site-specific measures to reduce stormwater exposure to pollutants related to vehicle maintenance; and measures to reduce the need for lubricants for all facility equipment that come in contact with river water.

The BMP Plan shall identify potential sources of pollution which may reasonably be expected to affect the quality of discharges associated with day-to-day work activity at the facility from equipment and floor drain-related water, maintenance-related water (collectively referred to as the "internal facility drainage water"), and any other facility-related water. The BMP Plan shall describe and ensure the implementation of practices which are to be used to eliminate or reduce the pollutants in internal facility drainage water discharges and facility-related water associated with operations at the facility and to assure compliance with the terms and conditions of this permit. The BMP Plan shall incorporate elements of pollution prevention as set forth in the Pollution Prevention Act of 1990 (42 U.S.C. § 13101).

Chief Joseph Dam is also subject to the Oil Pollution Prevention Act and must develop a SPCC plan as described at 40 CFR Part 112. EPA and Ecology administer this through a separate regulation outside of NPDES. However, similar to the SPCC plan, the BMP Plan is intended to prevent oil spills from the facility. An SPCC plan requires a facility to list locations of oil containers, types of oil and storage capacity, preventive measures to ensure safe handling of oils, secondary containment of oil storage, methods of disposal, contacts at the National Response Center, and emergency measures that will be taken if an oil spill occurs. The BMP Plan reinforces and complements requirements from the SPCC plan. To the extent that requirements from the SPCC plan fulfill BMP Plan requirements, the BMP Plan may cite to portions of the SPCC plan where appropriate.

The permittee must develop a BMP Plan within 180 days from the effective date of the permit and certify to EPA, Colville Tribes, and Ecology in writing, that the BMP Plan has been developed and is being implemented. The certification must be signed in accordance with the Signatory Requirements in the permits. The permit also requires a BMP Annual Report. The purpose of the report is to evaluate the effectiveness of the implementation of BMPs, identify which BMPs have been effective, evaluate BMPs which have been ineffective, and use the information to inform adaptive management of the BMPs. The BMP Annual Report must describe any changes in the facility or in the operation of the facility which materially increases the potential for an increased discharge of pollutants. The BMP Annual Report must be submitted to EPA and Ecology by February 28 following the first calendar year of permit coverage, and annually thereafter. The BMP

Plan must be amended whenever there is a change in the facility or in the operation of the facility which materially increases the potential for an increased discharge of pollutants. The BMP Annual Report may serve as an addendum to update the BMP Plan.

C. Environmentally Acceptable Lubricants (EAL) Plan and EAL Annual Reports

Pursuant to Section 402(a)(1) of the Clean Water Act, development and implementation of an EAL Annual Report may be included as a condition in NPDES permits. Section 402(a)(1) authorizes EPA to include miscellaneous requirements in permits on a case-by-case basis, which are deemed necessary to carry out the provisions of the Act. EALs, in addition to effluent limitations, are required to control or abate the discharge of pollutants in accordance with 40 CFR 122.44(k).

The permit requires the use of EALs for all equipment with oil to water grease interfaces, unless technically infeasible. EPA's 2011 Environmentally Acceptable Lubricants report defines EALs as "lubricants that have been demonstrated to meet standards for biodegradability, toxicity, and bioaccumulation potential that minimize their likely adverse consequences in the aquatic environment, compared to conventional lubricants." The permit requires that EALs used in hydroelectric generating facilities are consistent with the definition of EALs in EPA's 2011 Environmentally Acceptable Lubricants report. The permit defines technically infeasible for EALs as follows: 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.

The permittee must also develop an EAL Annual Report, which will require an evaluation of equipment that are candidates for EAL use, whether EALs are technically feasible, and a timeline for which EALs will be implemented. It also requires the report to be updated annually. The USACE has completed a series of reports on the feasibility of EALs and prioritization of EALs. Several of these reports may fulfill a part of the permit requirements. Any of these reports may be used and if needed, supplemented, to fulfill the permit requirements.

Wicket gates, in-line equipment and lubricated wire ropes, all use lubricants which may come into contact with water. This may result in release of lubricants into water. Currently, oil and grease are the primary lubricants used for equipment. However, EALs are an alternative lubricant that are biodegradable and less harmful to aquatic life species. EALs prevent or minimize the generation and potential release of pollutants from the facility to the waters of the United States.

The USACE has completed several reports evaluating EALs, comparing cost and feasibility with oil and grease lubricants, or mineral oils. An August 2015 study conducted by the USACE by Medina found that while EALs may be more costly in the short-term compared to mineral oils, EALs may last longer and need to be applied less. In addition, some EALs may be more effective than conventional mineral oil-based lubricants. Therefore, EALs in the long-term may be more cost effective. However, there are still some cases where EALs or other equivalent alternatives may be technically infeasible or are unknown. The information from the EAL Annual Report will help to inform the next permit cycle on the feasibility of using EALs to address potential releases from oil and grease lubricants.

