Fact Sheet

The U.S. Environmental Protection Agency (EPA)
Proposes to Reissue a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA) to:

Department of Interior
Bureau of Reclamation
Wastewater Treatment Plant at Grand Coulee Dam
P.O. Box 620
Coulee Dam, Washington 99133

Public Comment Start Date: April 30, 2014
Public Comment Expiration Date: June 2, 2014

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(206) 553-0060
800-424-4372, ext. 0060 (within Alaska, Idaho, Oregon and Washington)
Shum.Kai@EPA.Gov

The EPA Proposes To Reissue NPDES Permit
The EPA proposes to Reissue the NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to waters of the United States. In order to ensure 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 location
- technical material supporting the conditions in the permit

401 Certification
The Confederated Tribes of the Colville Reservation (also known as CTCR) has not yet taken on Section 401 certification under the CWA. Therefore, EPA is responsible for issuing 401 certification in this case.

Tribal Coordination
In the course of reissuing this NPDES Permit, EPA has coordinated with the CTCR.

Public Comment
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 the EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, the EPA's regional Director for the Office of Water and Watersheds 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, the 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 NPDES permit and related documents can be reviewed or obtained by visiting or contacting the EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at "http://EPA.gov/r10earth/waterpermits.htm."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OWW-130
Seattle, Washington 98101
(206) 553-0523 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permits are also available at:

Inchelium Community Center
Center Loop No. 9
P.O. Box 202
Inchelium, WA 99138
Phone: (509) 722-7031; Fax: (509) 722-7034

Keller Community Center
11669 S. Highway 21
P.O. Box 278
Keller, WA 99140
Phone: (509) 634-2190; Fax: (509) 634-2401

CTCR Office of Environmental Trust
13 Methow Street, Colville Indian Agency
P.O. Box 150
Nespelem, WA 99155
Phone: (509) 634-2428; Fax: (509) 634-2427

Nespelem Resource Center (Library)
Arrow Lakes Avenue, Colville Indian Agency
P.O. Box 150
Nespelem, WA 99155
Phone: (509) 634-2791; Fax: (509) 634-2790

Nespelem Community Center
Omak Lake Road (River Road)
P.O. Box 150
Nespelem, WA 99155
Phone: (509) 634-2370; Fax: (509) 634-2375

Omak Community Center
601 S. Benton Street
P.O. Box 862
Omak, WA 98841
Phone: (509) 422-7415; Fax: (509) 422-7431

Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
30Q10	30 day, 10 year low flow
ACR	Acute-to-Chronic Ratio
AML	Average Monthly Limit
ASR	Alternative State Requirement
AWL	Average Weekly Limit
BA	Biological Assessment
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
BOD_{5u}	Biochemical oxygen demand, ultimate
BMP	Best Management Practices
BPT	Best Practicable
°C	Degrees Celsius
C BOD_5	Carbonaceous Biochemical Oxygen Demand
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COD	Chemical Oxygen Demand
CSO	Combined Sewer Overflow
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EA	Environmental Assessment
EFH	Essential Fish Habitat

EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FOTW	Federally Owned Treatment Works
FR	Federal Register
gpd	Gallons per day
HUC	Hydrologic Unit Code
IC	Inhibition Concentration
ICIS	Integrated Compliance Information System
I/I	Infiltration and Inflow
LA	Load Allocation
lbs/day	Pounds per day
LTA	Long Term Average
LTCP	Long Term Control Plan
mg/L	Milligrams per liter
ml	Milliliters
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
N	Nitrogen
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observable Effect Concentration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works

PSES	Pretreatment Standards for Existing Sources
PSNS	Pretreatment Standards for New Sources
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SIC	Standard Industrial Classification
SPCC	Spill Prevention and Control and Countermeasure
SS	Suspended Solids
SSO	Sanitary Sewer Overflow
s.u.	Standard Units
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRC	Total Residual Chlorine
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
WET	Whole Effluent Toxicity
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
Water Quality Standards	Water Quality Standards
WWTP	Wastewater treatment plant

I. Applicant

A. General Information

This fact sheet provides information on the draft NPDES permit for the following entity:

Department of Interior, Bureau of Reclamation
Grand Coulee Power Office
NPDES Permit # WA0024163

Physical Address:
Grand Coulee Dam
Highway 155 Industrial Area
Grand Coulee Dam, Washington, 99133

Mailing Address:
Grand Coulee Power Office
P.O. Box 620
Grand Coulee, WA 99133

Facility Contacts:
Kerry McCalman, Acting Grand Coulee Dam Power Manager, (509) 633-9501
Jeff DeWinkler, Environmental Specialist, (509) 633-9321

B. Permit History

The most recent NPDES permit for the wastewater treatment plant at Grand Coulee Dam was issued on June 12, 2006, became effective on July 1, 2006, and expired on June 30, 2011. An NPDES application for permit issuance was submitted by the permittee on December 10, 2010. The EPA determined that the application was timely and complete. Therefore, pursuant to 40 CFR 122.6., the permit has been administratively extended and remains fully effective and enforceable.

II. Facility Information

A. General Information

The Grand Coulee Dam (GCD) is a large concrete dam located on the Columbia River Gorge, 90 miles west of Spokane in Okanogan County, Washington State. The original construction of the GCD was from 1933 to 1942. The dam has a length of 5,223 feet, a structural height of 550 feet, and required approximately 12 million cubic yards of concrete to construct. The GCD is operated by the U.S. Bureau of Reclamation, an agency of the United States Department of Interior; the dam serves the purposes of generating hydroelectric power, for irrigation, and for flood control. The GCD is the largest hydropower producer in the United States, with net generating capacity of over 24.5 billion kilowatt-hours. Operations at GCD include three powerplants, a pump-generating plant, and three switchyards.

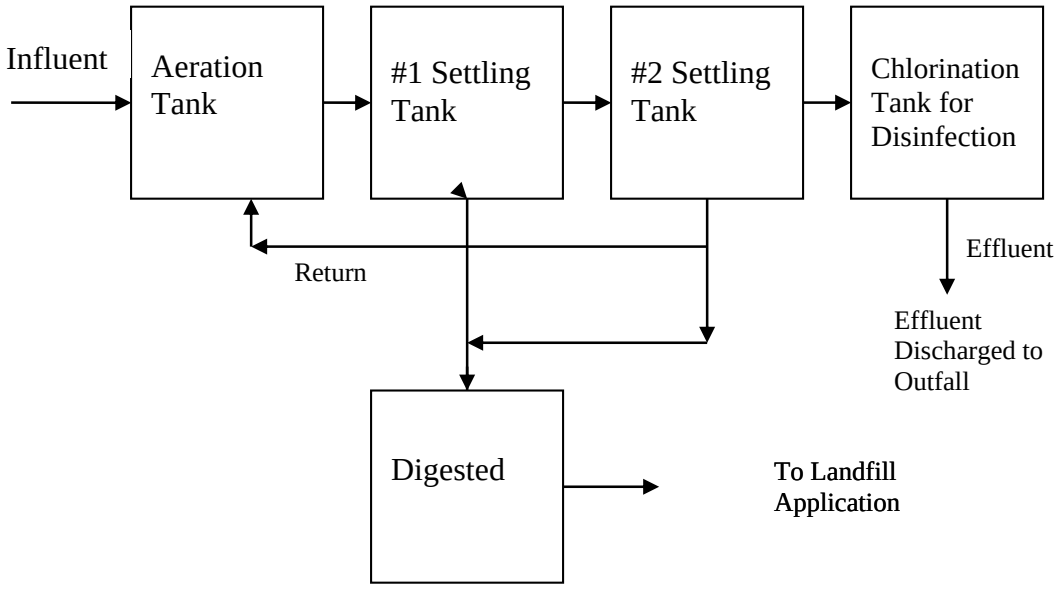
This Fact Sheet provides the basis for the conditions in the draft NPDES Permit for a small wastewater treatment plant (WWTP) that services a portion of the GCD (hereinafter referred to as the GCD WWTP or the WWTP). Sanitary sewage from the GCD complex flows to two separate sanitary sewer systems. On the west side of GCD, the sanitary wastes are discharged to a local Publicly Owned Treatment Works (POTW) at the Town of Coulee Dam. On the East side of GCD, sanitary wastes are treated in at the GCD WWTP that requires this NPDES Permit. The GCD WWTP services approximately 350 employees and visitors at and around the Right and Third Power Houses. Only sanitary wastewater is processed at the GCD WWTP; there is no industrial wastewater contribution.