D. PCB Management Plan and PCB Annual Reports

Section 402(a)(2) of the Clean Water Act allows EPA to include requirements in permits on a case-by-case basis, which are deemed necessary to carry out the cited provisions of the CWA. 40 CFR 122.44(k) allows the permitting authority to include requirements to implement BMPs in NPDES permits to control or abate the discharge of pollutants whenever necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA. BMPs are important tools for waste minimization and pollution prevention.

There are a range of potential sources of PCBs at dams, including transformers, transformer oil, other equipment oil, bushings, paints and caulks. In accordance with 40 CFR 122.44(k) the permit requires BMPs to control or abate the discharge of PCBs from the facility through the development and implementation of a PCB Management Plan (PMP).

The permittee must develop a PMP during the first year of the five-year permit cycle. The purpose of the PMP is to:

- Identify potential sources of PCBs and potential pathways for PCB discharges.
- Document actions that have been and will be established to limit the likelihood of PCB discharges through removal, containment or other mechanisms.
- Identify outfalls associated with potential PCB discharges.

The USACE has completed a series of internal reports on PCBs and has internal systems for tracking the disposal of equipment with PCBs. Several of these reports may fulfill a part of the permit requirements. Information from any of these reports may be used and if needed, supplemented, to fulfill the permit requirements.

Following the development of the PMP, the permittee must conduct two consecutive years of characterization monitoring for outfalls associated with potential PCB discharges. The permit requires monitoring once in the winter and once in the summer during the two consecutive years of the permit cycle. Monitoring in the winter and in the summer is required because the weathering of PCBs can be a function of river temperature, so monitoring results from both of these temperature conditions provide a more comprehensive characterization of annual PCB discharges. Monitoring during warm and cool river conditions during two consecutive years should be sufficient to capture any PCB discharges.

The permit requires characterization monitoring using EPA Method 608.3 (https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100LVIY.txt) on the effluent for outfalls identified in the PMP as having potential PCB discharges. EPA Method 608.3 is appropriate for sampling dam discharge water because it is an EPA-approved method for PCBs and analyzes for PCB Aroclors. The range of potential sources of PCBs at dams are likely to exhibit Aroclor patterns if present in discharge water, in contrast to PCB congeners which may indicate background PCBs present in the Columbia River or sources of inadvertently produced PCBs within the dam. Since the PCB requirements in this permit are focused on sources of PCBs from the dams, sampling methods for Aroclors are more appropriate. The reporting limit for this method and matrix is expected to be 0.1 µg/L, which is sufficient to capture PCB discharges associated with PCB sources in the dam.

The permit requires a PCB Annual Report following the development of the PMP (years 2-5 of the permit cycle). For the two-year sampling window only, the annual report will include the results of the characterization monitoring conducted during these two years of the permit cycle, including sampling date, analysis method, analysis date and lab. In addition, the PCB Annual Report must report the progress on source identification investigations, BMP implementation, and current and future actions to adapt and refine BMP approaches during the five-year permit cycle.

E. CWIS Plan, Evaluation Report, and BTA Annual Certification

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 to meet certain thresholds.[1] 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 EPA never intended that the rule's substantive provisions would apply to them. Rather, pursuant to 40 CFR 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 (EPA, 2021). This provision provides that a cooling water intake structure not subject to substantive provisions under the existing facility rule (40 CFR 125.94-99) or another 316(b) requirements rule must meet requirements established on a case-by-case, BPJ basis. Consequently, in this permit, EPA is proposing to establish case-by-case, BPJ 316(b) conditions for Chief Joseph Dam.

To determine if BTA requirements are satisfied, EPA used the framework outlined in EPA's 2021 memo, "Transmittal of Framework for Best Professional Judgment for Cooling Water Intake Structure at Hydroelectric Facilities." The memo states that four factors can be considered "technologies" that could minimize adverse environmental impacts from the use of a CWIS at hydroelectric facilities. 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. As described in EPA's 2021 memo, 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.

Factors applicable to all hydroelectric facilities:

1) Efficiency of power generation
2) Cooling water withdrawn relative to waterbody volume or flow

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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).

3) Location of the intake structure
4) Technologies at the facility

For Chief Joseph Dam, EPA relied on factor 2, to meet the entrainment requirement, and factor 4to meet the impingement requirement in its BPJ evaluation for BTA. EPA's 2021 memo describes guidelines to evaluate these four factors.