B. Treatment Process

The GCD WWTP has a design flow rate of 0.018 million gallons per day (mgd). Based on its monthly Discharge Monitoring Reports, the highest monthly average discharge for the last 5 years (from May 2008 to April 2013) was 0.007 mgd; this is approximately 39% of the design flow rate of the WWTP. The WWTP has one outfall that discharges from the dam into the Columbia River.

The process of this WWTP is illustrated in Figure 1 below. The WWTP utilizes secondary treatment with activated sludge and chlorination for disinfection. The WWTP does not operate dechlorination.

Figure 1: Process Flow Diagram of WWTP at Grand Coulee Dam



Land application of treated waste water is conducted by a contractor at the volume and frequency of approximately 3000 gallons, once every two years. This land application is conducted by Short Septic Services, Inc., whose business address is: 3350 Williams Road East, Almira, WA 99103. The location of the land treatment is at a site located approximately 5.5 miles NE of the town of Almira, Washington.

C. Outfall Description

The outfall is located approximately 100 feet from shore, and depending on water level managed at the dam, the outfall is submerged between 40 to 70 feet below surface. The outfall does not have a diffuser.

D. Compliance History

Based on Discharge Monitoring Reports submitted, the WWTP reported the following summary of effluent testing information compared to the permitted effluent discharge limits:

Table 1: Highest Monthly Average Concentrations Reported on Discharge Monitoring Reports

Pollutant	Highest Monthly Average Discharge Concentrations (May 2008 to April 2013)	Permitted Limit
Biochemical Oxygen Demand, BOD-5	6.5 mg/l	30 mg/l
Fecal Coliform	67 per 100 ml (Geometric Mean)	200 per 100 ml
Enterococci Bacteria	200 per 100 ml	none
Total Suspended Solids, TSS	8.7 mg/l	30 mg/l
pH	6.5 to 7.4 (Minimum and Maximum values)	6.5 to 8.5
Total Residual Chlorine	0.5 mg/l	0.5 mg/l

There have been no operational changes at the WWTP since the last permit that was issued in 2006.

Based on a review of monthly Discharge Monitoring Reports submitted by the WWTP during the last permit cycle, the WWTP has remained in compliance with permitted limits during the vast majority of the time.

E. Environmental Justice

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 is striving 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 that potentially experience disproportionate environmental harms and risks. As part of an agency-wide effort, EPA Region 10 will consider prioritizing enhanced public involvement opportunities for EPA-issued permits that may involve activities with significant public health or environmental impacts on already overburdened communities. For more information, please visit http://www.epa.gov/compliance/ej/plan-ej/.

As part of the permit development process, EPA Region 10 conducted an "EJSCREEN" to determine whether a permit action could affect overburdened communities. EJSCREEN is a nationally consistent geospatial tool that contains demographic and environmental data for the United States at the census block group level. As a pre-decisional tool, EJSCREEN is used to highlight permit candidates for additional review where enhanced outreach may be warranted.

The EPA also 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#h-13). 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, etc.

EPA's EJSCREEN tool identified the Colville Indian Nation as a potentially overburdened community because the WWTP discharges within the boundaries of the Colville Indian Reservation. During the screening process, EPA considered specific case-by-case circumstances, and EPA concluded that there is no indication that the reissuance of this permit would trigger significant environmental justice concerns. Separate from the environmental justice screening effort, EPA also conducted tribal coordination with the Confederated Tribes of the Colville Reservation (referred to in this document as "CTCR") for the reissuance of this permit.

III. Receiving Water

The GCD WWTP discharges from one outfall through one port from the Grand Coulee Dam into the Columbia River, on the North side, and near the East end of the dam. The point of discharge is within the water boundary of the Colville Indian Reservation. The CTCR has designated this segment of the Columbia River as a Class I surface water body.

A. Low Flow Conditions

The low flow conditions of a water body are used to assess the need for and develop water quality based effluent limits (see Appendix B of this fact sheet for additional information on

flows). The EPA used ambient flow data collected at the Columbia River and the EPA's DFLOW 3.1b model to calculate the low flow conditions.

The *Technical Support Document for Water Quality-Based Toxics Control* (hereafter referred to as the TSD) (EPA, 1991) and the State of Washington Water Quality Standards (WQS) recommend the flow conditions for use in calculating water quality-based effluent limits (WQBELs) using steady-state modeling. The TSD and the Washington State WQS state that WQBELs intended to protect aquatic life uses should be based on the lowest seven-day average flow rate expected to occur once every ten years (7Q10) for chronic criteria and the lowest one-day average flow rate expected to occur once every ten years (1Q10) for acute criteria. The flow data in Table 2 below is generated from the USGS data from 1982 to 2012, and analyzed by EPA's DFLOW program.

Table 2: Calculated Low Flow Values			
Units	**1Q10**	**7Q10**	**30B3**
USGS data in cfs	**24,100**	**42,200**	**51,900**
In mgd	**15,548**	**27,226**	**33,484**

B. Receiving Water Quality

The EPA reviews receiving water quality data when assessing the need for and developing water quality based effluent limits. In granting assimilative capacity of the receiving water, the EPA must account for the amount of the pollutant already present in the receiving water. In situations where some of the pollutant is actually present in the upstream waters, an assumption of "zero background" concentration overestimates the available assimilative capacity of the receiving water and could result in limits that are not protective of applicable water quality standards.

In this case, EPA evaluated reasonable potential for violating water quality standards for ammonia and chlorine.

Table 3 summarizes the receiving water data used to evaluate the need for and developing water quality based effluent limits.

Table 3: Receiving Water Quality Data				
Parameter	**Units**	**Percentile**	**Value**	**Source**
Temperature (Daily Average value) (10/1/2007 - 9/30/2012)	°C	100th (Max.)	19.48	USBR
pH (6/17/2009 - 10/10/2012)	S.U.	100th (Max.)	8.61	USBR
Ammonia (10/2/2006 – 9/26/2011)	Mg/l	100th (Max.)	0.039	Ecology
Note: USBR – U.S. Bureau of Reclamation data from Grand Coulee Dam. Ecology – Washington State Department of Ecology data from Coulee Dam Bridge station, located approximately 0.5 miles below Grand Coulee Dam. Ambient concentration of chlorine is assumed to be zero since there are no known sources of substantial chlorine upstream from the Grand Coulee Dam.				

C. Water Quality Standards

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards by July 1, 1977. Federal regulations at 40 CFR 122.4(d) require that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States. A State'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 (such as drinking water supply, contact recreation, and aquatic life) that each water body is expected to achieve. The numeric and/or 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.

In 40 CFR Part 131.35, EPA promulgated federal water quality standards for the Colville Tribes that were derived, in part, from standards that had been adopted by the CTCR. Water quality standards have been enacted into tribal law by the CTCR Business Council, as the Colville Water Quality Standards Act, CTC Title 33 (Resolution No. 1984-526 (August 6, 1984) as amended by Resolution No. 1985-20 (January 18, 1985).

The purpose of these Federal water quality standards is to prescribe minimum water quality requirements for the surface waters located with the exterior boundaries of the Colville Indian Reservation to ensure compliance with section 303(c) of the CWA. The Colville Tribes have a primary interest in the protection, control, conservation and utilization of the water resources of its reservation. In 40 CFR Part 131.35(b), the territory to be covered by the provisions of these water quality standards is for application to all surface waters within the exterior boundaries of the Colville Indian Reservation. 40 CFR Part 131.35(c)(1) states that: "*The water quality standards in this section shall be used by the Regional Administrator for establishing any water quality based National Pollutant Discharge Elimination System Permit (NPDES) for point sources on the Colville Confederated Tribes Reservation.*"

On February 12, 2014, EPA began coordinating with the CTCR prior to public noticing the draft permit. EPA and the CTCR believe that the point of discharge at the outfall is located within reservation water boundaries. The CTCR has indicated to EPA that the point of discharge is located within a surface water that is designated as a Class I surface water body.

D. Water Quality Limited Segment

Total Dissolved Gas (TDG) is the only parameter listed under Section 303(d) of the CWA by the State of Washington for the segment of the Columbia River due to TDG levels exceeding state water quality standards. The State of Washington Department of Ecology's document entitled, "Total Maximum Daily Load for Total Dissolved Gas in the Mid-Columbia River and Lake Roosevelt", dated June 2004 (2004 TMDL), listed the Grand Coulee Dam itself as a source of excessive TDG. The discharge from this WWTP does not cause any TDG impact on the receiving water, and no additional measures are in the draft permit to address TDG.

Antidegradation

With the exception of the elimination of the flow limit which is no longer necessary for this wastewater treatment plant, all proposed effluent limits are as stringent as the requirements from the previous permit. Accordingly, EPA the draft permit meets the intent of EPA's antidegradation policy.

IV. Effluent Limitations

A. Basis for Effluent Limitations

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based 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. The basis for the effluent limits proposed in the draft permit is provided in Appendix B.

B. Proposed Effluent Limitations

Below are the proposed effluent limits that are in the draft permit.

1. Removal Requirements for BOD_5 and TSS: The monthly average effluent concentration must not exceed 15 percent of the monthly average influent concentration. Percent removal of BOD_5 and TSS must be reported on the Discharge Monitoring Reports (DMRs). For each parameter, the monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month. Influent and effluent samples must be taken over approximately the same time period.

2. pH: pH shall be within the range of 6.5 to 8.5. This range is based on criteria for Class I surface water designation, at 40 CFR 131.35.

Table 4 (below) presents the proposed average monthly, average weekly, and maximum daily effluent limits.

Table 4: Proposed Effluent Limits

Parameter	Units	Effluent Limits		
		Average Monthly Limit	Average Weekly Limit	Instantaneous Maximum Limit
Five-Day Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	---
	lb/day	4.5	6.8	---
	% removal	85% (min)	—	---
Total Suspended Solids (TSS)	mg/L	30	45	---
	lb/day	4.5	6.8	---
	% removal	85% (min)	—	---
Fecal Coliform[1]	#/100 ml	50	---	100
Enterococci Bacteria[2]	#/100 ml	8	---	35
Total Residual Chlorine	mg/L	0.5	0.75	---
	lb/day	0.08	0.11	---

Table 4: Proposed Effluent Limits				
Parameter	**Units**	**Effluent Limits**		
		Average Monthly Limit	**Average Weekly Limit**	**Instantaneous Maximum Limit**
1. For Fecal Coliform bacteria, the limits are calculated as the geometric mean of the collected samples approximately equally spaced over a thirty day period. 2. For Enterococci bacteria, the average monthly limit is calculated as the geometric mean of the collected samples approximately equally spaced over a thirty day period. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation.				

The draft permit contains changes the following parameters compared with the previous permit:

Flow Limit: The flow limit is removed in the draft permit. The previous flow limit of 0.018 mgd (Average Monthly Limit) was based on the design flow. This limit is unnecessary since: 1) the draft permit includes limits to meet secondary treatment and water quality standards, and the facility has been in compliance with those limits; 2) the facility operates well below the design flow, and 3) the permit includes mass-based limits to insure there is no dilution of the effluent.

Fecal Coliform bacteria: These limitations are revised from the previous NPDES Permit based on current Washington WQS, and tribally adopted WQS.

Enterococci bacteria: These limitations are new permit limits based on federally promulgated water quality standards.

V. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 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 permit also requires the permittee to perform effluent monitoring required by the NPDES Form 2A application, so that these data will be available when the permittee applies for a renewal of its NPDES permit.

The permittee is responsible for conducting the monitoring and for reporting results on DMRs or on the application for renewal, as appropriate, to the EPA.

B. Effluent Monitoring

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. Permittees have 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 the EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit.

Table 5, below, presents the proposed effluent monitoring requirements for this wastewater treatment plant. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 5: Effluent Monitoring Requirements

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Flow	Mgd	Effluent	Continuous	meter
BOD_5	mg/L	Influent & Effluent	2/month	24-hour composite
	lb/day	Influent & Effluent	2/month	calculation[1]
	% Removal	--	1/month	calculation[2]
TSS	mg/L	Influent & Effluent	2/month	24-hour composite
	lb/day	Influent & Effluent	2/month	calculation[1]
	% Removal	--	1/month	calculation[2]
pH	standard units	Effluent	5/week	Grab
Enterococci Bacteria	#/100 ml	Effluent	1/week	calculation[3]
Fecal Coliform	#/100 ml	Effluent	1/week	calculation[3]
Total Residual Chlorine (if chlorine is used for disinfection)	µg/L	Effluent	1/week	Grab
	lb/day	Effluent		calculation[1]
Ammonia as N	mg/l	Effluent	1/quarter	24-hour composite
	lbs/day	Effluent		calculation[1]

Notes:
1. Loading is calculated by multiplying the concentration in mg/L by the flow in mgd and a conversion factor of 8.34.
2. The monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month, i.e.:. monthly average percent removal = (average monthly influent – average monthly effluent) ÷ average monthly influent.
3. Influent and effluent samples must be taken over approximately the same time period.

Monitoring Changes from the Previous Permit

Monitoring frequencies and parameters for monitoring have been unchanged, relative to the previous permit.

C. Surface Water Monitoring

Surface Water monitoring is not required due to the high dilution rates of the computation of the effluent discharged compared to the flow from the Grand Coulee Dam and the availability of water quality data from other sources. The design flow of the WWTP is 0.018 mgd, and when compared to the huge discharge volumes from the dam, dilution factors are high as shown in Table D-1; for example, the Acute Dilution Factor is 215,945. Based on this information that the dilution rate is very high, EPA does not expect that surface water will be impacted by the small volume of effluent from this WWTP. Therefore, EPA will not require surface water.

D. Electronic Submission of Discharge Monitoring Reports

The draft permit includes new provisions to require the permittee to 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. NetDMR allows participants to discontinue mailing in paper forms under 40 CFR § 122.41 and § 403.12. The permittee may use NetDMR after requesting and receiving permission from the EPA Region 10.

Under NetDMR, all reports required under the permit are submitted to the EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it is no longer required to submit paper copies of DMRs or other reports to the EPA. After the permittee begins submissions using NetDMR, paper submissions of DMRs and other reports to CTCR must continue for the duration of the permit.

The EPA encourages permittees to sign up for NetDMR, and currently conducts free training on the use of NetDMR. Further information about NetDMR, including upcoming trainings and contacts, is provided on the following website: http://www.EPA.gov/netdmr.

The draft permit requires that the permittee submit DMR data electronically using NetDMR within six months of the effective date of the permit. NetDMR is a national web-based tool that allows DMR data to be submitted electronically via a secure Internet application. NetDMR allows participants to discontinue mailing in paper forms under 40 CFR 122.41 and 403.12. Under NetDMR, all reports required under the permit are submitted to EPA as an electronic attachment to the DMR. Once a permittee begins submitting reports using NetDMR, it is no longer required to submit paper copies of DMRs or other reports to EPA.

The 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: http://www.epa.gov/netdmr. The permittee may use NetDMR after requesting and receiving permission from EPA Region 10.

VI. Sludge (Biosolids) Requirements

The EPA Region 10 separates wastewater and sludge permitting. The EPA has authority under the CWA to issue separate sludge-only permits for the purposes of regulating biosolids. The EPA may issue a sludge-only permit to each facility at a later date, as appropriate.

Until future issuance of a sludge-only permit, sludge management and disposal activities at each facility continue to be subject to the national sewage sludge standards at 40 CFR Part 503 and any requirements of the State's biosolids program. The Part 503 regulations are self-implementing, which means that facilities must comply with them whether or not a permit has been issued.

VII. Other Permit Conditions

A. Quality Assurance Plan

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The Bureau of Reclamation is required to update the Quality Assurance Plan for the wastewater treatment plant at Grand Coulee Dam within 90 days of the effective date of the

final permit. The Quality Assurance Plan must include standard operating procedures the permittee will follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan must be retained on site and be made available to the EPA and the CTCR upon request.

B. Operation and Maintenance Plan

The permit requires the Bureau of Reclamation to properly operate and maintain all facilities and systems of treatment and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements, and all other permit requirements at all times. The permittee is required to develop and implement an operation and maintenance plan for their facility within 90 of the effective date of the final permit. The plan must be retained on site and made available to the EPA and the CTCR upon request.

C. Sanitary Sewer Overflows and Proper Operation and Maintenance of the Collection System

Untreated or partially treated discharges from separate sanitary sewer systems are referred to as sanitary sewer overflows (SSOs). SSOs may present serious risks of human exposure when released to certain areas, such as streets, private property, basements, and receiving waters used for drinking water, fishing and shellfishing, or contact recreation. Untreated sewage contains pathogens and other pollutants, which are toxic. SSOs are not authorized under this permit. Pursuant to the NPDES regulations, discharges from separate sanitary sewer systems authorized by NPDES permits must meet effluent limitations that are based upon secondary treatment. Further, discharges must meet any more stringent effluent limitations that are established to meet the EPA-approved state water quality standards.