For factor 2, the 2021 memo explains that in previous rulemakings, EPA stated that using a low percentage of the waterbody flow for cooling water could be a factor that addresses impacts due to entrainment. The cooling water withdrawn for cooling purposes at Chief Joseph Dam is a small fraction of the water passed through the dam for generating purposes. The minimum average Columbia River flow between 2011-2016 was 58.88 kcfs at Chief Joseph dam. When converted to kcfs, the design flow of all combined cooling water withdrawals, assuming cooling water is used at full capacity for the year, is 0.099 kcfs at Chief Joseph Dam. With these numbers, EPA found that Chief Joseph Dam utilizes 0.17% of Columbia River flows as cooling water. Using BPJ, EPA determined that this meets the requirement to minimize entrainment. This is the maximum percentage of waterbody flow used for cooling and is protective across all river conditions. The permit requires the facility to provide information on actual cooling water use relative to waterbody flows in the CWIS Evaluation Report.

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.

To meet the impingement requirement using factor 4, EPA considered the strainers and grates over the CWIS intake pipes at Chief Joseph Dam. The grates mounted over the CWIS intake pipes are approximately 12" in diameter with welded in bars that are spaced at 2". After entering the CWIS intake pipes, cooling water is then routed through a screen (strainer) with 1/8" openings to remove debris before the water is used as cooling water. Debris from the strainers is removed manually, which involves dewatering the penstock and draft tube. It is assumed that fish and other organisms rarely become impinged on these grates and screens, if ever, but there is no information to demonstrate this since the penstock and draft tubes are dewatered during cleaning and inspection. These grates and screens will continue to be checked and cleaned in accordance with the BMP Plan in Appendix B of the permit, but since the area is dewatered when this occurs, there is still some uncertainty about impingements during normal operations. The existing technology at the dam satisfies the factor 4 BTA requirement to reduce impingement, but further evaluation is required as discussed below.

To resolve uncertainty around any possible impingement and to better understand CWIS BTA at Chief Joseph Dam to inform the next permit cycle, the draft permit requires a CWIS Evaluation Report. By one (1) year from the effective date of the final permit, the permittee must provide EPA, Ecology and the Colville Tribes with a CWIS Evaluation Report. The CWIS Evaluation Report must include the locations of the cooling water intake structures, an evaluation of strainers and fish presence, information on current fish impingement and entrainment, and an evaluation of additional operations or technologies to minimize fish impingement and entrainment. The report must also provide information on actual cooling water use relative to waterbody flows.

In addition, the permit requires the permittee to submit a CWIS Annual Certification by February 28 after the first full calendar year of permit coverage and annually thereafter. This Annual Certification must verify that CWIS BTA has been properly operated and maintained, and document any changes to the facility. These conditions and annual certification requirements will help ensure that fish impingement mortality and entrainment at CWIS are minimized, and that CWIS are maintained and optimized throughout the permit cycle.

As described above, 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.

VII. Environmental Justice Considerations

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities." EPA strives to enhance the ability of overburdened communities to participate fully and meaningfully in the permitting process for EPA-issued permits, including NPDES permits. "Overburdened" communities can include minority, low-income, tribal, and indigenous populations or communities. For more information, please visit https://www.epa.gov/environmentaljustice
As a part of the permit development process, EPA Region 10 conducted screening analyses to determine whether the permit action could affect overburdened communities. EPA used a nationally consistent geospatial tool that contains demographic and environmental data for which enhanced outreach may be warranted. As part of the screening process, it was determined that Chief Joseph Dam is located near an overburdened community.

Chief Joseph Dam is located within or near a Census block group that is potentially overburdened based on the State Wastewater Discharge Indicator (87^{th} percentile) and the State EJ Index for Wastewater Discharge Indicator (96^{th} percentile).

Regardless of whether a facility is located near a potentially overburdened community, EPA encourages permittees to review (and to consider adopting, where appropriate) "Promising Practices for Permit Applicants Seeking EPA-Issued Permits: Ways to Engage Neighboring Communities" (see https://www.federalregister.gov/articles/2013/05/09/2013-10945/epa-activities-to-promote-environmental-justice-in-the- permit-application-process#p-104. Examples of promising practices include thinking ahead about community's characteristics and the effects of the permit on the community, engaging the right community leaders, providing progress or status reports, inviting members of the community for tours of the facility, providing informational materials translated into different languages, setting up a hotline for community members to voice concerns or request information, follow up, and other activities.

VIII. Other Legal Requirements

A. CWA § 401 Certification

Section 401 of the CWA, 33 USC §1341, requires EPA to seek a certification from a State or Tribe that the conditions of the permit are stringent enough to comply with water quality standards, including the State or Tribe's antidegradation policy, before issuing the final permit. Federal regulations at 40 CFR 124.53 allows for the State or Tribe to stipulate more stringent conditions in the permit, if the certification cites the CWA or state law upon which that condition is based. See also CWA Section 401(d). The regulations also require a certification to include statements of the extent to which each condition of the permit can be made less stringent without violating the requirements of state law. See 40 CFR 124.53(c).

Chief Joseph Dam discharges to Colville tribal waters as well as State waters. Therefore, EPA requested final CWA § 401 Certifications from Ecology and the Colville Tribes on January 13, 2022.

B. Endangered Species Act [16 USC § 1531 et al.]

Section 7 of the Endangered Species Act (ESA) requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. EPA is developing a Biological Evaluation (BE) to evaluate potential impacts to ESA species.

C. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH).

The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. EPA is in the process of working with the NOAA Fisheries on the EFH assessment. EPA has provided NOAA Fisheries with copies of the draft permit and fact sheet during the public notice period. Any comments received from NOAA Fisheries regarding EFH will be considered prior to issuance of this permit.

D. National Environmental Policy Act (NEPA) [42 USC § 4321 et.seq.]

Regulations at 40 CFR 122.49, list the federal laws that may apply to the issuance of permits i.e., ESA, National Historic Preservation Act, the Coastal Zone Act Reauthorization Amendments (CZARA), NEPA, and Executive Orders, among others. The NEPA compliance program requires analysis of information regarding potential impacts, development and analysis of options to avoid or minimize impacts; and development and analysis of measures to mitigate adverse impacts.

Since Chief Joseph Dam is not a new source (i.e., they do not have any EPA-promulgated ELGs or new source performance standards (NSPS) specific to their operation), EPA determined that no Environmental Assessments (EAs) or Environmental Impact Statements (EISs) are required under NEPA.

E. Historic Preservation Act

These permits will not authorize the construction of any water resources facility or the impoundment of any water body or have any effect on historical property.

F. Paperwork Reduction Act [44 USC § 3501 et seq.]

The information collection required by this permit has been approved by OMB under the provisions of the Paperwork Reduction Act, 44 U.S.C.3501 et seq., in submission made for the NPDES permit program and assigned OMB control numbers 2040-0086 (NPDES permit application) and 2040-0004 (discharge monitoring reports). Additionally, this proposed permit requires electronic reporting for discharge monitoring reports to reduce reporting time and paper mailing costs.

G. Standard Permit Provisions

Specific regulatory management requirements for NPDES permits are contained in 40 CFR 122.41. These conditions are included in the permits as standard regulatory language that must be included in all NPDES permits. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements.