The permit contains language to address SSO reporting and public notice and operation and maintenance of the collection system. The permit requires that the permittee identify SSO occurrences and their causes. In addition, the permit establishes reporting, record keeping and third party notification of SSOs. Finally, the permit requires proper operation and maintenance of the collection system. The following specific permit conditions apply:

Immediate Reporting – The permittee is required to notify the EPA of an SSO within 24 hours of the time the permittee becomes aware of the overflow. (See 40 CFR 122.41(l)(6))

Written Reports – The permittee is required to provide the EPA a written report within five days of the time it became aware of any overflow that is subject to the immediate reporting provision. (See 40 CFR 122.41(l)(6)(i)).

Third Party Notice – The permit requires that the permittee establish a process to notify specified third parties of SSOs that may endanger health due to a likelihood of human exposure; or unanticipated bypass and upset that exceeds any effluent limitation in the permit or that may endanger health due to a likelihood of human exposure. The permittee is required to develop, in consultation with appropriate authorities at the local, county, tribal and/or state level, a plan that describes how, under various overflow (and unanticipated bypass and upset) scenarios, the public, as well as other entities, would be notified of overflows that may endanger health. The plan should identify all overflows that would be reported and to whom, and the specific information that would be reported. The plan should include a description of lines of communication and the identities of responsible officials. (See 40 CFR 122.41(l)(6)).

Record Keeping – The permittee is required to keep records of SSOs. The permittee must retain the reports submitted to the EPA and other appropriate reports that could include work orders associated with investigation of system problems related to a SSO, that describes the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the SSO. (See 40 CFR 122.41(j)).

Proper Operation and Maintenance – The permit requires proper operation and maintenance of the collection system. (See 40 CFR 122.41(d) and (e)). SSOs may be indicative of improper operation and maintenance of the collection system. The permittee may consider the development and implementation of a capacity, management, operation and maintenance (CMOM) program.

The permittee may refer to the Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (EPA 305-B-05-002). This guide identifies some of the criteria used by the EPA inspectors to evaluate a collection system's management, operation and maintenance program activities. Owners/operators can review their own systems against the checklist (Chapter 3) to reduce the occurrence of sewer overflows and improve or maintain compliance.

D. Design Criteria

The permit includes design criteria requirements. This provision requires the permittee to compare influent flow and loading to the facility's design flow and loading and prepare a facility plan for maintaining compliance with NPDES permit effluent limits when the annual average flow or loading exceeds 85% of the design criteria values for three consecutive months.

E. Standard Permit Provisions

Sections III, IV and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because these requirements are based directly on NPDES regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

VIII. Other Legal Requirements

A. Endangered Species Act

The Endangered Species Act 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.

NOAA Fisheries prepared a species document entitled, " Status of ESA Listings & Critical Habitat Designations for West Coast Salmon & Steelhead", (updated 10-31-12). EPA reviewed the above document, and two NOAA's Federal Register notices to determine if there would be any potential impacts to species. The two Federal Register notices reviewed were:

Federal Register Notice (Vol. 74, No. 162/ Monday, August 24, 2009) entitled, "Listing Endangered and Threatened Species: Change in Status for Upper Columbia River Steelhead Distinct Population Segment"; and,

Federal Register notice (Vol. 73, No. 200/ Wednesday, October 15, 2008), entitled, "Fisheries off West Coast States; West Coast Salmon Fisheries; Amendment 14; Essential Fish Habitat Descriptions for Pacific Salmon".

These three NOAA documents indicate that there are no NOAA listed species at the discharge since there is an impassible Man-made Barrier downstream at Chief Joseph Dam.

EPA also reviewed USFWS species list for Okanogan County entitled, "Listed and Proposed Endangered and Threatened Species and Critical Habitat; Candidate Species; and Species of Concern in Okanogan County" (Revised April 24, 2013). The following species were listed:

Bull trout (*Salvelinus confluentus*)

Canada Lynx (*Lynx Canadensis*)

Gray Wolf (*Canis lupus*)

Grizzly bear (*Ursus arctos horribilis*)

Northern spotted owl (*Strix occidentalis caurina*)

Except for Bull Trout, all the above species listed by NOAA are terrestrial species which cannot be affected by the discharge from the WWTP. In addition, the Bull Trout would also not be affected by the discharge due to extremely large dilution conditions.

Therefore, after reviewing information from NOAA Fisheries and the USFWS, the conclusion is that the issuance of this permit will have NO EFFECT to any threatened or endangered species in the vicinity of the discharge.

B. Essential Fish Habitat

Essential fish habitat (EFH) includes 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 (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. As discussed below, NO EFFECT is expected from the proposed discharge.

When Grand Coulee Dam was constructed, no fish passage facilities were provided so it blocked anadromous fish access to all spawning areas upstream. Anadromous fish passage has since been blocked about 50 miles downstream at Chief Joseph Dam.

The USFWS identified the following species as having Critical Habitat in Okanogan County in a document entitled, "Listed and Proposed Endangered and Threatened Species and Critical Habitat; Candidate Species; and Species of Concern in Okanogan County" (Revised April 24, 2013):

Bull Trout (*Salvelinus confluentus*)

Canada Lynx (*Lynx Canadensis*)

Spotted Owl (*Strix occidentalis caurina*)

There are no known adverse effects from the proposed discharge to the above species since the Canada Lynx and the Spotted Owl are terrestrial species, and the Bull Trout would not be impacted due to the huge dilution from the Columbia River. Therefore, there is NO EFFECT to Essential Fish Habitat from the discharge.

C. State Certification

The state in which the discharge originates is typically responsible for issuing the certification pursuant to CWA Section 401(a)(1). In the case where the state has no authority to give 401 certification, such as for a discharge located within the boundaries of an Indian Reservation, EPA provides the certification. The point of discharge of the outfall is also located within boundaries of the Colville Indian Reservation. Indian Tribes may issue 401 certification for discharges within their boundaries if the Tribe has been approved by the EPA pursuant to CWA Section 518(e) and 40 CFR Section 131.8 to administer a water quality standards program. The Colville Tribes has not yet taken on § 401 certification; therefore, EPA is responsible for issuing 401 certification in this case. However, in the course of issuing this NPDES Permit, EPA has coordinated with the Colville Tribes.

D. Permit Expiration

The permit will expire five years from the effective date.

IX. References

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control.* US Environmental Protection Agency, Office of Water, EPA/505/2-90-001.