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APPENDIX A

FACILITY LOCATION AND WASTESTREAM DIAGRAMS

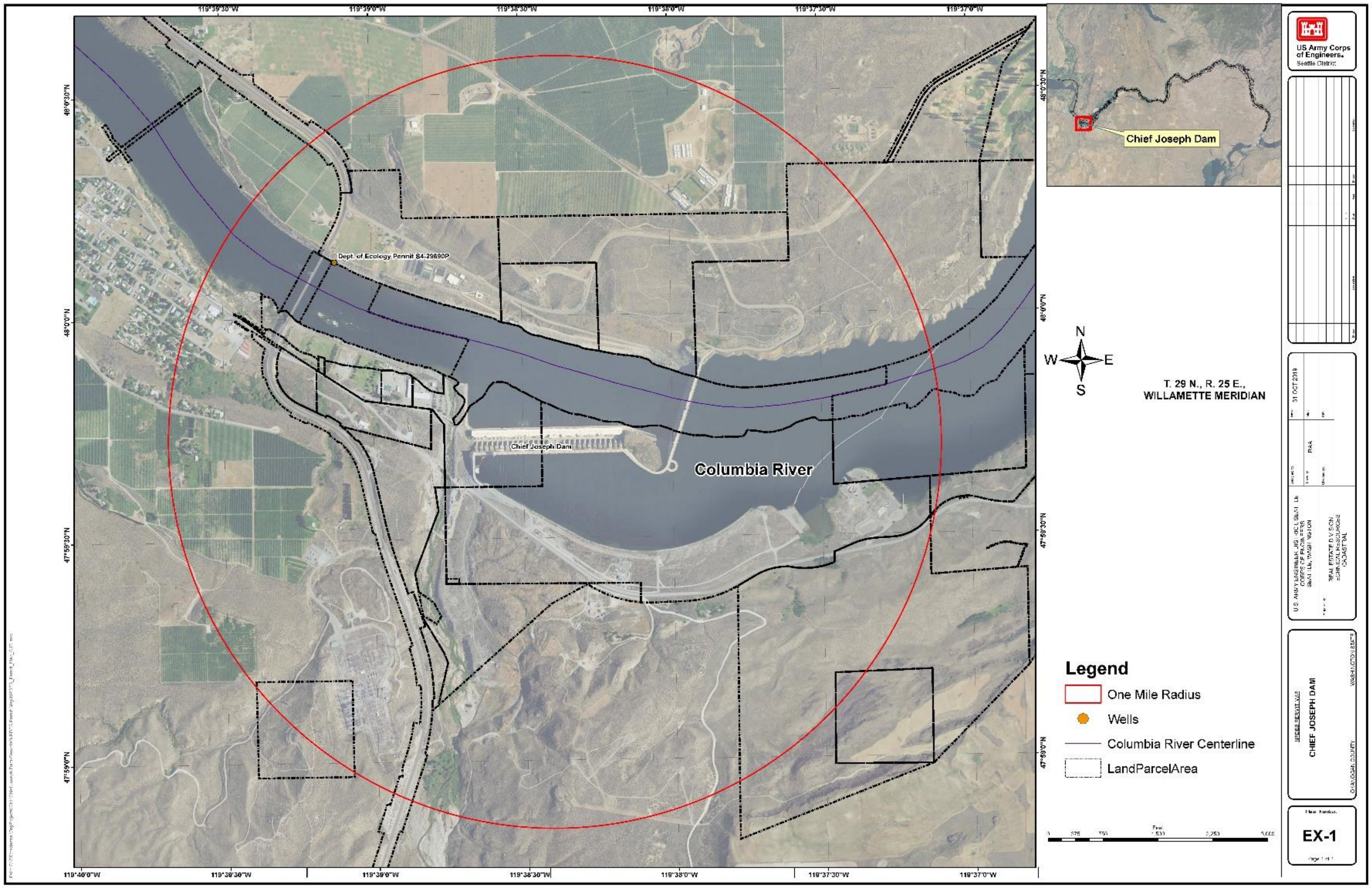

Figure 6. Aerial view of Chief Joseph Dam and surrounding area. Source: Chief Joseph Dam NPDES Permit Application (March 20, 2020)

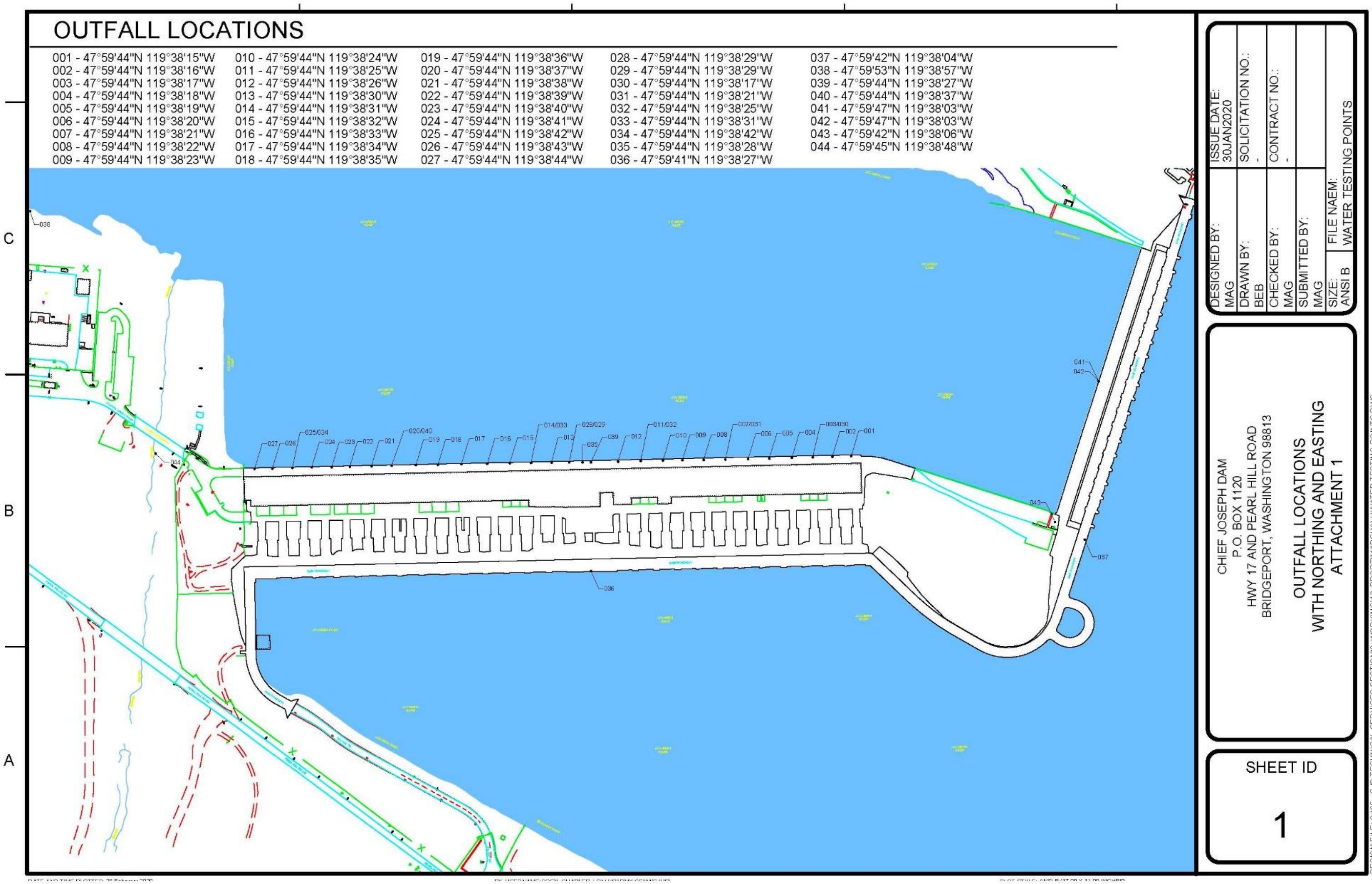

Figure 7. Diagram of Chief Joseph Dam outfall locations. Source: Chief Joseph Dam NPDES Permit Application (March 20, 2020)