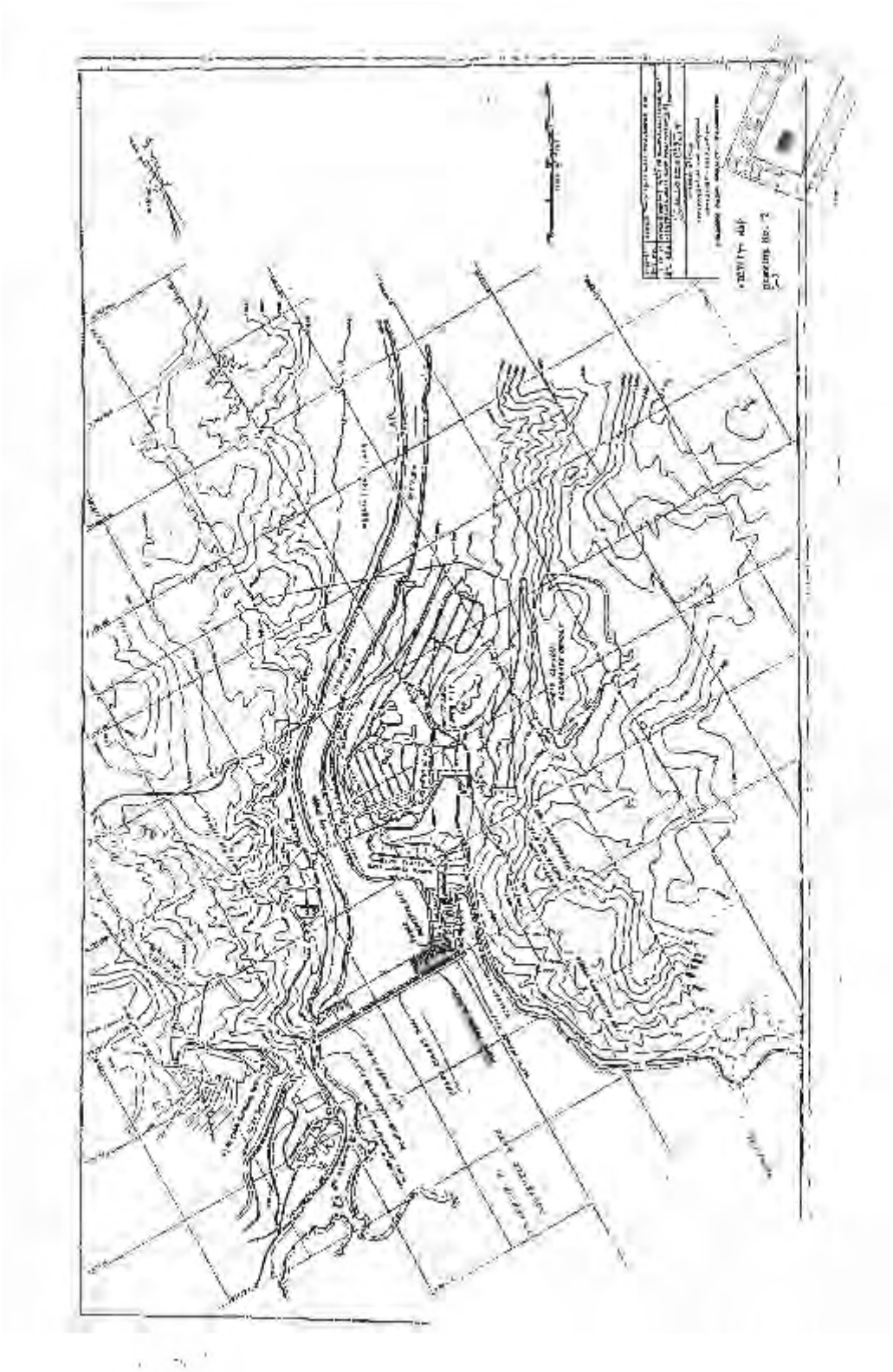
Water Pollution Control Federation. Subcommittee on Chlorination of Wastewater. *Chlorination of Wastewater.* Water Pollution Control Federation. Washington, D.C. 1976.

EPA. 2010. *NPDES Permit Writers' Manual.* Environmental Protection Agency, Office of Wastewater Management, EPA-833-K-10-001.

Appendix A: Facility Information

General Information	
NPDES ID Number:	WA0024163
Physical Address:	Highway 155 Industrial Area Grand Coulee Dam, WA 99133
Mailing Address:	Grand Coulee Power Office P.O. Box 620 Grand Coulee, WA 99133
Facility Background:	Waste Water Treatment Plant located on the East end of the Grand Coulee Dam
Facility Information	
Type of Facility:	Wastewater Treatment Plant for Sanitary Wastes
Treatment Train:	Secondary Treatment; activated sludge
Flow:	Designed flow rate: 0.018 mgd
Outfall Location:	latitude 47° 57' 37.5" N; longitude 118E 58' 23.1" W
Receiving Water Information	
Receiving Water:	Down-Stream on the North side of the Grand Coulee Dam on the Columbia River
Watershed:	Columbia River Watershed
Beneficial Uses:	Various, including: commercial, transportation and recreational uses.

Appendix B: Facility Map



Appendix C: Basis for Effluent Limits

The following discussion explains in more detail the statutory and regulatory basis for the technology and water quality-based effluent limits in the draft permit. Part A discusses Water Quality Criteria Summary; Part B discusses technology-based effluent limits, Part C discusses water quality-based effluent limits in general, Part D discusses facility specific water quality-based effluent limits, and Part E discusses anti-degradation.

Federally Owned Treatment Works

The Grand Coulee Dam WWTP is owned and operated by the U.S. Bureau of Reclamation, which indicates that the facility is a Federally Owned Treatment Works (FOTW). Because there are no established Effluent Limitation Guidelines for FOTWs, and the similarity in operation of this FOTW to a Publicly Owned Treatment Works (POTW), EPA used Best Professional Judgement (BPJ) in applying Federal Secondary Treatment Standards and applicable Water Quality Standards at this facility as would be applied for a POTW at the same location.

A. Water Quality Criteria Summary

EPA considered the Federal Secondary Treatment Standards, the federally promulgated water quality standards found in 40 CFR §131.35, the Washington Water Quality Standards found in WAC 173-201A (amended May 9, 2011), and the Colville Water Quality Standards to protect designated beneficial uses.

For reference, pertaining to Colville Water Quality Standards ("Chapter 4-8 Water Quality Standards" of the CTCR Code), for Class I water, the CTCR Code 4-8-6(a) states the following:

(a) Class I (Extraordinary):

(1) General characteristics: Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses.

(2) Characteristic uses: Characteristic uses may included, but not be limited to, the following:
(A) Water supply (domestic, industrial, and agricultural).
(B) Stock watering.
(C) Fish and shellfish: Salmonid migration, rearing, spawning, and harvesting; other fish migration, rearing, spawning, and harvesting.
(D) Ceremonial and religious water use.
(E) Recreation (primary contact recreation, sport fishing, boating and aesthetic enjoyment).
(F) Commerce and navigation.

(3) Water quality criteria:
(A) Fecal coliform organisms - freshwater: Fecal coliform organisms shall not exceed a geometric mean value of 50 organisms/100 mL, with not more than ten (10%) percent of samples exceeding 100 organisms/100 mL.
(B) Fecal coliform organisms - saline water: Fecal coliform organisms shall not exceed a geometric mean value of 14 organisms/100mL, with not more than ten (10%) percent of samples exceeding 43 organisms/100mL.
(C) Dissolved oxygen - freshwater: Dissolved oxygen shall exceed 9.5 mg/L.

(D) Dissolved oxygen - saline water: Dissolved oxygen shall exceed 7.0 mg/L. When natural conditions, such as upwelling, occur, causing the dissolved oxygen to be depressed near or below 7.0 mg/L, natural dissolved oxygen levels can be degraded by up to 0.2 mg/L by man-caused activities.
(E) Total dissolved gas shall not exceed one hundred-ten (110%) percent of saturation at any point of sample collection.
(F) Temperature shall not exceed 16.0ºC (freshwater) and 13.0ºC (saline water) due to human activities. Temperature increases shall not, at any time, exceed t=23/(T+5) (freshwater) or t=8/(T-4) (saline water).

(i) When natural conditions exceed 16.0ºC (freshwater) and 13.0ºC (saline water), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3ºC.

(ii) For purposes hereof, "t" represents the permissive temperature change across the dilution zone; and "T" represents the highest existing temperature in this water classification outside of any dilution zone.

(iii) Provided that temperature increase resulting from non-point source activities shall not exceed 2.8ºC, and the maximum water temperature shall not exceed 16.3ºC (freshwater).

(G) pH shall be within the range of 6.5 to 8.5 (freshwater) or 7.0 to 8.5 (saline water) with a man-caused variation within a range of less than 0.5 units.
(H) Turbidity shall not exceed 5 NTU over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
(I) Toxic, radioactive, or deleterious material concentrations - shall be below those of public health significance, or which may cause acute or chronic toxic conditions to the aquatic biota, or which may adversely affect any water use.
(J) Aesthetic values shall not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste.

B. Technology-Based Effluent Limits

Federal Secondary Treatment Effluent Limits

The CWA requires POTWs to meet requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as "secondary treatment," which all POTWs were required to meet by July 1, 1977. EPA has developed and promulgated "secondary treatment" effluent limitations, which are found in 40 CFR 133.102. These technology-based effluent limits apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD_5, TSS, and pH. The federally promulgated secondary treatment effluent limits are listed in Table C-1.

Table C-1: Secondary Treatment Effluent Limits
(40 CFR 133.102)

Parameter	Average Monthly Limit	Average Weekly Limit	Range
BOD_5	30 mg/L	45 mg/L	---
TSS	30 mg/L	45 mg/L	---

Removal Rates for BOD_5 and TSS	85% (minimum)	---	---
pH	---	---	6.0 – 9.0 s.u.

Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34

Since the design flow for this facility is 0.018 mgd, the technology based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit = 30 mg/L × 0.018 mgd[1] × 8.34 = 4.5 lbs/day

Average Weekly Limit = 45 mg/L × 0.018 mgd[1] × 8.34 = 6.8 lbs/day

Chlorine

Chlorine is often used to disinfect municipal wastewater prior to discharge. The Grand Coulee uses chlorine disinfection. A 0.5 mg/L average monthly limit for chlorine is derived from standard operating practices. The Water Pollution Control Federation's *Chlorination of Wastewater* (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after 15 minutes of contact time. Therefore, a wastewater treatment plant that provides adequate chlorine contact time can meet a 0.5 mg/L total residual chlorine limit on a monthly average basis. In addition to average monthly limits (AMLs), NPDES regulations require effluent limits for POTWs to be expressed as average weekly limits (AWLs) unless impracticable. For technology-based effluent limits, the AWL is calculated to be 1.5 times the AML, consistent with the "secondary treatment" limits for BOD_5 and TSS. This results in an AWL for chlorine of 0.75 mg/L.

Since the federal regulations at 40 CFR 122.45 (b) and (f) require limitations for POTWs to be expressed as mass based limits using the design flow of the facility, mass based limits for chlorine are calculated as follows:

Chlorine Average Monthly Limit = 0.5 mg/l x 0.018 mgd[1] x 8.34 = 0.08 lbs/day

Chlorine Average Weekly Limit = 0.75 mg/l x 0.018 mgd[1] x 8.34 = 0.11 lbs/day

C. Water Quality-based Effluent Limits

Fecal Coliform Bacteria

Fecal Coliform effluent limits were in the previous permit. During the previous permit cycle in June 2009, the highest geometric mean of the Average Monthly value was 67/100 ml, and highest geometric mean of the Average Weekly value was 337/100 ml. These values exceeded the allowable permitted limits in the previous permit (Monthly Average of 200/100 ml, and Average Weekly Limit of 400/100ml).

The applicable criteria for fecal coliform bacteria may be found in Washington's WQS (adopted May 9, 2011) at WAC 173-201A-200, Table 200(2)(b) for Extraordinary Primary Contact

Recreation, and CTCR's tribally adopted WQS for Class I, Extraordinary Waters (CTCR Code 4-8-6(a)(3)(A)). No mixing zone is proposed for fecal coliform, therefore the effluent limits are revised in the draft permit as follows. :

Average Monthly Limit = 50 organisms/100 ml (expressed as a Geometric Mean); and,

Instantaneous Maximum Limit = 100 organisms/100 ml

Enterococci Bacteria

The receiving water has been designated by the CTCR as a Class I surface water body. Pertaining to 40 CFR 131.35(f)(1)(ii)(A) for a Class I surface water body, the regulation states: "The geometric mean of the enterococci bacteria densities in samples taken over a 30 day period shall not exceed 8/100 ml, nor shall any single sample exceed an enterococci density of 35 per 100 milliliters. These limits are calculated as the geometric mean of the collected samples approximately equally spaced over a thirty day period." In 2 out of 9 samples taken from July 2006 to June 2013, the WWTP discharged enterococci bacteria that exceeded the above standard of 35 per 100 milliliters. In both instances, during May 2008 and May 2009, the enterococci bacteria count was 200 per 100 milliliters. No mixing zone is proposed for bacteria, therefore the following effluent limits for enterococci bacteria are necessary to meet water quality standards described in 40 CFR 131.35(f)(1)(ii)(A):

Average Monthly Limit = 8 organisms/100 ml; and

Instantaneous Maximum Limit = 35 organisms/100 ml.

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Discharges to State or Tribal waters must also comply with limitations imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. Federal regulations at 40 CFR 122.4(d) prohibits the issuance of an NPDES permit that does not ensure compliance with the water quality standards of all affected States.

The NPDES regulation (40 CFR 122.44(d)(1)) implementing Section 301(b)(1)(C) of the CWA 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, and that the level of water quality to be achieved by limits on point sources is derived from and complies with all applicable water quality standards.

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 wasteload allocation.

Reasonable Potential Analysis

When evaluating the effluent to determine if the pollutant parameters in the effluent 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/Tribal water quality criterion, the EPA projects the receiving water

concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern. The EPA uses the concentration of the pollutant in the effluent and receiving water and, if appropriate, the dilution available from the receiving water, to project the receiving water concentration. If the projected concentration of the pollutant in the receiving water exceeds the numeric criterion for that specific pollutant, then the discharge has the reasonable potential to cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it may be appropriate to allow a small area of the receiving water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loadings of the pollutant to the water body and will decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and the concentration of the pollutant in the receiving water is less than the criterion necessary to protect the designated uses of the water body. Mixing zones must be authorized by the State.

The reasonable potential analysis for ammonia and chlorine for the draft permit is based on a mixing zone of 25% consistent with Washington State regulations.

Procedure for Deriving Water Quality-based Effluent Limits

The first step in developing a water quality-based effluent limit is to develop a wasteload allocation (WLA) for the pollutant. A wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water.

In cases where a mixing zone is not authorized, either because the receiving water already exceeds the criterion, the receiving water flow is too low to provide dilution, or the State does not authorize one, the criterion becomes the WLA. Establishing the criterion as the wasteload allocation ensures that the permittee will not cause or contribute to an exceedance of the criterion. The following discussion details the specific water quality-based effluent limits in the draft permit.

Once a WLA is developed, EPA calculates effluent limits which are protective of the WLA using statistical procedures described in Appendix F.

D. Facility-Specific Water Quality-based Limits

pH

Water quality standards found in 40 CFR 131.35(f)(1)(ii)(E) for a Class I surface water body states that “pH shall be within the range of 6.5 and 8.5 with a human caused variation of less than 0.2 units”. The pH of the effluent during the last 5 years has been in the range of 6.5 to 7.4, therefore no mixing is necessary to meet the pH criteria. EPA proposes to maintain the effluent limitation for pH at between 6.5 and 8.5.

Ammonia

Based on the site specific high dilution factor the reasonable potential calculation showed that the Bureau of Reclamation WWTP discharge would not have the reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia. Therefore, the draft permit does not contain a water quality-based effluent limit for ammonia. However, EPA proposes to

retain ammonia monitoring so that ammonia concentrations can be re-evaluated during the next permit cycle. See Appendix D for reasonable potential calculations for ammonia.

Aesthetic values

In accordance with Colville WQS found at CTCR Code 4-8-6(a)(3)(J):

"*Aesthetic values shall not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste*".

The proposed draft permit at Part I.B.3. therefore requires the following:

The permittee must not discharge any floating solids, visible foam in other than trace amounts, or oily wastes that produce a sheen on the surface of the receiving water. In addition, the permittee's discharge must not offend the senses of sight, smell, touch or taste of the receiving water.

Anti-backsliding Provisions

Section 402(o) of the CWA 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. Section 402(o)(1) of the CWA states that a permit may not be reissued with less-stringent limits established based on Sections 301(b)(1)(C), 303(d) or 303(e) (i.e. water quality-based limits or limits established in accordance with State treatment standards) except in compliance with Section 303(d)(4). Section 402(o)(1) also prohibits backsliding on technology-based effluent limits established using best professional judgment (i.e. based on Section 402(a)(1)(B)), but in this case, the effluent limits being revised are water quality-based effluent limits (WQBELs).

Section 303(d)(4) of the CWA states that, for water bodies where the water quality meets or exceeds the level necessary to support the water body's designated uses, WQBELs may be revised as long as the revision is consistent with the State's antidegradation policy. Additionally, Section 402(o)(2) contains exceptions to the general prohibition on backsliding in 402(o)(1). According to the EPA NPDES Permit Writers' Manual (EPA-833-K-10-001) the 402(o)(2) exceptions are applicable to WQBELs (except for 402(o)(2)(B)(ii) and 402(o)(2)(D)) and are independent of the requirements of 303(d)(4). Therefore, WQBELs may be relaxed as long as either the 402(o)(2) exceptions or the requirements of 303(d)(4) are satisfied.

Even if the requirements of Sections 303(d)(4) or 402(o)(2) are satisfied, Section 402(o)(3) prohibits backsliding which would result in violations of water quality standards or effluent limit guidelines.

An anti-backsliding analysis was done for this proposed permit and is found to be in compliance with anti-backsliding regulations. Specifically,

- All parameters with effluent limits in the previous permit are included in proposed in the draft permit. (Except for flow limits which are no longer necessary because flow volume is accounted for in proposed loading limits).
- All concentration limitations in the proposed draft permit are as stringent as the previous permit.

E. Antidegradation

The proposed issuance of an NPDES permit triggers the need to ensure that the conditions in the permit ensure that the State's antidegradation policy is met. The proposed draft permit meets the State's antidegradation policy, and the antidegradation policy found at 40 CFR 131.35(e)(2), because all limitations in the proposed draft permit are as stringent as the previous permit; and in addition, all use-designations of the receiving water body are retained and unaffected by the issuance of this proposed permit.

F. Facility Specific Limits

Table C-2 summarizes the numeric effluent limits that are in the proposed permit. The final limits are the more stringent of technology treatment requirements, water quality based limits or limits retained as the result of anti-backsliding analysis or to meet the State's anti-degradation policy.

Table C-2: Proposed Effluent Limits

Parameter	Units	Effluent Limits			Basis for Effluent Limits
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	
Five-Day Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	---	Federal Secondary Treatment Standards
	lb/day	4.5	6.8	---	
BOD_5 Removal	Percent	85 minimum	---	---	
Total Suspended Solids (TSS)	mg/L	30	45	---	Federal Secondary Treatment Standards
	lb/day	4.5	6.8	---	
TSS Removal	Percent	85 minimum	---	---	
Fecal Coliform	#/100 ml	50 (geometric mean)	---	100 (Instantaneous Max)	WA State and Colville WQS
Enterococci Bacteria	#/100 ml	8	---	35 (Instantaneous Max)	Federally promulgated standards
Total Residual Chlorine	mg/L	0.5	0.75	---	Water Pollution Control Federation
	lb/day	0.08	0.11	---	
pH	S.U.	6.5 to 8.5			Federally promulgated standards

Appendix D: Reasonable Potential Calculations

The following describes the process EPA has used to determine if the discharge authorized in the draft permit has the reasonable potential to cause or contribute to a violation of federally approved water quality standards. EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) 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 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. This section discusses how the maximum projected receiving water concentration is determined.

A. Mixing Zones and Dilution

In some cases a dilution allowance or mixing zone is permitted. A mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient water body. A mixing zone is an allocated impact zone where the water quality standards may be exceeded as long as acutely toxic conditions are prevented (the EPA, 1994). The federal regulations at 40 CFR 131.13 states that "States may, at their discretion, include in their State standards, policies generally affecting their application and implementation, such as mixing zones, low flows and variances."

To protect downstream use designations, EPA applied Washington's Mixing Zone Policy. The Washington Water Quality Standards at WAC 173-201-400 provides Washington's mixing zone policy for point source discharges. Washington's policy could authorize a mixing zone for a point source. Washington's regulation at WAC 173-201-400(7) states:

"(7) The maximum size of a mixing zone shall comply with the following:
(a) In rivers and streams, mixing zones, singularly or in combination with other mixing zones, shall comply with the most restrictive combination of the following (this size limitation may be applied to estuaries having flow characteristics that resemble rivers):
(i) Not extend in a downstream direction for a distance from the discharge port(s) greater than three hundred feet plus the depth of water over the discharge port(s), or extend upstream for a distance of over one hundred feet;
(ii) Not utilize greater than twenty-five percent of the flow; and
(iii) Not occupy greater than twenty-five percent of the width of the water body."

Consistent with Washington's Mixing Zone Policy, at WAC 173-201-400(7)(a)(iii), EPA calculated the Reasonable Potential to exceed Water Quality Standards based on 25% of critical low-flow volumes for ammonia and chlorine.

The following formula is used to calculate a dilution factor based on the allowed mixing zone.

$$D = \frac{\mathrm{Q_e} + \mathrm{Q_u} \times \%\mathrm{MZ}}{\mathrm{Q_e}}$$

Where:

D = Dilution Factor
Q_e = Effluent flow rate (set equal to the design flow of the WWTP)
Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10, 30B3, etc)
%MZ = Percent Mixing Zone

B. Low Flow Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits. In general, water quality standards require the criteria be evaluated at the following low flow receiving water conditions as defined below:

Table D-1: Low Flow Conditions	
Acute aquatic life	1Q10 or 1B3
Chronic aquatic life	7Q10 or 4B3
Ammonia	30B3 or 30Q10
1. The 1Q10 represents the lowest one day flow with an average recurrence frequency of once in 10 years. 2. The 1B3 is biologically based and indicates an allowable exceedence of once every 3 years. 3. The 7Q10 represents lowest average 7 consecutive day flow with an average recurrence frequency of once in 10 years. Note: The river flow downstream of the Columbia River is controlled by the operation of the Grand Coulee Dam.	

The EPA determined critical low flows downstream of the discharge from the following USGS Station:

The estimated low flows for the station are presented below:

Table D-2: Critical Flows at the Columbia River at Grand Coulee Dam			
Units	**1Q10**	**7Q10**	**30B3**
USGS data in cfs	**24,100**	**42,200**	**51,900**
In mgd	**15,548**	**27,226**	**33,484**
Note: USGS data from 1982 to 2012, and analyzed by EPA's DFLOW program.			

C. Mass Balance

For discharges to flowing water bodies, the maximum projected receiving water concentration is determined using the following mass balance equation:

$$C_dQ_d = C_eQ_e + C_uQ_u \qquad \text{(Equation D-1)}$$

where,

C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)
C_e = Maximum projected effluent concentration
C_u = 95th percentile measured receiving water upstream concentration
Q_d = Receiving water flow rate downstream of the effluent discharge = $Q_e + Q_u$

Q_e = Effluent flow rate (set equal to the design flow of the WWTP)
Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10 or 30B3)

When the mass balance equation is solved for C_d, it becomes:

$$C_d = \frac{C_eQ_e + C_uQ_u}{Q_e + Q_u} \qquad \text{(Equation D-2)}$$

The above form of the equation is based on the assumption that the discharge is rapidly and completely mixed with the receiving stream. If the mixing zone is based on less than complete mixing with the receiving water, the equation becomes:

$$C_d = \frac{C_eQ_e + C_u(Q_u \times MZ)}{Q_e + (Q_u \times MZ)} \qquad \text{(Equation D-3)}$$

Where MZ is the fraction of the receiving water flow available for dilution. In this case, the mixing zone is based on complete mixing of the effluent and the receiving water, and MZ is equal to unity (1). Therefore, in this case, Equation D-3 is equal to Equation D-2.

If a mixing zone is not allowed, dilution is not considered when projecting the receiving water concentration and,

$$C_d = C_e \qquad \text{(Equation D-4)}$$

Equation D-2 can be simplified by introducing a "dilution factor,"

$$D = \frac{Q_e + Q_u}{Q_e} \qquad \text{(Equation D-5A)}$$

Assuming 25% flow in mixing zone, which yields a more conservative dilution factor:

$$D = \frac{Q_e + (0.25)Q_u}{Q_e} \qquad \text{(Equation D-5B)}$$

For the dilution factor D, the 1Q10 flow rate in the receiving stream and used to determine reasonable potential and wasteload allocations for acute aquatic life criteria; the 7Q10 flow rate to determine reasonable potential and wasteload allocations chronic aquatic life criteria (except for ammonia) and conventional pollutants, and the 30B3 flow rate to determine reasonable potential and wasteload allocations for the chronic ammonia criterion. All dilution factors are calculated with the effluent flow rate set equal to the design flow of 0.018 mgd. This results in a total of three different dilution factors under consideration for 25% flow. The dilution factors are listed in Table D-3, below.

Table D-3: Dilution Factors

	Acute Dilution Factor	Chronic Dilution Factor	Chronic Ammonia Criterion Dilution Factor
25% flow	**215,945 : 1**	**378,140 : 1**	**465,0567: 1**

After the dilution factor simplification, Equation D-2 becomes:

$$C_d = \frac{C_e - C_u}{D} + C_u \qquad \text{(Equation D-6)}$$

If the criterion is expressed as dissolved metal, the effluent concentrations are measured in total recoverable metal and must be converted to dissolved metal as shown in Equation D-7.

$$C_d = \left[\frac{CF \times C_e - C_u}{D} \right] + C_u \qquad \text{(Equation D-7)}$$

Where C_e is expressed as total recoverable metal, C_u and C_d are expressed as dissolved metal, and CF is a conversion factor used to convert between dissolved and total recoverable metal.

Equations D-6 and D-7 are the forms of the mass balance equation which were used to determine reasonable potential and calculate wasteload allocations.

Based on these equations above, EPA conducted Reasonable Potential analysis for chlorine and ammonia using site-specific data. The Reasonable Potential analyses are shown in the tables below, and show that there is no reasonable potential for both ammonia and chlorine.

Due to extremely high dilution rates and the comparatively small amount of effluent, EPA is proposing to use the technology based effluent limits for BOD_5 and TSS.