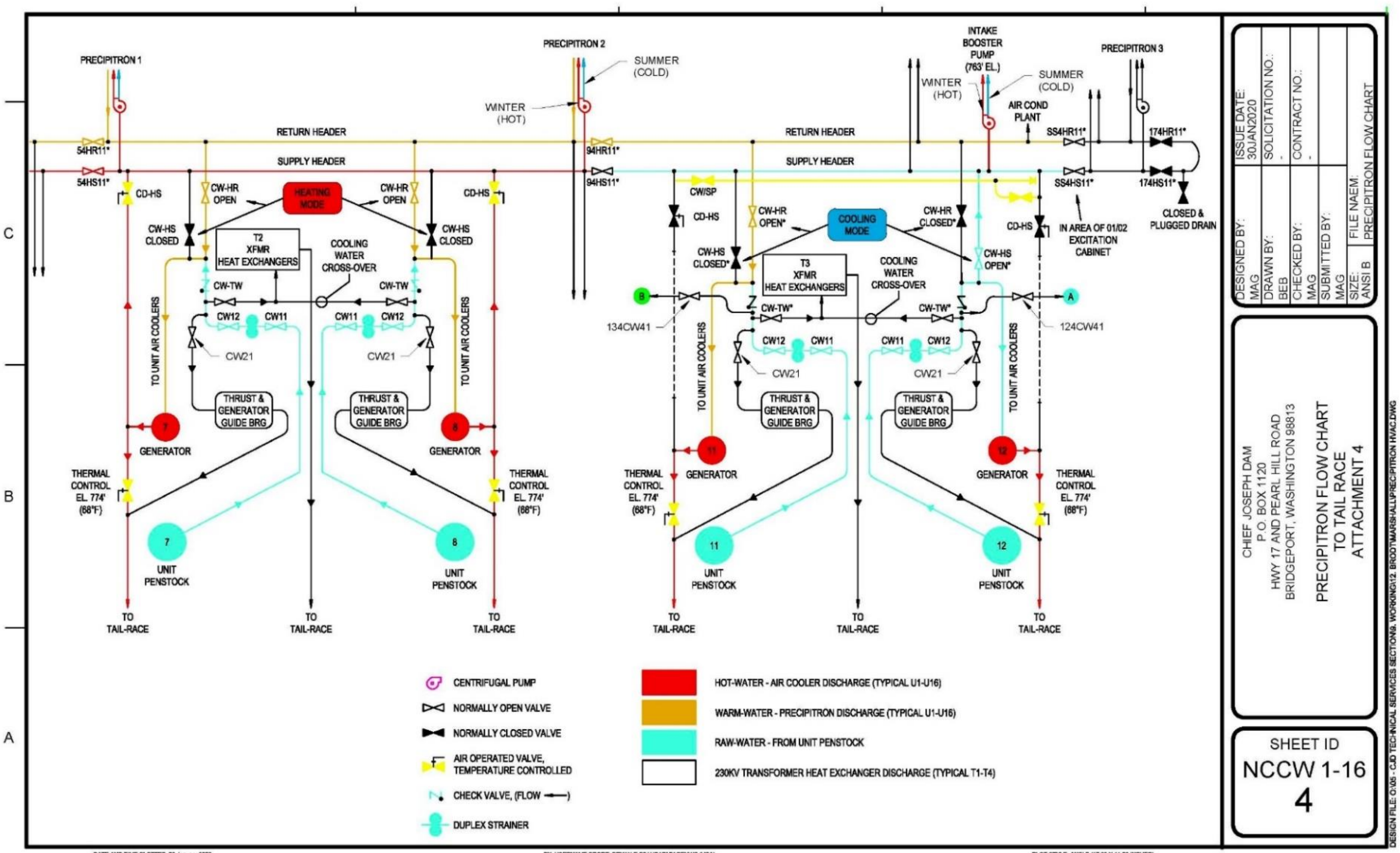

Figure 8. Flow chart for air conditioning precipitron heating mode and cooling mode. Source: Chief Joseph Dam NPDES Permit Application (March 20, 2020)

APPENDIX B.

Summary of Water Quality Data

Table 10. Influent Data from Chief Joseph Dam Permit Application – Collected September - December 2019. Source: Chief Joseph Dam NPDES Permit Application (March 20, 2020)

LOCATION	BOD5	TSS	OIL & GREASE	AMMONIA (as N)	pH	Temp C	COD	TOC
Forebay	ND	ND	ND	2.2	7.37	19.9	17	ND
Forebay					8.07	16.5		
Forebay					7.95	16.6		
Forebay					7.76	16.9		
Forebay	ND	ND	ND	ND	7.71	16.5	ND	1.6
Forebay					8.07	13.8		
Forebay					8.12	13.8		
Forebay	5.8	ND	ND	ND	7.97	13.7	ND	1.5
Forebay					7.42	12.9		
Forebay					8.14	12.7		
Forebay					8.19	13.2		
Forebay	ND	ND	5.3	ND	8.20	13.2	ND	2.7
Forebay	X	X	ND	X	8.08	7.8	X	X

Table 11. Chief Joseph Dam Permit Application Data. Source: Chief Joseph Dam NPDES Permit Application (March 20, 2020)