Procedure for Deriving Water Quality-based Effluent Limits

The following is a discussion on the procedure for deriving Water Quality-based effluent limits. However, due to the fact that it has been determined that there is no reasonable potential to exceed Water Quality Standards, and there are no applicable TMDLs applicable to the proposed permit, the information below is only for informational purposes.

The first step in developing a water quality-based effluent limit is to develop a wasteload allocation (WLA) for the pollutant. A wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. Wasteload allocations are determined in one of the following ways:

1. TMDL-Based Wasteload Allocation

   Where the receiving water quality does not meet water quality standards, the wasteload allocation is generally based on a TMDL developed by the State. A TMDL is a determination of the amount of a pollutant from point, non-point, and natural background sources that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risk violating water quality standards.

   To ensure that these waters will come into compliance with water quality standards Section 303(d) of the CWA requires States to develop TMDLs for those water bodies that will not meet water quality standards even after the imposition of technology-based effluent limitations. The first step in establishing a TMDL is to determine the assimilative capacity (the loading of pollutant that a water body can assimilate without exceeding water quality standards). The next step is to divide the assimilative capacity into allocations for non-point sources (load allocations), point sources (wasteload

allocations), natural background loadings, and a margin of safety to account for any uncertainties. Permit limitations are then developed for point sources that are consistent with the wasteload allocation for the point source.

Reference any TMDLs with WLAs here

2. Mixing zone based WLA

When the State authorizes a mixing zone for the discharge, the WLA is calculated by using a simple mass balance equation. The equation takes into account the available dilution provided by the mixing zone, and the background concentrations of the pollutant.

3. Criterion as the Wasteload Allocation

In some cases a mixing zone cannot be authorized, either because the receiving water is already at, or exceeds, the criterion, the receiving water flow is too low to provide dilution, or the facility can achieve the effluent limit without a mixing zone. In such cases, the criterion becomes the wasteload allocation. Establishing the criterion as the wasteload allocation ensures that the effluent discharge will not contribute to an exceedance of the criteria.

Once the wasteload allocation has been developed, the EPA applies the statistical permit limit derivation approach described in Chapter 5 of the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991, hereafter referred to as the TSD) to obtain monthly average, and weekly average or daily maximum permit limits. This approach takes into account effluent variability, sampling frequency, and water quality standards.

Summary - Water Quality-based Effluent Limits

The water quality based effluent limits in the draft permit are summarized below.

Ammonia

EPA calculated the acute and chronic ammonia criteria (Table D-4), and the reasonable potential for ammonia to exceed water quality standards. Based on the method discussed in this Fact Sheet, and site specific data, there is no potential for this WWTP to exceed the water quality standards as shown in Table D-5.

Table D-4: Calculation of Ammonia Criteria

Freshwater Un-ionized Ammonia Criteria Calculation	
Based on Chapter 173-201A WAC, amended November 20, 2006	
1. Receiving Water Temperature (deg C):	19.48
2. Receiving Water pH:	8.61
3. Is salmonid habitat an existing or designated use?	Yes
4. Are non-salmonid early life stages present or absent?	Present
Output: Using mixed temp and pH at mixing zone boundaries? No	
Ratio	13.500
FT	1.400
FPH	1.000

pKa	9.419
Unionized Fraction	0.134
Unionized ammonia NH3 criteria (mg/L as NH_3)	
Acute:	0.284
Chronic:	0.042
Total ammonia nitrogen criteria (mg/L as N):	
Acute:	1.738
Chronic:	0.259
Notes: 1. Ambient temperature value based on USBR ambient data (Daily Average water temperature) from 10/1/2007 to 9/30/2012. The maximum value for this data set is 19.48 C. 2. Ambient pH value based on USBR ambient data from 5/19/2008 to 10/10/2012. The maximum value for the data set is 8.61 s.u.	

Chlorine

EPA calculated the reasonable potential for chlorine to exceed water quality standards. Based on the method discussed in this Fact Sheet, and Washington's established acute and chronic water quality standard for this parameter with site specific monitoring data, it has been determined in Table D-5 that there is no potential for this WWTP to exceed the water quality standards for chlorine.

Table D-5: REASONABLE POTENTIAL CALCULATIONS

		State Water Quality Standard		Max concentration at edge of...												
	Max. Ambient Concentration (metals as dissolved)	Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone	LIMIT REQ'D?	Effluent percentile value		95th Percentile effluent conc. measured (metals as total recoverable)	Coeff Variation		# of samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor	
Parameter	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*			*Pn*	*ug/L*	*CV*	*s*	*n*				COMMENTS
Total Ammonia as NH3-N	39	1738	259	39.61	39.28	**NO**	0.99	0.681	13485	1.87	1.23	12	9.72	215945	465057	WQ criteria based on highest ambient pH & Temp.
Chlorine	-	19	11	0.00	0.00	**NO**	0.99	0.925	650.00	0.23	0.23	59	1.22	215945	378140	

1. This spreadsheet calculates the reasonable potential to exceed state water quality standards for a small number of samples. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 56. User input columns are shown with red headings. Corrected formulas in col G and H on 5/98 (GB)

2. Dilution Factors based on USGS Flows (USGS station #12436500 COLUMBIA RIVER AT GRAND COULEE, WA), dates from 1982-2012, and using DFLOW program to calculate low flows.

3. 95th Percentile effluent concentration based on DMR data. For Ammonia, DMRs for 12 available Quarterly Maximum values from 7/31/2006 to 6/30/2013. For Chlorine, DMRs for 59 available Weekly Average values from 5/31/2008 to 5/31/2013.

Appendix E: Essential Fish Habitat Assessment

When Grand Coulee Dam was constructed, no fish passage facilities were provided so it blocks anadromous fish access to all spawning areas upstream. Anadromous fish passage has since been blocked about 50 miles downstream at Chief Joseph Dam.

Pursuant to the requirements for Essential Fish Habitat (EFH) assessments, this appendix contains the following information:

- Listing of EFH Species in the Facility Area
- Description of the Facility and Discharge Location
- EPA's Evaluation of Potential Effects to EFH

A. Listing of EFH Species in the Facility Area

On February 3, 2006, NOAA responded to an inquiry from EPA in which there are no listed endangered species in the area. In addition, there are no critical habitats. On December 11, 2013, NOAA's website did not list any endangered species in the vicinity of the receiving water in the Columbia River.

B. Description of the Facility and Discharge Location

The activities and sources of wastewater at the Bureau of Reclamation waste water treatment facility are described in detail in Part II and Appendix A of this fact sheet. The location of the outfall is described in Part III ("Receiving Water").

C. EPA's Evaluation of Potential Effects to EFH

Water quality is an important component of aquatic life habitat. NPDES permits are developed to protect water quality in accordance with state water quality standards. The standards protect the beneficial uses of the waterbody, including all life stages of aquatic life. The development of permit limits for an NPDES discharger includes the basic elements of ecological risk analysis. In this site specific case, NOAA has informed EPA that there are no listed endangered species, and no critical habitat in the vicinity of discharge.

Effluent Characterization

Characterization of Bureau of Reclamation effluent was accomplished using a variety of sources, including:

- Permit application monitoring
- Permit compliance monitoring
- Statistical evaluation of effluent variability

Identification of Pollutants of Concern and Threshold Concentrations

The pollutants of concern include pollutants with aquatic life criteria in the Colville Water Quality Standards. No other pollutants of concern were identified.

Exposure and Wasteload Allocation

Analysis of the transport of pollutants near the discharge point with respect to the following:

- Mixing zone policies in Water Quality Standards

- Dilution modeling and analysis
- Exposure considerations (e.g., prevention of lethality to passing organisms)
- Consideration of multiple sources and background concentrations

Monitoring Programs

Development of monitoring requirements includes the compliance monitoring of the effluent.

Protection of Aquatic Life in NPDES Permitting

EPA's approach to aquatic life protection is outlined in detail in the *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001, March 1991). EPA and states evaluate toxicological information from a wide range of species and life stages in establishing water quality criteria for the protection of aquatic life.

The NPDES program evaluates a wide range of chemical constituents (as well as whole effluent toxicity testing results) to identify pollutants of concern with respect to the criteria values. When a facility discharges a pollutant at a level that has a "reasonable potential" to exceed, or to contribute to an exceedance of, the water quality criteria, permit limits are established to prevent exceedances of the criteria in the receiving water (outside any authorized mixing zone).

Effects Determination

Since the proposed permit has been developed to protect aquatic life species in the Columbia River in accordance with applicable water quality standards, EPA has determined that issuance of this permit has no effect to EFH in the vicinity of the discharge.