OUTFALL	OUTFALL DESCRIPTION	FLOW (GPM)	BOD5	TSS	OIL & GREASE	AMMONIA (as N)	PH - LOW	PH - HIGH	Temp C (winter)	Temp C (summer)	Temp C (other)	COD	TOC
1	Generator U1 Non-contact cooling water	1660	ND	ND	ND	ND	7.85	7.85	NA	20.9	NA	10.1	NA
2	Generator U2 Non-contact cooling water	1660	ND	ND	ND	ND	7.70	8.10	NA	NA	19.2	ND	1.2
3	Generator U3 Non-contact cooling water	1660	ND	ND	ND	ND/1.3	7.70	8.10	NA	22.3	20.8	22.7	1.2
4	Generator U4 Non-contact cooling water	1660	ND	ND	ND	ND	7.91	8.03	NA	NA	20.8	ND	1.1
5	Generator U5 Non-contact cooling water	1660	ND	ND	ND	ND/1.3	7.70	8.10	NA	22.3	20.8	22.7	1.2
6	Generator U6 Non-contact cooling water	1660	ND	ND	ND	ND/1.3	7.70	8.10	NA	22.3	20.8	22.7	1.2
7	Generator U7 Non-contact cooling water	1660	ND	ND	ND	ND/1.3	7.70	8.10	NA	22.3	20.8	22.7	1.2
8	Generator U8 Non-contact cooling water	1660	ND	ND	ND	ND/1.3	7.70	8.10	NA	22.3	20.8	22.7	1.2
9	Generator U9 Non-contact cooling water	1660	ND	ND	ND	ND/1.3	7.70	8.10	NA	22.3	20.8	22.7	1.2
10	Generator U10 Non-contact cooling water	1660	ND	ND	ND	ND/1.3	7.70	8.10	NA	22.3	20.8	22.7	1.2
11	Generator U11 Non-contact cooling water	1660	ND	ND	ND	1.3	7.79	7.79	NA	20.9	NA	12.2	ND
12	Generator U12 Non-contact cooling water	1660	ND	ND	ND	ND/1.3	7.70	8.10	NA	22.3	20.8	22.7	1.2
13	Generator U13 Non-contact cooling water	1660	ND	ND	ND	ND	7.78	7.78	NA	21.0	NA	ND	ND
14	Generator U14 Non-contact cooling water	1660	ND	ND	ND	ND/1.3	7.70	8.10	NA	22.3	20.8	22.7	1.2
15	Generator U15 Non-contact cooling water	1660	ND	ND	ND	ND	7.73	7.73	NA	22.3	NA	22.7	ND
16	Generator U16 Non-contact cooling water	1660	ND	ND	ND	ND/1.3	7.70	8.10	NA	22.3	20.8	22.7	1.2
17	Generator U17 Non-contact cooling water	1410	ND	ND	ND	ND	7.94	8.18	NA	NA	17.5	ND	2.2
18	Generator U18 Non-contact cooling water	1410	ND	ND	ND	ND	8.03	8.21	NA	NA	16.4	ND	1.3
19	Generator U19 Non-contact cooling water	1410	ND	ND	ND	ND	7.94	8.18	NA	NA	17.5	ND	2.2
20	Generator U20 Non-contact cooling water	1410	ND	ND	ND	ND	7.94	8.18	NA	NA	17.5	ND	2.2
21	Generator U21 Non-contact cooling water	1410	ND	ND	ND	ND	7.94	8.18	NA	NA	17.5	ND	2.2
22	Generator U22 Non-contact cooling water	1410	ND	ND	ND	ND	7.94	8.18	NA	NA	17.5	ND	2.2
23	Generator U23 Non-contact cooling water	1410	ND	ND	ND	ND	7.94	8.18	NA	NA	17.5	ND	2.2
24	Generator U24 Non-contact cooling water	1410	ND	ND	ND	ND	7.94	8.18	NA	NA	17.5	ND	2.2
25	Generator U25 Non-contact cooling water	1410	ND	ND	ND	ND	8.07	8.15	NA	NA	15.6	ND	1.2
26	Generator U26 Non-contact cooling water	1410	ND	ND	ND	ND	8.03	8.21	NA	NA	16.35	ND	1.31
27	Generator U27 Non-contact cooling water	1410	ND	ND	ND	ND	8.06	8.17	NA	NA	16.0	ND	1.5
28	Station Service Generator U28 Non-contact cooling water	200	ND	ND	ND	ND	7.36	7.36	NA	NA	19.6	ND	ND
29	Station Service Generator U29 Non-contact cooling water	200	ND	ND	ND	ND	7.36	7.36	NA	NA	19.6	ND	ND
30	Transformer Bank T1 Non-contact cooling water	300	5.8	ND	5.6/ND	ND	7.88	8.19	NA	NA	18.1	ND	1.3
31	Transformer Bank T2 Non-contact cooling water	300	5.1	ND	ND	ND	7.90	8.19	NA	NA	17.3	ND	1.3
32	Transformer Bank T3 Non-contact cooling water	300	5.8	ND	5.6/ND	ND	7.88	8.08	NA	NA	18.1	ND	1.3
33	Transformer Bank T4 Non-contact cooling water	300	5.8	ND	5.6/ND	ND	7.88	8.19	NA	NA	18.1	ND	1.3
34	Central Air Conditioning Room 4 CAC-4 Non-contact cooling water	520	5.4	ND	6.2	ND	7.88	7.96	NA	NA	14.3	ND	1.3
35	Central HVAC System Non-contact cooling water	135	ND	ND	ND	ND	7.68	7.95	NA	NA	30.4	ND	1.1
36	Intake Structure HVAC System Non-contact cooling water	335	ND	ND	ND	1.7	7.10	7.10	NA	19.4	NA	33	ND
37	Spillway Standby Generator Non-contact cooling water	40	ND	ND	ND	1.1	7.59	7.59	NA	37.6	NA	22	ND
38	Main Warehouse AC Non-contact cooling water	150	ND	ND	ND	ND	7.42	7.42	NA	18.5	NA	29	ND
39	Powerhouse and Intake Structure Drainage Sump Pump	4000	ND	ND	ND	ND	7.65	7.65	NA	NA	19	ND	ND
40	Unwatering Tunnel and Drainage Sump Pump	2000	ND	ND	ND	ND	7.53	7.53	NA	NA	18	ND	ND
41	Common Spillway Sump Pump – Upper Discharge Pipe	2400	5.2	ND	ND	ND	7.88	7.88	NA	NA	14.1	ND	ND
42	Common Spillway Sump Pump – Lower Discharge Pipe	2400	5.2	ND	ND	ND	7.88	7.88	NA	NA	14.1	ND	ND
45	Oil-Water Separator Stormwater	100	X	X	X	X	X	X	X	X	X	X	X
MIN			ND	ND	ND	ND	7.1	7.1	0	18.5	14.1	ND	ND
MAX			5.8	ND	6.2	1.7	8.07	8.2	0	37.6	30.4	33	2.2

Table 12. Chief Joseph Dam Overall Design Flow and Cooling Water Design Flow. Source: Chief Joseph Dam NPDES Permit Application (March 20, 2020)

TOTAL FACILITY DESIGN FLOW (GPM)	55,750
TOTAL FACILITY COOLING WATER DESIGN FLOW (OUTFALLS 1-38) (GPM)	44,850